FINANCIAL RESTATEMENTS: IMPLICATIONS FOR MANAGEMENT EARNINGS FORECASTS

by Zinan Zhu

Bachelor of Arts
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Master of Accountancy
George Washington University, 2003

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Sok-Hyon Kang
Professor of Accountancy

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Zinan Zhu

Dissertation Research Committee:

Sok-Hyon Kang, Professor of Accountancy, Dissertation Director

William R. Baber, McDonough Professor of Accountancy, McDonough School of Business, Georgetown University, Committee Member

Christopher L. Jones, Assistant Professor of Accountancy, Committee Member

Robin L. Tarpley, Associate Professor of Accountancy, Committee Member

Susan Kulp, Assistant Professor of Accountancy, Committee Member

Dedicated to my parents

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Abstract of Dissertation

Financial Restatements: Implications for Management Earnings Forecasts

This study investigates how financial statement restatements influence managers' subsequent voluntary disclosure behavior and investor response to such disclosures. I find that restating firms are less likely to issue a voluntary earnings forecast following financial restatements. To the extent that firms do issue forecasts, however, the post-restatement forecasts are more timely and more accurate (ex post) than pre-restatement forecasts. Further, investor response to management forecasts is moderated after restatements. Further analyses indicate that investors discount bad-news forecasts, but not good-news forecasts, following financial restatements. This finding suggests an asymmetric loss function associated with the two types of forecasts. In sum, financial restatements alter not only voluntary disclosure behavior but also the market's reaction to such disclosures.

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1. Introduction

This study investigates how financial statement restatements influence subsequent voluntary earnings disclosure behavior and investor response to such disclosures. Financial restatements are a source of increasing concern among investors, analysts, researchers, and government regulators, in part due to the adverse consequences on restatement firms and their management. Financial restatements usually lead to equity price declines for restating firms (Palmrose et al. 2004; Gleason et al. 2008), increase information asymmetry (Palmrose et al. 2004; Shankar et al. 2009) and cost of capital (Hribar and Jenkins 2004) for restating firms, trigger turnovers of top executives in restating firms (Desai et al. 2006; Hennes et al. 2008), and increase shareholder litigation risk for restating firms (Jones and Weingram 1996; Palmrose and Scholz 2004).

Financial restatements also compromise management credibility. Prominent business publications (e.g., *The Wall Street Journal*) describe efforts of firms that report restatements to restore trust among investors (e.g., Barta and Zuckerman 2003; Reigber 2003). Consistent with these concerns, accounting researchers (e.g., Anderson and Yohn 2002; Wu 2002; Wilson 2008) find that restatements initially erode the informativeness of mandatory earnings disclosures issued by restating firms. The short-term decline in the informativeness of earnings is consistent with the characterization that investors question the reliability of earnings information after restatements. To date, however, no study examines whether restatements impact the market's reaction to *voluntary* earnings disclosures. Building on prior studies, I investigate how financial restatements influence investor response to voluntary earnings disclosures.

The effect of financial restatements on voluntary earnings disclosures is interesting for two reasons. First, the trustworthiness of management has a greater impact on the credibility of voluntary earnings disclosures than on that of mandatory earnings disclosures. Mandatory earnings disclosures are perceived to be more credible than voluntary earnings disclosures (Mercer 2004) in part because the former are certified by external auditors, whereas the latter typically are not. Since credibility is of greater concern for voluntary earnings disclosures, financial restatement, an event that jeopardizes management credibility, can more substantially undermine the informativeness of voluntary earnings disclosures.

Second, financial restatements can influence investor response to voluntary and mandatory earnings disclosures differentially. Unlike mandatory disclosures, where managers are required to disclose every quarter and year, managers have discretion over the timing and extent of voluntary disclosures. Studies indicate that stock price responses to voluntary disclosures vary according to disclosure characteristics.[1] If managers' voluntary disclosure behavior (e.g., forecast horizon and forecast accuracy) changes following financial restatements, so can investors' assessment of disclosure information. Therefore, market reactions to voluntary earnings disclosures can change differently than market reactions to mandatory earnings disclosures.

Focusing on management's voluntary earnings forecast, I investigate how financial statement restatements influence subsequent voluntary earnings forecast behavior and investor response to these forecasts. Nevertheless, the association between financial

[1] For example, Baginski et al. (1993) find that more precise management earnings forecasts (one type of voluntary earnings disclosures) are associated with greater market reactions. Pownall et al. (1993) find that interim forecasts are more price-informative than annual forecasts.

restatements and investor response to management forecasts is unclear, *ex ante*. If restatements undermine investor confidence in disclosures, then investors discount the information contained in forecasts following restatements. On the other hand, greater scrutiny in the capital market and penalties on misstatement can provide restating firms' managers with incentives to forecast more truthfully after restatements. As a result, managers may issue more credible forecasts to reduce expected litigation costs and to restore investor confidence. If investors perceive that these incentives outweigh incentives to issue misleading forecasts, then investors respond more substantially to management forecasts following restatements. Thus, how restatements influence investor response to management forecasts is an empirical question.

Because voluntary forecast behavior can change following restatements, which, in turn, can trigger differential investor response to management earnings forecasts, I explore changes in management voluntary forecast behavior surrounding restatements. Specifically, I examine pre- versus post-restatement changes in the propensity to issue a forecast, the timeliness of issued forecasts,[2] and forecast accuracy following restatements.[3] I also control for forecast antecedents,[4] such as analyst and investor environment and information asymmetry, because these attributes are impacted potentially by restatements.

Results indicate that subsequent to financial restatements, firms are less likely to issue voluntary earnings forecasts. To the extent that firms do issue voluntary forecasts, however, the forecasts are more timely and more accurate (ex post) than pre-restatement

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[2] Some studies refer to *timeliness of forecasts* as *forecast horizon* (e.g., Brown et al. 2005; Rogers and Buskirk 2009). These two terms are used interchangeably in this study.

[3] I also examine whether forecast precision and forecast bias change following restatements. Results are reported in Table 11 and 12, respectively, and discussed in Section 4.6.

[4] Factors that exist at the time managers make decisions regarding whether to issue a forecast and forecast characteristics are referred to as *forecast antecedents* by Hirst et al. (2008).

forecasts. Despite the increased timeliness and accuracy of the forecasts, investor response to management forecasts is less substantial, however. Further analyses suggest that the erosion in the market's reaction to management forecasts is attributed to lower response to bad-news forecasts, but not to good-news forecasts. This finding is consistent with the asymmetric loss function associated with the two types of forecasts; that is, investors expect managers to be more concerned about related litigation following restatements and thus more careful about good-news forecasts as compared to bad-news forecasts. I also find that the information content of management forecasts is compromised following revenue-related restatements and restatements initiated by parties other than the management. I find no evidence, however, that the market response to management forecasts declines following non-revenue related restatements and company-initiated restatements.

This study contributes to the extant literature in several ways. First, previous studies focus on how restatements affect mandatory disclosures, but not voluntary disclosures. Since voluntary disclosures differ from mandatory disclosures in terms of managerial discretion, economic role (Ball and Shivakumar 2008), and investors perception, this study complements the existing literature by examining the effect of restatements on one type of voluntary earnings disclosure, namely, management earnings forecasts. More specifically, this study documents that financial restatements alter not only voluntary disclosure behavior but also the market's reaction to voluntary disclosure.

Second, this study contributes to the restatement literature by investigating whether voluntary disclosure behavior changes in response to financial restatements. Extant studies that examine the consequences of financial restatements primarily focus on the negative outcomes in the capital market, especially the effects on external users of earnings

information (e.g., stockholders and security analysts). Only a few studies (e.g., Lu 2004; Moore and Pfeiffer 2004; Ettredge et al. 2009) examine the effects of accounting restatements on the behavior of managers who control information disclosures. These studies focus on financial reporting strategies, in particular, accrual-based earnings management and accounting conservatism. In contrast, my study examines the consequences of restatements on producers of earnings information, focusing on a different aspect of managers' choices, namely, voluntary disclosure behavior, which is not examined previously.

Third, this study informs managers and regulators regarding the impact of restatements on the credibility of voluntary earnings forecasts. More specifically, results suggest that financial restatements cause investors to doubt the credibility of management earnings forecasts. One explanation for this finding is that investors do not believe that market forces alone provide managers with sufficient incentives to forecast truthfully following restatements. Furthermore, examination of market responses to management forecasts along different characteristics of restatements broadens understanding of how these characteristics of restatements influence the credibility of voluntary disclosures in the post-restatement period.

The remainder of the paper is organized as follows. Section 2 discusses the related literature and develops hypotheses. Section 3 explains the research design and sample selection. Empirical results are presented in Section 4. Section 5 concludes.

2. Hypothesis Development

2.1. Financial Restatements and Voluntary Earnings Forecast Behavior

A number of factors suggest that voluntary forecast behavior can change following restatements. First, the information environment facing both analysts and investors changes. There is an increase in analyst earnings forecast dispersion (Palmrose et al. 2004) and implied cost of equity capital (Hribar and Jenkins 2004) following restatements. Shankar et al. (2009) reports a wider bid-ask spread—a proxy for information asymmetry—following restatement.

Second, firm-specific litigation risk and corporate governance systems also change following restatements. Jones and Weingram (1996) and Palmrose and Scholz (2004) report that financial restatements lead to a substantial increase in litigation risk. Farber (2005) finds that following accounting misstatements, firms attempt to restore investor confidence by improving the quality of governance mechanisms, for example, by improving board independence. These factors potentially influence managers' post-restatement voluntary disclosure behavior. Thus, I investigate whether the propensity to issue a forecast, the timeliness of forecasts, and forecast accuracy change following restatements.

2.1.1. Hypothesis on the Propensity to Issue a Forecast

The association between financial restatements and the propensity to issue a management forecast is uncertain, *ex ante*. Managers are more likely to issue a forecast after restatements for at least two reasons. First, the literature suggests that managers voluntarily forecast earnings to reduce uncertainty and information asymmetry (e.g., Healy

and Palepu 2001; Verrecchia 2001) because lower information asymmetry is associated with higher securities liquidity and lower cost of capital (Diamond and Verrecchia 1991). Evidence indicates that restatements lead to increases in uncertainty and information asymmetry (Palmrose et al. 2004; Hribar and Jenkins 2004; Shankar et al. 2009). As a result, managers have greater incentives to issue forecasts to mitigate the increase in information asymmetry subsequent to a restatement.

Second, increased firm-specific litigation risk following restatements increases the propensity to issue a forecast. Rogers and Buskirk (2009, 138) argue that a firm may "reduce the probability of litigation by disseminating news relatively frequently [and presumably in low magnitudes], rather than releasing infrequent disclosures that result in sizeable market reactions." Consistent with this idea, Brown et al. (2005) find that firms with higher litigation risk are more likely to issue a forecast regardless of the type of earnings news. In addition, managers often issue preemptive forecasts to deter potential lawsuits or to minimize the expected litigation costs (Skinner 1994, 1997). In sum, financial restatements, which usually increase the likelihood of lawsuits, can increase the firm's propensity to issue a forecast.

On the other hand, managers may refrain from issuing forecasts following restatements. First, managers are less likely to issue an earnings forecast when investors perceive the firm's earnings news to be less informative about the firm's prospects (Lennox and Park 2006). This is because issuing a forecast under this circumstance does not effectively reduce the information asymmetry. As restating firms usually experience a decline in the informativeness of earnings following restatements (e.g., Wilson 2008), managers have disincentives to issue a forecast in the post-restatement period. A second

reason for limiting management forecasts is increased litigation risk. Even a good-faith management earnings forecast can be used as grounds for a lawsuit if the forecast is ex-post optimistic. As a result, companies facing high ex ante litigation risk can be more cautious in issuing a forecast (e.g., Frost and Pownall 1994; Baginski et al. 2002; Rogers and Buskirk 2009). Because a firm's expected litigation risk increases following a restatement, the possibility of issuing a forecast can decrease following restatements.

The preceding factors undermine the ability to predict the consequences of restatements with respect to decisions to provide management forecasts. Thus the first hypothesis, stated in the null form, is as follows:

> H_1: The propensity to issue a management forecast does not change following a financial restatement.

2.1.2. Hypothesis on Timeliness of Forecasts

Timeliness of a forecast (i.e., forecast horizon) is measured as the number of days between the forecast release date and the end date of the fiscal period being forecasted.[5] A longer forecast horizon implies a more timely forecast because it accelerates the dissemination of the earnings information. Notice, however, that uncertainty increases with forecast horizon, and so does the likelihood of missing a forecast. As a result, managers have an incentive to shorten the forecast horizon to minimize the forecast error.

On the other hand, incentives to issue more timely, longer-horizon forecasts can be greater after restatements. First, accelerating the forecast, that is, issuing more timely

[5] Some studies measure forecast timeliness as the number of days between the forecast release date and the earnings announcement date for earnings being forecasted. This measure is not suitable for this study because a delay in an earnings announcement after a financial restatement will be measured as a more timely disclosure.

management forecasts, potentially mitigates "the ability of potential litigants to claim that the firm was withholding information" (Rogers and Buskirk 2009, 138). This viewpoint suggests that increased litigation risks following restatements induce managers to issue more timely forecasts. Second, timelier forecasts, although they are potentially less accurate, more effectively reduce information asymmetry (Rogers 2007). Considering increased information asymmetry and uncertainty among investors after restatements, managers would issue earlier forecasts to provide more timely information to the market. On the basis of the preceding discussion, I make no directional prediction on the change in forecast horizon. The second hypothesis, stated in the null form, is as follows:

> H_2: Conditional on the decision to issue a forecast, the timeliness of management forecasts does not change following a financial restatement.

