Do Media Help Deter Financial Misreporting?

by Li Fang

B.A. in Business Administration, July 2007, Sun Yat-sen University
M.A. in Accounting, December 2008, The George Washington University

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Christopher L. Jones
Associate Industry Professor of Accountancy

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Li Fang

Dissertation Research Committee:

Christopher L. Jones, Associate Industry Professor of Accountancy, Dissertation Director

Frederick W. Lindahl, Associate Professor of Accountancy, Committee Member

Liang Tan, Assistant Professor of Accountancy, Committee Member

Yanfeng Xue, Associate Professor of Accountancy, Committee Member

Yun Zhang, Associate Professor of Accountancy, Committee Member

Abstract of Dissertation

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This paper investigates the role of the media as an external deterrence mechanism for firms' aggressive reporting practices. Using a sample of firms that filed income-decreasing annual restatements due to financial frauds, irregularities, and misrepresentations between 2000 and 2011, and a matched control sample, I provide evidence that the more media coverage a firm receives in the previous year, the lower likelihood of subsequent misstatements. I then distinguish positive tone from negative tone to examine whether the tone of media content affects firms' incentives to misreport. I find that negative tone of media articles is significantly negatively associated with the likelihood of subsequent misstatements, whereas positive tone does not appear to be significant. This paper further examines the relative importance of the deterrence roles that the media and analysts play in firms' misstatement behavior, and find that the media play a more important role than financial analysts, although the roles of these two mechanisms are overlapping to some degree.

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Chapter 1: Introduction

A growing literature on the media has found that press coverage plays a significant role in corporate governance as well as in the capital market. The media feed the public's thirst for information, track corporate financial statements on a regular basis, pressure firms to alter their governance structures and business strategies, and get directly involved in the discovery of corporate problems in companies such as Eastman Kodak, American Express, and Sears Roebuck (Dyck and Zingales, 2002; Joe et al. 2009; Kuhnen and Niessen, 2012). But it is unclear whether the presence of the media affects the quality of firms' financial reporting and, more specifically, whether scrutiny from the media on firms' financial reporting behavior helps deter these firms from misreporting their financial statements.

The revelation of serious accounting problems in the early 2000s raised a serious concern that insufficient disciplinary mechanisms allow managers to engage in self-interested activities that destroy firm value and harm shareholders. Responding to those financial reporting failures, a number of academic studies investigate the causes and consequences of firm misstatements[1] (e.g., Ettredge et al. 2010), the characteristics of firms involved in fraud (Richardson et al. 2002; Burns et al. 2006; Efendi et al. 2007), and the role that different parties play in bringing corporate fraud to light (Miller 2006; Bowen et al. 2007; Dyck et al. 2010). However, the existing research has been largely focused on the ex-post period of firms' misreporting, that is, after the firms have already misstated their financial statements.

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[1] In this paper, I use the terms 'misstate', 'misreport' and 'misrepresentation' interchangeably to refer to original financial statements filed with the SEC in Form 10-K or 10-Q that are later restated due to financial frauds, irregularities, and misrepresentations as categorized by Audit Analytics.

This paper attempts to provide an ex-ante look at the firms that ultimately misreport, due to financial frauds, irregularities, and misrepresentations, in order to examine whether one potential deterrence mechanism—the media— help discourage corporate misreporting practices from occurring. Specifically, this paper investigates whether the media coverage a firm receives in the one-year period before the misstatement period affects the likelihood of the firm's misstatement in the following period. Figure 1 depicts a generic timeline associated with this study.

Figure 1: Restatement Timeline

Focus of this study

Misstatement period

Restatement announcement occurs after end of misstatement period

$t_1 - 1$ t_1 t_2
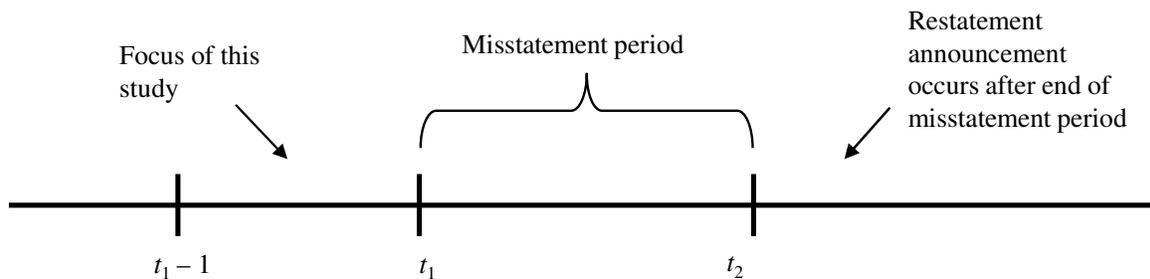
Note: I examine the level of media coverage for the one year period ($t_1 - 1$ through t_1) preceding the beginning of a period of financial misreporting as identified by the presence of a subsequent restatement announcement.

There are several reasons why media coverage might affect the likelihood of the firm's misreporting behavior. The media may help deter firms from misreporting by greatly increasing the expected cost of misreporting. The media not only may increase the probability that the public will know about the firms' misreporting behavior, therefore making the firms potential targets of the SEC, but also may significantly increase the reputation costs to managers, directors, as well as the firms. As a result, firms that are subject to more scrutiny of the media may be less likely to engage in misreporting due to the increased cost of misreporting.

However, media coverage has been criticized for lacking in-depth research and tending towards sensationalism. In some circumstances, the media were even held responsible for putting too much pressure on firms to increase profits, and diverting managers' attention and effort from efficient operation (Sutton and Galunic, 1996; Malmendier and Tate, 2009), thereby increasing firms' propensity to adopt aggressive accounting practice.

Despite the evidence provided by previous studies regarding the role the media play in monitoring firms and in influencing stock prices, it remains open whether the media help discourage firms' misreporting behavior. This paper tries to investigate this empirical question by collecting both print and web news articles from all U.S. sources available on Factiva, [2] and employing a sample of firms that filed income-decreasing restatements of their annual financial statements due to "Financial Frauds, Irregularities, and Misrepresentations". [3] The income-decreasing restatement sample is likely to be attributable to deliberate misreporting as opposed to accounting mistakes (Callen et al., 2008; Kedia and Rajgopal, 2011) and, therefore, serves as an appropriate setting to study how the presence of media coverage affects firms' propensity to adopt aggressive accounting practices. The empirical results show that the level of media coverage a firm receives in the one-year pre-misstatement period is negatively related to the likelihood of

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[2] Factiva classifies the sources of news articles into five categories: (i) All Publications, (ii) All Web News, (iii) All Blogs, (iv) All Pictures, and (v) All Multimedia. This article only focuses on All Publications and All Web News, and therefore the media coverage proxy used in this study is not a complete measurement.

[3] Audit Analytics classifies restatements into four categories according to the underlying reasons of restatements: (i) Accounting Rule (GAAP/FASB) application failures, (ii) Financial Frauds, Irregularities and Misrepresentations, (iii) Errors due to Accounting and Clerical Applications, and (iv) Other significant issues. The sample employed here is drawn from the category of Financial Frauds, Irregularities and Misrepresentations.

subsequent misstatements, which supports the media's role in deterring firms' aggressive reporting practices.

After establishing the deterrence role of the media, I further explore whether the characteristics of media coverage affect firms' likelihood to misstate. I take into account the tone of media coverage by employing the word lists compiled by Loughran and McDonald (2011) in order to provide evidence regarding whether the tone of media content affects managers' incentives to report aggressively by itself, and in addition to the level of media coverage. I find that negative tone of media content is significantly negatively associated with the likelihood of restatements, both by itself and in addition to the level of media coverage. The empirical results may suggest that negative tone may serve as a triggering mechanism, prompting firms to take corrective actions to avoid further negative media coverage that is often accompanied by enormous economic losses and reputation costs. However, the results do not seem to support the argument that positive tone of media articles affects the incentives of firms to misreport.

Finally, I take into account another possible deterrence mechanism, financial analysts, to examine whether the media and analysts have overlapping or differing effects on firms' subsequent misstatements. I find that financial analysts by themselves help discipline firms' aggressive reporting behavior, although their deterrence effect losses statistical significance when the effect of the media is also considered. Furthermore, the deterrence effect of the media in firms' aggressive reporting behavior becomes greater if the firms are followed by more financial analysts. The findings suggest that the media play a more important deterrence role than financial analysts, despite the overlapping effect of the two mechanisms.

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This study makes several important contributions. First, the primary contribution is the finding that the media help deter the occurrence of financial misstatements through scrutiny of firms, which suggests a potential preventive mechanism to discourage firms' misstatement behavior. From a broader perspective, the above evidence suggests that the media help improve the quality of financial reporting by deterring firms from misreporting. This is the first study that investigates the role of the media in affecting the quality of firms' financial reporting by employing the general level of media coverage to proxy for the media coverage a firms receives. Second, this study provides evidence that negative tone of media content affects the incentives of firms to misreport their financial statements, which expands the literature on the linguistic content of media coverage by investigating the role of negative tone in affecting the quality of financial reporting. Finally, this study provides evidence that the deterrence roles of the media and financial analysts in firms' misreporting behavior are overlapping to some extent, but neither is the absolute superset of the other. Specifically, the media play a more important role in deterring firms' misreporting behavior than financial analysts, whose deterrence role appears to be largely overridden by the role of the media. The evidence provided here contributes to the mixed results in the previous literature on the monitoring role of financial analysts on management behavior. More importantly, this paper is the first study that investigates how the media and financial analysts work cooperatively in disciplining firms' misreporting behavior.

The remainder of the paper is organized as follows. Section 2 provides a literature review and develops the hypotheses. Section 3 describes the sample selection, the research design, and measurements of variables. Section 4 presents the empirical results. Section 5 concludes and discusses potential avenues for future work.

Chapter 2: Literature Review and Hypothesis Development

2.1 Media Coverage

Bushee et al. (2010) state: "The business press is perhaps the broadest and most widely disseminated of all potential information intermediaries, reaching both the sophisticated and unsophisticated investors, as well as managers, regulators, and other market participants" (Bushee et al. 2010; Page 2). A burgeoning literature explores the media's influence on real outcomes, providing evidence that the media are able to shift public opinion, particularly with regard to voting patterns (Gentzkow et al. 2004; Gentzkow 2006; DellaVigna et al. 2007; Gerber et al. 2009).

In a related vein, a growing body of research provides evidence that the media play a significant role in the financial markets. Media coverage provides information about firm fundamentals to equity market participants, incremental to information provided by other information intermediaries and accounting data, helps reduce information asymmetry and influences the pricing of securities in equity markets (Tetlock et al. 2008; Fang et al. 2009; Bushee et al. 2010; Boudoukh et al. 2012), and also affects firm value and mutual fund selection (Gurun et al. 2010; Solomon et al. 2011). For example, Bushee et al. (2010) provide evidence that greater media coverage results in a lower information asymmetry for firms during earnings announcement periods. Tetlock et al. (2007, 2008) document significant market reaction to the tone of articles published in the business press. Kothari et al. (2009) show that the tone of articles is related to the cost of capital, stock return volatility, as well as analyst forecast dispersion. They suggest that business press disclosures are considered more credible by investors than disclosures provided by firms or financial analysts.

There is also a growth literature on the media's role as an external monitor of firms due to its prevalence and economic significance. There is evidence that the media play a significant role in shaping firms' corporate governance choices (Joe et al. 2009; Kuhnen and Niessen, 2012), detecting high profile frauds, such as Enron (Miller 2006; Dyck et al. 2010), as well as pressuring firms to behave in ways that are socially acceptable (Dyck and Zingales, 2002). Miller (2006) provides evidence that, besides providing new information to the market, articles in the business press help in the early identification of accounting fraud. Additionally, Dyck et al. (2008) suggest that the probability of a firm's reverse of a corporate governance violation is increasing with the extent of the press coverage of the violation. However, no studies to date have been performed to examine how the presence of the media affect firms' financial reporting quality, and more specifically, how media coverage of a firm affects the firm's incentives to misreport its financial statements.

