Economics

年报前的媒体基调和盈余管理：来自中国的证据

--Manuscript Draft--

Manuscript Number:	ECONJOURNAL-D-24-00079
Full Title:	年报前的媒体基调和盈余管理：来自中国的证据
Article Type:	Research Article
Keywords:	earnings management, media tone, stock price; management opportunism
Manuscript Region of Origin:	CHINA
Abstract:	本文探讨了异常媒体语气与年报前盈余管理之间的关系。通过使用中国的数据，我们发现年报前一年的盈余管理与年报发布前的媒体基调呈正相关。对于管理者在随后时期出售其所有权并拥有过去媒体经验的公司来说，这种正相关关系更为明显。外部治理往往会弱化盈余管理与盈余公布前媒体异常基调之间的关系。我们的研究结果表明，媒体倾斜是盈余管理的补充，是管理者在盈余公告中提高股价的途径。我们进一步发现，在盈利公告之前发布盈利预告和初步会计数据是管理者在年报发布前引导媒体基调的两个可能的公共渠道。我们的研究扩大了媒体在盈余管理中的作用，并提供了同时使用多种管理工具来抬高股价的证据。
Manuscript Classifications:	2: History of Economic Thought, Methodology, and Heterodox Approaches; 8: Public Economics; 15: Economic Development, Innovation, Technological Change, and Growth

Media tone and earnings management before annual report: Evidence from China

Huan Wang[1,2,*]

[1]School of Economics and Finance, Xi'an Jiaotong University, Xi'an, 710061, China

[2]Xi'an Yanta No.1 Middle School, Xi'an, 710000, China

*Corresponding Author, Email: abc123202307@163.com

Abstract：This paper examines the relationship between abnormal media tone and earnings management prior to annual report. By using data from China, we find that earnings management during the year before annual report is positively related to media tone before the release of annual report. The positive relation is more pronounced for firms whose managers sell their ownership in the subsequent period, and have past media experience. The external governance tends to weaken the relation between earnings management and abnormal media tone before earnings announcement. Our results indicate that media slant is a supplement to earnings management as the avenues for managers to boost stock price in earnings announcement. We further find that the release of earnings pre-announcement and preliminary accounting data before earnings announcement are two possible public channels that managers use to guide media tone before annual reports. Our research extents the media role in earnings management and provides the evidence of simultaneous use of several management tools in inflating stock prices.

Keywords: earnings management, media tone, stock price; management opportunism

JEL Classification: G14, M41

1. Introduction

Earnings report is one of the most important communications between companies and their shareholders as it conveys information about firm values to investors. Since management can use discretion in reporting corporate profits without violating generally accepted accounting principles, an extensive body of research provide evidences that firms use discretionary accounting choices to manage earnings disclosures around the time of certain types of corporate events (Teoh, Welch and Wong, 1998a, 1998b, Rangan, 1998; DuCharme et al., 2004). Such use of discretionary accounting choices to manage profits is often referred to "earnings management" (Schipper, 1989). A proliferation of research focuses on the determinants (e.g., Ducharme et al, 2004; Louis, 2004; Brown, 2001) and consequences (e.g., Healy and Wahlen, 1999) of earnings management in different markets. A consensus in the literature is that managers have incentives to manage earnings to affect stock prices and take advantage of the increased stock prices.

As an important information intermediary and external supervision mechanism, the impact of media on earnings management also receives widespread attention in academia (Dyck and Zingales, 2003; Chahine, Mansi and Mazboudi, 2015; Chen et al., 2018). As media news can affect investor sentiment and facilitate the formation of public opinion, a growth body of literature finds that media press is another way that managers may use to influence stock returns. For example, studies show the evidence of optimistic media tone during important corporate events (Cook, Kieschnick, and Ness, 2006; Ahern and Sosyura, 2014). Recent research also documents that managers have incentives to manage media news through various ways, such as the use of public relations firms (Solomon, 2012), advertisement (Reuter and Zitzewitz, 2006; Ellman and Germano, 2009), and media connections (Gurun, 2015).

Although managing reported earnings and media reports are two avenues for managers to temporally boost company share prices, there is no clear understanding of the association between these two forms of managerial opportunism. Would companies with earnings management also manage their media reports? Is media spin a substitute or supplement to earnings management in influencing stock prices? To answer the questions, we explore the relationships between earnings management and the abnormal media tone during the days before earnings announcement. We investigate whether the earnings management implied in the reported earnings could explain the abnormal media tone before its announcement. The premise assumption of our research design is that media does not spontaneously change its reporting slant in a short term. Therefore, the abnormal media tone must be driven by the public or private information of the covered company. This has ruled out the alternative hypothesis that companies manage their earnings to meet the expectations of media press.

By collecting and investigating the data from Chinese stock market during 2007-2016, we find that discretionary accruals are positively associated with the abnormal media slant of 30 days before earnings announcement. As we exclude the samples with other major activities, such as IPO, SEOs, and reduction of shareholders, during the time window of earnings announcement, the abnormal media tone before earnings announcement can only be caused by the events related to earnings reports. This result is robust after a battery of robustness and endogeneity checks, such as using alternative measures of earnings management and media tone, using various time windows, using instrumental variable, and controlling for several variables that could influence media report. Therefore, we can conclude that companies with positive earnings management are more likely to experience optimistic abnormal media tone before earnings announcement. From this perspective, media press seems to be a supplement to

earnings management for managers to boost stock price in a short run.