2.1.3. Hypothesis on Forecast Accuracy

Management forecast accuracy can improve following financial restatements. First, managers are inclined to maximize management forecast accuracy due to litigation or reputation concerns. Financial restatements call into questions restating firms' managerial competence and integrity. If managers have greater incentives to signal managerial talent (Trueman 1986) and to restore investor confidence after a restatement, then forecast accuracy increases following a restatement. Second, even if the incentives to issue accurate forecasts remain the same across periods, managers may exercise greater efforts (e.g., using real transactions to manage actual earnings) to achieve more accurate forecasts. In addition, it is very likely that firms self-selecting to issue forecasts are better forecasters in nature. Therefore, more accurate forecasts can be expected in the

post-restatement period. Furthermore, increased public scrutiny and expected litigation risk after restatements likely impose a need for greater forecast accuracy. Hence, I predict a positive association between financial restatements and ex post forecast accuracy. The third hypothesis, stated in the null form, follows:

> H_3: Conditional on the decision to issue a forecast, forecast accuracy does not change following a financial restatement.

2.2. Financial Restatements and Investor Response to Management Earnings Forecasts

Studies that examine the effect of financial restatements on mandatory earnings disclosures find that investors discount the information content of earnings announcements issued by restating firms. Anderson and Yohn (2002) and Wu (2002) document a decrease in earnings response coefficient (ERC) in the first annual and the first two quarterly earnings announcements following restatements. Wilson (2008) reports that the decline in the informativeness of earnings following restatements is temporary, lasting about four quarters. The short-term decline in the informativeness of earnings is consistent with the characterization that investors lose confidence in the reliability of earnings information after restatements. Building on Anderson and Yohn (2002), Wu (2002), and Wilson (2008), this study investigates how financial restatements influence investor response to a voluntary earnings disclosure: management earnings forecast.

Previous research finds that management earnings forecasts have information content (Patell 1976; Penman 1980; Waymire 1984; Pownall et al. 1993). My study examines whether and how the informativeness of management earnings forecasts changes

surrounding financial restatements. Investors may respond less to management forecasts after restatements, if investors question restating firms' trustworthiness (Anderson and Yohn 2002; Wu 2002; Wilson 2008) and lose confidence in their forecasts.

On the other hand, if investors believe that restating firms' managers have greater incentives to issue more truthful and useful information, then investors respond more substantially to management forecasts after a restatement. To the extent that the need to reduce information asymmetry and expected litigation costs and to signal superior forecasting ability increases following restatements, managers have greater incentives to truthfully reveal information regarding firms' prospects. If investors perceive that these incentives are sufficiently high, then they are more responsive to management forecasts in the post-restatement period. Furthermore, in addition to the litigation and reputation concerns, firms may self-select to issue forecasts to signal managerial confidence or financial reporting quality following financial restatements. If this signaling story applies and investors value managers' behavior, then market reactions to management forecasts are more substantial in the post-restatement period.

Since it is unclear *ex ante* which characterization dominates, I make no directional prediction on investor response to management forecasts in the post-restatement period. The fourth hypothesis, stated in the null form, is as follows:

> H_4: Investor response to management earnings forecasts does not change following a financial restatement.

Notice that three types of news can be conveyed in management forecasts: good news, bad news, and confirming news.[6] The extant evidence indicates that the information content differs between good-news and bad-news forecasts. Specifically, bad-news forecasts are considered more credible than good-news forecasts (Jennings 1987; Skinner 1994; Williams 1996; Hutton et al. 2003). This is in part because managers have disincentives to volunteer bad news, and the fact that managers have to issue a bad-news forecast conveys greater credibility. Considering the differential informativeness of these forecasts, I distinguish good-news forecasts from bad-news forecasts in testing H_4.

2.3. Financial Restatement Characteristics and Investor Response to Management Earnings Forecasts

Prior studies (e.g., Palmrose et al. 2004; Gleason et al. 2008) find that characteristics of financial restatement, such as severity and duration, impact market reactions to restatement announcements. Since these factors can influence investors' perception on restating firms' integrity and competence, they can influence market reactions to management earnings forecasts subsequent to a restatement. In this section, I investigate whether and how financial restatement characteristics impact investor response to management earnings forecasts. Specifically, based on data availability, [7] I examine two characteristics of financial restatements, i.e., whether a restatement is revenue-related and whether a restatement is initiated by the company.

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[6] The First Call describes the confirming forecasts as "OK with expectations" or "comfortable with expectations."

[7] Other restatement characteristics, e.g., whether a restatement is due to fraud or accounting error, will be hand collected and examined in the future.

Prior studies document that revenue recognition-related restatements generate more negative price declines than other restatements (Anderson and Yohn, 2002; Gleason et al., 2008), which suggests that investors are more concerned about revenue recognition problems than other financial reporting errors. Following this result, I expect revenue recognition-related restatements to impact investor response to restating firms' voluntary management forecasts differently than other restatements. On one hand, revenue-related restatements can undermine the credibility of management forecasts more than non-revenue related restatements. Since errors that cause revenue-related restatements usually involve manipulating earnings upward, such restatements lead to greater loss of investor confidence in restating firms. If so, then investor response to management forecasts is lower following revenue-related restatements than following other types of restatements.

On the other hand, companies that announce revenue-related restatements are likely to receive more public scrutiny and face higher litigation risk than those committing non-revenue related errors. As a result, managers in these companies are more careful about issuing management forecasts in the post-restatement period than managers in other companies. If investors perceive these incentives to be sufficiently high, then investor response to forecasts issued by firms reporting revenue recognition restatements is greater than for firms with other restatement forms in the post-restatement period.

Given the discussion above, it is not straightforward whether the change in investor response to management forecasts following revenue-related restatements is higher or lower than that following non-revenue related restatements. The fifth hypothesis, stated in the null form, is:

H_5: Change in investor response to management earnings forecasts following a financial restatement is independent of whether the restatement is revenue-related.

A second restatement characteristic that I examine is whether a restatement is initiated by the company. Some studies (e.g., Arthaud-Day et al. 2006; Desai et al. 2006) use the prompter of a restatement to measure the severity of a restatement. More importantly, this characteristic of financial restatement reveals information about management competence and integrity. A restatement initiated by internal parties mitigates concern that the related financial reporting error is intentional. If attribution to internal parties is a positive signal regarding managers' credibility and reliability, then investor response to forecasts is greater following company-initiated restatements than following restatements initiated by other parties. The sixth hypothesis, stated in the null form, is:

H_6: Change in investor response to management earnings forecasts following a financial restatement is independent of whether the restatement is initiated by management.

3. Research Design

3.1. Financial Restatements and Voluntary Earnings Forecast Behavior

3.1.1. Financial Restatements and the Propensity to Issue a Forecast

To test H_1 (the propensity to issue a forecast), I model the probability of issuing a management forecast during one-year before and one-year after the restatement as a function of the determinants of the issuance of management earnings forecasts. More specifically,

$$\begin{aligned}\text{Prob (ISSUE} = 1) = f(&\alpha_0 + \alpha_1 \text{POST} + \alpha_2 \text{SIZE} + \alpha_3 \text{ANALYSTS} + \alpha_4 \text{FCF} \\ &+ \alpha_5 \text{MB} + \alpha_6 \text{LOSS} + \alpha_7 \text{ROA} + \alpha_8 \text{EVOL} + \alpha_9 \text{INSTHOLD} \\ &+ \alpha_{10} \text{LITI} + \alpha_{11} \text{FD} + e),\end{aligned} \tag{1}$$

where firm and time subscripts are suppressed. The appendix provides a more detailed definition of the variables. ISSUE is an indicator variable that equals one if the firm issued at least one earnings forecast during the period and zero otherwise. POST is an indicator variable that designates the post-restatement period (POST = 1 and zero otherwise).[8] The estimate on POST is of special interest with respect to testing H_1. Rejecting the null hypothesis in favor of a *positive* coefficient estimate supports a characterization that the propensity to issue management forecasts *increases* following a restatement, and conversely for a negative estimate.

On the basis of the extant literature, I include firm size (SIZE) and analyst followings (ANALYSTS) to capture the demand for information in the market. Following Brown et al. (2005), free cash flow (FCF), defined as the sum of operating and investing

[8] POST is a comprehensive measure that captures various changes following restatements that impact managers' forecast decisions, e.g., increased public scrutiny and litigation risk and decreased earnings informativeness.

cash flows scaled by total assets, controls for the need of raising capital. Market-to-book ratio, MB, is a proxy for proprietary costs (Bamber and Cheon 1998).[9] LOSS is an indicator variable for whether the firm reported losses in the current period. Return-on-assets (ROA) is measured at the beginning of the fiscal period and controls for the possibility that firms with better financial performance are more likely to issue a forecast. EVOL measures earnings volatility[10] and is inversely associated with the issuance of management earnings forecasts (Waymire 1985; Ajinkya et al. 2005). Institutional ownership, INSTHOLD, measures corporate governance, for which a positive association is predicted. Prior studies (Skinner 1994; Baginski et al. 2002; Brown et al. 2005) suggest that the litigation environment is an important determinant of whether to issue a forecast. Litigation risk (LITI) is an indicator variable designating bio-technology (SIC 2833–2836), computer hardware (SIC 3570–3577), electronics (SIC 3600–3674), retailing (SIC 5200–5961), and computer software (SIC 7371–7379). FD is an indicator variable that controls for the potential effect of Regulation FD on management forecast behavior (Bailey et al. 2003; Heflin et al. 2003).

Eq. (1) is a Probit specification that models whether a firm chooses to issue a forecast before or after a financial statement restatement. Because the subsequent analyses are conditional on the issuance of management forecasts, selection bias can be an issue. As a result, Eq. (1) also serves as a first-stage model, for which the Inverse Mills Ratio from Eq. (1) is used to correct for self-selection (Heckman 1979; Li and Prabhala 2006) when

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[9] An alternative measure of proprietary costs is the industry concentration ratio (i.e., Herfindahl index), computed as the sum of squares of the market shares of the firms' sales within each four-digit SIC industry. Tests using this measure yield similar results.

[10] EVOL is measured as the standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the 3-year period.

testing for associations between financial restatements and forecast characteristics and investor response to management forecasts.

Notice that the dependent variable ISSUE does not distinguish firms issuing one forecast from firms issuing multiple forecasts. As a result, this approach can lead to a loss of information. To address this issue, I also use forecast frequency (FREQUENCY), defined as the number of forecasts issued by a firm, as an alternative dependent variable and estimate Eq. (1) using a negative binomial regression.[11]

3.1.2. Financial Restatements and Forecast Horizon and Accuracy

To test H_2 (forecast horizon) and H_3 (forecast accuracy), I estimate the following two specifications:

$$\begin{aligned} \text{HORIZON} = {} & \alpha_0 + \alpha_1 \text{POST} + \alpha_2 \text{SIZE} + \alpha_3 \text{ANALYSTS} + \alpha_4 \text{FCF} + \alpha_5 \text{MB} \\ & + \alpha_6 \text{LOSS} + \alpha_7 \text{ROA} + \alpha_8 \text{EVOL} + \alpha_9 \text{INSTHOLD} \\ & + \alpha_{10} \text{QUARTER} + \alpha_{11} \text{LITI} + \alpha_{12} \text{FD} + \alpha_{13} \text{MILLS} + \varepsilon \end{aligned} \tag{2}$$

$$\begin{aligned} \text{ABSERROR} = {} & \alpha_0 + \alpha_1 \text{POST} + \alpha_2 \text{SIZE} + \alpha_3 \text{ANALYSTS} + \alpha_4 \text{FCF} + \alpha_5 \text{MB} \\ & + \alpha_6 \text{LOSS} + \alpha_7 \text{ROA} + \alpha_8 \text{EVOL} + \alpha_9 \text{INSTHOLD} \\ & + \alpha_{10} \text{QUARTER} + \alpha_{11} \text{HORIZON} + \alpha_{12} \text{LITI} + \alpha_{13} \text{FD} \\ & + \alpha_{14} \text{MILLS} + \varepsilon. \end{aligned} \tag{3}$$

The dependent variable of Eq. (2) is HORIZON, which is the number of days between the forecast release date and the end date of the fiscal period being forecasted. The remaining explanatory variables are as defined in Eq. (1) except for the indicator variable, QUARTER, which distinguishes quarterly forecasts from annual forecasts. H_2 relates to the estimate on POST. If post-restatement management earnings forecasts are more (less)

[11] Using analyst following data, Rock et al. (2001) provide evidence that negative binomial model is preferred over OLS where the dependent variable is a nonnegative count data variable. Analyses using OLS yield similar results in my paper.

timely than pre-restatement management forecasts, then a positive (negative) estimate on POST applies. I make no prediction for the coefficient on LITI.[12] Following Brown et al. (2003) and Brown et al. (2005), I expect a positive association between FD and HORIZON. Finally, notice that MILLS is the Inverse Mills Ratio obtained from Eq. (1).

The dependent variable of Eq. (3) is ABSERROR, which is the absolute value of management earnings forecast minus actual earnings per share, scaled by the stock price two days before the forecast date. ABSERROR is an inverse measure of forecast accuracy. Due to the inconsistent split adjustment across different First Call databases (Ng et al. 2008), I obtain non-split-adjusted management earnings forecasts and actual EPS from First Call and I/B/E/S, respectively. The split factor from CRSP is then applied to ensure that the corresponding management forecasts and actual EPS are based on the same number of shares, as suggested in Robinson and Glushkov (2006) and Ng et al. (2008). The remaining explanatory variables are as defined in Eq. (2). The estimate of POST addresses H_3. If post-restatement management earnings forecasts are more (less) accurate (ex post) than pre-restatement management forecasts, then a negative (positive) estimate on POST applies.