2.2 Restatements

An Item 4.02 restatement is a de facto admission that a company's past financial statements contain accounting errors and therefore should no longer be relied on (SEC Item 4.02 Form 8-K)[4]. Financial restatements among public companies represent a costly problem in the capital market, and are listed by the SEC as a major factor that undermines investor confidence in financial reporting and market efficiency. A restatement can trigger an SEC investigation, lead to replacement of top management, and result in the firms being severely punished by their investors. Many of these firms are subsequently forced to file for bankruptcy.

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[4] Item 4.02 is titled "Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review".

Previous studies on restatements has focused on the possible causes of restatements and the consequences of these restatements for the executives, the restating firms and their shareholders, as well as the failure of governance mechanisms in deterring misreporting (Hribar et al. 2004; Palmrose et al. 2004; Desai et al., 2006; Hennes et al., 2008; Hennes et al. 2013). For example, studies have provided evidence regarding the influence of earnings management (Ettredge et al. 2010; Callen et al. 2008), CEO compensation (Efendi et al. 2007), CFO characteristics (Aier et al. 2005), audit committee characteristics (Abbott et al. 2004; Stanley et al. 2007), and ambiguous accounting standards (Plumlee et al. 2010) on the likelihood of restatements. There are also a few studies investigating several consequences of restatements, such as a dramatic plummet in stock prices upon the first announcement of restatements to the public (GAO, 2003; Palmrose et al., 2004), an increase in firms' cost of equity capital (Hribar et al. 2004) and in the incidence of shareholder lawsuits (Palmrose et al. 2004), and high turnover and labor market penalties for top management (Cheng et al. 2008; Hennes et al. 2008; Leone et al. 2010) and outside directors (Desai et al. 2006; Srinivasan, 2005). There are also studies that investigate actions taken by top management of a restating firm to repair their reputations as well as the reputation of the firm (Farber 2005; Cheng et al. 2008; Ettredge et al. 2012).

Motivated by the significant number of firms filing restatements annually (Stuart 2010; Scholz 2012) and by the enormous losses suffered in market capitalization, this paper attempts to provide some evidence regarding whether the media serve as an effective mechanism that discourages managers from adopting aggressive accounting practices in the first place, and thus helps improve the quality of firms' financial reporting.

The two papers that are most relevant to this study are Miller (2006) and Qi et al. (2014). Miller (2006) provides evidence that media help early identify frauds. They find that for 29% of their fraud sample, the press publishes an article alleging the existence of an accounting fraud prior to a public acknowledgment by the firm or SEC. In contrast, I investigate whether the level of media coverage a firm receives affects the likelihood of subsequent misstatements.

Qi et al. (2014) investigate the influence of media exposure on managers' earnings management behavior using China's publicly traded firms, and find that the Chinese media serve as an effective external monitor in reducing the level of discretional accruals, which is used as an indicator for earnings management. This paper differs from Qi et al. (2014) study in that Qi et al. (2014) investigate the role of the media in China, where the market has been emerging and the media have been highly controlled by the government, whereas this study focuses on the U.S. market, where the capital market is well-developed and the freedom of media is highly protected by the law. Furthermore, I examine the impact of media coverage on restatements instead of that on earnings management as in Qi et al. (2014). With earnings management in a general form, which most firms might engage in routinely to varying degrees, it is harder to be certain of the presence of managers' intentional manipulation for a company. Restatements arising from earnings overstatements are fairly strong indictors of managerial manipulation (Agrawal and Chadha 2005). Therefore, the sample employed in this study serves as an ideal setting to test whether the media play a role in deterring managers' aggressive accounting choices.

2.3 Impact of Media Coverage on Firm Misstatements

2.3.1 Media's Role as Effective Deterrence Mechanism

Dyck et al. (2008) were the first to comprehensively study the role of the media in corporate governance. Their model, motivated by Becker (1968) and in line with a large literature on the economics of crime, is based on the assumption that a potential criminal's decision to engage in an illegitimate activity is a function of both the expected costs of committing the violation and benefits of this activity. In the context of firm misstatements, differences in the perceived probability of getting caught and the expected penalty after getting caught will be reflected in differences in firms' propensity to commit violations.

Dyck et al. (2008) argue that a director or manager will be discouraged from reputation-hurting action if, and only if:

$$E(\text{Private benefit}) < E(\text{Reputation cost}) + E(\text{Punishment}) \tag{1}$$

In the above model, $E(\text{Reputation cost}) = \alpha_1 \cdot \text{Reputation cost}$, with α_1 being the probability that the public will receive the news about the manager's action and will believe it; and $E(\text{Punishment}) = \alpha_2 \cdot \text{Punishment in case of enforcement}$, with α_2 being the probability of enforcement. Therefore, Model (1) is equivalent to the following expanded model:

$$
\begin{aligned}
E(\text{Private benefit}) \\
< \alpha_1 \cdot \text{Reputation cost} + \alpha_2 \cdot \text{Punishment in case of enforcement}
\end{aligned}
\tag{2}
$$

The media will influence all the four factors on the right-hand side of Model (2).

First, the media affect the probability that the public will know about the manager's action, and will believe it. The business press is known for its ability to disseminate information to a vast audience in a relatively short amount of time, which helps the news

on a firm reach the public in a broad and efficient manner. In this sense, the media contribute to an increased public awareness of the issues within a firm, and therefore may discourage the firm from misbehaving. Furthermore, media coverage of a story increases its credibility or perceived importance with the public (Dyck et al. 2002, 2008). Miller (2006) provides evidence that the media fulfill the role of a watchdog by assisting in the early identification of firms' fraudulent behavior.

The media can also affect the right-hand side of Model (2) by increasing the amount of the reputation costs to managers, directors and firms. The responsibility of the CEO in a firm is to influence the investing public's perception of the firm by fostering a positive corporate image. Since unfavorable coverage of the firm may reflect poorly on the CEO's abilities, the CEO may face an increased likelihood of being fired. A director as well may perceive that his or her reputation is adversely affected if the firm is the subject of unfavorable news articles. The negative slant may greatly increase the reputation costs he/she faces since the director has incentives to be effective monitors to signal to shareholders and labor markets his/her value as an expert in decision control (Fama et al. 1983). Therefore, the media may greatly increase the reputation cost by increasing the awareness of firm's behavior among investors and the labor market.

The third way the media can impact the right-hand side of Model (2) is by influencing the probability of enforcement. Given its limited staff and resources, the SEC is more likely to focus its enforcement actions on egregious violations and high-profile cases that are likely to generate more publicity (Kedia and Rajgopal 2011). A former Chief Accountant of the SEC Enforcement Division indicated that approximately one-third of its leads are initiated by scanning the financial press (Feroz et al. 1991). Kedia and Rajgopal (2011)

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suggest that media attention may help unearth evidence, making the targeting of these firms more cost-effective for the SEC. As expected, they find evidence that the SEC is more inclined to investigate firms that have attracted more media attention. Therefore, it is reasonable to expect that, firms with higher levels of media coverage are more likely to grab SEC's attention and, therefore, possess a higher likelihood of being the target of enforcement actions.

Finally, the media can also affect the right-hand side of Model (2) by impacting the size of the punishment. The SEC has been excoriated for its failure to detect several high profile frauds (Kedia and Rajgopal 2011). Once cases are highlighted by the media, they are likely to face harsher punishment by the SEC whose intent is to achieve greater deterrent effects. By imposing severe penalties on those cases, the SEC not only sends warning to other firms, but also demonstrates to the public that it is not lax in prosecuting known cases of corporate misconduct (Files 2012).

In sum, by impacting all the four factors on the right-hand side of Model (2), the media greatly increase the expected cost of committing a violation and therefore discourage managers from engaging in self-interested activities, such as financial misstatements.

2.3.2 Media's Role as Non-Effective Deterrence Mechanism

While a number of studies suggest that the media potentially serve as an effective governance mechanism, some studies do argue that press coverage lacks in-depth research and tends towards sensationalism, and other studies suggest that media coverage may even breed firms' incentives to misreport in some circumstances.

Previous studies suggest that the press tend to write stories in an entertaining way in order to stimulate subscription and advertising revenues, and therefore may not affect the

tendency of a firm to misreport its financial statements. Jensen (1979) suggests that most of the demand for news services derives not from a demand for information, but from a demand for entertainment. Consistent with this, Core et al. (2005) study press coverage of compensation and conclude that the press sensationalize their coverage by focusing on large ex-post stock gains rather than compensation expense to the company, and has no impact on compensation behavior. Bednar (2012) examines how the media respond to changes in board composition, and find that the media respond positively to those changes even when these changes are largely symbolic.

Furthermore, there are other studies suggesting that coverage by the media may even result in the increase of a firm's tendency to misreport. For example, Sutton and Galunic (1996) argue that scrutiny of business leaders can lead to constant distraction that interferes with their thoughts and actions. They suggest five consequences of scrutiny, among these are frequent delays in ongoing task, attention and effort devoted toward symbolic activities, and attention and effort diverted away from learning and creativity.

Malmendier and Tate (2009) study how shifts in CEO status induced by awards from major national media affect subsequent firm performance, and provide evidence that firms with award-winning CEOs subsequently underperform, in terms of both stock and operating performance, relative to the matched non-winning CEOs over the three years following the awards. They also find that these award winners spend more time on activities outside their core responsibilities, such as writing books, sitting on outside boards and playing golf. These distracting activities make it increasingly difficult for the award-winning CEOs to meet or beat market and analysts' expectations, which might result in a higher likelihood of these CEOs' earnings manipulation behavior. Thus, by offering the

private benefits to these CEOs, the media might help breed the incidence of firms' misreporting.

Finally, there is substantial evidence that media attention, or the threat of media attention, creates much pressure on managers to perform, which might lead to more misreporting. For example, in the case of poorly performing firms, the attention brought by the media may further exacerbate operating problems at these firms by harming relations with suppliers, customers, lenders, etc (Farrell and Whidbee 2002). The fear of worsening the situation, in other words, the benefits of keeping the current situation under control, gives the managers incentives to adopt aggressive accounting choices, resulting in a higher likelihood of subsequent restatements.

As a group, these studies question the validity of the press as a potential governance mechanism and even suggest it may play a negative role. In this regard, it is unclear whether the media are an effective governance mechanism in deterring firm misstatements. Therefore, my hypothesis, stated in the null, is:

H1: Companies with more media coverage in a period are as likely as those with less media coverage to misstate their financial statements in the subsequent period, all else equal.

2.4 Tone of Media Coverage

Given that the level of media coverage is found to affect the likelihood of misstatements, it is natural to ask whether the content of coverage also affects firms' incentives to report aggressively beyond the level of media coverage. Prior literature suggests that the role of news agencies is not only in identifying important corporate announcements but also in "toning them down" and filtering out the excessively positive content or making more clear the negative aspects of the original release, and therefore making them more informative

for investors. In this section, I examine the tone of media content beyond the level of coverage to further understand the deterrence role of the media.

Previous research on the impact of the tone of media content on the stock market provides evidence that linguistic media content captures otherwise hard-to-quantify aspects of firms' fundamentals (Tetlock 2007; Tetlock et al. 2008; Garcia 2013; Chen et al. 2011; Dzielinski 2012). Tetlock (2007) is the first study that applies the linguistic analysis of text to financial news. He shows that the number of negative words in the "Abreast of the Market" column of the Wall Street Journal predicts stock returns at the daily frequency from 1984 to 1999. While Tetlock (2007) exclusively focuses on negative word counts for most of his analysis, Garcia (2013) focuses on both the negative and positive word counts to provide further support for Tetlock (2007) by showing that media content can indeed predict trading volume.