To further prove this point, we examine several potential influence factors that may affect the positive association between earnings management and abnormal media tone. We first test if the relation is more pronounced for firms whose managers sell their ownership in the subsequent period. Since the goals of both earnings management and media spin are to affect stock price, managers are more likely to use both avenues to inflate stock price when they plan to sell their own firm's shares in the subsequent period because they would benefit more from the stock prices. The result is consistent to our conjecture that insider sales enhances the positive relation between earnings management and abnormal media slant. We then test the effect of media experience of managers on the positive relationships. We find that the relation is more pronounced at firms where the managers have past media experience. This result is consistent with previous studies (Gurun, 2015) that media experience enables managers to be more easily and effectively in influencing media slant through their connections, expertise and resources. In this case, media report is more used as a supplement to earnings management. We thirdly explore the effect of external governance on the relations. We use institutional ownership, analyst coverage and reputation of audit firms as the proxies and find that external governance weakens the positive relation between earnings management and abnormal media tone before earnings announcement.

As our research design exclude the explanation that earnings management is a response to media slant, the only explanation for our findings is that managers may communicate with media before earnings announcement to spin media tone as a supplement to their earnings management. Are there any public channels through which companies may give advance notice of the performance and thus guide the opinion of financial media before earnings announcement? We investigate this effect in the further

analysis by exploring two channels: earnings pre-announcement and preliminary accounting data. We manually collect the samples with the release of earnings pre-announcement and preliminary accounting data during the period from the end of the previous fiscal year to the release of the annual report by excluding all the mandatory disclosure. The results show that the relation between discretionary accruals and abnormal media tone before earnings announcement partly works through the two channels and the mediating effect of preliminary accounting data is greater.

Our study contributes to the important role of media in earnings management. Literature on the relationship between media and earnings management mainly focus on media coverage and its monitoring role. Few studies examine the relationship between media slant and earnings management. In related research, Chahine, Mansi and Mazboudi (2015) explores media role in reflecting the extent of earnings management before equity offerings. They find that uninformative media news at the time of equity offerings is positively related to earnings management during the year. Chen et al. (2018) also find that media coverage effectively reduces earnings management. However, they only use media coverage rather than media tone in their research. Moreover, the hypothesis of Chahine Mansi and Mazboudi (2015) is that managers strategically respond to media requests prior to equity offering. This is reasonable for media coverage because although media coverage influences public attention, it does not necessarily inflate stock prices. Therefore, media coverage is not usually an avenue of managers to affect stock price. We believe that there are significant differences between media coverage and media tone in their role on earnings management. As the ultimate goals of media slant and earnings management are the same, managers may not only strategically respond to media expectations, but also actively manage media tone as a supplement to earnings management. We provide the

first formal piece of empirical evidence confirming that earnings management is positively related to positive slant of media tone prior to earnings reports. We show that the positive relationship is explained by the communications between companies and media, and influenced by managers' incentives and media experiences. Our results are consistent with that managers use media slant as a complement to achieve the goals of earnings management.

This paper also adds to the growing literature on management tools to inflate stock prices. Although the previous studies on media slant and earnings management respectively find that both ways can influence stock prices in the short run, there is no research on whether the two will be used together. This paper explores the relationships between earnings monument and abnormal media tone before earnings announcement. We find that managers may communicate with media prior to earnings announcement to use media slant as a supplement to promote the effect of earnings management. Although studies find that the nondiscretionary accruals may be a complementary or substitute to discretionary accruals, there is no evidence for the relationship between earnings management and other management tools except for accounting method. This paper may shed some lights on the research of ways that management may jointly use to boost stock prices in the short term.

Finally, this paper adds to the available evidence on media spin. Although the literature finds that companies have incentives to influence media tone, it is usually difficult to find the direct evidence of how companies communicate with media. By investigating the mechanisms of earnings management on abnormal media tone, this paper provides some evidence of the public communication channels that companies may use to release information and affect the opinion of media.

The rest of the paper is organized as follows. Section 2 reviews the related literature

and proposes the hypotheses. Section 3 discusses the data, variables, and the empirical model. Section 4 presents the empirical results. Section 5 provides further analysis. Section 6 shows the robustness and endogeneity checks. Section 7 concludes.

2. Background and Hypotheses

2.1 Earnings management and media news

Earnings management always refers to the opportunistic behavior of management to manage reported profits by the use of discretionary accruals (Schipper, 1989). Since discretionary accruals allow revenues, expenses, gains, and losses to be shifted from one year to another, they usually "reverse" in a future period and so the impact of earnings management is transient (Chung, Firth, and Kim, 2002). However, previous studies find extensive evidence that earnings management exists in various situations, such as IPO (Teoh Welch and Wong, 1998a; 1998b; Ducharme et al., 2004), M&A (DeAngelo, 1988; Louis, 2004), executive compensation seeking (Cheng and Warfield, 2005; Bergstresser and Philippon, 2006), debt contracts (Watts and Zimmerman, 1990, Beneish, 1997), and earnings expectations (Burgstahler and Dichev, 1997; Brown, 2001). Most of the studies have concluded that earnings management can temporally inflate stock prices and managers take advantage of the increased stock prices. For example, Stein (1989) constructs a model to show that managers are expected to manage earnings to increase short-term stock prices and such behavior increases with the sensitivity of managers' utility to current stock prices. Cheng and Warfield (2005) show that managers with high equity incentives are more likely to sell shares in the future and this motivates them to engage in earnings management to increase the value of the shares to be sold.

The determinants of earnings management are also the focus of the literature.

Previous studies find that institutional ownership, audit committee, board independence and analyst coverage would reduce earning management (Klein, 2002; Cornett, Marcus and Tehranian, 2008). Studies also show that stock incentives increase earning management (Cheng and Warfield, 2005; Bergstresser and Philippon, 2006; Jiang et al., 2010).