Acknowledging the differences between good-news and bad-news management forecasts (e.g., Hutton and Stocken 2007; Chen et al. 2008), I further distinguish among management forecasts containing three types of news: good (GOOD), bad (BAD), and confirming (CONFIRM). GOOD (BAD) equals one if the management earnings forecast is higher (lower) than the market's expectation of earnings as of the forecast date and zero

[12] Prior studies provide mixed results on the association between litigation risk and forecast horizon. For example, Brown et al. (2005) find that litigation risk increases forecast horizon for both good-news and bad-news firms, whereas Baginski et al. (2002) find that litigation risk is negatively associated with forecast horizon.

otherwise.[13] CONFIRM, which is an indicator variable, equals one if the description in First Call indicates "OK with expectations" or "comfortable with expectations", and zero otherwise. I interact GOOD, BAD, and CONFIRM with POST, as follows:

$$\begin{aligned} HORIZON = {} & \alpha_1 GOOD + \alpha_2 BAD + \alpha_3 CONFIRM \\ & + \alpha_4 POST*GOOD + \alpha_5 POST*BAD + \alpha_6 POST*CONFIRM \\ & + \alpha_7 SIZE + \alpha_8 ANALYSTS + \alpha_9 FCF + \alpha_{10} MB + \alpha_{11} LOSS \\ & + \alpha_{12} ROA + \alpha_{13} EVOL + \alpha_{14} INSTHOLD + \alpha_{15} QUARTER \\ & + \alpha_{16} LITI + \alpha_{17} FD + \alpha_{18} MILLS + \varepsilon \end{aligned} \tag{4}$$

$$\begin{aligned} ABSERROR = {} & \alpha_1 GOOD + \alpha_2 BAD + \alpha_3 CONFIRM \\ & + \alpha_4 POST*GOOD + \alpha_5 POST*BAD + \alpha_6 POST*CONFIRM \\ & + \alpha_7 SIZE + \alpha_8 ANALYSTS + \alpha_9 FCF + \alpha_{10} MB + \alpha_{11} LOSS \\ & + \alpha_{12} ROA + \alpha_{13} EVOL + \alpha_{14} INSTHOLD + \alpha_{15} QUARTER \\ & + \alpha_{16} HORIZON + \alpha_{17} LITI + \alpha_{18} FD + \alpha_{19} MILLS + \varepsilon. \end{aligned} \tag{5}$$

3.2. Financial Restatements and Investor Response to Management Earnings Forecasts

To test H_4, I compare the response coefficient of management forecasts issued by restating firms during the two-year window, one-year period before and one-year period after restatement. Wilson (2008) finds that the decline in the information content of earnings announcements lasts about four quarters. I choose one-year period before and after restatement announcements to facilitate the comparison between the response coefficient of management forecasts and the response coefficient of earnings announcements documented by Wilson (2008). The following model applies:

[13] Equivalently, in later market reaction analysis, I define earnings surprise (UEMF) contained in management earnings forecasts as management earnings forecasts minus the market's expectation of earnings as of the forecast date. GOOD (BAD) is set to one if UEMF is positive (negative) and zero otherwise.

$$\begin{aligned} CARMF = {} & \alpha_1 + \alpha_2 POST + \beta_1 UEMF + \beta_2 POST * UEMF \\ & + \sum_{K=1}^{10} CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) \\ & + \delta_1 MILLS + \varepsilon. \end{aligned} \quad (6)$$

The dependent variable (CARMF) is the three-day size-adjusted return centered at the day of the management forecast. UEMF is the earnings surprise, that is, management earnings forecast minus the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast,[14] deflated by stock price two days before the forecast date. Following the existing studies (e.g., Hutton and Stocken 2007), I use the midpoint value as the forecast if forecasts are expressed as a range[15] and use the low-end or high-end value as the forecast for one-sided directional forecasts. For confirming forecasts, I use the most recent IBES analyst EPS forecast made before the forecast as the value of the forecast. Non-split-adjusted management earnings forecasts and analyst forecasts are obtained from First Call and I/B/E/S, respectively. Adjustments are then made to ensure that the corresponding management and analyst forecasts are based on the same number of shares (Robinson and Glushkov 2006; Ng et al. 2008). Because the market reaction is positively associated with forecast news (e.g., Ajinkya and Gift 1984; Waymire 1984), I expect a positive coefficient on UEMF.

Of central interest for testing H_4 is the coefficient estimate, β_2, which measures the change in investor response to management forecast following restatements. If investors

[14] Following Brown (2001) and Bartov et al. (2002), I use the most recent analyst EPS forecast as a proxy for the market's expectation, since "the forecast closest in time to the earnings announcement date is a superior proxy of the market's expectation of earnings relative to the median of outstanding forecasts within a specific date range." (Wilson 2008, 526)

[15] Prior studies (Baginski et al. 1993; Hirst et al. 1999) suggest that investors use the mid-point of a range forecast when forming their expectation of earnings.

lose confidence in restating firms and thereby question the credibility of earnings forecasts, then the response coefficient for the post-restatement management earnings forecast is lower than that of the pre-restatement forecasts; that is, $\beta_2 < 0$. In contrast, evidence of $\beta_2 > 0$ is consistent with a characterization that investors respond more substantially to management forecasts, and suggests that investors perceive that managers reveal more useful information about earnings following a restatement.

Consistent with the extant literature (e.g., Collins and Kothari 1989; Easton and Zmijewski 1989), I include a number of variables (CONTROLS) to control for cross-sectional differences in response coefficients. They are earnings persistence (PERSIST), growth (MB, measured as the market-to-book ratio at the prior year end), and systematic risk (BETA, measured as the market-model beta estimated over the year prior to the forecast ending two days prior to the forecast date). Firm size, SIZE, is measured as the natural log of the market value of equity. MLOSS is an indicator variable that equals one if a forecast value is less than zero, and zero otherwise. A negative coefficient on MLOSS is expected, when interacted with UEMF (Hayn 1995). UEMF* $\left|\text{UEMF}\right|$ controls for the nonlinearity between stock returns and earnings (Freeman and Tse 1992; Lipe et al. 1998).

A second set of variables controls for the effect of forecast characteristics and forecast environment on response coefficients of management forecasts. Following prior studies (e.g., Baginski et al. 1993; Rogers and Stocken 2005; Hutton and Stocken 2007), I include forecast timeliness (HORIZON), forecast precision (POINT), whether a forecast is a quarterly forecast (QUARTER), litigation risk (LITI), and Regulation FD (FD). Positive coefficients are expected for HORIZON, QUARTER, and LITI, when interacted with

UEMF. All variables are winsorized at 1 and 99 percent levels. Observations with a price less than one are deleted.

Acknowledging that the information content differs between good-news and bad-news forecasts, that is, bad-news forecasts are considered more credible than good-news forecasts (Skinner 1994; Jennings 1987; Williams 1996; Hutton et al. 2003), I test H_4 by distinguishing good-news forecasts versus bad-news forecasts, as follows:

$$\begin{aligned} CARMF = {} & \alpha_1 + \alpha_2 POST + \alpha_3 GOOD + \alpha_4 BAD + \alpha_5 POST * GOOD \\ & + \alpha_6 POST * BAD + \beta_1 GOOD * UEMF + \beta_2 BAD * UEMF \\ & + \beta_3 POST * GOOD * UEMF + \beta_4 POST * BAD * UEMF \\ & + \sum_{K=1}^{10} \gamma_K CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) \\ & + \delta_1 MILLS + \varepsilon. \end{aligned} \tag{7}$$

3.3. Financial Restatement Characteristics and Investor Response to Management Earnings Forecasts

To test H_5 that the change in investor response to management earnings forecasts following a restatement is independent of whether a restatement is revenue-related, I estimate the following specification:

$$\begin{aligned} CARMF = {} & \alpha_1 + \alpha_2 POST + \alpha_3 REV + \alpha_4 POST * REV \\ & + \beta_1 UEMF + \beta_2 POST * UEMF + \beta_3 REV * UEMF + \beta_4 POST * REV * UEMF \\ & + \sum_{K=1}^{10} \gamma_K CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) \\ & + \delta_1 MILLS + \varepsilon \end{aligned} \tag{8}$$

In tests of H_5, REV is an indicator variable which equals one if the restatement is revenue recognition related, and zero otherwise. For firms announcing revenue-related restatements, the response coefficients of management forecasts in the pre- and post-restatement periods are represented by $\beta_1+\beta_3$ and $\beta_1+\beta_2+\beta_3+\beta_4$, respectively. Similarly, the

response coefficients for firms announcing non-revenue related errors are measured by β_1 in the pre-restatement period and $\beta_1+\beta_2$ in the post-restatement period. I compare the response coefficients of management forecasts across two periods and draw inference on whether characteristics of financial restatement influence investor response to management forecasts.

To test H_6 that company-initiated restatements and restatements initiated by other parties differentially influence market reactions to management earnings forecasts, I estimate the following model:

$$\begin{aligned} CARMFE = {} & \alpha_1 + \alpha_2 POST + \alpha_3 COMP + \alpha_4 POST*COMP \\ & + \beta_1 UEMF + \beta_2 POST*UEMF + \beta_3 COMP*UEMF \\ & + \beta_4 POST*COMP*UEMF \\ & + \sum_{K=1}^{10} \gamma_K CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) \\ & + \delta_1 MILLS + \varepsilon \end{aligned} \tag{9}$$

In tests of H_6, COMP is an indicator variable which equals one if the prompter of a restatement is the company, and zero otherwise. Comparisons between $\beta_1+\beta_3$ and $\beta_1+\beta_2+\beta_3+\beta_4$ (β_1 and $\beta_1+\beta_2$) provide evidence on whether the response coefficient of management forecasts changes following company-initiated restatements (restatement initiated by other parties). Other variables are as previously defined.

3.4. Sample

The sample size varies across different tests. To test H_1 whether the propensity to issue a forecast following restatement, I begin with the GAO (2002) sample, which includes 919 restatement announcements for 844 firms issued between January 1, 1997, and June 30, 2002. I retain 753 restatement firms with necessary data to estimate the selection model, Eq. (1). Because I distinguish whether each firm issues a forecast before

and after a restatement, the final sample for testing H_1 consists of 1506 observations. Notice that this sample includes restatement firms that issue no forecasts in both the pre- and post-restatement periods.

[Insert Table 1]

The sample selection procedure for testing H_4 whether investor response to management earnings forecasts differs following restatements is presented in Table 1. I begin with the GAO (2002) sample, which includes 919 restatement announcements for 844 firms issued between January 1, 1997, and June 30, 2002. After removing observations that have no data in CRSP, IBES, COMPUSTAT, or First Call, the sample reduces to 577 restatement announcements issued by 518 firms.

Tests of H_4 focus on management forecasts issued during a two-year window, that is, one year before and one year after the restatement announcement. I obtain from the First Call Company Issued Guidelines (CIG) database an initial sample of 2,756 management forecasts within the two-year period for 518 restating firms. I eliminate duplicate forecast observations, drop forecasts with errors,[16] and retain only annual and quarterly EPS forecasts in the form of point, range, one-side directional, and confirming statements. These procedures yield a sample of 1,654 observations. I then exclude earnings preannouncements, which are released after the end of the fiscal period.[17] Furthermore, I eliminate observations with more than one forecast made on the same day because I cannot identify investor reactions to each forecast. Lastly, I restrict my sample to observations with necessary data available in CRSP, IBES, COMPUSTAT, and First

[16] I exclude forecasts for which the record date of the observation in First Call is before the announcement date since these observations might involve data recording errors.

[17] This is because "even though preannouncements are technically earnings forecasts, most of the literature treats them as early earnings announcements rather than late earnings forecasts" (Hirst et al. 2008, 319).

Call. The final sample for testing H_4 whether investor response to management earnings forecasts differs following restatements consists of 731 management forecasts issued by 228 restatement firms.[18] Tests of H_5 and H_6 are based on this sample as well.

Samples used to test H_2 (forecast horizon) and H_3 (forecast accuracy) are obtained following a similar selection procedure (untabulated), except that I require no data from CRSP and retain multiple forecasts issued on the same day in the sample. As a result, the final samples for testing H_2 and H_3 contain 1254 and 1147 observations, respectively.

[18] Among these 228 restatement firms, 92 firms continue to issue forecasts, 49 firms start to issue forecasts, and 87 firms stop to issue forecasts in the post-restatement period.

4. Empirical results

4.1. Descriptive Statistics

[Insert Table 2]

Table 2 contains descriptive statistics. Panel A shows variables appearing in the first-stage selection equation, Eq. (1). Mean SIZE and ANALYSTS are 5.517 and 1.901, respectively. Mean MB is 3.329, which is comparable to that reported by Wilson (2008). On average, restating firms are in need of additional capital (i.e., the mean FCF is –0.364) and have institutional ownership of 0.370.

Panel B compares forecast properties between the pre- and post-restatement periods. HORIZON_A, HORIZON_Q,[19] QUARTER, and ABSERROR differ significantly across the two periods. HORIZON increases for both annual and quarterly forecasts. Specifically, managers release annual (quarterly) earnings forecasts 23 days (11 days) earlier in the post-restatement period than in the pre-restatement period. A significant decrease in QUARTER indicates that managers are less likely to issue quarterly forecasts after restatements. Finally, forecasts issued after restatements are more accurate ex post, indicated by the significant decrease in ABSERROR.

Panel C presents descriptive statistics for variables in market reaction models. Mean persistence and size are 0.574 and 7.568, respectively. Magnitudes are comparable to those reported by Wilson (2008), that is, 0.626 and 7.460, respectively. Panel D shows the pre- and post-restatement statistics for good-news and bad-news forecasts. From the pre- to post-restatement period, good-news forecasts change only on the HORIZON

[19] HORIZON_A and HORIZON_Q stand for HORIZON of annual and quarterly forecasts, respectively.

variables; however, bad-news forecasts change on a few characteristics. For example, the surprise contained in bad-news forecasts becomes smaller after restatements, as indicated by the significant decrease in UEMF. In addition, the significant increase in HORIZON_Q suggests that quarterly bad-news forecasts become timelier following restatements. The significant decline in QUARTER suggests that bad-news forecasts are less likely to be forecasted for quarter following restatements.