Despite previous studies on how the tone of media coverage affects the stock market, there is limited evidence regarding the role that the tone of news stories plays in affecting the quality of financial reporting. Kothari et al. (2009) analyze the content of more than 100,000 disclosure reports by management, analysts and business press to examine the impact of the content of disclosure on firm risks. They provide evidence that positive news disclosure by the business press decreases cost of capital, while negative news disclosure increases cost of capital. Loughran et al. (2011) create lists of words based on 50,115 firm-year 10-Ks between 1994 and 2008, and provide evidence that some word lists (i.e., negative, uncertainty, and litigious) are significantly linked to the probability of 10b-5 fraud lawsuits.[5] They also find that firms with a higher proportion of negative financial

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[5] Loughran et al. (2011) employ a sample of firms subject to shareholder litigation under Rule 10b-5. All of the firms in this limited sample have been accused of accounting fraud. The sample was

words or strong modal words are more likely to report material weakness in their internal controls.

In this section, I employ the word lists compiled by Loughran et al. (2011) [6] to analyze the content of news stories to examine whether the tone has any incremental effect on the firms' tendency to misreport beyond the level of media coverage per se. I consider both the negative words and the positive words since ex-ante it is not clear whether the two perform differently in affecting firms' aggressive reporting practices. Although prior literature finds positive words don't capture qualitative information as well as negative words using the Harvard word lists (Tetlock 2007; Engelberg 2008; Kothari et al. 2009), some researchers note that the insignificant association between the Harvard positive word list and financial disclosures may be due to erroneous classification of these positive words (Engelberg 2008). [7] Indeed, Garcia (2013) provides evidence that positive words can be as important as negative words in predicting stock returns.

Ex-ante, it is not clear whether and how positive/negative tone of media coverage affects the likelihood of restatements. On the one hand, managers may be more likely to misstate in the circumstances of negative press coverage compared to those of non-negative coverage. Unfavorable media reports would signal negative signs about a firm's future performance, as well as possible operating problems that the firm is confronted with (Pollock et al. 2003; Gurun et al. 2012; Tetlock 2007; Tetlock et al. 2008). The desire to

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created by a keyword search for "GAAP" and "Restatement" in 10b-5 class action suits. The Rule 10b-5 allegations argue that material omissions by managers led to inflated stock prices.

[6] Another commonly used source for word classification to gauge the tone of a text is the Harvard Psychosociological Dictionary. Since this word list was originally developed for psychology and sociology, researchers question its validity in the realm of business (Engelberg 2008; Loughran et al. 2011).

[7] Engelberg (2008) cites company, shares, and outstanding from the Harvard positive word list as examples of misclassification.

not exacerbate the situation gives the managers incentives to misstate in the presence of negative media attention. In other words, the benefits from keeping the current situation under control and undisclosed breed managers' incentive to manipulate financial statements.

However, firms covered by negative news do not necessarily possess a higher tendency to misstate compared to those covered by non-negative news. Negative press coverage may act as a triggering mechanism, prompting firms to take actions to demonstrate to the public their commitment to practices generally accepted as good governance in order to avoid further negative coverage in the future (Dyck et al. 2002). By increasing the expected costs of negative media coverage, the media help curb firms' misreporting behavior, resulting in a lower likelihood of subsequent restatements.

In a related vein, firms with positive media coverage may be less likely to misstate their financial statements compared to those with non-positive media coverage, because the former would likely suffer greater reputational damage from poor-quality financial reporting. There is evidence that a firm or insider with positive media coverage occupies more central positions in a social network, which in turn enhances the firm's legitimacy and acceptance and improves its market value accordingly (Pollock et al. 2003; Bansal et al. 2004). Therefore, the firm will take steps to protect its reputations by adopting effective internal control and external audit, thereby reducing the likelihood of misreporting.

Alternatively, positive media coverage may be accompanied with a high incidence of misstatements. Previous research suggests that positive coverage may be an indicator of individual characteristics that enhance managerial discretion to affect firm actions (Chatterjee et al. 2007), that is, positive press coverage can be considered as a source of

managerial power for executives in relation to their firms' boards (Finkelstein 1992). The high managerial power of the CEO has been shown to be associated with the incidence of earnings management (Malmendier and Tate 2007), therefore, a higher tendency of subsequent restatements. In such a situation, the private benefits resulting from the media attention give managers incentive to misreport.

Given the above arguments, empirical evidence is needed to determine whether the tone of media coverage affects the likelihood of misstatements by itself, and incremental to the level of media coverage. My predictions, stated in the null, are as follows:

H2a: Positive media coverage of a firm is not associated with the likelihood of its misstatement.

H2b: Negative media coverage of a firm is not associated with the likelihood of its misstatement.

I include measurements of tone in the main regression both without and in addition to the media coverage variable in order to test whether media content has any incremental effect on the likelihood of misstatements (as stated in **H2a–2c**) above and beyond the level of media coverage. By considering the tone of media content, I take one step further in understanding the deterrence role of the media compared to most studies that focus on the level of media coverage a firm receives. And I also contribute to assessing the validity of the word lists compiled by Loughran et al. (2011). Loughran et al. (2011) acknowledge that the nature of word usage is not identical across disclosures by different entities. The evidence that their word lists work in the sample of media articles strengthens the validity of the word lists.

2.5 Association between Media Coverage and Other External Possible Deterrence Mechanisms

Thus far, I have examined the role played by the media in disciplining management's aggressive accounting choices. A natural question arises about whether the media still serve as an effective deterrence mechanism in the presence of other external monitors, such as financial analysts, and whether the deterrence roles of these mechanisms are overlapping or differing. The reason why I investigate the -relation between financial analysts and the media is due to the fact that analysts and the media gather a great deal of relevant information as a by-product of their normal work, and thus are able to identify fraudulent corporate behavior at a lower cost than traditional monitors (e.g., security regulators) of firms' aggressive accounting practices (Dyck et al. 2010). In this section, I examine the marginal deterrence role of the media and financial analysts in disciplining management's aggressive accounting choices.

Previous studies have examined the individual monitoring roles of analysts and the media as well as the role of the business press as an information intermediary in the presence of financial analysts (Frankel et al. 2004; Miller 2006; Kothari et al. 2009; Bushee et al. 2010), and provide mixed evidence regarding the relative role of these two parties in different settings. Frankel et al. (2004) examine three significant sources of information, including financial statements, analyst following and news, to assess the marginal effect of each on the information asymmetry between managers and investors. They provide evidence that analyst following and news each substitutes for financial statement informativeness. Bushee et al. (2010) find that the press has a larger impact on the information environment than other information intermediaries. Kothari et al. (2009)

compare the content of reports by management, analysts, and news reporters, and provide evidence that corporations' and analysts' communications are considered not credible by the investment community, whereas the credibility of news disclosure by the press is higher than that of companies or analysts.

Despite the above studies that investigate the interactive role of the press and analysts both as information intermediaries, there is no study that provides evidence regarding how these two mechanisms work together in monitoring firm behavior with the only exception of Dyck et al. (2010). Dyck et al. (2010) compare the relative importance of different sources for detecting corporate fraud. They find that analysts are involved in the revelation of the fraud for approximately 15% of the cases, and the media account for 13% of the cases, and the media's role becomes more important and the number increases to 24% after value weighting these frauds.

Bushee et al. (2010) call for future work to test for the relative importance of the press vis-à-vis other intermediaries around other major corporate events. This paper tries to add to the literature evidence on how the media and financial analysts work cooperatively in disciplining firms' financial reporting behavior. If the media help deter financial misreporting, it is possible that its monitoring role becomes less important for firms with higher levels of analysts following. Alternatively, the monitoring role of financial analysts could complement that of the media.

Ex ante, it is unclear whether analyst coverage or media coverage plays a more important role in disciplining firms' misreporting behavior. On the one hand, financial analysts are sophisticated users of financial statements who use fundamental analysis of accounting numbers to develop their reports. They discipline corporate managers by

monitoring and publicizing managerial actions through their information search and reporting activities (Dechow et al. 1996; Block 1999; Roulstone 2003; Cheng et al. 2008; Tucker 2010). Fairfield et al. (2001) study analysts employed by the Center for Financial Research and Analysis (hereafter CFRA), and find that, by using only publicly available information, these analysts are able to identify firms that are masking operational problems with aggressive accounting practices.[8] And they also find that CFRA identified firms tend to restate earnings more often than a sample of control firms. Cotter et al. (2007) provide evidence that sell-side equity analysts anticipate the fraud and reveal this predicted bad news to the market prior to public disclosure by either revising down their recommendations or dropping coverage of the firm. Furthermore, analysts' behavior appears to be guided by career concerns, failing to detect such cases would result in severe economic losses for their clients as well as impose high costs of reputational punishment on them (Ljungqvist et al. 2007; Dyck et al. 2010; Brown et al. 2015). Thus it is reasonable to expect them to take an early and informed reaction to corporate misbehavior.

However, there is also evidence that analysts are unlikely to possess the incentives to uncover firms' intentional misreporting. Brown et al. (2015) surveyed 365 analysts about their perceptions of the potential "red flags" of intentional misreporting, and most analysts responded that they exert little effort in determining whether firms misreport their earnings. Furthermore, financial analysts have been criticized for providing incentives for firms'

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[8] The CFRA is a private, for-profit entity. It was founded in 1994 by Howard Schilit, a former accounting professor. Its primary product, The CFRA Monthly Research Compendium, was, during the period covered by Fairfield et al. (2001), a monthly list of approximately 5 (in its first year) to 10 (in later years) research reports on publicly held companies. Subscribers to the CFRA research report include mutual funds, money managers, hedge funds, insurance companies, banks, CPA firms, law firms, and individual investors. The CFRA reports that their analysts use fundamental analysis to identify target firms.

myopic behavior. The pressure to meet or beat analyst earnings expectation may motivate managers to overstate earnings (Burgstahler et al. 1997; Bartov et al. 2002; and Graham et al. 2005).

On the other hand, although financial analysts are more specialized in interpreting company information and conducting insightful analysis, the media appear to have a larger impact on the RHS of Model (2), and thus a larger deterrence effect on firms' misreporting behavior. First, media coverage tends to have a larger impact on the expected reputation cost to a firm than analyst coverage due to the more extensive and inclusive nature of media coverage. The media, known to be the broadest and most widely disseminated information intermediaries, tend to have a larger impact on α_1 than financial analysts. Furthermore, as Dyck et al. (2008) suggest, one important channel through which the media affect a firm's behavior is by shaming, that is, by influencing the reputation cost to the firm. Thus, I expect that the media may impose a higher reputation cost on the firm than financial analysts. Second, for the probability of enforcement (α_2), the business press are considered as an important source for initiating enforcement actions by the SEC (Feroz et al. 1991, Kedia and Rajgopal 2011), whereas the role of analysts is not highlighted by the SEC. Since analysts are not as effective as the media in attracting SEC's attention, they do not have as large an impact on the size of the punishment as the media. Based on the above arguments, I expect the media to have a larger influence on all of the four factors on the RHS of Model (2) than financial analysts and, therefore, a larger effect in deterring firms' misreporting behavior.

Furthermore, Miller (2006) suggests that analysts consider the press as an important source of information, and in addition, analysts are frequently contacted by the press to

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provide information about firms. Due to the high information flow between the media and financial analysts, it is difficult to determine whether analyst coverage, media coverage, or both help discipline firms' financial reporting behavior.

Therefore, I start with examining (i) whether analyst coverage per se helps discourage firms from misreporting, and then investigate (ii) the influence of media coverage on firms' misstatement behavior in the presence of analyst coverage, as well as (iii) the overlapping/differing effects between the deterrence role of the media and that of financial analysts. My hypothesis, stated in the null, is as follows:

H3a: Companies with more analyst following in a period are as likely as those with less analyst following to misstate their financial statements in the subsequent period, all else equal.

H3b: Media coverage and analyst following (in disciplining firms' misreporting behavior) are unrelated.

Chapter 3:   Research Design and Sample Selection

In this section, I first discuss the derivation of misstatement and matched control samples, then present the measurement details for my test variables, including Media Coverage, Tone and Analyst Following, and finally provide detailed explanations for the control variables.