Media in the literature is often regarded as an information intermediary and external governance in financial market. Therefore, prior studies on the relationship between earnings management and media reports mainly focus on the role of media in restricting management opportunism and constraining earnings management (Miller, 2006; Dyck, Volchkova and Zingales, 2008). For example, Chen et al. (2018) find that media coverage can curb the activities of earnings management. Chahine, Mansi and Mazboudi (2015) divide media news into informative and non-informative news, and find that earnings management is negatively correlated to informative media news prior to their equity carve-outs (ECOs). Qi, Yang and Tian (2014) find that "suspect firms" (ST, RO and SEO firms) with more media exposure engage in more earnings management.

However, some resent studies find evidence that media does not always play an independent role in financial market. For example, some studies document that companies have incentives to manage their media report in some specific situations, including IPOs (Cook, Kieschnick, and Ness, 2006), and takeovers (Ahern and Sosyura, 2014). Studies also find that companies have the channels to influence media slant by hiring public relations firms (Solomon, 2012), paying more advertising fees (Reuter

and Zitzewitz, 2006; Ellman and Germano, 2009), disclosure of corporate social responsibility (Cahan et al., 2015), through local media presses (Gurun and Butler, 2012) and hiring board members with past media experience (Gurun, 2015).

Since media spin and earnings management are both ways managers use to inflate the company share price in the short term, a natural question followed is whether managers have incentives to spin media when they manage the reported earnings. Is media report a substitute or supplement to earnings management? This paper will answer this question by systematically exploring the relationship between earnings management and the abnormal media tone before earnings announcement.

2.2 Hypotheses

We find in the literature that earnings management and media reports are both ways that managers can use to obtain a higher short-term share price of companies. On the one hand, managers may use accruals to temporarily boost reported income and affect stock prices. On the other hand, companies may let the media press report more favorable news to influence the public image and form a good opinion about the covered firms in some circumstances (Ahern and Sosyura, 2014). Then what is the relationship between these two ways? Are they substitutes or complements in influencing short-run stock prices?

Bertomeu and Marinovic (2016) proposed a theory of hard and soft information where hard information can be verified and soft disclosures refer to forecasts, unaudited statements and press releases. They argue that misreporting is more likely when soft information is issued jointly with hard information. Based on this theory, if we categorize the reported earnings as hard information and press releases as soft

information, we would expect the media reports as a supplement to the strategic release of hard information (managed earnings). Our logic is as follows: Firstly, managers can use their accounting discretion to affect reported earnings and stock prices only if the markets have difficulty in detecting earnings management. Accruals are components of earnings that are not reflected in current cash flows and thus cannot be supported by hard facts. According to the efficient market assumption, managers cannot fool investors with earnings management. In addition, since information in earnings announcement is subjected to formal verification procedure or audit, earnings management could be easily discovered and proved to be "difficult to agree". In this case, stock prices may not react to earnings announcements in the direction of earnings surprises. Managers thus cannot take fully advantage of earnings management. They may need another way as a supplement to help earnings management and affect stock prices. As press releases are effective in framing an impression about the covered firm and in the form of a measure that "can easily be pushed in one direction or another" (Nelson and Ijiri, 1976), such kind of soft disclosures may be a good helper for earnings management. Secondly, Schipper (1989) argues that the absence of full communication, together with asymmetric information, makes it possible for managers to manage earnings. However, such poor information environment may also reduce the effect of earnings management as the credibility of earnings information is low. In this case, a second opinion from a third party seems to be important to investors. Since media press is always regarded as information intermediary and external supervision, investors may rely more on the opinion of media reports when the credibility of earnings is low.

Therefore, press release is a good way for managers with earnings management to better obtain their private interests. Finally, in the markets with more individual investors, such as Chinese stock market, media is a very important information source to the investors because they are lack of the ability to interpret the earnings information. The positive slant of media tone plus manipulated earnings may easily promote investor optimism in such market. We thus predict that companies with more earnings management are also more likely to feature aggressive media reports and a greater likelihood of overstatements. We propose the following hypothesis.

Hypothesis 1. Firms with more earnings management tend to have more abnormal positive media tone right before earnings announcement, ceteris paribus.

Prior literature provides a theoretical basis of insider trading and earnings management (Elitzur and Yaari, 1995; Trueman, 1990; Bar-Gill and Bebchuk, 2003). They document that when managers intend to sell some of their holdings in the short-term, incentives to misreport and the occurrence of misreporting (e.g., engaging in earnings management) increase. The empirical studies also support that managers adjust discretionary accruals to increase current-period earnings before they sell their own firms' shares in the subsequent period (Park and Park, 2004). The underlying assumption of such earnings management incentives is that earnings management can affect stock prices, which would benefit managers by generating higher proceeds than otherwise from subsequent insider sales. If stock prices increase more with earnings management and associated media spins, then managers would gain more from the value of stocks than without press releases. In this case, if managers sell their ownership

in the subsequent period of annual report, the use of discretionary accruals to manipulate reported earnings is more likely to be accompanied by the promoting of media press to affect the share price. Even if managers cannot sell their shares immediately after the earnings announcement, they are still motivated to inflate stock price in order to improve the terms under which their firms would be able to raise capital for new projects. In this case the benefits to managers from earnings management and media spin increase if managers may sell some of their shares in the intermediate trading period. We thus develop the following hypothesis.

Hypothesis 2. The relationship between earnings management and abnormal media tone before earnings announcement is more pronounced for firms whose managers sell their ownership in the subsequent period.