4.2. Financial Restatements and Voluntary Earnings Forecast Behavior

4.2.1. Financial Restatements and the Propensity to Issue a Forecast

[Insert Table 3]

Table 3 presents Probit estimates for the odds of issuing a forecast (ISSUE, Panel A) and negative binomial regression estimates for the frequency of issuing a forecast (FREQUENCY, Panel B) based on Eq. (1). In the Probit model, the parameter estimate on POST of –0.589 (χ^2 = 13.70, p = 0.0002) implies that the odds of issuing a forecast decrease after restatements. The negative binomial model of forecast frequency lends additional support to this finding. More specifically, the estimate of POST (α_1 = –0.638, p < 0.0001) suggests that the frequency of a management forecast declines following restatements. In sum, results from both specifications reject H_1 in favor of the alternative hypothesis that restating firms are less likely to make voluntary disclosures following restatements.[20] One explanation for this result is that an expected decrease in earnings informativeness and an increased litigation risk following restatement discourage managers from issuing voluntary forecasts. Further analysis suggests that the relative proportion (or

[20] I estimate alternative models which allow coefficients of control variables to vary across the pre- and post-restatement periods. Inferences for the propensity to issue a forecast and forecast frequency still hold.

the mix) of good-news and bad-news forecasts does not significantly change across the pre- and post-restatement periods.

Estimates on control variables, which are consistent across two models, conform to the prior literature. In particular, a positive coefficient on FD suggests that firms are more likely to issue forecasts after Regulation FD, consistent with Heflin et al. (2003) and Brown et al. (2005). Positive coefficients on SIZE, ANALYSTS, and INSTHOLD are consistent with the idea that larger firms, firms with greater analyst following, and firms with more institutional ownership are more likely to issue a forecast (or issue forecasts more frequently). LOSS has a negative coefficient, which is consistent with the explanation that loss-making firms are less likely to issue a forecast because earnings are less value-relevant for these firms (Ajinkya et al. 2005).

4.2.2. Financial Restatements and Forecast Horizon

[Insert Table 4]

Table 4 evaluates H_2 (forecast horizon) based on Eq. (2). Results in Panel A indicate that HORIZON increases by about 13 days, that is, 178 calendar days to 191 calendar days before the fiscal year end, following restatements. In other words, forecasts are issued earlier by 13 days after a restatement. Panel B reports the results of horizon analysis for annual and quarterly forecasts, respectively. Results indicate that annual forecasts are issued 21 days earlier while quarterly forecasts are issued 6 day earlier following financial restatement.

Panel C presents the results of forecast horizon analysis for three types of forecasts: GOOD, BAD, and CONFIRM. The coefficients on POST*GOOD and POST*BAD are significantly positive at one and ten percent levels, respectively, which suggests that both

good-news and bad-news forecasts are more timely in the post-restatement period than before. Although the coefficient on POST*CONFIRM is insignificant, the coefficient test at the bottom of Panel C suggests that the coefficient on POST*CONFIRM is not different from the coefficient on POST*GOOD or POST*BAD. The insignificant coefficient on POST*CONFIRM may be due to the low power of the test since only 227 confirming forecasts are included in this analysis. The coefficient needs to be interpreted with caution.

Collectively, results in Table 4 are consistent with the proposition that timelier forecasts more effectively reduce information asymmetry among investors (Rogers 2007), and thereby managers release forecasts with longer horizons following restatement. Results excluding MILLS (i.e., results based on OLS) are also reported in Table 4, and inferences on forecast horizon all hold. A significant positive estimate on LITI is consistent with Brown et al. (2005), who document a positive association between litigation risk and forecast horizon.

4.2.3. Financial Restatement and Forecast Accuracy

[Insert Table 5]

Table 5 presents tests of H_3, which considers forecast accuracy. All coefficient estimates are multiplied by 100. Panel A shows that the absolute value of management forecast errors is negatively associated with POST, with the associated significance level of 0.01. This suggests that forecast accuracy improves following restatements. Specifically, ABSERROR decreases from 2.499 to 2.088, a 16 percent reduction from the pre-restatement period. Results are similar after excluding MILLS from the forecast accuracy model (e.g., using OLS to estimate the forecast accuracy model).

Panel B examines forecast accuracy for GOOD, BAD, and CONFIRM forecasts separately. The coefficients on POST*GOOD and POST*BAD are significantly positive at ten and one percent levels, respectively, which suggests that both good-news and bad-news forecasts become more accurate following restatements. The coefficient estimate on POST*CONFIRM is not significant; however, the coefficient test at the bottom of Panel B suggests that this coefficient is not significantly different from that of POST*GOOD or POST*BAD. Taken together, results from Table 5 are consistent with the prediction that managers provide more accurate information following restatements.

Estimates on control variables are consistent with prior studies. Positive coefficients on LOSS and EVOL indicate that forecasting earnings is more difficult for loss-making and volatile firms (Ajinkya et al. 2005). On the other hand, forecast accuracy varies directly with firm size and institutional ownership. Consistent with prior studies (Kasznik 1999; Chen 2004; Hribar and Yang 2006), quarterly forecasts are more accurate than annual forecasts (α_{10} = –0.599, t = –2.76), and forecast accuracy varies inversely with forecast horizon (α_{11} = 0.006, t = 6.35).

4.3. Financial Restatements and Investor Response to Management Earnings Forecasts

[Insert Table 6]

Table 6 contains results for tests of H_4, whether investor response to management forecasts changes after restatements. As expected, the market's response to management forecasts is positive, that is, UEMF has a positive coefficient of 5.670 (t = 3.02). The coefficient on UEMF*POST represents the incremental change in investor response following a restatement. A significantly negative estimate of –1.655 (t = –2.03) suggests

that investors react *less* substantially to management forecasts after restatements.[21] Specifically, the response to management earnings forecasts decreases from 5.670 to 4.015 following restatements, a 29 percent decrease from the pre-restatement period. The analysis excluding MILLS (i.e., OLS) yields similar but weaker results. This result suggests that investors lose confidence in the credibility of forecasts issued after an accounting restatement. This evidence is particularly interesting, given that the timeliness and accuracy of the forecasts improve significantly following restatements. Finally, the Inverse Mills Ratio (MILLS) extracted from Eq. (1) is statistically significant, which implies that there is a need to control for selection bias in this specification.

Consistent with prior studies (e.g., Collins and Kothari 1989; Hayn 1995), the coefficient on UEMF*PERSIST is positive and the coefficients on UEMF*LOSS are negative. Thus, market responses to management forecasts vary directly with earnings persistence, and reactions to loss forecasts are less than reactions to profit forecasts. The coefficients on UEMF*QUARTER and UEMF*POINT are positive, indicating that interim and more precise forecasts are more informative than annual and less precise forecasts.

[Insert Table 7]

Table 7 provides additional insights regarding market reactions for good-news and/or bad-news forecasts. The coefficient on UEMF*POST*GOOD is negative but not significantly different from zero (t = –0.41), whereas the negative coefficient on UEMF*POST*BAD is significantly different from zero at the five percent level. This evidence, in conjunction with that of Table 6, suggests that the erosion in the response

[21] The inference does not change if only the first restatement announced by a firm is retained or year dummies are included.

coefficient of management forecasts documented in Table 6 is attributable to a lower investor response to bad-news forecasts, but not to good-news forecasts. A plausible explanation is that investors perceive the expected litigation costs associated with good-news forecasts following restatements to discourage managers from issuing misleading forecasts. In contrast, investors perceive the expected litigation costs associated with bad-news forecasts as low and, as such, provide less incentive to issue forecasts truthfully. Thus, investors respond less to bad-news forecasts.

4.4. Financial Restatement Characteristics and Investor Response to Management Earnings Forecasts

[Insert Table 8]

Table 8 presents the results for tests of H_5, whether revenue-related restatements and non-revenue related restatements differentially impact investor response to management forecasts. Statistical comparisons at the bottom of Table 8 indicate that market response to management forecasts following revenue-related restatements is lower than that during the pre-restatement period. The market reaction for the pre-restatement period is 5.259 and then declines to 3.401 in the post-restatement period, although the decline is statistically significant only at ten percent level. By contrast, the market response to management forecasts is not significantly different in the post-restatement period for non-revenue related restatements. In sum, results from Table 8 suggest that the credibility of management forecasts is compromised following revenue-related restatements, but not following restatements that correct other types of accounting errors.

[Insert Table 9]

Results for tests of H_6, the differential effect of company-initiated restatements versus restatements initiated by other parties on investor response to management forecasts, are reported in Table 9. The lower section of Table 9 shows the comparison of response coefficients for company-initiated restatements and restatements initiated by outsiders. Following restatements initiated by external parties (e.g., SEC), market response to management forecasts declines from 6.002 to 3.306 ($p < 0.05$). In contrast, I find no decline in the response coefficient of management forecasts following company-initiated restatements. Results in Table 9 are consistent with the explanation that investors interpret restatements initiated by outsiders as evidence that restatements indicate opportunistic or negligent management behavior.

4.5. Sensitivity Analyses

Sensitivity analyses are conducted for H_1–H_4. Notice that this study is primarily interested in examining whether disclosure policies and the market's response differ after restatements. Having found that they do differ after restatements, a potentially interesting question is whether restatement firms differ from non-restatement firms.

To gain additional insight, I compare restatement firms with non-restatement firms for both pre- and post-restatement periods. More specifically, I construct a set of non-restatement firms that are matched to restatement firms with respect to year, industry, size,[22] and fiscal year end. When a test firm has multiple matches, I retain the control firm with the closest match in size. The matched-pair sample consists of 597 pairs of test and control firms.[23] I create four indicator variables (i.e., TESTPRE,[24] TESTPOST,

[22] Control firms with a size greater than 120% or smaller than 80% of the test firm size are eliminated.
[23] A control firm must make no restatement announcement between January 1, 1997, and June 30, 2002.

CONPRE, and CONPOST) and repeat the analyses for H_1-H_4 based on the matched sample.[25] I estimate the coefficients on these four indicator variables and further test the equality of the coefficients.

[Insert Table 10]

Results based on the matched sample are in Table 10. Panel A-D consider respectively the propensity to issue a forecast, forecast horizon, forecast accuracy, and market response to management earnings forecasts. Three findings are worth noting. First, before a restatement, restatement firms do not differ from control firms with respect to the propensity to issue a forecast, forecast horizon, forecast accuracy, or market reactions to management forecasts, indicated by the insignificant difference between TESTPRE and CONPRE. This finding mitigates a potential concern that restating firms are systematically different from non-restatement firms even *before* issuing a restatement.

Second, the test of equality between CONPRE and CONPOST indicate that, for the control firms, there is no change in the propensity to issue a forecast, forecast horizon, forecast accuracy, or market response to management forecasts between the pre- and post-restatement periods. These results address a potential concern that the decline in the informativeness of management earnings forecasts for restating firms is driven by an economy-wide decline in the ERC over time, rather than by earnings restatements. Comparisons between restatement firms and matched non-restatement firms provide assurance that changes in manager and investor behavior surrounding restatements are not caused by time trends and are a result of financial restatements.

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[24] TESTPRE is an indicator variable that equals one if a forecast is issued by a restating firm in the pre-restatement period, and zero otherwise. TESTPOST, CONPRE, and CONPOST are defined in a similar way.

[25] The sample size varies across different tests. I retain observations with necessary data to conduct each test.

Finally, analyses for H_1–H_4 based on the matched sample confirm the results based on the restatement sample. For test firms, coefficients on all variables of interest (i.e., TESTPRE and TESTPOST) are statistically and significantly different between the pre- and post-restatement periods in the same directions as reported in Table 3-6. That is, restatement firms are less likely to issue a forecast, issue timelier forecasts, and issue forecasts more accurately following restatements. Furthermore, investor response to management forecasts declines following restatements.

4.6. Other Analyses

Analyses of forecast precision and forecast bias are discussed in this section. Two tests are conducted to examine forecast precision surrounding restatements. In the first test, forecast precision, denoted POINT, is an indicator variable that equals one if the management forecast is a point estimate and zero otherwise.[26] In the second test, I define forecast precision at a finer level. Forecast precision, PRECISE, equals 1 for a qualitative confirming forecast, 2 for a one-side directional forecast, 3 for a range forecast, and 4 for a point forecast. I use range forecasts as the comparison group and estimate a multinomial logistic regression. Control variables are included as in other forecast characteristic models.

[Insert Table 11]

Results for forecast precision tests are shown in Table 11. Panel A shows that managers are equally likely to issue point forecasts in the post-restatement period comparing to the pre-restatement period. Results in Panel B suggest that following financial restatements managers are more likely to issue range forecasts than any other

[26] In the first precision test, I eliminate qualitative confirming forecasts since it is difficult to determine whether a forecast like "OK with expectations" is a more or less precise forecast.

types of forecasts, i.e., qualitative forecasts, one-side directional forecasts, or point forecasts.

To examine whether forecast bias changes between the pre- and post-restatement periods, I estimate a model specification similar to Eq. (3). The dependent variable is forecast bias (ERROR), computed as management earnings forecast minus actual earnings per share, and scaled by the stock price two days before the forecast date.

[Insert Table 12]

Table 12 reports the results for forecast bias tests. Panel A shows that forecast bias does not change significantly following financial restatements, indicated by the insignificant coefficient on POST ($\alpha_1 = –0.221$, $p = 0.1844$). Further analysis distinguishes GOOD, BAD, and CONFIRM forecasts. Results in Panel B suggest that forecast bias does not change following financial restatements, for any type of forecasts.