3.1 Sample Selection

3.1.1 Sample of Restating Firms

This study focuses on the restatements that correct previous overstatements of annual net income due to "Financial Fraud, Irregularities, and Misrepresentations" based on Audit Analytics' classification.[9] Prior studies document that approximately 90% of restatements affect previously reported net income, among which 80%–90% have the effect of decreasing previously overstated net income (Scholz 2008; Ettredge et al. 2012). The predominance of income-decreasing restatements in the entire restatement sample suggests that these restatements are more likely attributable to deliberate misreporting than to unintentional error.[10] Furthermore, the auditors and investors appear to view non-income-decreasing restatements as less serious (Agrawal et al. 2005). Therefore, I focus on income-decreasing restatements to examine the hypothesis that the scrutiny from the media affects the probability of firms' misreporting behavior.

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[9] I acknowledge that the classification is subject to judgment by Audit Analytics, and therefore it is possible that some of the restatements may be misclassified, but it is reasonable to assume most of the restatements are appropriately classified.

[10] Consistent with that in Ettredge et al. (2012), the finding that only one firm out of 4402 with annual restatements filed an income-increasing restatement in my sample further justifies the use of the income-decreasing restatement sample to capture firms' aggressive reporting behavior.

I limit my sample to restatements that affect only the annual reports to better control for variation that might exist in the degree of external audit scrutiny of the quarterly financial information. More specifically, SEC registrants, throughout my sample period, were not required to have their interim financial statements reviewed by their external auditors. Furthermore, misstatements that only affect the interim quarterly earnings could be reversed in a subsequent quarter and may have no impact on annual earnings. Therefore, I limit my sample to the firms with restatements of annual financial statements.

I start with an initial sample of companies that reported negative effect on their financial statements, such as the income statement, balance sheet and cash flow statement, caused by the restatements announced during January 1, 2001 through October 1, 2014.[11] Due to data availability reasons and the need to reduce the risk of misclassifying a restatement as a non-restatement, I further cut off the sample for which restated periods begin before January 1, 2000 or end after October 1, 2011.[12] I set the beginning date of a restated period no earlier than January 1, 2000, assuming a zero-day lag between the earliest possible ending date of an annual restatement (January 1, 2001) and its corresponding restatement announcement (as aforementioned, this date can be no earlier than January 1, 2001). Following prior literature, I allow a three-year lag in order to permit

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[11] The Audit Analytics restatement database has complete data for restatements announced between January 1, 2001 and October 1, 2014, as of October 2014 when the sample was collected.

[12] The following two examples help illustrate the rationale for the two cut-offs. First, if my sample includes a firm with a misstated period from January 1, 1998 through December 31, 1999, and an announcement of the restatement on November 1, 2000, this firm would be misclassified as a non-restate firm since the restatement data is complete only for restatements announced after January 1, 2001. Therefore, I cut off the firms whose restated periods begin before January 1, 2000. Second, if my sample includes a firm with a misstated period ending on March 1, 2013 and the announcement of the restatement on December 1, 2014, this firm would be misclassified as a non-restate firm since the restatement data is available only for restatements announced before October 1, 2014. Therefore, I cut off the firms whose restated periods end after October 1, 2011.

sufficient time for the subsequent restatements to occur after the original release date of the financial statements (Francis et al. 2012). Cheffers et al. (2011) document that the average time lag between the release of the original financial statement and a subsequent restatement is about 700 days. Therefore, the cut-off date of October 1, 2011 provides sufficient time lag for correctly classifying restating and non-restating firms.

The restatement sample is obtained from the Non-Reliance Restatements data within the Audit Analytics database.[13] Scholz (2008) compares data sources for overlapping periods and finds that the Audit Analytics Restatement database includes nearly all the restatements identified in the GAO lists and Lexis–Nexis searches during 2001–2003. Therefore, the restatement sample is obtained only from Audit Analytics. Audit Analytics includes restatements made by public companies to correct accounting that does not conform to GAAP. Thus, it excludes restatements due to changes in accounting principles, GAAP-to-GAAP changes, and changes in estimates. I further exclude restatements that were due to accounting rule application failures, errors resulting from accounting and clerical applications, or other significant issues, leaving only restatements that were due to "Financial Fraud, Irregularities, and Misrepresentations" based on Audit Analytics' classification. Furthermore, if multiple filings correct the same underlying misstatement, Audit Analytics classifies them as a single restatement observation. Following prior literature, multiyear restatements are categorized as income-decreasing if the cumulative change in net income for all the periods affected by the restatement is negative (Francis et al. 2013).

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[13] For restatements disclosed after August 23, 2004 (the date when Item 4.02 became effective), Audit Analytics staff members extract the data from all 8-K and 8-K/A filings containing restatement information identified with the title 4.02 "Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review".

Table 1, Panel A shows the sample selection process. I start with a sample of 9400 restatements reporting negative impact on their annual financial statements of which the initial misreported year ranges from 2000 to 2011. For a firm with multiple restatements, I only keep the earliest observation for the firm in order to avoid contamination effects of earlier restatements on later ones. I then omit 1955 cases of quarterly restatements. I also eliminate 3206 restatements that are associated with non-negative cumulative change in net income (Kedia and Rajgopal 2011). [14] I further eliminate an additional 213 cases where the restating firms are real estate investment trust or exchange-traded fund, and/or are incorporated outside of the U.S. Following prior literature (Agrawal and Chadha 2005; Agrawal and Cooper 2007), I further exclude 169 firms in utilities (SICs 4900–4999) and financial industries (SICs 6000–6999) due to the difficultly in interpreting variables such as leverage and market-to-book that are used as controls (Barton et al. 2002; Chen et al. 2013). Finally, I omit 263 restatement cases that do not have required data to calculate regression variables.[15]

For each restatement in my sample, I obtain data for financial statement variables from Compustat, and data for analyst following from I/B/E/S database. [16] For each firm observation, I examine the media coverage level for the one-year period preceding the

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[14] Among the 3206 firm observations with non-negative cumulative changes in net income, 696 have zero values for the cumulative change in net income, 1 has a positive value, and 2509 have missing values. Per a discussion with a research staff from Audit Analytics, most of these firm observations with missing values are those that are not traded on NYSE, NASDAQ, or AMEX.

[15] It is noted that, in several papers on restatements (Ettredge et al. 2010; Kedia et al. 2011; Blankley et al. 2012; Francis et al. 2013), the percentages of restatements discarded during the sample selection process range from 64% to 93%, and that the percentages reported in Blankley et al. (2012) and Francis et al. (2013) appear to be comparable to that in my study (i.e., 93%+ and 91% versus 97%).

[16] I convert the Audit Analytics data to the Compustat fiscal year convention (i.e., when a company's fiscal year ends between January 1 and May 31, the previous year is used to denote its fiscal year).

beginning of the misstated period to examine whether media scrutiny of a firm helps deter the firm from committing misreporting, that is, whether a firm that receives a higher level of media coverage in the one-year period tends to have a lower likelihood of misstatements in the following period.

3.1.2 Matched Control Sample

In order to mitigate the concerns that the media are more likely to cover larger firms with larger reader base and that the change of economic conditions over time may have been the primary driver for observed changes in firms' propensity to adopt aggressive accounting practices, I select a one-to-one matched non-restatement firm for each restating firm in the sample and use the matched firm's characteristics as controls. The restating and control firms are matched by size and industry in the year just prior to the onset of overstatements from among those firms covered by the Compustat database.

Consistent with prior research, for each restating firm, I obtain a control firm that satisfies three criteria. First, the total assets of the control firm should be within 15% of the sample firm at the beginning of the misstated period. If no control firm meets this criterion, I expand the window of tolerance to allow for a maximum total assets deviation of ±30%. Second, the control firm should have the same four-digit Standard Industrial Classification (SIC) code as the restating firm whenever possible. In cases where I am unable to locate a control firm with the same four-digit SIC code as the restating firm, I select a control firm by matching at the three- or two-digit level. Third, the control firm should have none of its financial statements restated during the sample period. I double check the control firm's SEC filings through 2014 to verify that there were no restatements announced. If no control firm meets the three criteria, I drop the restating firm from the sample.

213 firms were further dropped out of the restatement sample because no suitable matches were located. Among the 213 firms, 119 firms were eliminated due to the merger and acquisition activities surrounding the matching date. Kinner et al. (2004) document the association between the merger and acquisition activity of a firm and the occurrence of restatements in the firm. Furthermore, the merger and acquisition activity also impacts the level of media coverage a firm receives. The matching process resulted in a final sample of 305 match pairs.[17]

Table 1, Panel B shows that 138 of the restatement firms were matched with a corresponding control firm at the four-digit SIC level, 52 restatement firms were matched at the three-digit SIC level, and the other 115 restatement firms were matched at the two-digit level. Panel C presents the industry distribution of the restatement firms and shows that approximately one third of the firms are from the following three industries: 73xx (Business Service), 28xx (Chemicals and Allied Products), and 36xx (Electronic and Other Electrical Equipment and Components). Panel D shows the distribution of the restatement firms by year, with the majority of the restatements occurring in the early years of the sample period, which appears to be consistent with the sample selection criterion that only the earliest restatement for a firm with multiple restatements is kept to avoid the contamination by later restatements.

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[17] I acknowledge that one limitation of my data lies in the possibility that a control firm misreports its financial statement(s), but does not get caught. Thus, the main test may be viewed as a test of the effect of the media on a joint event of a firm misreporting its financial statements, and getting caught.

3.2 Test Variables

3.2.1 Measurement of Media Coverage

Following prior literature (Bushee et al. 2010; Dzielinski 2012), I quantify the amount of media coverage by using the number of articles as well as the number of words in articles covering a firm in the one-year pre-restatement period. Dzielinski (2012) suggest that word counts of firm-related articles are positively related to firm size. In order to mitigate the effect of firm size, I take the natural logarithm of these variables to reduce the large skewness. [18]

Following prior case-control studies in biostatistics (Hosmer and Lemeshow, 2000), and accounting (Archambeault and DeZoort, 2001; Menon and Williams, 2004; Agrawal et al. 2005; Stanley and DeZoort, 2007), I use a series of conditional logistic regression models to test H_{1a} and H_{1b}. The conditional logistic regression model is employed to address the concern of the independence assumption violation inherent in matched-sample designs.[19] Using conditional logistic regression to compare restatement firms with control firms requires a suppressed intercept due to the fact that each of the independent variables is measured as the difference between a restatement firm and its matched pair,[20] and therefore I estimate the following regression model:

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[18] Alternatively, following prior literature, I use the daily (monthly) number of words and the daily (monthly) number of articles without taking the log transformation as proxies for the level of media coverage for a firm, and results are similar.

[19] Breslow and Day (1980) point out that matched observations in a case-control design are not independent and, if analyzed unconditionally (i.e., using unconditional logistic regression), can result in seriously biased estimates of effects of interest. Hosmer and Lemeshow (2000) suggest that matched pair designs violate general logistic regression assumption because they involve creation of matched observations that are not independent.

[20] I estimate matched sample-control models using the conditional likelihood approach to reduce the bias arising from unconditional analysis of matched data. Breslow and Day (1980) point out that matched observations in a case-control design are not independent and, if analyzed unconditionally (i.e., using unconditional logistic regression), can result in seriously biased estimates of effects of interest. In the conditional likelihood approach, the intercept term in the

$$RESTATE = \beta_1 MEDIACOVERAGE + \beta_2(+)LTA + \beta_3(+)LEV$$
$$+ \beta_4(+)MTB + \beta_5(+)FIN + \beta_6(+)FCF + \beta_7(-)ROA$$
$$+ \beta_8(+)MLOSS + \beta_9(+)M\&A + \beta_{10}(+)EPSGrow \qquad (3)$$
$$+ \beta_{11}(-)BIG4 + \varepsilon$$

The dependent variable *RESTATE* is a restatement indicator variable, and is set to one if a firm restates its annual financial statements during the sample period and zero otherwise. Thus, the restatement indicator variable represents periods for which investors could not rely on originally issued financial statements. All the independent variables are defined in Appendix.