At the firm level, there is significant cross-sectional variation in the ability to affect media reports. Studies argue that companies can manage media to promote their corporate news stories through various ways, such as using investor relations firms (Solomon, 2012), advertising fees (Reuter and Zitzewitz, 2006), local media (Gurun and Butler, 2012), and disclosure of corporate social responsibility (Cahan et al., 2015). Gurun (2015) find that corporate board members with mass media experience can influence firms' media coverage and media slant. They find that articles written about the firms with a media professional on the board of directors include 21% fewer negative words. We exploit this assumption in our study to examine whether media experience influence the relationship between earnings management and abnormal media tone. As advertising or hiring investor relations firms are costly, media

experience can affect investor opinion without any further spending. Managers with media experience can use their personal connections to influence media coverage and slant in the media outlets they are directly connected with. For those indirectly connected media, managers with media experience may have resources which enable them to be more efficient in dealing with the media. Moreover, they may also be better at advertising their firms to work with effective public or investor relations firms. They may be more professional in forming public opinion and attract media attention for their firms. Therefore, media experience makes it easier and more effective for managers to affect media slant. We thus expect that managers with mass media experience are more likely to influence media slant while managing earnings. We then propose the following hypothesis.

Hypothesis 3. The relationship between earnings management and abnormal media tone before earnings announcement is more pronounced at firms where the managers have media experience.

Since the ultimate goal of earnings management and media spin is to temporally boost the share price of companies, both activities refer to the conflict of interest between firms' dispersed owner-investors and the managers hired to determine firms' investment projects and payout decisions. Prior literature shows that external corporate governance plays an important role in constraining managers from managing abnormal accruals and improve corporate earnings quality (Mitra and Cready, 2005; Velury and Jenkins, 2006). As media spin is also a self-interest behavior of managers, one would expect that effective external governance would also reduce media slant from this

perspective. We thus predict that companies with more effective external governance are less likely to managing both earnings and media news. Therefore, we propose the following hypothesis.

Hypothesis 4. The relationship between earnings management and abnormal media tone before earnings announcement is weakened by effective external governance.

3. Data and Model

3.1 Data

As China formally launched the non-tradable shares reform in September 2005, we construct our sample with all Chinese A share-listed companies[1] during the 2007-2016 period. All the financial data are collected from the China Securities Market and Accounting Research (CSMAR) database. We then exclude the samples that are under special treatment[2], have IPO, SEOs, and insider sales in a year[3], in financial services industry[4], with fewer than 30 trading weeks of stock returns in a fiscal year, with no media report in 30 days before its earnings announcement, and with missing information for the control variables. After data filtering, we are left with a sample of 11,446 firm-year observations for the period 2007-2016. Since the financial annual report of year t is public in year *t*+1, we choose the sample period of 2007-2015 for the control variables and 2008-2016 for the media data. To mitigate the effect of outliers,

[1] A shares are shares that denominated in Chinese Yuan (RMB) and traded in the Shanghai and Shenzhen stock exchanges.
[2] In China's stock market, a firm under special treatment (with "ST" or "*ST" in stock name) means that the firm has a risk of delisting. Since this kind of firms continuously have serious problems in operation, the media tone may be significantly negative.
[3] According to Chen and Yuan (2004), Chen, Lee and Li. (2008), Edmans et al. (2018), IPOs, SEOs, and insider sales would induce strong incentives of both earnings management and media news management.
[4] The disclosure requirements and accounting rules of the financial services industry are significantly different from other industries in China's stock market, so we delete the sample in this industry.

all the continuous variables are winsorized at the 1% and 99% levels.

The data of media news are obtained from eight largest nation-wide business newspapers in China: *Securities Daily, Securities Times, China Securities Journal, Shanghai Securities Journal, The Economic Observer, 21st Century Business Herald, First Financial Daily,* and *China Business Journal*. The media data are widely used in previous studies such as You, Zhang, and Zhang (2017) and Li, Wang, and Bao (2019).

3.2 Variables

3.2.1 Earnings management

Earnings management is usually measured by nondiscretionary accruals and discretionary accruals. Discretionary accruals reflect subjective accounting choices made by managers, whereas nondiscretionary accruals depend on the level of activity of a firm (Chung, Firth, and Kim, 2002). In order to examine the role of media in managers' reporting of earnings, we use discretionary accruals (*DAC*) as a proxy for earnings management. We use a cross-sectional modified version of the Jones (1991) model to estimate discretionary accruals. This model is widely used to assess earnings management in the accounting literature (e.g. Dechow, Sloan and Sweeney, 1995; Teoh, Welch and Wong, 1998a, 1998b). We model total accruals (*TAC*) as a function of changes in sales revenues minus changes in account receivables, and property, plant, and equipment. We then run the following cross-sectional model within each fiscal year and industry (based on SIC codes of CSRC):

$$\frac{TAC_{i,t}}{A_{i,t-1}} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \qquad (1)$$

Where $A_{i,t-1}$ is the lagged total assets of firm *i* in year *t*-1, $\Delta REV_{i,t}$ is the change in

sales between year *t*-1 and *t* , $\Delta REC_{i,t}$ is the change in accounts receivables, $PPE_{i,t}$ is the property, plant, and equipment of firm *i* in year *t*. Discretionary accruals (*DAC*) are estimated as the residual from Eq. (1).

3.2.2 Media tone

The measure of media tone is based on two steps. The first step is to construct the emotion lexicon. We randomly select 1,000 news articles from each newspapers each year. We ask ten graduates in Finance major to read the sample articles individually and collect positive and negative words. When there is different opinion, we let the students vote to make the final decision. In this step, we get 2,069 positive words and 2,330 negative words. The second step is to measure news tone for all news data by Python program. We use Python to cut articles into words and match the words with our emotion lexicon. A positive word plus the adverb "no" (or not) is regarded as a negative word, and vice versa. For instance, "not good" is a negative word and "no loss" is treated as a positive word. We then measure the tone of each news article by counting the number of positive and negative words as follows:

$$News\_Tone_{i,t} = \frac{PostiveWords_{i,t} - NegativeWords_{i,t}}{PostiveWords_{i,t} + NegativeWords_{i,t}} \quad (2)$$

In the meantime, we let two teams each including five graduates and eight undergraduates majoring in Finance evaluate the news tone of sample news articles independently. When there is a different opinion between two evaluations, a third team is involved. We then compare the result of Python with our manual evaluation. We find about 17% mismatch. We further abstract all the mismatched articles and discuss them

with all the reading teams. We find more than half are wrongly judged by human. This means we can trust the result of the Python program.