5. Conclusions

Accounting restatements are of increasing concern among investors, analysts, researchers, and government regulators. One stream of research that examines how financial statement restatements impact mandatory earnings disclosures documents a temporary decline in the informativeness of earnings following restatement. To date, however, no study examines whether and how restatements impact voluntary earnings disclosures. Because voluntary disclosures differ from mandatory disclosures with respect to external assurance, managerial discretion, and economic roles, exploring the impact of financial restatements on voluntary disclosures contributes to the literature.

This study examines the change in management earnings forecast behavior and the change in investors' reactions to management earnings forecasts surrounding restatements, an issue that has not been addressed in the literature. Results indicate that managers change voluntary forecast behavior in response to financial restatements. Specifically, subsequent to financial restatements, restating firms are less likely to issue a forecast. To the extent that firms do issue forecasts, however, forecasts are more timely, and accurate, following restatements.

Despite the improvement in management forecasts, investors respond less substantially to management forecasts following restatements. In particular, associations between security returns and differences between management forecasts and earnings expectations decrease from 5.670 to 4.015, or by 29 percent, from the pre-restatement period. This decline in the informativeness of management forecasts could stem from the loss of confidence in the source of the disclosure (i.e., restating firms' management) or/and the content of the disclosure (i.e., earnings information). Further analyses suggest that

lower investor response to management forecasts is driven primarily by lower response to bad-news forecasts, not good-news forecasts. The asymmetric loss function associated with the two types of forecasts potentially explains the differential investor response. That is, investors expect managers to be more concerned about related litigation, and thus, more careful about issuing good-news, than bad-news, forecasts.

Tests examining investor response to management forecasts along restatement characteristics indicate that the information content of management forecasts is compromised following revenue-related restatements and following restatements identified by parties other than management. Market response to management forecasts are unaffected following non-revenue related restatements and company-initiated restatements. These results are consistent with the explanation that investors are more concerned with revenue-related restatements and interpret restatements initiated by outsiders as evidence that restatements indicate opportunistic or negligent management behavior. This examination informs how characteristics of restatements influence the credibility of voluntary disclosures in the post-restatement period.

This paper contributes to our understanding of consequences of financial restatements by examining how voluntary disclosure behavior changes and how voluntary earnings disclosures are incorporated in stock prices surrounding financial restatements. Results suggest that both manager and investor behaviors change following restatements. Managers improve forecast quality regarding timeliness and accuracy, but investors respond less substantially to management earnings forecasts following restatements. One explanation is that investors do not believe that market forces provide managers with sufficient incentives to forecast truthfully. A few factors (e.g., information environment and

litigation risk) influence managers' voluntary disclosure practices following restatements. Which of these factors dominates managers' decision-making processes regarding such disclosures remains an issue for future research.

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APPENDIX: VARIABLE DEFINITIONS

A1. Variables in the first-stage selection model

ISSUE	indicator variable that equals one if the firm issued at least one earnings forecast in a particular period (i.e., one year before or after a restatement announcement) and zero otherwise.
FREQUENCY	number of forecasts issued by a firm in a particular period (i.e., one year before or after a restatement announcement).
POST	indicator variable that equals one if the observation is in the post-restatement period and zero otherwise.
SIZE	natural log of the market value of equity.
ANALYSTS	natural log of the number of analysts following the firm.
FCF	free cash flow, measured as the sum of operating and investing cash flows scaled by total assets.
MB	market-to-book ratio, measured as market value of equity divided by book value of equity.
LOSS	indicator variable that equals one if the firm reported losses in the current period and zero otherwise.
ROA	return-on-assets, measured as earnings before extraordinary items divided by lagged total assets.
EVOL	earnings volatility, measured as the standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the three-year period.
INSTHOLD	institutional ownership, measured at the prior fiscal year end.
LITI	indicator variable that equals one for biotechnology (SIC 2833–2836), computer hardware (SIC 3570–3577), electronics (SIC 3600–3674), retailing (SIC 5200–5961), and computer software (SIC 7371–7379) and zero otherwise.
FD	indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise.

A2. Variables in forecast characteristic models

HORIZON	number of days between the forecast release date and the end date of the fiscal period being forecasted.
HORIZON_A	HORIZON for annual forecasts.

HORIZON_Q	HORIZON for quarterly forecasts.
ABSERROR	absolute value of management earnings forecast minus actual earnings per share, scaled by the stock price two days before the forecast date.
ERROR	management earnings forecast minus actual earnings per share, scaled by the stock price two days before the forecast date.
GOOD	indicator variable that equals one if management earnings per share is greater than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise. The definition is equivalent to that defined in section A3 but is stated in a different way.
BAD	indicator variable that equals one if management earnings per share is smaller than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise. The definition is equivalent to that defined in section A3 but is stated in a different way.
CONFIRM	indicator variable that equals one if (1) the description in First Call indicates "OK with expectations" or "comfortable with expectations" or (2) management earnings per share equals the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date; zero otherwise.
MILLS	Inverse Mills Ratio obtained from Eq. (1).

A3. Variables in market reaction models

CARMF	size-adjusted three-day return centered on the day of the management forecast.
UEMF	(management earnings per share − the most recent IBES analyst EPS forecast made before the forecast date) / stock price two days before the forecast date.
GOOD	indicator variable that equals one if UEMF is positive and zero otherwise.
BAD	indicator variable that equals one if UEMF is negative and zero otherwise.
PERSIST	the autoregressive coefficient estimated over the five-year period prior to the forecast date.
MB	market-to-book ratio, measured as market value of equity divided by book value of equity.
BETA	market-model beta estimated over the year prior to the forecast ending two days prior to the forecast date.
SIZE	natural log of the market value of equity.

MLOSS	indicator variable that equals one if forecasted earnings per share are less than zero and zero otherwise.
HORIZON	number of days between the forecast release date and the fiscal year end date.
QUARTER	indicator variable that equals one for quarterly forecast and zero otherwise.
POINT	indicator variable that equals one if the management forecast is a point estimate and zero otherwise.
LITI	indicator variable that equals one for biotechnology (SIC 2833–2836), computer hardware (SIC 3570–3577), electronics (SIC 3600–3674), retailing (SIC 5200–5961), and computer software (SIC 7371–7379) and zero otherwise.
FD	indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise.
MILLS	Inverse Mills Ratio obtained from Eq. (1).
REV	indicator variable that equals one if a financial restatement is revenue-related and zero otherwise.
COMP	indicator variable that equals one if a financial restatement is initiated by management and zero otherwise.

A4. Variables in matched sample analysis

TESTPRE	indicator variable that equals one if a management forecast is issued by a restating firm in the pre-restatement period and zero otherwise.
TESTPOST	indicator variable that equals one if a management forecast is issued by a restating firm in the post-restatement period and zero otherwise.
CONPRE	indicator variable that equals one if a management forecast is issued by a nonrestating firm in the pre-restatement period and zero otherwise.
CONPOST	indicator variable that equals one if a management forecast is issued by a nonrestating firm in the post-restatement period and zero otherwise.

Table 1: Sample Description (Market Reaction Models)

	# of management forecasts
Management forecasts for 518 restatement firms that are covered by CRSP/IBES/COMPUSTAT/First Call, issued within one-year period before and one-year period after a restatement announcement	2,756
Eliminate duplicate forecast observations	2,496
Drop forecast observations with errors,[a] retain point, range, and one-side directional only, and retain annual and quarterly EPS forecasts only	1,654
Remove preannouncements[b]	1,254
Remove multiple forecasts announced on the same day[c]	794
Eliminate observations missing data from CRSP/IBES/COMPUSTAT	731

a. Forecast observations for which the record date of the observation in First Call is before the announcement date are excluded, since these observations might result from data recording errors.
b. I exclude earnings preannouncements which are released after the end of the fiscal period. This is because "even though preannouncements are technically earnings forecasts, most of the literature treats them as early earnings announcements rather than late earnings forecasts" (Hirst et al. 2008, p.319).
c. I eliminate observations with more than one forecast made on the same day since I cannot identify investor reactions to each forecast.

Table 2: Descriptive Statistics of Regression Variables

Panel A: Variables in the first-stage selection model (n = 1506)[a]

Variable	Mean	Median	Std Dev	Q1	Q3
SIZE	5.517	5.521	2.036	4.138	6.643
ANALYSTS	1.901	1.903	0.987	1.386	2.639
FCF	-0.364	-0.081	0.673	-0.527	0.021
MB	3.329	2.256	5.800	1.110	5.664
LOSS	0.543	1.000	0.498	0.000	1.000
ROA	-0.230	0.003	0.541	-0.258	0.056
VOLATILE	0.139	0.055	0.302	0.018	0.140
INSTHOLD	0.370	0.372	0.192	0.309	0.387
LITI	0.371	0.000	0.483	0.000	1.000
FD	0.375	0.000	0.484	0.000	1.000

a. The sample size varies across different tests. Statistics in Panel A are based on 1506 observations used in the selection model, i.e., Eq. (1). Descriptive statistics of these variables in forecast characteristic models are similar.

Panel B: Forecast characteristics: pre- versus post-restatement period (n = 1254)[b]

Variable	Pre-restatement Mean	Post-restatement Mean	Difference t-statistic	
HORIZON_A	193.030	216.310	2.99	***
HORIZON_Q	37.455	48.186	5.35	***
QUARTER	0.505	0.444	2.23	**
POINT	0.287	0.252	1.42	
ABSERROR	0.019	0.011	3.31	***
ERROR	0.012	0.007	2.24	**

b. The sample size varies across different tests. Statistics of ABSERROR (ERROR) are based on 1147 observations used in forecast accuracy model, i.e., Eq. (3). Other statistics in Panel B are based on 1254 observations used in forecast horizon model, i.e., Eq. (2).

Panel C: Variables in market reaction models (n = 731)

Variable	Mean	Median	Std Dev	Q1	Q3
CARMF	-0.032	-0.014	0.133	-0.079	0.036
UEMF	-0.002	0.000	0.014	-0.002	0.001
PERSIST	0.574	0.229	1.708	-0.188	0.792
MB	3.362	2.328	14.762	1.376	5.045
BETA	0.918	0.787	0.629	0.477	1.239
SIZE	7.568	7.488	1.904	6.087	9.087
MLOSS	0.103	0.000	0.304	0.000	0.000
HORIZON_A	206.768	224.000	105.923	114.000	312.000
HORIZON_Q	39.586	38.000	26.373	14.000	65.000
QUARTER	0.492	0.000	0.500	0.000	1.000

POINT	0.261	0.000	0.440	0.000	1.000
LITI	0.368	0.000	0.483	0.000	1.000
FD	0.676	1.000	0.468	0.000	1.000

Panel D: Good-news and bad-news forecast subsamples: pre- versus post-restatement period (n = 731)

	Good-news forecasts			Bad-news forecasts		
Variable	Pre-restatement Mean	Post-restatement Mean		Pre-restatement Mean	Post-restatement Mean	
CARMF	0.016	0.016		-0.070	-0.046	
UEMF	0.005	0.006		-0.012	-0.008	*
PERSIST	0.696	0.688		0.662	0.443	
MB	5.113	2.458		6.048	2.974	*
BETA	0.846	0.890		1.033	0.955	
SIZE	7.822	7.369	**	7.587	7.564	
MLOSS	0.046	0.027		0.206	0.132	*
HORIZON_A	189.850	223.09	**	207.590	205.170	
HORIZON_Q	38.440	48.912	**	33.725	42.798	**
QUARTER	0.385	0.390		0.661	0.483	***
POINT	0.223	0.199		0.236	0.213	
LITI	0.315	0.356		0.449	0.322	**
FD	0.631	0.829	***	0.539	0.736	***

***, **, and * indicate that the variable is significantly different between pre- and post-restatement period at 1%, 5%, and 10%, respectively. Variable definitions: SIZE=natural log of the market value of equity; ANALYSTS=natural log of the number of analysts following; FCF=free cash flow, measured as the sum of operating and investing cash flows scaled by total assets; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; LOSS=indicator variable that equals one if the firm reported losses in the current period and zero otherwise; ROA=return-on-assets, measured as earnings before extraordinary items divided by lagged total assets; EVOL=earnings volatility, measured as the standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the three-year period; INSTHOLD=institutional ownership, measured at the prior fiscal year end; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; HORIZON_A (HORIZON_Q)=HORIZON for annual (quarterly) forecasts; QUARTER=indicator variable that equals one for quarterly forecasts and zero otherwise; POINT=indicator variable that equals one if the forecast is a point estimate and zero otherwise; ABSERROR=absolute value of management forecast minus actual earnings, scaled by the stock price two days before the forecast date; ERROR=management forecast minus actual earnings, scaled by the stock price two days before the forecast date; CARMF=size-adjusted three-day return centered on the day of the management forecast; UEMF=(management forecast-the most recent IBES analyst EPS forecast made before the forecast date)/stock price two days before the forecast date; PERSIST=the autoregressive coefficient estimated over the five-year period prior to the forecast year; BETA=the market-model beta estimated

over the year prior to the forecast ending two days prior to the forecast date; MLOSS=indicator variable that equals one if a forecast is less than zero and zero otherwise.