I control for a vector of firm-specific characteristics that are suggested by prior literature to be related to the likelihood of restatements or the media coverage variable in order to reduce the possibility of having correlated omitted variables. The rationale to include these variables is discussed in detail in Section 3.3.

I collect newspaper articles for the one-year period preceding the beginning of the misstated period for each firm observation in my sample from Factiva database. Factiva is Dow Jones's replacement for the Dow Jones News Retrieval Service. It covers nearly 8,000 sources of information including all of the major wire services, national and regional newspapers, and trade publications.

I search through all U.S. sources available on Factiva for news articles. Since the goal of this paper is to investigate the role of media coverage in corporate governance, I exclude

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general regression model is conditioned out of the likelihood function, and the vector of parameters (**β**) for the differences between the values of independent variables of the sample (*RESTATE* = 1) and those of the control (*RESTATE* = 0) is estimated. Therefore, I estimate no-intercept models whose regression variables are the differences in independent variables for sample versus control.

the wire services that directly reprint managerial news releases (PR Newswire, and Business Wire). Articles carried on press release wires are assumed to be firm-initiated disclosures (Miller 2006; Bushee et al. 2007; Core et al. 2008). All other articles are considered press-initiated because news wires such as Reuters, Dow Jones, and the AP, as well as traditional publications, exercise editorial control over their content. I then exclude any additional republished or duplicate news stories.[21] I also leave out Blogs, pictures or multimedia information due to the difficulty of quantifying the amount of media coverage as well as measuring the tone of these information.

To collect articles and press releases for each firm, I use the firm's name as it appears in the Compustat database together with the acquirer's Intelligent Indexing Code assigned by Factiva. Factiva matches an article to a firm's intelligent indexing code if the news article discusses the firm in sufficient detail. To improve the search performance, I adjust the Compustat company names to match Factiva's coding of company names, for example, by changing "Company" to "Co", and "Intl" to "International". My database contains each individual word of an article (covering a firm) with its corresponding date, headline, author, and section.

3.2.2 Tone of Media Coverage

I use the word lists of Loughran et al. (2011) to gauge the content of the media articles instead of the commonly used Harvard IV-4 word lists due to the fact that the word lists of Loughran et al. (2011) are specifically constructed from language patterns of the annual 10-K reports, whereas the latter is developed for psychology and sociology purpose.

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[21] For robustness, I repeat the analysis by including duplicate news stories, since these duplicate news stories still help expand reader base. The results are similar.

Loughran et al. (2011) examine all words occurring in at least 5% of 50,115 firm-year 10Ks filed during 1994 to 2008 to consider their most likely usage in financial documents, and develop six word lists, including a negative list (Fin-Neg) and a positive list (Fin-Pos).[22,23]

Their Fin-Neg word list includes 2,337 words that typically have negative implications in a financial sense, about half of which overlap with the Harvard IV-4 negative word list. The list also includes some frequently occurring words that are not on the Harvard IV-4 negative word list, such as termination, discontinued, penalties, unpaid, investigation, misstatement, misconduct, serious, allegedly, noncompliance, and deterioration.

Their Fin-Pos word list consists of 353 words, such as achieve, attain, efficient, and improve. The Fin-Pos word list has far fewer words than the Fin-Neg word list due to the fact that positive words are more unilateral in potential tone. They account for simple negation for the Fin-Pos words. Simple negation is defined as cases where one of six words (no, not, none, neither, never, nobody) occurs within three words preceding a positive word.

In order to test **H2a–2b**, I estimate Equation (3) by including the tone variables representing Fin-Neg and Fin-Pos in addition to the media coverage variable in the main regression. I test whether media content has any incremental effect on the likelihood of misstatements in addition to the level of media coverage per se. The model is estimated as follows:

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[22] All these lists are available at http://www3.nd.edu/~mcdonald/Word_Lists.html.
[23] They also take into account inflections by inflecting each word to forms that retain the original meaning of the root word, for example, accidental, accidentally, and accidents are inflections of the word 'accident'.

$$RESTATE = \beta_1 FinNeg(FinPos) + \beta_2 MEDIACOVERAGE + \beta_3 (+)LTA$$

$$+ \beta_4(+)LEV + \beta_5(+)MTB + \beta_6(+)FIN + \beta_7(+)FCF$$

$$+ \beta_8(-)ROA + \beta_9(+)MLOSS + \beta_{10}(+)M\&A \qquad (4)$$

$$+ \beta_{11}(+)EPSGrow + \beta_{12}(-)BIG4 + \varepsilon$$

For each tone variable, I examine the proportional weight, which is defined as the ratio of the word list count to the total number of words appearing in an article, averaged over all the articles covering a firm.

3.2.3 Analyst Following

For analyst following, I obtain the number of analysts providing annual earnings forecasts for a firm from the Institutional Brokers' Estimate System (I/B/E/S) database, and measure the level of analyst following as the number of analysts following the firm during the period from 12 months before the misstatement begin date to 1 month after that date.

I first run the regression by including only the analyst following variable (*ANALYST*) to examine whether analysts play a role in deterring a firm's misreporting behavior. I then include the analyst following variable together with the media coverage variable (*MEDIACOVERAGE*) to see whether analyst following has a moderating or escalating effect on the deterrence role of the media.

Therefore, to test **H3a** and **H3b**, I estimate the following model:

$$RESTATE = \beta_1 ANALYST + (\beta_2\ MEDIACOVERAGE)$$

$$+ (\beta_3\ MEDIACOVERAGE * ANALYST) + \beta_4\ (+)LTA$$

$$+ \beta_5(+)LEV + \beta_6(+)MTB + \beta_7(+)FIN + \beta_8(+)FCF \qquad (5)$$

$$+ \beta_9(-)ROA + \beta_{10}(+)MLOSS + \beta_{11}(+)M\&A$$

$$+ \beta_{12}(+)EPSGrow + \beta_{13}(-)BIG4 + \varepsilon$$

where:

> $ANALYST =$ the number of analysts following a firm during the period from 12 months before the beginning of the misstatement period to 1 month after that date.

3.3 Control Variables

In this section, I discuss the rationale as well as the measurement details for control variables that I use in the regression model. These control variables, including management incentives and innate firm characteristics, may be associated with both the media coverage variable and the likelihood of restatements, as suggested by previous studies. A failure to consider any of these variables in a regression model may give rise to a correlated omitted variable issue, which could result in a biased estimate of the effect of the media coverage on the likelihood of firms' subsequent misstatements.[24] In what follows, I first discuss why the control variables may be associated with the media coverage variable, and then explain why these variables may affect the likelihood of restatements.

Previous studies suggest that several control variables may be related to the level of media coverage. For example, firm size has been shown to be one of the primary factors

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[24] Omitted variable becomes an issue when a regression model omits an independent variable that is correlated with both the dependent variable and the independent variable of interest, as described in Chapter 8.2.1 in Greene (2000). In such a case, the absence of the (correlated) omitted variable will result in a biased estimate of the effect of interest.

that determine the amount of coverage a firm receives (Solomon and Soltes 2011). High-growth firms and firms engaging in merger and acquisition activities are considered to be "newsworthy", and therefore may be more likely to attract media attention (Jensen 1979; Miller 2006). The media are also suggested to be more likely to cover news and events that are of a negative nature (Holstein 2008; Solomon and Soltes 2011). For example, the media may be more likely to cover firms that disclose news which could indicate a possibility of debt defaults, or firms with bad financial performance.

Prior research documents various management incentives to overstate earnings (Healy et al. 1999; McNichols, 2000). Among these are pressure to hide financial distress (Argenti, 1976; Summers et al. 1998; and Rosner, 2003), avoidance of debt covenant violations (Watts et al. 1986; Dechow et al. 2000; and Beatty et al. 2003) as well as demand for low-cost external financing (Dechow et al., 1996). I elaborate the measurement details for the control variables as follows.

I control for firm size using the natural log of the firms' total assets (*LTA*). Ettredge et al. (2010) argue that larger firms have been associated with higher propensity to restate due to the greater capital market pressures they face compared to smaller firms. Furthermore, it is often argued that larger firms are subject to closer scrutiny by analysts as well as those institutional investors. Therefore, I expect that larger firms have a higher likelihood of restatements than smaller firms.

Motivated by the debt covenant hypothesis (Watts et al. 1986), the large literature studying the association between debt defaults and earnings management suggest that firms that are closer to violating debt covenants are more likely to adopt aggressive accounting practices in order to avoid the costs associated with debt defaults (Richardson et al. 2003;

Burns et al. 2006). Furthermore, Ettredge et al. (2010) argue that managers of financially distressed firms are more likely to manipulate financial results because they have fewer resources to be devoted to high quality financial reporting in such circumstances. Therefore, I include leverage (*LEV*) as a proxy for closeness to debt covenant violations as well as costs of financial distress. Leverage is measured as the ratio of the sum of short-term debt and long-term debt to total assets. I expect this coefficient to be positive.

Povel et al. (2003) document that high-growth firms facing reduced growth opportunities are more likely to engage in aggressive accounting practices. Higher growth firms are suggested to have a higher tendency to misreport not only because they outgrow their governance and control system, but also because they have fewer resources to be allocated to financial reporting due to the expanding customer bases and product lines (Ettredge et al. 2010). Therefore, I use market-to-book ratio (*MTB*) to proxy for a firm's growth opportunities.

Prior literature suggests that firms with a higher need to attract external financing are more likely to be engaged in earnings manipulation in order to portray an optimistic picture of the future, and therefore are more likely to misreport in order to reduce the cost of external financing (Dechow et al. 1996; Beneish 1999; Abbott et al. 2004; Erickson et al. 2006). Following Blankley et al. (2012), I proxy for the demand for external financing using financing (*FIN*) and free cash flow (*FCF*). Financing is defined as the sum of additional cash raised from issuance of long-term debt, common stock and preferred stock deflated by total assets. It is intended to capture the extent to which a firm is actively raising cash in the capital markets. FCF is a measurement of free cash flow, and is defined as the sum of cash from operations less average capital expenditures scaled by lagged current

assets. It measures a company's ability to cover its capital expenditures through funds generated from operations.

Following prior literature, I also control for firm performance using Return on Assets (*ROA*) as well as multiyear losses (*MLOSS*). *MLOSS* is an indicator variable which equals one if a firm reports a loss in more than one consecutive year (i.e., in at least the current year and the year before) and zero otherwise. Scholz (2008) suggests that more profitable firms have fewer incentives to manipulate earnings, therefore are less likely to restate. I expect *ROA* to be negatively related to the likelihood of restatements, and *MLOSS* to be positively related.

Merger and acquisition activity has been documented to be associated with restatements (Kinner et al. 2004; Stanley and DeZoort 2007). So I include an *M&A* indicator variable which is set to one if a company is engaged in a merger or acquisition that contributes to income in the prior year. I expect *M&A* to be positively related to the likelihood of restatements.

I also include *EPSGrow* to proxy for the pressure to continue the trend in reporting growing earnings. Myers et al. (2002) and Barth et al. (1999) find strong evidence that managers attempt to increase earnings when faced with the threat of breaking strings of consistent earnings increases. *EPSGrow* is an indicator variable that equals to one if the firm has reported consecutive increases in EPS for the last three years and zero otherwise.

A restatement is strongly suggestive of a failure by an auditor to enforce the correct application of GAAP at the time the financial statements were originally issued. Compared to non-Big 4 auditors, Big 4 auditors have greater expertise and greater objectivity and are expected to be more likely to enforce the correct implementation of GAAP as well as a

better watchdog for firms' misreporting behavior. As a consequence, Big 4 auditors are expected to be associated with a lower likelihood of subsequent restatements (Schmidt and Wilkins 2012). Therefore, I include an indicator variable (*BIG4*) for the firms whose financial statements are audited by Big 4 auditors when they were originally issued.