We then adopt two benchmarks to measure the abnormal media tone in 30 days before earnings announcement. The first benchmark is the average media tone of the other companies in the same industry in 30 days before earnings announcement. The abnormal media tone (*Ab_Tone*1) is calculated as:

$$Ab\_Tone1_{i,t} = \frac{\sum_j Media\_Tone_{i,j}}{Coverage_1} - \frac{\sum_{k \neq i} Media\_Tone_{k,j}}{Coverage_2} \qquad (3)$$

where $Media\_Tone_{ij}$ is the news tone of report *j* of firm i during the 30 days. $Coverage_1$ is the total number of report *j*. $Media\_Tone_{kj}$ is the news tone of report *j* of firm *k* (other firms in the same industry) during the 30 days. $Coverage_2$ is the total number of all the reports of other firms in the same industry during the 30 days.

The second benchmark is the average media tone during the period between last earnings announcement and 30 days before this earnings announcement. The abnormal media tone (*Ab_Tone*2) is calculated as:

$$Ab\_Tone2_{i,t} = \frac{\sum_j Media\_Tone_{i,j}}{Coverage_1} - \frac{\sum_{k \neq j} Media\_Tone_{i,k}}{Coverage_3} \qquad (4)$$

where $Media\_Tone_{ik}$ is the news tone of report *k* of firm i during the period between last earnings announcement and 30 days before this earnings announcement. $Coverage_3$ is the total number of report *k*.

3.2.3 Empirical model

To test the relationship between earnings management and abnormal media tones before earnings announcement, we estimate the following model:

$$Ab\_Tone_{i,t+1} = \beta_0 + \beta_1 DAC_{i,t} + \beta_2 Controls + \beta_3 Year + \beta_4 Industry + \varepsilon_{i,t} \quad (5)$$

where $Ab\_Tone_{i,t+1}$ is the abnormal media tone of firm *i* during the 30 days before earnings announcement of year *t*+1. $DAC_{i,t}$ is the earnings management level of company *i* in year *t* proxied by discretionary accruals. We impose a one-year lag between the dependent and independent variables because financial annual report of year *t* is public in year *t*+1. We also measure all control variables (*Controls*) in year *t*. According to the previous literatures (Fang, Huang and Karpoff, 2016; Li, Wang, and Bao, 2019), the control variables in our paper include financial leverage (*LEV*), book-to-market ratio (*BM*), return on assets (*ROA*), firm size (*SIZE*), firm age (*AGE*), analyst coverage (*ANLST*), institutional shareholdings (*INS*) , the nature of equity (*SOE*), earnings per share (*EPS*) and media coverages (*MC*). We also include industry and year dummies in all regressions. Variable definitions are provided in the Appendix.

4. Empirical results

4.1 Descriptive statistics

Table 1 reports the statistics of the variables. The mean and median values of discretionary accruals are 0.0016 and -0.0016 respectively, indicating that the distribution of discretionary accruals is positive skewness and there exists big value of discretionary accruals. The two measures of abnormal media tone are similar in distribution. The mean and median values of abnormal media tone are negative. On average, the sample firms have a market-to-book ratio of 0.6014, a leverage of 0.4272, a return on assets of 0.0549, three ($=e^{1.4716}-1$) analysts who follow the company, and 7.8% institutional ownership. About half of the company (means=0.51) are state-owned.

Table 2 presents the Pearson correlation matrix of the variables used in this paper. The correlation coefficient of the two measures of abnormal media tone is 0.89 and significant at the 1% level. This suggest that the two measures capture the same information underlying the variable. The discretionary accruals is positively associated with the two media tone variables and significant at the 1% level. This is consistent with Hypothesis 1 that more positive earnings management leads to more media optimism just before the earnings announcement.

4.2 Baseline regression results

Table 3 presents the baseline regression results of this paper. Consistent with our prediction, discretionary accruals (DAC) has significantly positive coefficient, suggesting that companies with more positive earnings management are more likely to experience more optimistic abnormal media tone in the days before earnings announcement. On average, a one-standard-deviation increase in *DAC* is associated with an increase of 2.36% (=0.072×0.0889/0.2716) and 2.78% (=0.062×0.0889/0.1982) of a standard deviation in abnormal media tone before earnings announcement as measured by *Ab_Tone*1 and *Ab_Tone*1 respectively. Coefficients for six of the control variables are significant at the 0.01 level. The variables of firm size (*SIZE*), firm age (*AGE*), analyst coverage (*ANLST*), institutional shareholdings (*INS*)，the nature of equity (*SOE*), earning per share (*EPS*) and return on assets (*ROA*) have positive signs. The leverage (*LEV*), book-to-market ratio variable (*BM*) and media coverages (*MC*) have negative signs. The signs and statistical significances are consistent with previous research on media coverage in other contexts

(Fang and Press, 2009; Gurun and Butler, 2012; Gurun, 2015).