Table 3: Financial Restatements and the Propensity to Issue a Forecast

$$\begin{aligned}\Pr ob(ISSUE = 1) / FREQUENCY \\ = f(\alpha_0 + \alpha_1 POST + \alpha_2 SIZE + \alpha_3 ANALYSTS + \alpha_4 FCF + \alpha_5 MB \\ + \alpha_6 LOSS + \alpha_7 ROA + \alpha_8 EVOL + \alpha_9 INSTHOLD + \alpha_{10} LITI + \alpha_{11} FD \\ + e)\end{aligned}$$

Panel A: Financial restatements and the propensity to issue a forecast

		ISSUE (Probit)			ISSUE (Probit with interactions)		
Variable	**Pred. Sign**	**Coefficient Estimate**	**Wald χ^2 value**		**Coefficient Estimate**	**Wald χ^2 value**	
INTERCEPT		-3.522	163.16	***	-3.219	80.69	***
POST	?	-0.589	13.70	***	-1.376	5.51	**
SIZE	+	0.296	37.49	***	0.265	15.75	***
ANALYSTS	+	0.224	5.63	**	0.229	3.01	*
FCF	-	0.172	1.43		0.188	1.22	
MB	-	-0.010	0.60		0.007	0.22	
LOSS	-	-0.598	17.03	***	-0.412	4.88	**
ROA	+	0.324	2.28		0.008	0.00	
EVOL	-	-0.060	0.04		-0.436	0.64	
INSTHOLD	+	2.137	31.09	***	1.681	10.89	***
LITI	+/-	0.158	1.21		0.110	0.33	
FD	+	0.716	19.60	***	0.354	2.13	
POST*SIZE					0.045	0.21	
POST* ANALYSTS					0.085	0.19	
POST*FCF					0.065	0.04	
POST*MB					-0.045	2.83	*
POST*LOSS					-0.348	1.36	
POST*ROA					0.610	1.80	
POST*EVOL					0.554	0.72	
POST* INSTHOLD					0.980	1.57	
POST*LITI					-0.015	0.00	
POST*FD					0.638	3.57	*
Pseudo R^2		0.323			0.337		
N=		1506			1506		

Panel B: Financial restatements and forecast frequency

Variable	Pred. Sign	FREQUENCY (NEGATIVE BINOMIAL) Coefficient Estimate	Wald χ^2 value		FREQUENCY (NEGATIVE BINOMIAL with interactions) Coefficient Estimate	Wald χ^2 value	
INTERCEPT		-2.960	172.88	***	-2.656	82.16	***
POST	?	-0.638	22.06	***	-1.339	8.05	***
SIZE	+	0.292	49.66	***	0.277	23.78	***
ANALYSTS	+	0.177	4.79	**	0.131	1.33	
FCF	-	0.137	1.47		0.087	0.44	
MB	-	0.002	0.05		0.010	0.62	
LOSS	-	-0.558	22.25	***	-0.665	18.25	***
ROA	+	0.018	0.01		-0.178	0.79	
EVOL	-	-0.393	2.85	*	-0.591	2.33	
INSTHOLD	+	1.519	24.18	***	1.318	9.91	***
LITI	+/-	0.117	1.09		0.174	1.33	
FD	+	1.034	58.19	***	0.641	12.23	***
POST*SIZE					-0.026	0.10	
POST* ANALYSTS					0.197	1.47	
POST*FCF					0.285	1.36	
POST*MB					-0.026	1.41	
POST*LOSS					0.318	1.77	
POST*ROA					0.595	2.84	*
POST*EVOL					0.285	0.32	
POST* INSTHOLD					0.541	0.79	
POST*LITI					-0.196	0.75	
POST*FD					0.716	7.32	***
N=		1506			1506		

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; SIZE=natural log of the market value of equity; ANALYSTS=natural log of the number of analysts following; FCF=free cash flow, measured as the sum of operating and investing cash flows scaled by total assets; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; LOSS=indicator variable that equals one if the firm reported losses in the current period and zero otherwise; ROA=return-on-assets, measured as earnings before extraordinary items divided by lagged total assets; EVOL=earnings volatility, measured as standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the three-year period; INSTHOLD=institutional ownership, measured at the prior fiscal year end; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise.

Table 4: Financial Restatements and Forecast Horizon

Panel A: Financial restatements and forecast horizon

$$HORIZON = \alpha_0 + \alpha_1 POST + \alpha_2 SIZE + \alpha_3 ANALYSTS + \alpha_4 FCF + \alpha_5 MB + \alpha_6 LOSS + \alpha_7 ROA + \alpha_8 EVOL + \alpha_9 INSTHOLD + \alpha_{10} QUARTER + \alpha_{11} LITI + \alpha_{12} FD + \alpha_{13} MILLS + \varepsilon$$

		HORIZON			HORIZON (without MILLS)		
Variable	**Pred. Sign**	**Coefficient Estimate**	**t-statistic**		**Coefficient Estimate**	**t-statistic**	
INTERCEPT		178.190	8.79	***	181.930	14.92	***
POST	?	13.234	2.93	***	13.380	2.99	***
SIZE	+	-2.040	-1.05		-2.218	-1.24	
ANALYSTS	+	4.895	1.13		4.652	1.11	
FCF		3.142	0.60		2.960	0.57	
MB		-0.130	-0.82		-0.128	-0.81	
LOSS		8.649	1.58		9.217	1.88	*
ROA		-5.130	-0.38		-5.165	-0.38	
EVOL		2.192	0.11		2.425	0.13	
INSTHOLD		17.098	1.35		15.825	1.38	
QUARTER	+	-165.707	-38.41	***	-165.689	-38.43	***
LITI	+/-	17.615	3.84	***	17.595	3.84	***
FD	+	6.176	1.16		5.842	1.15	
MILLS		1.372	0.23				
Adj. R^2		0.553			0.553		
N=		1254			1254		

Panel B: Financial restatements and forecast horizon: annual vs. quarterly forecasts

$$HORIZON = \alpha_0 + \alpha_1 POST + \alpha_2 SIZE + \alpha_3 ANALYSTS + \alpha_4 FCF + \alpha_5 MB + \alpha_6 LOSS + \alpha_7 ROA + \alpha_8 EVOL + \alpha_9 INSTHOLD + \alpha_{10} QUARTER + \alpha_{11} LITI + \alpha_{12} FD + \alpha_{13} MILLS + \varepsilon$$

		HORIZON (Annual)			HORIZON (Quarterly)		
Variable	**Pred. Sign**	**Coefficient Estimate**	**t-statistic**		**Coefficient Estimate**	**t-statistic**	
INTERCEPT		170.892	4.47	***	29.137	3.11	***

POST	?	21.217	2.47	**	6.268	3.07	***
SIZE	+	-1.944	-0.53		-1.694	-1.90	*
ANALYSTS	+	4.313	0.52		3.144	1.60	
FCF		25.893	1.89	*	-0.030	-0.01	
MB		-0.340	-1.19		0.088	1.15	
LOSS		24.958	2.34	**	-2.488	-1.03	
ROA		21.151	0.57		-7.427	-1.42	
EVOL		150.591	1.98	**	-6.100	-0.88	
INSTHOLD		19.095	0.85		3.754	0.59	
LITI	+/-	25.358	2.82	***	7.629	3.75	***
FD	+	-6.397	-0.62		16.510	7.09	***
MILLS		-0.092	-0.01		-2.081	-0.75	
Adj. R^2		0.051			0.164		
N=		647			607		

Panel C: Financial restatements and forecast horizon: good-news, bad-news, and confirming forecasts

$$HORIZON = \alpha_1 GOOD + \alpha_2 BAD + \alpha_3 CONFIRM + \alpha_4 POST * GOOD + \alpha_5 POST * BAD + \alpha_6 POST * CONFIRM + \alpha_7 SIZE + \alpha_8 ANALYSTS + \alpha_9 FCF + \alpha_{10} MB + \alpha_{11} LOSS + \alpha_{12} ROA + \alpha_{13} EVOL + \alpha_{14} INSTHOLD + \alpha_{15} QUARTER + \alpha_{16} LITI + \alpha_{17} FD + \alpha_{18} MILLS + \varepsilon$$

		HORIZON			**HORIZON (without MILLS)**		
Variable	**Pred. Sign**	**Coefficient Estimate**	**t-statistic**		**Coefficient Estimate**	**t-statistic**	
GOOD		173.910	8.26	***	178.329	13.70	***
BAD		179.315	8.76	***	183.591	14.40	***
CONFIRM		178.396	8.40	***	182.732	13.34	***
POST *GOOD	?	17.125	2.36	***	17.186	2.37	**
POST*BAD	?	11.806	1.80	*	12.076	1.87	*
POST *CONFIRM	?	6.954	0.66		7.083	0.68	
SIZE	+	-1.935	-0.99		-2.142	-1.19	
ANALYSTS	+	4.829	1.11		4.547	1.08	
FCF		3.232	0.62		3.019	0.58	
MB		-0.139	-0.87		-0.136	-0.86	
LOSS		8.151	1.47		8.819	1.79	*
ROA		-5.146	-0.38		-5.185	-0.38	
EVOL		2.292	0.12		2.563	0.13	
INSTHOLD		17.624	1.38		16.144	1.41	

QUARTER	+	-166.034	-38.06	***	-166.005	-38.08	***
LITI	+/-	17.792	3.85	***	17.776	3.85	***
FD	+	6.474	1.20		6.078	1.17	
MILLS		1.595	0.27				
Adj. R^2		0.807			0.807		
N=		1254			1254		

Test Equality of Coefficients	**t-value**
POST*GOOD = POST*CONFIRM	0.81
POST*BAD = POST*CONFIRM	0.40
POST*GOOD = POST*BAD	0.55
Joint Test	F-value
POST*GOOD = POST*BAD =POST*CONFIRM	0.35

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasts; POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; GOOD (BAD)=indicator variable that equals one if management earnings per share is greater (smaller) than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; CONFIRM=indicator variable that equals one if the description in First Call indicates "OK with expectations" (or "comfortable with expectations") or management earnings per share equals the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; SIZE=natural log of the market value of equity; ANALYSTS=natural log of the number of analysts following; FCF=free cash flow, measured as the sum of operating and investing cash flows scaled by total assets; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; LOSS=indicator variable that equals one if the firm reported losses in the current period and zero otherwise; ROA=return-on-assets, measured as earnings before extraordinary items divided by lagged total assets; EVOL=earnings volatility, measured as the standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the three-year period; INSTHOLD=institutional ownership, measured at the prior fiscal year end; QUARTER=indicator variable that equals one for quarterly forecasts and zero otherwise; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).

Table 5: Financial Restatements and Forecast Accuracy

Panel A: Financial restatements and forecast accuracy

$$ABSERROR = \alpha_0 + \alpha_1 POST + \alpha_2 SIZE + \alpha_3 ANALYSTS + \alpha_4 FCF + \alpha_5 MB + \alpha_6 LOSS + \alpha_7 ROA + \alpha_8 EVOL + \alpha_9 INSTHOLD + \alpha_{10} QUARTER + \alpha_{11} HORIZON + \alpha_{12} LITI + \alpha_{13} FD + \alpha_{14} MILLS + \varepsilon$$

		ABSERROR			ABSERROR (without MILLS)		
Variable	**Pred. Sign**	**Coefficient Estimate**	**t-statistic**		**Coefficient Estimate**	**t-statistic**	
INTERCEPT		2.499	3.42	***	3.099	6.61	***
POST	?	-0.411	-2.68	***	-0.390	-2.56	**
SIZE	-	-0.085	-1.30		-0.113	-1.86	*
ANALYSTS	-	-0.138	-0.97		-0.180	-1.32	
FCF		-0.343	-1.70	*	-0.374	-1.87	*
MB	+	0.005	1.02		0.006	1.12	
LOSS	+	2.030	10.48	***	2.118	12.03	***
ROA		1.978	4.42	***	1.906	4.31	***
EVOL	+	1.867	1.78	*	1.956	1.87	*
INSTHOLD	-	-1.812	-3.98	***	-2.012	-4.85	***
QUARTER	-	-0.599	-2.76	***	-0.589	-2.72	***
HORIZON	+	0.006	6.35	***	0.006	6.35	***
LITI	-	-0.079	-0.51		-0.082	-0.52	
FD		-0.403	-2.21	**	-0.457	-2.61	***
MILLS		0.230	1.07				
Adj. R^2		0.262			0.261		
N=		1147			1147		

Panel B: Financial restatements and forecast accuracy: good-news, bad-news, and confirming forecasts

$$ABSERROR = \alpha_1 GOOD + \alpha_2 BAD + \alpha_3 CONFIRM + \alpha_4 POST * GOOD + \alpha_5 POST * BAD + \alpha_6 POST * CONFIRM + \alpha_7 SIZE + \alpha_8 ANALYSTS + \alpha_9 FCF + \alpha_{10} MB + \alpha_{11} LOSS + \alpha_{12} ROA + \alpha_{13} EVOL + \alpha_{14} INSTHOLD + \alpha_{15} QUARTER + \alpha_{16} HORIZON + \alpha_{17} LITI + \alpha_{18} FD + \alpha_{19} MILLS + \varepsilon$$

	ABSERROR	ABSERROR (without

					MILLS)		
Variable	**Pred. Sign**	**Coefficient Estimate**	**t-statistic**		**Coefficient Estimate**	**t-statistic**	
GOOD		2.526	3.59	***	2.873	6.57	***
BAD		2.380	3.46	***	2.714	6.14	***
CONFIRM		2.236	3.14	***	2.579	5.62	***
POST*							
GOOD	?	-0.407	-1.72	*	-0.405	-1.71	*
POST*BAD	?	-0.606	-2.61	***	-0.588	-2.55	**
POST*							
CONFIRM	?	-0.445	-1.31		-0.439	-1.29	
SIZE	-	-0.202	-3.27	***	-0.218	-3.87	***
ANALYSTS	-	-0.044	-0.33		-0.077	-0.62	
FCF	+	-0.320	-1.58		-0.334	-1.67	*
MB	+	0.006	1.13		0.006	1.19	
LOSS	+	1.866	9.34	***	1.907	10.10	***
ROA		1.875	4.17	***	1.818	4.13	***
EVOL	+	2.108	1.99	**	2.190	2.08	**
INSTHOLD	-	-0.495	-1.69	*	-0.573	-2.16	**
QUARTER	-	-0.628	-2.86	***	-0.624	-2.85	***
HORIZON	+	0.006	6.35	***	0.006	6.35	***
LITI	-	-0.139	-0.86		-0.148	-0.92	
FD		-0.412	-2.26	**	-0.439	-2.48	**
MILLS		0.143	0.63				
Adj. R^2		0.394			0.393		
N=		1147			1147		

Test Equality of Coefficients	**t-value**
POST*GOOD = POST*CONFIRM	0.09
POST*BAD = POST*CONFIRM	-0.40
POST*GOOD = POST*BAD	0.61
Joint Test	F-value
POST*GOOD = POST*BAD = POST*CONFIRM	0.20

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: ABSERROR=absolute value of management forecast minus actual earnings, scaled by the stock price two days before the forecast date; POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; GOOD (BAD)=indicator variable that equals one if management earnings per share is greater (smaller) than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; CONFIRM=indicator variable that equals one if the description in First Call indicates "OK with expectations" (or "comfortable with expectations") or management earnings per share equals the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; SIZE=natural log of the market value of equity; ANALYSTS=natural log of the number of analysts following; FCF=free cash flow, measured as the sum of operating and investing cash flows scaled by total assets; MB=market-to-book ratio, measured as market value of equity

divided by book value of equity; LOSS=indicator variable that equals one if the firm reported losses in the current period and zero otherwise; ROA=return-on-assets, measured as earnings before extraordinary items divided by lagged total assets; EVOL=earnings volatility, measured as the standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the three-year period; INSTHOLD=institutional ownership, measured at the prior fiscal year end; QUARTER=indicator variable that equals one for quarterly forecasts and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).