All the control variables are measured as of the beginning of the first restated year, since they are intended to control for the propensity of companies to materially misstate their financial statements. I winsorize all the continuous variables at the 1% and 99% levels to remove the effects of outliers in my model estimation.

Chapter 4: Empirical Results

4.1 Descriptive Statistics

Table 2, Panel A presents the means, medians, and standard deviations for the restatement firms and the matched control firms. The table also shows significant tests for differences between means of the independent variables for the restatement firms versus the control firms. Results of two-tailed tests are reported.

As expected, the matched control firms receive more media coverage in the one-year pre-restatement period than the restating firms. Specifically, the average number of words of articles (after taking the log transformation) covering a firm in the one-year sample period is 10.041 for the control firms, which is higher than that for the restatement firms (9.774), and the difference is statistically significant ($p < 0.05$). The matched control firms seem to be covered by articles with more negative tone than the restating firms, and the difference is significant ($p < 0.05$), whereas the measure of positive tone doesn't appear to be significantly different between the two groups. Furthermore, the matched control firms are followed by a larger number of financial analysts (1.748 versus 1.642 after taking the log transformation), although the difference is not statistically significant at the conventional levels.

With respect to the control variables, the control firms tend to be smaller in size than the sample firms despite being matched by size, and the difference is statistically significant ($p < 0.05$). On average, restating firms show a greater need for external financing than the matched control sample in the pre-restatement period (*FIN*) and the difference is significant at the 0.10 level. The matching process seems to be successful

since most of the control variables are not significantly different between the restating firms and the matched control firms.

Table 2, Panel B shows the correlation matrix for the test and control variables in the restatement model. As expected, the proxy for the level of media coverage (*MEDIACOVERAGE*) is significantly correlated with firm size (*LTA*) (Pearson $\rho = 0.537$), consistent with the evidence provided by Solomon and Soltes (2011) that firm size is one of the primary factors that determine the amount of coverage a firm receives. The level of analyst following of the firm (*ANALYST*) is highly correlated with both the firm size (*LTA*) (Pearson $\rho = 0.648$) and the media coverage proxy (*MEDIACOVERAGE*) (Pearson $\rho = 0.554$). This is predictable since larger firms tend to have more media coverage as well as more analyst following. The other three largest correlations are between *LTA* and *ROA* (Pearson $\rho = 0.442$), *LTA* and *BIG4* (Pearson $\rho = 0.431$), and multiyear losses (*MLOSS*) and demand for external financing (*FCF*) (Pearson $\rho = 0.488$), which, together with the strong correlations between the *MEDIACOVERAGE*, *ANALYST* and *LTA*, raise concerns about multicollinearity among the independent variables. I calculate the variance inflation factor (VIF) values for all the test and control variables, and find all the VIF values are less than 2.6, which is well below the threshould value of 10.0 suggested by Kennedy (1992). Thus, the analysis of VIF suggests multicollinearity does not appear to be a problem.

4.2 Conditional Logistic Regression Results

4.2.1 Media Coverage and Likelihood of Subsequent Restatements

Table 3 summarizes the conditional logistic regression results for **H₁**. The dependent variable is a dichotomous variable which equals to one if a firm restates its financial statements during the sample period, and zero otherwise. The conditional logistic

regression model is highly significant ($p < 0.05$) and returns a pseudo-R^2 of 5%. Since I match a sample firm with its match by industry just prior to the beginning of the restating period, the inclusion of industry and year dummies in the regression model is not necessary. I further control for firm size in the regression model due to the significant difference in size between the sample firms and the matched control firms.

The coefficient of *MEDIACOVERAGE* is -0.149, and is significant at the 0.05 level, which leads to the rejection of the null hypothesis of **H₁**. The statistical significance of the media coverage variable suggests that the level of media coverage for the one-year pre-restatement period is significantly, negatively related to the likelihood of restatement in the following period.[25] In terms of economic significance, a one-standard-deviation increase in *MEDIACOVERAGE* during the one-year pre-restatement period is expected to result in a 0.259 decrease in the odds of a firm misstating its annual statements in the subsequent period.[26] The results support the argument that media coverage of a firm in the pre-restatement period indeed reduces the likelihood of the firm's future misstatement by providing an additional layer of scrutiny. Knowing it is under the scrutiny of the media, a firm is likely to be deterred from misreporting financial numbers.

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[25] I also estimate the conditional logistic regression model by adopting the Huber-White robust standard errors (SEs), and find that the SEs and significance levels of the independent variables show slight to minimal changes.

[26] The dependent variable in the conditional logistic regression is the log of an odds ratio (*OR*) or log odds, $\text{logit}(p) = \log(p/(1 - p))$, where p is the probability of a restatement. Given the estimated coefficient (–0.149) of *MEDIACOVERAGE* in Table 3, the effect of media coverage on restatement can be expressed as $\log(p/(1 - p)) = -0.149*MEDIACOVERAGE$ + Controls. For a one-standard-deviation (2.010) increase in *MEDIACOVERAGE* while holding all the control variables constant, we can expect a decrease in the dependent variable, $\log(p/(1 - p))$, by 0.299. The change in the log odds can be translated to the change in *OR* simply by exponentiation, i.e., $\Delta OR = \exp(-0.299) = 0.741$. So, a one-standard-deviation increase in *MEDIACOVERAGE* is expected to result in a 0.259 (= $1 - 0.741$) decrease in the odds of a firm restating its annual statements.

Alternatively, I use the number of articles in the one-year pre-restatement period as a proxy for the level of media coverage received by a firm. This measure is highly correlated with the number of words (Pearson $\rho = 0.93$), and I find very similar results using the number of articles as the proxy. [27]

Results for the control variables are in general consistent with expectations and prior research (Ettredge et al. 2010; Blankley et al. 2012). For example, firm size (*LTA*) has a coefficient of 2.895 and is statistically significant ($p < 0.01$), indicating that larger firms are more likely to restate their financial statements as compared to smaller firms possibly due to higher capital market pressure and closer scrutiny. The proxy for external financing, *FIN*, is positively related to the likelihood of restatements, at the significance level of 0.05. This provides evidence that firms with greater external financing needs are more likely to misstate to portray an optimistic picture of their future. The remaining variables are not significant at the conventional levels.

4.2.2 Tone of Media Coverage

Table 4, Columns (1) and (2) present the conditional logistic results for **H2a**. I run the regression model with and without the level of media coverage to examine whether positive tone of media content affects the likelihood of misstatements by itself as well as whether it provides any incremental monitoring beyond that of the level of media coverage.

Table 4, Columns (1) and (2) examine whether positive tone affects the tendency of firms to misreport. The proxy for positive tone is not significant at the conventional levels, and therefore I fail to reject the null hypothesis of **H2a**. Columns (3) and (4) show the results

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[27] Following prior literature, I also use the daily (monthly) number of words and the daily (monthly) number of articles instead of taking the log transformation to proxy for the level of media coverage of a firm, and obtain similar results.

for **H2b**. Negative tone of media content is negatively associated with the likelihood of misstatements, and this association is significant at the 0.05 level, which leads to the rejection of the null hypothesis of **H2b**. The significance level only slightly decreases when the level of media coverage is included in the model. The results suggest that firms with more negative media coverage in a period will have a lower likelihood of restatements in the subsequent period, providing support for the argument that negative media coverage may work as a triggering mechanism by greatly increasing the economic and reputation costs to the firms, and therefore putting pressure on the firms to take remedial actions to avoid further negative coverage. The evidence above is consistent with prior finding in the literature that the negativity of press coverage has shown to be a disciplining device for corporate decisions. For example, Kuhnen and Niessen (2012) find that the negativity of media coverage of CEO pay pressures firms to reduce option grants to CEOs, and the reduction in option pay tends to be more pronounced for firms that have stronger reputation concerns. Joe et al. (2005) provide evidence that Business Week's exposure of board ineffectiveness forces the targeted agents to take corrective actions.

In Column (5), I run the regression by including all the three variables related to media coverage, i.e., the level of media coverage, positive tone, and negative tone. The results are similar to those in Panel A and Panel B. Both the level of media coverage and the proxy for negative tone are significantly negatively associated with the probability of subsequent misstatements, whereas the proxy for positive tone is not significant. The consistent significance of the media coverage variable in Columns (2), (4) and (5) is not surprising since the tone measure does not take into account the intensity and breadth of coverage, the unique advantages of the media relative to other external monitors, and important

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channels through which the media discourage firms' aggressive reporting (e.g., by greatly increasing the cost to these firms). Results for the control variables are in general consistent with expectations and results in Model 1.

In sum, the results in Table 4 provide evidence that negative tone of the media coverage helps deter firms' aggressive reporting practices, by greatly increasing the expected reputation costs on the right hand side of Model (2), in addition to the level of media coverage firms receive, whereas positive tone doesn't play a significant deterrence role.

4.2.3 Analyst Following

Table 5 reports the results of the regression analysis that examines whether financial analysts contribute to deterring firms' misreporting behavior by themselves, as well as whether they serve as an additional layer of deterrence on top of the media.

Column (1) shows the results considering analysts as the only deterrence mechanism in deterring firms' misreporting behavior. The coefficient of the proxy for analyst following (*ANALYST*) is significantly negative at the 0.05 level, which leads to the rejection of null hypothesis of **H₃ₐ**. The empirical results suggest that financial analysts indeed work as a deterrence mechanism in discouraging firms from misreporting their earnings.

However, when considering the media's role as a deterrence mechanism in the presence of financial analysts, as shown in column (2), the coefficient of *ANALYST* becomes insignificant, although the sign remains negative, whereas the coefficient of *MEDIACOVERAGE* is still significantly negative at the 0.05 level. Furthermore, the consideration of the deterrence role of the media, in addition to that of analysts, greatly increases the pseudo-R^2 (i.e., from 5.5% to 8.2%). The results provide evidence that the media appear to play a more important deterrence role than analysts, which is consistent

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with the argument in Miller (2006) that the business press undertake independent analyses on firms' fraudulent behavior even in the absence of analysts' support. The insignificance of the coefficient of *ANALYST* may be explained by the information flow between the media and financial analysts. There is anecdotal evidence that analysts consider the press as an important ongoing source of information, and in addition, analysts are frequently contacted by the press to provide information about firms that the analysts follow or do not follow (Miller 2006).

Column (3) presents the empirical results for examining whether the deterrence role of the media and that of financial analysts are overlapping or differing. The interaction term is significantly negative at the 0.10 level, resulting in the rejection of the null hypothesis of **H3b**. The significantly negative coefficient of the interaction term, *ANALYST*MEDIACOVERAGE*, and that of *MEDIACOVERAGE* provide evidence that the deterrence effect of the media in firms' misreporting behavior becomes greater for firms followed by more financial analysts. This finding suggests that the media and financial analysts seem to work more effectively when both are present, and that, although the deterrence roles of these two in firms' misreporting behavior are overlapping to some degree, neither is the absolute superset of the other. The above evidence responds to Armstrong et al. (2010)'s call for more research into the relations among alternative monitoring mechanisms in affecting firms' information environment. This study provides the earliest evidence regarding the relation between the media and financial analysts in deterring firms' misreporting behavior.

Chapter 5: Conclusion

This paper contributes to the growing literature on the economic effects of the media by examining the deterrence role of media coverage in firms' misreporting behavior. Using a sample of firms that filed income-decreasing restatements of their annual financial statements, and a matched sample of non-restating firms, I find that the level of media coverage in the one-year pre-restatement period is significantly negatively associated with the likelihood of restatements in the following period, suggesting the media acts as a potential deterrence mechanism for firms' aggressive reporting behavior. Unlike previous studies that examine the role of the media in detecting high profile frauds (Miller 2006; Dyck et al. 2010), this study focuses on the pre-misstatement period, and provides evidence that the media work as a preventive mechanism that discourages firms from engaging in financial misreporting.