4.3 Influence factors

As we predict in Hypotheses 2 to 4, if managers plan to sell their own firm's shares in the subsequent period, they may have more incentives to manage earnings and communicate with media before earnings announcement. In addition, the past media experience of firm managers may make such communication much easier. However, external corporate governance may constrain managers from managing abnormal accruals and media slant. In order to estimate the effects of these factors, we add the interaction between discretionary accruals and these factors in model (5) respectively. Tables 4 reports the estimated regression coefficients. In the baseline regression, we exclude the firms with IPOs, SEOs, and insider sales around earnings announcement to avoid the endogeneity. In order to test the effect of managers incentives in managing both media reports and firm earnings, we include the firms whose managers sell their ownership in the 180 days after the annual report. We use *REDUC* to proxy for the insider sales. It equals one if managers sell their own firms' shares in the 180 days after the annual report. It equals zero otherwise. To address the potential endogeneity issue that media spin may be caused by the subsequent insider sales rather than earnings management, we include *REDUC* as a control in the regression. The results show that the coefficients of *DAC* remain positive and significant after including *REDUC*. Meanwhile, the coefficients of the interaction between *DAC* and *REDUC* are positive and significant at the 5% level, for both measure of abnormal media tone. This is consistent with our prediction that managers of insider sales firms would have

deliberately inflate stock price by increasing earnings through DAs and media spins.

The working experience in media industry of managers is defined by *MEDIA*, where *MEDIA*=1 if the board members of the company have worked or studied in media industry and *MEDIA*=0, otherwise. The results show that the positive relationship between discretionary accruals and abnormal media tone in the days before earnings announcement remains significant at the 0.01 or 0.05 level. The coefficients of the interaction between *DAC* and *MEDIA* are both positive and significant at the 5% level. The results suggest that the positive relation between abnormal media tone and earnings management is more prominent for firms whose managers have working experience in media industry.

Table 5 presents the effect of external corporate governance on the relations between abnormal media tone and discretionary accruals. Previous studies find that analysts, auditors' reputation and institutional ownership can constrain managers from managing abnormal accruals and improve corporate earnings quality (Dyck, Morse and Zingales, 2010; Healy and Palepu, 2001; DeFond and Jiambalvo, 1991). Therefore, we use analyst coverage (*ANLST*), reputation of audit firms (*AUDIT*) and institutional owenership (*INS*) to proxy for the external corporate governance, where *AUDIT*=1 if the audit firm belongs to the top four firms and *AUDIT*=0 otherwise. The first two columns of Table 5 show the effect of analyst coverage, columns (3) and (4) show the effect of audit reputation, and the last two columns show the effect of institutional ownership. We find that the relation between discretionary accruals and abnormal media tone right before the earnings announcement remains positive and significant at

the 0.01 level in all columns. Moreover, the coefficients of the interaction between *DAC* and all three proxies (*ANLST*, *AUDIT*, and *INS*) are negative and significant at the 0.01 level. This is consistent to our hypothesis that external corporate governance tends to weaken the positive relations between earnings management and abnormal media tone before earnings announcement.

5.Further analysis: Communication channels

The empirical results in Section 4 suggest that there may exist communications between companies and media before earnings announcement. As we discussed in the hypothesis, such communications could be concealed or open. Since we are not able to obtain the evidence of secretive communication, we try to explore the public channels through which companies may guide the opinion of financial media. One possible way is to give advance notice of the performance before earnings announcement. We investigate the effect by two releasements: earnings pre-announcement and preliminary accounting data. Earnings pre-announcement is essentially a performance forecast of companies' profit to avoid large fluctuations in stock price after earnings announcement, whereas preliminary accounting data is the unaudited accounting data release before annual reports. Both disclosures are voluntary to companies in China's stock market expect for some special cases[5]. We conjecture that if companies release their

[5] In Shanghai Stock Exchange, companies must disclose earnings pre-announcement before January 31 if they (1) lose money, (2) turn a loss into a profit, and (3) increase or decrease their net profit by more than 50% compared with the previous year (except for those whose case is too small). In Shenzhen Stock Exchange, except for the above cases, companies also need to disclose earnings pre-announcement before January 31 if their net assets at the end of the period are negative, the annual operating revenue is less than 10 million yuan or if they belong to the small and medium enterprise (SME) board and Growth Enterprise Market (GEM). In addition, the disclose of preliminary accounting data in SMEs and GEM is required if the annual report is not disclosed before the end of February.

manipulated surplus by earnings pre-announcement and preliminary accounting data, media may thus form an opinion of the company. Such public opinion guidance forms the abnormal media tone before earnings announcement.

We manually collect 7,317 earnings pre-announcement and 4,245 preliminary accounting data releases during the period from the end of the previous fiscal year to the release of the annual report by excluding all the mandatory disclosure. There are 3,828 observations having both earnings pre-announcement and preliminary accounting data before earnings announcement. We define the earnings pre-announcement with a dummy variable *PRE*. If the earnings pre-announcement includes "*big increase*", "*slight increase*", "*turn loss into profit*" or "*continued profit*", *Forecast* =1; and *Forecast*=0 otherwise. As EPS is included in the preliminary earnings estimate, we use the difference between EPS in preliminary accounting data in year *t* and the actual EPS in year *t*-1 to proxy for the earnings information in preliminary accounting data (*Earnings*).