Table 6: Market Reactions to Management Forecasts following Financial Restatements

$$CARMF = \alpha_1 + \alpha_2 POST + \beta_1 UEMF + \beta_2 POST * UEMF + \sum_{K=1}^{10} CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) + \delta_1 MILLS + \varepsilon$$

		CARMF			CARMF (without MILLS)		
Variable	**Pred. Sign**	**Coefficient Estimate**	**t-statistic**		**Coefficient Estimate**	**t-statistic**	
INTERCEPT		0.046	1.34		-0.053	-2.25	**
POST		-0.013	-1.37		-0.017	-1.75	*
UEMF	+	5.670	3.02	***	6.036	3.19	***
UEMF*POST	?	-1.655	-2.03	**	-1.538	-1.87	*
Control Variables							
UEMF*PERSIST	+	0.479	1.88	*	0.455	1.77	*
UEMF*MB	+	-0.039	-0.60		-0.041	-0.61	
UEMF*BETA	-	2.591	4.06	***	2.866	4.48	***
UEMF*SIZE		-0.665	-3.02	***	-0.713	-3.21	***
UEMF*MLOSS	-	-3.496	-3.57	***	-3.583	-3.62	***
UEMF*HORIZON	+	0.901	0.64		0.325	0.23	
UEMF*QUARTER	+	3.118	3.10	***	3.165	3.12	***
UEMF*POINT	?	2.129	1.69	*	-1.935	-1.52	
UEMF*LITI	+	-0.709	-0.86		-0.593	-0.71	
UEMF*FD		-1.769	-1.97	**	-1.729	-1.91	*
UEMF*|UEMF|		-0.706	-1.12		-0.579	-0.91	
PERSIST		0.006	1.81	*	0.005	1.49	
MB		-0.001	-1.57		-0.001	-1.79	*
BETA		-0.009	-1.06		-0.014	-1.58	
SIZE		-0.010	-2.99	***	-0.001	-0.45	
MLOSS		-0.019	-0.91		-0.026	-1.25	
HORIZON		0.050	3.10	***	0.049	3.02	***
QUARTER		0.001	0.08		-0.000	-0.00	
POINT		0.015	1.40		0.017	1.56	
LITI		-0.004	-0.43		-0.002	-0.18	
FD		0.034	3.17	***	0.046	4.42	***
MILLS		-0.044	-3.92	***			
Adj. R^2		0.215			0.198		
N=		731			731		

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; CARMF=size-adjusted three-day return centered on the day of the management forecast;

UEMF=(management forecast-the most recent IBES analyst EPS forecast made before the forecast date)/stock price two days before the forecast date; /stock price two days before the forecast date; $CONTROLS_k$=ten control variables, namely, PERSIST, MB, BETA, SIZE, MLOSS, HORIZON, QUARTER, POINT, LITI, and FD; PERSIST=the autoregressive coefficient estimated over the five-year period prior to the forecast year; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; BETA=the market-model beta estimated over the year prior to the forecast ending two days prior to the forecast date; SIZE=natural log of the market value of equity; MLOSS=indicator variable that equals one if a forecast is less than zero and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; QUARTER=indicator variable that equals one for quarterly forecast and zero otherwise; POINT=indicator variable that equals one if the forecast is a point estimate and zero otherwise; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).

Table 7: Market Reactions to Management Forecasts following Financial Restatements: Good-news versus Bad-news Forecasts

$$
\begin{aligned}
CARMF = {} & \alpha_1 + \alpha_2 POST + \alpha_3 GOOD + \alpha_4 BAD + \alpha_5 POST * GOOD \\
& + \alpha_6 POST * BAD + \beta_1 GOOD * UEMF + \beta_2 BAD * UEMF \\
& + \beta_3 POST * GOOD * UEMF + \beta_4 POST * BAD * UEMF \\
& + \sum_{K=1}^{10} \gamma_K CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) \\
& + \delta_1 MILLS + \varepsilon
\end{aligned}
$$

		CARMF			CARMF (without MILLS)		
Variable	**Pred. Sign**	**Coefficient Estimate**	**t-statistic**		**Coefficient Estimate**	**t-statistic**	
INTERCEPT		0.047	1.27		-0.055	-2.01	**
POST		-0.032	-1.42		-0.036	-1.57	
GOOD		0.005	0.25		0.004	0.19	
BAD		-0.016	-0.82		-0.017	-0.82	
POST*GOOD		0.021	0.74		0.022	0.78	
POST*BAD		0.018	0.64		0.020	0.71	
UEMF*GOOD	+	5.605	2.31	**	5.825	2.38	**
UEMF*BAD	+	5.483	2.88	***	5.855	3.04	***
UEMF*POST* GOOD	?	-0.706	-0.41		-0.958	-0.55	
UEMF*POST* BAD	?	-2.353	-2.22	**	-2.017	-1.88	*
Control Variables							
UEMF*PERSIST	+	0.418	1.62		0.409	1.57	
UEMF*MB	+	-0.054	-0.82		-0.054	-0.81	
UEMF*BETA	-	2.676	4.18	***	2.937	4.56	***
UEMF*SIZE		-0.693	-3.09	***	-0.732	-3.24	***
UEMF*MLOSS	-	-2.768	-2.64	***	-3.029	-2.86	***
UEMF*HORIZON	+	0.452	0.31		-0.008	-0.01	
UEMF*QUARTER	+	2.541	2.43	**	2.698	2.56	**
UEMF*POINT	?	2.227	1.73	*	-2.062	-1.58	
UEMF*LITI	+	-0.515	-0.62		-0.445	-0.53	
UEMF*FD		-1.589	-1.74	*	-1.592	-1.72	*
UEMF*|UEMF|		-0.691	-1.09		-0.547	-0.85	
PERSIST		0.005	1.61		0.004	1.31	
MB		-0.001	-1.69	*	-0.001	-1.92	*
BETA		-0.009	-1.04		-0.014	-1.55	
SIZE		-0.009	-2.81	***	-0.000	-0.10	
MLOSS		-0.015	-0.74		-0.023	-1.13	
HORIZON		0.049	3.05	***	0.048	2.98	***

QUARTER	0.003	0.33		0.002	0.16	
POINT	0.017	1.53		0.018	1.63	
LITI	-0.003	-0.31		-0.001	-0.08	
FD	0.033	3.06	***	0.046	4.36	***
MILLS	-0.046	-4.13	***			
Adj. R^2	0.223			0.204		
N=	731			731		

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; CARMF=size-adjusted three-day return centered on the day of the management forecast; UEMF=(management forecast-the most recent IBES analyst EPS forecast made before the forecast date)/stock price two days before the forecast date; GOOD (BAD)=indicator variable that equals one if management earnings per share is greater (smaller) than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; $CONTROLS_k$=ten control variables, namely, PERSIST, MB, BETA, SIZE, MLOSS, HORIZON, QUARTER, POINT, LITI, and FD; PERSIST=the autoregressive coefficient estimated over the five-year period prior to the forecast year; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; BETA=the market-model beta estimated over the year prior to the forecast ending two days prior to the forecast date; SIZE=natural log of the market value of equity; MLOSS=indicator variable that equals one if a forecast is less than zero and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; QUARTER=indicator variable that equals one for quarterly forecast and zero otherwise; POINT=indicator variable that equals one if the forecast is a point estimate and zero otherwise; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).

Table 8: Market Reactions to Management Forecasts following Financial Restatements: Revenue-related versus Other Restatements

$$CARMF = \alpha_1 + \alpha_2 POST + \alpha_3 REV + \alpha_4 POST * REV + \beta_1 UEMF + \beta_2 POST * UEMF + \beta_3 REV * UEMF + \beta_4 POST * REV * UEMF + \sum_{K=1}^{10} \gamma_K CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) + \delta_1 MILLS + \varepsilon$$

Variable	Pred. Sign	Coefficient Estimate	t-statistic	
INTERCEPT		0.048	1.37	
POST		-0.018	-1.40	
IND		-0.016	-1.15	
POST*REV		0.008	0.45	
UEMF		5.356	2.76	***
UEMF*POST		-1.203	-1.14	
UEMF*REV		-0.097	-0.10	
UEMF*POST*REV		-0.655	-0.46	
Control Variables				
UEMF*PERSIST	+	0.469	1.82	*
UEMF*MB	+	-0.034	-0.51	
UEMF*BETA	-	2.772	4.49	***
UEMF*SIZE		-0.636	-2.88	***
UEMF*MLOSS	-	-4.008	-3.99	***
UEMF*HORIZON	+	0.796	0.55	
UEMF*QUARTER	+	3.098	2.98	***
UEMF*POINT	?	-2.041	-1.60	
UEMF*LITI	+	-0.330	-0.40	
UEMF*FD		-1.950	-2.20	**
PERSIST		0.005	1.76	*
MB		-0.000	-1.51	
BETA		-0.009	-1.00	
SIZE		-0.009	-2.88	***
MLOSS		-0.021	-1.03	
HORIZON		0.051	3.16	***
QUARTER		0.001	0.10	
POINT		0.014	1.36	
LITI		-0.002	-0.16	
FD		0.036	3.30	***
MILLS		-0.042	-3.78	***
Adj. R^2		0.216		
N=		731		

Test Response Coefficients	Pre-restatement	Post-restatement	Difference	
Revenue-related	$\beta_1+\beta_3=5.259$	$\beta_1+\beta_2+\beta_3+\beta_4=3.401$	-1.858	*
Other	$\beta_1=5.356$	$\beta_1+\beta_2=4.153$	-1.203	

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; REV=indicator variable that equals one if a financial restatement is revenue-related and zero otherwise; CARMF=size-adjusted three-day return centered on the day of the management forecast; UEMF=(management forecast-the most recent IBES analyst EPS forecast made before the forecast date)/stock price two days before the forecast date; GOOD (BAD)=indicator variable that equals one if management earnings per share is greater (smaller) than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; $CONTROLS_k$=ten control variables, namely, PERSIST, MB, BETA, SIZE, MLOSS, HORIZON, QUARTER, POINT, LITI, and FD; PERSIST=the autoregressive coefficient estimated over the five-year period prior to the forecast year; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; BETA=the market-model beta estimated over the year prior to the forecast ending two days prior to the forecast date; SIZE=natural log of the market value of equity; MLOSS=indicator variable that equals one if a forecast is less than zero and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; QUARTER=indicator variable that equals one for quarterly forecast and zero otherwise; POINT=indicator variable that equals one if the forecast is a point estimate and zero otherwise; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).

Table 9: Market Reactions to Management Forecasts following Financial Restatements: Company-initiated versus Others-initiated Restatements

$$CARMF = \alpha_1 + \alpha_2 POST + \alpha_3 COMP + \alpha_4 POST * COMP + \beta_1 UEMF + \beta_2 POST * UEMF + \beta_3 COMP * UEMF + \beta_4 POST * COMP * UEMF + \sum_{K=1}^{10} \gamma_K CONTROLS_K + \sum_{K=1}^{10} \gamma_K (CONTROLS_K * UEMF) + \delta_1 MILLS + \varepsilon$$

Variable	Pred. Sign	Coefficient Estimate	t-statistic	
INTERCEPT		0.061	1.71	*
POST		-0.025	-2.09	**
IND		-0.021	-1.50	
POST*COMP		0.032	1.69	*
UEMF		6.002	3.19	***
UEMF*POST		-2.696	-2.57	**
UEMF*COMP		-1.779	-1.91	*
UEMF*POST*COMP		2.658	1.93	*
Control Variables				
UEMF*PERSIST	+	0.502	1.95	*
UEMF*MB	+	-0.043	-0.67	
UEMF*BETA	-	2.713	4.29	***
UEMF*SIZE		-0.626	-2.83	***
UEMF*MLOSS	-	-3.333	-3.46	***
UEMF*HORIZON	+	0.908	0.64	
UEMF*QUARTER	+	3.066	3.04	***
UEMF*POINT	?	2.160	1.68	*
UEMF*LITI	+	-0.604	-0.73	
UEMF*FD		-2.135	-2.37	**
PERSIST		0.007	2.10	**
MB		-0.001	-1.72	*
BETA		-0.010	-1.17	
SIZE		-0.010	-3.16	***
MLOSS		-0.017	-0.84	
HORIZON		0.052	3.24	***
QUARTER		0.001	0.10	
POINT		0.016	1.46	
LITI		-0.003	-0.30	
FD		0.031	2.86	***
MILLS		-0.046	-4.13	***
Adj. R^2		0.221		
N=		731		

Test Response Coefficients	Pre-restatement	Post-restatement	Difference	
Company-initiated	$\beta_1+\beta_3=4.223$	$\beta_1+\beta_2+\beta_3+\beta_4=4.185$	-0.038	
Others-initiated	$\beta_1=6.002$	$\beta_1+\beta_2=3.306$	-2.696	**

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; COMP=indicator variable that equals one if a financial restatement is initiated by management and zero otherwise; CARMF=size-adjusted three-day return centered on the day of the management forecast; UEMF=(management forecast-the most recent IBES analyst EPS forecast made before the forecast date)/stock price two days before the forecast date; GOOD (BAD)=indicator variable that equals one if management earnings per share is greater (smaller) than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; $CONTROLS_k$=ten control variables, namely, PERSIST, MB, BETA, SIZE, MLOSS, HORIZON, QUARTER, POINT, LITI, and FD; PERSIST=the autoregressive coefficient estimated over the five-year period prior to the forecast year; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; BETA=the market-model beta estimated over the year prior to the forecast ending two days prior to the forecast date; SIZE=natural log of the market value of equity; MLOSS=indicator variable that equals one if a forecast is less than zero and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; QUARTER=indicator variable that equals one for quarterly forecast and zero otherwise; POINT=indicator variable that equals one if the forecast is a point estimate and zero otherwise; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).