In order to better understand the deterrence role of the media, this paper further examines whether the tone of media content contributes to the deterrence of firms' aggressive reporting practices beyond the level of media coverage, and provides evidence that the linguistic content of media articles, especially negative tone, affects firms' incentives to misreport in addition to the level of media coverage. This may due to the negative tone's role as a triggering mechanism by pressuring the firm to take remedial actions to avoid further negative coverage.

Finally, I examine the deterrence role of the media in the presence of another mechanism, financial analysts, and find that that the media play a more important role in deterring firms' misreporting behavior than financial analysts, although the roles of these two mechanisms are overlapping to some degree. This paper is the first study that

investigates how the media and financial analysts work cooperatively in disciplining firms' financial reporting behavior. This finding further strengthens the main finding of the deterrence role of the media.

This study offers a couple of avenues for potential future research. First, the empirical results in this paper provide only preliminary evidence on the interaction between the media and financial analysts in affecting firms' incentives to misreport. Separation of analyst-originated information from media-originated information would enable us to better understand the interactive role between these two groups. Second, I will consider the factor of geographic proximity to distinguish local media coverage from national media coverage. Geographic proximity can be quantified by computing the distance between the media and the firm covered. This study may shed light on the differential monitoring role of the local and national media.

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Appendix: Variable Definitions

This appendix presents definitions of the variables used in the paper.

MEDIACOVERAGE = log (1 + number of words), where the number of words is computed based on articles covering a firm in the one-year pre-restatement period;

FinNeg = negative tone of media coverage computed as the ratio of Fin-Neg word list count to total number of words appearing in an article, averaged over all the articles covering a firm;

FinPos = positive tone of media coverage computed as the ratio of Fin-Pos word list count to total number of words appearing in an article, averaged over all the articles covering a firm;

ANALYST = log (1 + number of analysts), where the number of analysts following a firm is counted for the period from 12 months before the beginning of the misstatement period to 1 month after that date;

LTA = log (end of year total assets);

LEV = sum of short-term debt (Data #34) and long-term debt divided by total assets;

MTB = market-to-book ratio;

FIN = financing raised, defined as the sum of additional cash raised from issuance of long-term debt, common stock, and preferred stock deflated by total assets;

FCF = 1 if the sum of cash from operations less average of previous three years capital expenditures scaled by lagged current assets is less than -0.5, 0 otherwise;

ROA = Earnings before Interests and Taxes/lagged total assets;

MLOSS = 1 if a firm reports a loss in more than one consecutive year, 0 otherwise;

M&A = 1 if a firm had an acquisition that contributed to net income in the prior year, 0 otherwise;

EPSGrow = 1 if a firm had positive earnings change for three consecutive years, = 0 otherwise;

BIG4 = 1 if a firm is audited by the Big 4 audit firms, 0 otherwise.

Table 1: Sample Description

Panel A: Restatement Sample Selection	
Number of restatements found per initial restatement search	9400
Less: None-earliest restatements from firms with multiple ones	(3043)
Less: Quarterly restatements	(1955)
Less: Non-negative cumulative change in net income	(3206)[28]
Less: Trusts and funds	(48)
Less: Banks and other holding companies	(5)
Less: Foreign companies	(160)
Less: Utilities (SICs 4900–4999) and financial industries (SICs 6000–6699)	(169)
Less: Restatements with missing CIK codes in Compustat[29]	(33)
Less: Restatements with missing data for at least one control variable	(263)
Less: Restatements without a suitable match	(213)
Final sample of restatement firms	305[30]

Panel B: Matches by SIC Code	
Four-digit SIC code	138
Three-digit SIC code	52
Two-digit SIC code	115
Total	305

Panel C: Restatement Sample Observations by Two-Digit SIC Code		
SIC Code	Industry Description	**Observations**
73xx	Business Services	52
28xx	Chemicals And Allied Products	35
36xx	Electronic And Other Electrical Equipment And Components, Except Computer Equipment	30
38xx	Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches And Clocks	22
35xx	Industrial And Commercial Machinery And Computer Equipment	17
13xx	Oil And Gas Extraction	13
48xx	Communications	13
58xx	Eating And Drinking Places	11
50xx	Wholesale Trade-durable Goods	10
56xx	Apparel And Accessory Stores	10
20xx	Food And Kindred Products	8
37xx	Transportation Equipment	8
80xx	Health Services	8

[28] Among the 3206 firm observations with non-negative cumulative changes in net income, 696 have zero values for the cumulative change in net income, 1 has a positive value, and 2509 have missing values. Per a discussion with a research staff from Audit Analytics, most of these firm observations with missing values are those that are not traded on NYSE, NASDAQ, or AMEX.

[29] A missing CIK code may be due to delist, merger or acquisition.

87xx	Engineering, Accounting, Research, Management, And Related Services	8
59xx	Miscellaneous Retail	7
34xx	Fabricated Metal Products, Except Machinery And Transportation Equipment	6
	Industries with less than six firms	47
Total		305

Panel D: Restatement Sample Observations by Fiscal Year

Year	Observations
2000	28
2001	55
2002	55
2003	44
2004	33
2005	24
2006	19
2007	19
2008	8
2009	9
2010	10
2011	1
Total	305

Table 2: Descriptive Statistics

Panel A: Univariate Statistics and Tests of Differences

Variable	Restatement sample (n = 305[31])			Control sample (n = 305)			Paired t-test
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	t-stat (p-val)
MEDIACOVERAGE	9.774	10.015	2.131	10.041	10.351	1.875	-2.067 (0.040)
FinPos	0.006	0.006	0.003	0.006	0.006	0.003	0.688 (0.492)
FinNeg	0.009	0.009	0.004	0.010	0.009	0.005	-2.194 (0.029)
ANALYST	1.642	1.792	1.091	1.748	1.946	1.124	-1.519 (0.130)
LTA	5.341	5.499	2.013	5.326	5.502	2.011	2.321 (0.021)
LEV	0.235	0.179	0.286	0.221	0.157	0.257	0.736 (0.462)
MTB	3.910	1.922	10.445	3.737	1.958	8.790	0.230 (0.819)
FIN	0.215	0.071	0.379	0.166	0.034	0.329	1.909 (0.057)
FCF	0.393	0.000	0.489	0.367	0.000	0.483	0.755 (0.451)
ROA	-0.006	0.061	0.313	-0.013	0.051	0.288	0.377 (0.707)
MLOSS	0.269	0.000	0.444	0.285	0.000	0.452	-0.548 (0.584)
M&A	0.141	0.000	0.349	0.098	0.000	0.298	1.642 (0.102)
EPSGROW	0.118	0.000	0.323	0.118	0.000	0.323	0.000 (1.000)
BIG4	0.666	1.000	0.473	0.702	1.000	0.458	-1.095 (0.274)

Variables are defined as follows:
MEDIACOVERAGE = log (1 + number of words), where the number of words is computed based on articles covering a firm in the one-year pre-restatement period; *FinPos* = positive tone of media coverage computed as the ratio of Fin-Pos word list count to total number of words appearing in an article, averaged over all the articles covering a firm; *FinNeg* = negative tone of media coverage computed as the ratio of Fin-Neg word list count to total number of words appearing in an article, averaged over all the articles covering a firm; *ANALYST* = log (1 + number of analysts) following a firm is counted for the period from 12 months before the beginning of the misstatement period to 1 month after that date; *LTA* = log (end of year total assets); *LEV* = sum of short-term debt and long-term debt divided by total assets; *MTB* = market-to-book ratio; *FIN* = financing raised, defined as the sum of additional cash raised from issuance of long-term debt, common stock, and preferred stock deflated by total assets; *FCF* = 1 if the sum of cash from operations less average of previous three years capital expenditures scaled by lagged current assets is less than -0.5, 0 otherwise; *ROA* = Earnings before Interests and Taxes/lagged total assets; *MLOSS* = 1 if a firm reports a loss in more than one consecutive year, 0 otherwise; *M&A* = 1 if a firm had an acquisition that contributed to net income in the prior year, 0 otherwise; *EPSGrow* = 1 if a firm had positive earnings change for three consecutive years, = 0 otherwise; and *BIG4* = 1 if a firm is audited by the Big 4 audit firms, 0 otherwise.

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[31] Note that the number of restatement-control pairs n = 305 for all the variables expect for *ANALYST*. Due to missing analyst data in both restatement and control firms, n = 246 for *ANALYST*.

Panel B: Correlation Table (Pearson below Diagonal, Spearman above)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
MEDIACOVERAGE (1)		**0.3644**	**0.2203**	**0.6405**	**0.5758**	-0.0243	**0.2161**	0.0591	**-0.1307**	0.0757	**-0.0981**	0.044	0.0658	**0.2977**
FinPos (2)	**0.2581**		0.1072	**0.2272**	0.0884	**-0.1888**	**0.2952**	-0.0385	0.0395	**-0.1066**	**0.1040**	-0.0708	0.0326	0.0832
FinNeg (3)	**0.1870**	0.0751		**0.1160**	**0.2251**	0.0335	**-0.1701**	**-0.1150**	0.0217	**-0.1501**	**0.0915**	-0.0415	-0.0703	**0.1200**
ANALYST (4)	**0.5541**	**0.1857**	0.059		**0.6413**	-0.0429	**0.2836**	0.0749	**-0.2156**	**0.2691**	**-0.2229**	**0.1099**	0.0261	**0.2882**
LTA (5)	**0.5374**	0.0949	**0.2016**	**0.6481**		**0.2548**	0.0235	0.0831	**-0.3348**	**0.3380**	**-0.3381**	0.0519	0.0046	**0.3378**
LEV (6)	**-0.1337**	**-0.1180**	**0.0823**	-0.0639	-0.004		**-0.2803**	**0.3415**	**0.1011**	-0.006	-0.0127	-0.0323	-0.0452	-0.0191
MTB (7)	0.0046	**0.1255**	-0.0458	0.0639	**-0.0926**	**-0.0937**		**0.1099**	**-0.1111**	**0.2575**	-0.055	-0.0128	**0.1268**	0.0469
FIN (8)	-0.0273	0.006	**-0.0918**	**-0.0905**	**-0.1957**	**0.2838**	**0.1682**		**0.0965**	-0.0021	0.0657	**0.0987**	0.0276	-0.0353
FCF (9)	**-0.1204**	0.0616	0.003	**-0.2076**	**-0.3595**	**0.1589**	**0.1214**	**0.1923**		**-0.5716**	**0.4772**	0.0041	-0.043	**-0.1115**
ROA (10)	0.0509	**-0.1372**	0.0026	**0.2250**	**0.4423**	**-0.2007**	**-0.1504**	**-0.4346**	**-0.5062**		**-0.6455**	-0.0212	**0.1720**	**0.1023**
MLOSS (11)	**-0.1045**	**0.1075**	**0.1078**	**-0.2142**	**-0.3457**	**0.1370**	**0.1439**	**0.2169**	**0.4884**	**-0.5601**		0.005	-0.0414	-0.0732
M&A (12)	0.0733	-0.0341	-0.0415	**0.1087**	**0.1072**	-0.0391	-0.01	0.001	-0.0184	0.0017	-0.0138		0.0016	0.0683
EPSGROW (13)	0.0644	0.0219	**-0.0917**	0.0128	0.0111	-0.0374	0.0153	0.0087	-0.0459	**0.0880**	-0.0448	0.0217		0.0307
BIG4 (14)	**0.2788**	**0.0939**	0.0599	**0.2933**	**0.4314**	**-0.0977**	-0.0426	**-0.1277**	**-0.1350**	**0.1704**	**-0.1144**	0.0771	0.0195	

Bold indicates significance at $p < 0.05$.