We then use the Causal Step Regression and Sobel test proposed by Baron and Kenny (1986) and Sobel (1982) to examine the channels. The empirical estimations are reported in Tables 6 and 7 respectively. Table 6 presents the channel effect of earnings pre-announcement. In the first step, we regress discretionary accruals (*DAC*) to earnings pre-announcement (*Forecast*). Column (1) of Table 6 shows that the coefficient estimate of *DAC* is positive and significant, suggesting that companies with positive earnings management tends to give positive earnings pre-announcement. In the second step, we regress earnings pre-announcement (*Forecast*) to abnormal media tone before

earnings announcement (*Ab_Tone*). The coefficient of *Forecast* in Column (2) is significantly positive, indicating that positive earnings pre-announcement can lead to abnormal positive coverage of media before earnings announcement. In the third step, we add both discretionary accruals (*DAC*) and earnings pre-announcement (*Forecast*) into the regression model (5). We find that the coefficients of both independent variable and mediator variable are significantly positive. Compared with our baseline results in Table 3, the significance of *DAC* decreases when Forecast is included in the regression. This indicates that part of the effect of discretionary accruals on abnormal media tone works through earnings pre-announcement. Table 7 presents the channel effect of preliminary accounting data. The results of preliminary accounting data are similar to that of earnings pre-announcement. Therefore, the relation between discretionary accruals and abnormal media tone before earnings announcement also partly works through the accounting data. We further use the Sobel test examine whether the mediate effects are significant. Results[6] shows that the Sobel Z-values are significant at 1% level for both earnings pre-announcement and preliminary accounting data.

In order to explore the dominant mediator, we use the 3,828 samples that have both earnings pre-announcement and preliminary accounting data before earnings announcement. We include both variables as mediators in the Causal Step Regression and report the results in Table 8. We find that the mediating effect of preliminary accounting data remains significant, but the significancy of earnings pre-announcement is reduced for *Ab_Tone1*. We further adopt the bootstrap method to self-sample for

[6] Sobel Z-values of earnings pre-announcement is 0.012 (t=3.583) and 0.098 (t=3.929) respectively. The Sobel Z-values of preliminary accounting data are 0.011 (t=2.41) and 0.078 (t=2.386) respectively.

1,000 times to estimate the coefficients. Suppose that the regression coefficients of *DAC* to *Forecast* and *Earnings* are α and β respectively, the coefficients of *Forecast* and *Earnings* to *Ab_Tone* is γ and ω respectively. If $\alpha\gamma>\beta\omega$, then the mediating effect of *Forecast* dominates that of *Earnings*. If $\alpha\gamma<\beta\omega$, then *Earnings* is the dominant mediator. The obtained results are shown in Table 9. We find the result is consistent with Table 8 that the significancy on the mediating effect of earnings pre-announcement is lower. Moreover, the difference in mediating effect between two mediators is significant. Therefore, we can conclude that the mediating effect of preliminary accounting data is greater. The reason might be that compared to earnings pre-announcement which use vague expressions, such as "*big increase*" and "*slightly decrease*", preliminary accounting data mostly includes specific numbers of earnings that is close to the earnings announcement. In addition, the release time of preliminary accounting data is always closer to earnings announcement, which is more likely to induce abnormal media sentiment before earnings announcement. However, since not all the companies release earnings pre-announcement and preliminary accounting data, there must be other ways companies communicate with media before earnings announcement.

6. Robustness and endogeneity checks

6.1 Robustness tests

In this section, we run a battery of tests to examine whether core evidence of baseline regression is robust to alternative measures. First, we use alternative measures of discretionary accruals (*DAC*1 and *DAC*2). Based on the previous studies (Dechow, Sloan and Sweeney, 1995; Fang, Huang and Karpoff, 2016), we use the Jones model

(Jones, 1991) instead of modified Jones model to measure discretionary accruals. The model is as follows:

$$\frac{TAC_{i,t}}{A_{i,t-1}} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (7)$$

where all the variables are the same as model (1). *DAC*1 is defined as the regression residuals.

In addition, in order to see if it is the direction of earnings management instead its figures influence the abnormal media tone before earnings announcement, we use dummy variables (*DAC*2) as an alternative measure that *DAC*2=1 if DAC>0 and *DAC*2=0 otherwise. Table 10 shows the results are consistent with Table 5 that the coefficients of *DAC*1 and *DAC*2 are positive and significant.

Second, we use alternative measures of media tone. Considering the inaccurate measure of media tone between positive and negative, we divide the news tone calculated by Eq. (2) into quintiles across the pooled set of articles (Li, Wang, and Bao, 2015). We define the *Goodnews* is the news with tone in the top quintile across all news articles, and *Badnews* is when the news tone is in the bottom quintile. Then the news tone for firm i in year t can be calculated as:

$$Firm\_Tone1_{i,t} = \frac{Goodnews_{i,t} - Badnews_{i,t}}{1 + TotalCoverage_{i,t}} \quad (8)$$

where *Goodnews* refer to the number of good news and *Badnews* refers to the number of bad news. Since the positive association between abnormal media tone and earnings management may also be affected by the intensity of the tone instead of the news volume, we use the intensity of news tone as weights to calculate media tone of each

firm. The detail is as follows:

$$Firm\_Tone2_{i,t} = \frac{1}{N}\sum_{j=1}^{N} News\_Tone_j \times Intensity_{i,j} \quad (9)$$

Where $News\_Tone_j$ refers to the tone of news *j* which calculated by Eq. (2). $Intensity_{i,j}$ refers to the degree of news tone on news *j* for firm *i*. We measure it by the extent of news *j* concerning for firm *i*. It equals three when firm *i* appears in news *j*'s title, equals two when firm *i* appears more than 3 times in news *j*'s text instead of title and one otherwise. N refers to the number of total-related news of firm *i* in the 30 days before annual report. The measurement of abnormal media tone is then based on the firm news tone in Eq. (8) and (9). Table 11 shows that the coefficients of *DAC* are positive and significant. This is consistent with Table 5

In this paper, we choose 30 days before earnings announcement as the period to calculate abnormal media tone. To mitigate the potential problem of sample selection, we further choose 20, 40 and 60 days as alternative periods to check the robustness of our results. The results in Table 12 show that the coefficients of *DAC* remain significantly positive when different period is used to measure abnormal media tone.