Table 10: Sensitivity Analyses: Matched-pair Sample Analyses

Panel A: The propensity to issue a forecast (Dependent variable = ISSUE)

Variable	Coefficient Estimate	Wald Chi-Square	
TESTPRE	-3.535	126.09	***
TESTPOST	-4.152	143.58	***
CONPRE	-3.917	153.73	***
CONPOST	-4.041	141.35	***
Control variables	Included		
Pseudo R^2	0.476		
# of observations	2388		
Test Equality of Coefficients	**Wald Chi-Square**		
TESTPRE=TESTPOST	-11.98	***	
CONPRE=CONPOST	0.52		
TESTPRE=CONPRE	0.73		
TESTPOST=CONPOST	0.05		

Panel B: Forecast horizon (Dependent variable = HORIZON)

Variable	Coefficient Estimate	t-statistic	
TESTPRE	175.865	8.75	***
TESTPOST	188.413	9.15	***
CONPRE	180.633	7.65	***
CONPOST	172.248	7.45	***
Control variables	Included		
R^2	0.812		
# of observations	1056		
Test Equality of Coefficients	**t-statistic**		
TESTPRE=TESTPOST	2.45	**	
CONPRE=CONPOST	1.50		
TESTPRE=CONPRE	-0.23		
TESTPOST=CONPOST	0.76		

Panel C: Forecast accuracy (Dependent variable = ABSERROR)

Variable	Coefficient Estimate	t-statistic	
TESTPRE	3.606	5.79	***
TESTPOST	3.143	4.90	***
CONPRE	2.712	3.72	***
CONPOST	2.542	3.57	***

Control variables	Included	
R^2	0.350	
# of observations	945	
Test Equality of Coefficients	**t-statistic**	
TESTPRE=TESTPOST	-3.02	***
CONPRE=CONPOST	1.02	
TESTPRE=CONPRE	1.32	
TESTPOST=CONPOST	0.87	

Panel D: Response coefficient of management earnings forecasts (Dependent variable = CARMF)

Variable	**Coefficient Estimate**	**t-statistic**	
TESTPRE	5.060	2.88	***
TESTPOST	3.254	1.77	*
CONPRE	3.903	2.52	**
CONPOST	4.255	2.17	**
Control variables	Included		
R^2	0.212		
# of observations	1016		
Test Equality of Coefficients	**t-statistic**		
TESTPRE=TESTPOST	-2.88	***	
CONPRE=CONPOST	-0.37		
TESTPRE=CONPRE	1.48		
TESTPOST=CONPOST	-1.35		

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: TESTPRE=indicator variable that equals one if a management forecast is issued by a restating firm in the pre-restatement period and zero otherwise.; TESTPOST=indicator variable that equals one if a management forecast is issued by a restating firm in the post-restatement period and zero otherwise; CONPRE=indicator variable that equals one if a management forecast is issued by a nonrestating firm in the pre-restatement period and zero otherwise; CONPOST=indicator variable that equals one if a management forecast is issued by a nonrestating firm in the post-restatement period and zero otherwise. Control variables are as previously defined.

Table 11: Financial Restatements and Forecast Precision

Panel A: Financial restatements and forecast precision

$$POINT = \alpha_0 + \alpha_1 POST + \alpha_2 SIZE + \alpha_3 ANALYSTS + \alpha_4 FCF + \alpha_5 MB + \alpha_6 LOSS + \alpha_7 ROA + \alpha_8 EVOL + \alpha_9 INSTHOLD + \alpha_{10} QUARTER + \alpha_{11} HORIZON + \alpha_{12} LITI + \alpha_{13} FD + \alpha_{14} MILLS + \varepsilon$$

Variable	Pred. Sign	Coefficient Estimate	χ^2 value	
INTERCEPT		-2.048	9.70	***
POST	?	-0.163	1.31	
SIZE	+	0.237	14.68	***
ANALYSTS	+	-0.252	3.38	*
FCF	-	-0.221	0.56	
MB	-	-0.013	5.26	**
LOSS	-	0.047	0.07	
ROA	+	0.133	0.06	
EVOL	-	-0.173	0.03	
INSTHOLD	+	0.938	5.28	**
QUARTER		0.055	0.08	
HORIZON		-0.001	0.25	
LITI	+/-	0.195	1.78	
FD	+	-0.602	13.74	***
MILLS		0.004	0.00	
Pseudo R^2		0.067		
N=		1178		

Panel B: Financial restatements and forecast precision

$$PRECISE = \alpha_0 + \alpha_1 POST + \alpha_2 SIZE + \alpha_3 ANALYSTS + \alpha_4 FCF + \alpha_5 MB + \alpha_6 LOSS + \alpha_7 ROA + \alpha_8 EVOL + \alpha_9 INSTHOLD + \alpha_{10} QUARTER + \alpha_{11} HORIZON + \alpha_{12} LITI + \alpha_{13} FD + \alpha_{14} MILLS + \varepsilon$$

	PRECISE =1			PRECISE =2			PRECISE =4		
Variable	**Coeff. Est.**	**χ^2 value**		**Coeff. Est.**	**χ^2 value**		**Coeff. Est.**	**χ^2 value**	
INTERCEPT	-7.584	34.88	***	-3.660	8.15	***	-1.855	7.44	***
POST	-1.294	18.61	***	-0.829	9.27	***	-0.254	3.06	*
SIZE	0.617	25.78	***	-0.052	0.18		0.219	11.94	***
ANALYSTS	-0.293	0.98		0.262	1.04		-0.215	2.33	
FCF	1.122	2.72	*	1.234	3.79	*	-0.072	0.06	
MB	-0.023	5.53	**	-0.018	2.71	*	-0.014	6.95	***

LOSS	-0.761	4.01	**	-0.445	1.89		0.022	0.02	
ROA	-0.947	0.85		-0.618	0.43		0.124	0.06	
EVOL	-0.617	0.09		0.395	0.04		-0.099	0.01	
INSTHOLD	3.506	14.81	***	3.683	15.88	***	1.242	8.75	***
QUARTER	0.132	0.10		0.005	0.00		0.053	0.07	
HORIZON	0.001	0.06		-0.002	1.55		-0.001	0.50	
LITI	0.667	5.41	**	0.631	5.72	**	0.260	3.05	*
FD	-1.967	48.20	***	-1.693	38.07	***	-0.856	25.08	***
MILLS	1.321	13.95	***	0.831	6.26	**	0.076	0.15	
N=	1254								

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: PRECISE=1 for a qualitative forecast, 2 for a single bound forecast, 3 for a range forecast, and 4 for a point forecast; POINT=indicator variable that equals one if the management forecast is a point estimate and zero otherwise; POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; GOOD (BAD)=indicator variable that equals one if management earnings per share is greater (smaller) than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; CONFIRM=indicator variable that equals one if the description in First Call indicates "OK with expectations" (or "comfortable with expectations") or management earnings per share equals the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; SIZE=natural log of the market value of equity; ANALYSTS=natural log of the number of analysts following; FCF=free cash flow, measured as the sum of operating and investing cash flows scaled by total assets; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; LOSS=indicator variable that equals one if the firm reported losses in the current period and zero otherwise; ROA=return-on-assets, measured as earnings before extraordinary items divided by lagged total assets; EVOL=earnings volatility, measured as the standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the three-year period; INSTHOLD=institutional ownership, measured at the prior fiscal year end; QUARTER=indicator variable that equals one for quarterly forecasts and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).

Table 12: Financial Restatements and Forecast Bias

Panel A: Financial restatements and forecast bias

$$ERROR = \alpha_0 + \alpha_1 POST + \alpha_2 SIZE + \alpha_3 ANALYSTS + \alpha_4 FCF + \alpha_5 MB + \alpha_6 LOSS + \alpha_7 ROA + \alpha_8 EVOL + \alpha_9 INSTHOLD + \alpha_{10} QUARTER + \alpha_{11} HORIZON + \alpha_{12} LITI + \alpha_{13} FD + \alpha_{14} MILLS + \varepsilon$$

Variable	Pred. Sign	Coefficient Estimate	t-statistic	
INTERCEPT		1.073	1.34	
POST	?	-0.221	-1.33	
SIZE	-	-0.075	-1.04	
ANALYSTS	-	0.005	0.03	
FCF		-0.515	-1.46	
MB	+	-0.002	-0.36	
LOSS	+	2.076	9.97	***
ROA		2.411	3.73	***
EVOL	+	1.486	1.28	
INSTHOLD	-	-1.107	-2.25	**
QUARTER	-	-0.619	-2.63	***
HORIZON	+	0.005	4.81	***
LITI	-	0.193	1.15	
FD		-0.465	-2.36	**
MILLS		0.338	1.45	
Adj. R^2		0.226		
N=		1147		

Panel B: Financial restatements and forecast bias: good-news, bad-news, and confirming forecasts

$$ERROR = \alpha_1 GOOD + \alpha_2 BAD + \alpha_3 CONFIRM + \alpha_4 POST * GOOD + \alpha_5 POST * BAD + \alpha_6 POST * CONFIRM + \alpha_7 SIZE + \alpha_8 ANALYSTS + \alpha_9 FCF + \alpha_{10} MB + \alpha_{11} LOSS + \alpha_{12} ROA + \alpha_{13} EVOL + \alpha_{14} INSTHOLD + \alpha_{15} QUARTER + \alpha_{16} HORIZON + \alpha_{17} LITI + \alpha_{18} FD + \alpha_{19} MILLS + \varepsilon$$

Variable	Pred. Sign	Coefficient Estimate	t-statistic	
GOOD		1.417	1.73	*
BAD		0.951	1.18	
CONFIRM		1.042	1.26	
POST*GOOD	?	-0.220	-0.86	
POST*BAD	?	-0.161	-0.64	

POST*CONFIRM	?	-0.276	-0.75	
SIZE	-	-0.072	-0.99	
ANALYSTS	-	-0.021	-0.13	
FCF		-0.566	-1.60	
MB	+	-0.002	-0.29	
LOSS	+	2.088	9.98	***
ROA		2.429	3.76	***
EVOL	+	1.332	1.14	
INSTHOLD	-	-1.145	-2.32	**
QUARTER	-	-0.543	-2.28	**
HORIZON	+	0.005	4.85	***
LITI	-	0.216	1.29	
FD		-0.527	-2.64	***
MILLS		0.302	1.29	
Adj. R^2		0.292		
N=		1147		

Asterisks *, **, *** indicate significance at the 10%, 5%, 1% level. Variable definitions: ERROR=management earnings forecast minus actual earnings per share, scaled by the stock price two days before the forecast date; POST=indicator variable that equals one if an observation is in the post-restatement period and zero otherwise; GOOD (BAD)=indicator variable that equals one if management earnings per share is greater (smaller) than the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; CONFIRM=indicator variable that equals one if the description in First Call indicates "OK with expectations" (or "comfortable with expectations") or management earnings per share equals the market's expectation as of the forecast date, with the market's expectation proxied by the most recent IBES analyst EPS forecast made before the forecast date, and zero otherwise; SIZE=natural log of the market value of equity; ANALYSTS=natural log of the number of analysts following; FCF=free cash flow, measured as the sum of operating and investing cash flows scaled by total assets; MB=market-to-book ratio, measured as market value of equity divided by book value of equity; LOSS=indicator variable that equals one if the firm reported losses in the current period and zero otherwise; ROA=return-on-assets, measured as earnings before extraordinary items divided by lagged total assets; EVOL=earnings volatility, measured as the standard deviation of annual earnings during three years prior to the current fiscal period, divided by median assets for the three-year period; INSTHOLD=institutional ownership, measured at the prior fiscal year end; QUARTER=indicator variable that equals one for quarterly forecasts and zero otherwise; HORIZON=number of days between the forecast date and the end date of the fiscal period being forecasted; LITI=indicator variable that equals one for bio-technology (SIC 2833 to 2836), computer hardware (SIC 3570 to 3577), electronics (SIC 3600 to 3674), retailing (SIC 5200 to 5961), and computer software (SIC 7371 to 7379) and zero otherwise; FD=indicator variable that equals one if a forecast is issued after Regulation FD's effective date (October 23, 2000) and zero otherwise; MILLS=Inverse Mills Ratio obtained from Eq. (1).