Variables are defined as follows:

MEDIACOVERAGE = log (1 + number of words), where the number of words is computed based on articles covering a firm in the one-year pre-restatement period; *FinPos* = positive tone of media coverage computed as the ratio of Fin-Pos word list count to total number of words appearing in an article, averaged over all the articles covering a firm; *FinNeg* = negative tone of media coverage computed as the ratio of Fin-Neg word list count to total number of words appearing in an article, averaged over all the articles covering a firm; *ANALYST* = log (1 + number of analysts), where the number of analysts following a firm is counted for the period from 12 months before the beginning of the misstatement period to 1 month after that date; *LTA* = log (end of year total assets); *LEV* = sum of short-term debt and long-term debt divided by total assets; *MTB* = market-to-book ratio; *FIN* = financing raised, defined as the sum of additional cash raised from issuance of long-term debt, common stock, and preferred stock deflated by total assets; *FCF* = 1 if the sum of cash from operations less average of previous three years capital expenditures scaled by lagged current assets is less than -0.5, 0 otherwise; *ROA* = Earnings before Interests and Taxes/lagged total assets; *MLOSS* = 1 if a firm reports a loss in more than one consecutive year, 0 otherwise; *M&A* = 1 if a firm had an acquisition that contributed to net income in the prior year, 0 otherwise; *EPSGrow* = 1 if a firm had positive earnings change for three consecutive years, = 0 otherwise; and *BIG4* = 1 if a firm is audited by the Big 4 audit firms, 0 otherwise.

Table 3: Media Coverage and Likelihood of Accounting Restatements

Regression Model (Model 1) for **H$_1$**:
$$RESTATE = \boldsymbol{\beta_1 MEDIACOVERAGE} + \beta_2 LTA + \beta_3 LEV + \beta_4 MTB + \beta_5 FIN + \beta_6 FCF$$
$$+ \beta_7 ROA + \beta_8 MLOSS + \beta_9 M\&A + \beta_{10} EPSGrow + \beta_{11} BIG4 + \varepsilon$$

Variable	Coeff (ΔOR[32])	z-stat (p-val)
MEDIACOVERAGE	-0.149** (-0.259)	-2.46 (0.014)
LTA	2.895***	2.62 (0.009)
LEV	0.073	0.19 (0.850)
MTB	0.002	0.27 (0.790)
FIN	0.576**	1.99 (0.047)
FCF	0.271	1.23 (0.219)
ROA	0.183	0.41 (0.679)
MLOSS	-0.188	-0.75 (0.455)
M&A	0.320	1.19 (0.233)
EPSGROW	0.042	0.16 (0.874)
BIG4	-0.180	-0.87 (0.386)
Number of match-pairs	305	
Model *p*-value[33]	0.032	
Pseudo R^2	0.050	

*, **, and *** represent significance at less than .10, .05, and .01 (two-tailed), respectively.

Variables are defined as follows:
MEDIACOVERAGE = log (1 + number of words), where the number of words is computed based on articles covering a firm in the one-year pre-restatement period; *LTA* = log (end of year total assets); *LEV* = sum of short-term debt and long-term debt divided by total assets; *MTB* = market-to-book ratio; *FIN* = financing raised, defined as the sum of additional cash raised from issuance of long-term debt, common stock, and preferred stock deflated by total assets; *FCF* = 1 if the sum of cash from operations less average of previous three years capital expenditures scaled by lagged current assets is less than -0.5, 0 otherwise; *ROA* = Earnings before Interests and Taxes/lagged total assets; *MLOSS* = 1 if a firm reports a loss in more than one consecutive year, 0 otherwise; *M&A* = 1 if a firm had an acquisition that contributed to net income in the prior year, 0 otherwise; *EPSGrow* = 1 if a firm had positive earnings change for three consecutive years, = 0 otherwise; and *BIG4* = 1 if a firm is audited by the Big 4 audit firms, 0 otherwise.

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[32] ΔOR denotes the change in the odds ratio (*OR*) of restatement which results from a one-standard-deviation increase in a test variable (*MEDIACOVERAGE* in this case) while holding all the control variables constant. A positive/negative ΔOR indicates an increase/decrease in *OR* as a result of the one-standard-deviation increase in the test variable. A brief explanation on how ΔOR is computed for *MEDIACOVERAGE* can be found in Footnote 26.

[33] Of the chi-squared test

Table 4: Tone of Media Coverage and Likelihood of Accounting Restatements

Regression Models (Models 2 and 3) for **H2a-2b**:

$$RESTATE = \boldsymbol{\beta_1 FinPos} + (\boldsymbol{\beta_2 FinNeg}) + \beta_3 MEDIACOVERAGE + \beta_4 LTA + \beta_5 LEV + \beta_6 MTB + \beta_7 FIN + \beta_8 FCF + \beta_9 ROA + \beta_{10} MLOSS + \beta_{11} M\&A + \beta_{12} EPSGrow + \beta_{13} BIG4 + \varepsilon$$

Variable	H2a				H2b					
	(1)		(2)		(3)		(4)		(5)	
	Coeff (ΔOR)	z-stat (p-val)	Coeff (ΔOR)	z-stat (p-val)	Coeff (ΔOR)	z-stat (p-val)	Coeff (ΔOR)	z-stat (p-val)	Coeff (ΔOR)	z-stat (p-val)
MEDIACOVERAGE			-0.156** (-0.269)	-2.52 (0.012)			-0.143** (-0.249)	-2.37 (0.018)	-0.150** (-0.260)	-2.44 (0.015)
FinPos	24.773 (0.070)	0.69 (0.493)	35.769 (0.103)	0.96 (0.339)					39.172 (0.114)	1.05 (0.294)
FinNeg					-41.592** (-0.178)	-1.97 (0.049)	-39.109* (-0.168)	-1.84 (0.066)	-40.438* (-0.174)	-1.89 (0.059)
LTA	2.340**	2.18 (0.029)	2.871***	2.59 (0.010)	2.525**	2.34 (0.019)	3.006***	2.70 (0.007)	2.983***	2.68 (0.007)
LEV	0.201	0.54 (0.589)	0.114	0.29 (0.771)	0.268	0.72 (0.472)	0.171	0.44 (0.661)	0.218	0.55 (0.582)
MTB	0.002	0.27 (0.790)	0.001	0.1 (0.918)	0.002	0.25 (0.802)	0.001	0.16 (0.876)	0.000	-0.02 (0.988)
FIN	0.505*	1.80 (0.073)	0.585**	2.02 (0.043)	0.420	1.49 (0.135)	0.494*	1.71 (0.088)	0.501*	1.74 (0.082)
FCF	0.207	0.94 (0.349)	0.243	1.09 (0.275)	0.227	1.02 (0.306)	0.266	1.19 (0.235)	0.234	1.03 (0.301)
ROA	0.339	0.78 (0.435)	0.164	0.37 (0.712)	0.275	0.63 (0.530)	0.119	0.27 (0.790)	0.093	0.21 (0.836)
MLOSS	-0.168	-0.67 (0.502)	-0.208	-0.82 (0.412)	-0.083	-0.33 (0.744)	-0.119	-0.46 (0.642)	-0.140	-0.54 (0.587)
M&A	0.378	1.42 (0.156)	0.331	1.23 (0.217)	0.318	1.18 (0.238)	0.276	1.02 (0.309)	0.287	1.06 (0.291)
EPSGROW	-0.048	-0.19 (0.852)	0.048	0.18 (0.857)	-0.076	-0.29 (0.769)	0.013	0.05 (0.961)	0.018	0.07 (0.946)
BIG4	-0.168	-0.81 (0.416)	-0.184	-0.88 (0.377)	-0.191	-0.92 (0.357)	-0.201	-0.96 (0.335)	-0.205	-0.98 (0.327)
Number of match-pairs	305		305		305		305		305	
Model p-value	0.1948		0.0370		0.0754		0.0168		0.0185	
Pseudo-R^2	0.0349		0.0522		0.0432		0.0582		0.0608	

*, **, and *** represent significance at less than .10, .05, and .01 (two-tailed), respectively.

Table 5: Analyst Following and Likelihood of Accounting Restatements

Regression Model (Model 5) for **H₃**:

$$RESTATE = \boldsymbol{\beta_1 ANALYST} + (\beta_2 MEDIACOVERAGE + \boldsymbol{\beta_3 ANALYST * MEDIACOVERAGE}) + \beta_4 LTA + \beta_5 LEV + \beta_6 MTB + \beta_7 FIN + \beta_8 FCF + \beta_9 ROA$$
$$+ \beta_{10} MLOSS + \beta_{11} M\&A + \beta_{12} EPSGrow + \beta_{13} BIG4 + \varepsilon$$

Variable	H₃ₐ (1) Coeff (ΔOR)	(1) z-stat (p-val)	H₃ᵦ (2) Coeff (ΔOR)	(2) z-stat (p-val)	(3)[34] Coeff (ΔOR)	(3) z-stat (p-val)
ANALYST	-0.260** (-0.250)	-2.05 (0.040)	-0.143 (-0.146)	-1.03 (0.302)	-0.110 (-0.104)	-0.69 (0.488)
MEDIACOVERAGE			-0.171** (-0.291)	-2.13 (0.033)	-0.452** (-0.363)	-2.41 (0.016)
ANALYST*MEDIACOVERAGE					-0.265* (-0.241)	-1.87 (0.062)
LTA	2.423*	1.92 (0.055)	2.770**	2.14 (0.032)	2.824**	2.19 (0.029)
LEV	0.439	0.97 (0.332)	0.420	0.89 (0.375)	0.407	0.86 (0.389)
MTB	0.018	1.46 (0.143)	0.013	1.08 (0.282)	0.013	1.03 (0.303)
FIN	0.766**	2.19 (0.029)	0.771**	2.16 (0.031)	0.817**	2.28 (0.023)
FCF	0.117	0.47 (0.641)	0.143	0.56 (0.572)	0.149	0.58 (0.559)
ROA	0.571	1.12 (0.264)	0.395	0.77 (0.442)	0.510	0.98 (0.328)
MLOSS	-0.139	-0.49 (0.626)	-0.172	-0.6 (0.549)	-0.134	-0.46 (0.643)
M&A	0.432	1.49 (0.137)	0.369	1.26 (0.206)	0.357	1.21 (0.228)
EPSGROW	0.026	0.09 (0.927)	0.052	0.26 (0.791)	0.052	0.18 (0.860)
BIG4	-0.156	-0.67 (0.504)	-0.215	-0.79 (0.428)	-0.215	-0.90 (0.367)
Number of match-pairs	246		246		246	
Model p-value	0.0658		0.0188		0.0092	
Pseudo-R^2	0.0550		0.0711		0.0820	

*, **, and *** represent significance at less than .10, .05, and .01 (two-tailed), respectively.

Variables are defined as follows:
MEDIACOVERAGE = log (1 + number of words), where the number of words is computed based on articles covering a firm in the one-year pre-restatement period; *ANALYST* = log (1 + number of analysts), where the number of analysts following a firm is counted for the period from 12 months before the beginning of the misstatement period to 1 month after that date; *LTA* = log (end of year total assets); *LEV* = sum of short-term debt and long-term debt divided by total assets; *MTB* = market-to-book ratio; *FIN* = financing raised, defined as the sum of additional cash raised from issuance of long-term debt, common stock, and preferred stock deflated by total assets; *FCF* = 1 if the sum of cash from operations less average of previous three years capital expenditures scaled by lagged current assets is less than -0.5, 0 otherwise; *ROA* = Earnings before Interests and Taxes/lagged total assets; *MLOSS* = 1 if a firm reports a loss in more than one consecutive year, 0 otherwise; *M&A* = 1 if a firm had an acquisition that contributed to net income in the prior year, 0 otherwise; *EPSGrow* = 1 if a firm had positive earnings change for three consecutive years, = 0 otherwise; and *BIG4* = 1 if a firm is audited by the Big 4 audit firms, 0 otherwise.

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[34] Regression results presented in (3) are obtained after centering and scaling the two independent variables: *MEDIACOVERAGE*, and *ANALYST*. Centering refers to subtracting the mean (of the respective variable), and scaling refers to dividing by the standard deviation.