Finally, in order to mitigate the potential problem of omitted variable, we also control for the province-fixed effects as a robust check. Since our sample is an unbalanced panel with some firms only having one-year observations, we cannot fix firm effect in our test. Instead, we include province-fixed effects in our regression to eliminate the effect of geography. The results in Table 13 reveal no noticeable change when the province-fixed effect is used in the regression.

6.2 Endogeneity correction

The potential reverse causality problem may not be an issue in our analysis because financial media may not spontaneously change the tone of their report right before earnings announcement. However, endogeneity concerns still persist due to unobservable heterogeneity that unobservable firm-specific factors affect both discretionary accruals and abnormal media tone. Therefore, we employ the instrumental variables approach to mitigate these endogeneity concerns.

We use the average *DAC* of other firms in the same industry as the instrumental variable (*DAC_Industry*). The logic is that firms in the same industry always face the similar business scope, investment opportunity, and operational risk. When earnings management level is averagely higher on the other firms in the industry, it may suggest a potential rule in the industry. In this case, the earnings management level of the target firm also tends to increase. Therefore, the industry average *DAC* can be treated as exogenous variables because they are unlikely to be affected by firm characteristics and it can hardly make a logical connection to the abnormal media tone of a specific firm in the industry.

Table 14 shows the results of the instrumental variables approach by two stage least square method (2SLS). The coefficients associated with the instrumented variable (*DAC_industry*) are positive and statistically significant at 0.01 level. Meanwhile, the F-statistics for the joint significance of the instruments are significant at 0.01 level. The results indicate that our instrumented variable is strong instrument.

Although we use the instrumental variable approach to mitigate the endogeneity

caused by variable omission, we also consider that if the relationship between earnings management and abnormal media tone before earnings announcement is caused by analyst report before earnings announcement. Analyst reports usually contain analyst prediction of firm earnings, which may guide media opinion. Meanwhile, media tone may also affect analyst prediction before earnings announcement. We manually collect the sample that have analyst prediction in the 30 days before earnings announcement and obtain 1,613 observations. We then use the average analyst prediction (*ANLST_average*) in the 30 days of a specific firm as a control variable in our baseline model. We also include the difference between analyst prediction and the firm's EPS of the previous year (△*ANLST_average*) as another proxy for analyst prediction. The results are collected in Table 15 and reveal no noticeable change when analyst prediction is included in the regression.

7. Conclusion

Previous literature on the relations between media and earnings management documents two different roles of media. One is that media plays as an external governance that reduces earnings management. Another is media leads the way that companies report their earnings. That is, companies manage their earnings to cater to the expectation of media. Our objective in this paper is to provide a third role of media in earnings management that it is a supplement avenue for managers to promote the effects of earnings management. We empirically test the relation between earnings management during the year before annual report and the abnormal media tone before the release of annual report. We find evidence that higher levels of earnings

management tend to be associated with more abnormal optimistic media tone right before the annual report. Since it is unlikely that the media suddenly change its slant and let the company to respond, the result confirm the instrumental hypothesis of media that media press is used by company management as an instrument to influence stock price and help achieve the goal of earnings management.

More specially, this paper employs a sample of news articles from the eight largest nation-wide newspapers and A share listed companies from the mainland of China over a ten-year period. By calculating the abnormal media tone of each company during the 30 days prior to annual report and the discretionary accruals of the company, we find a significantly positive relation between the level of earnings management and abnormal media tone. Moreover, this paper explores the potential effect of insider sales, media experience of managers, and other external corporate monitors on the associations between earnings management and abnormal media tone. The evidence shows that the relation is more pronounced for firms whose managers sell their ownership in the subsequent period, managers that have past media experience, and with less institutional holdings, analyst coverage and lower reputation of audit firms. These findings strengthen our hypothesis about the supplementary view of media in earnings management.

In the further analysis, this paper explores the underlying channels through which company management may communicate with media prior to earnings report. We find that the release of earnings pre-announcement and preliminary accounting data before earnings announcement are two possible public channels that managers use to guide

media tone before annual reports. However, the relation only works partly through the channels and suggests that there are other potential ways company may use to influence and guide the opinion of media.

Although earnings management and media tone are found in literature that they can influence stock prices in the short term, this paper is the first one to rejoin the two, generally distinct, subsets of the literature to show the evidence of jointly use of the two methods before earnings announcement. Our study does not only propose a new role of media in earnings management, but also extend the literature of media spin by providing new evidence on how company influence the opinion of media press. Further study may regard the other circumstances in which management may joint use various avenues to boost stock prices and the economic consequences of such management opportunism.

References

Ahern K R, Sosyura D S. Who writes the news? Corporate press releases during merger negotiations[J]. The Journal of Finance, 2014, 69(1):241-291.

Bar-Gill O, Bebchuk L A. Misreporting corporate performance. Working paper, Harvard University, 2003.

Baron R M, Kenny D A. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations[J]. Journal of Personality and Social Psychology, 1986, 51(6): 1173-1182.

Beneish M D. Detecting GAAP violation: Implications for assessing earnings management among firms with extreme financial performance[J]. Journal of Accounting and Public policy, 1997, 16(3): 271-309.

Bergstresser D, Philippon T. CEO incentives and earnings management[J]. Journal of Financial Economics, 2006, 80(3): 511-529.□□

Bertomeu J, Marinovic I. A theory of hard and soft information[J]. The Accounting Review, 2016, 91(1): 1-20.

Brown L. A temporal analysis of earnings surprises: Profits versus losses. Journal of Accounting Research, 2001, 39(2): 221-241.

Burgstahler D, Dichev I. Earnings management to avoid earnings decreases and losses[J]. Journal of Accounting and Economics, 1997, 24(1): 99-126.

Cahan S F, Chen C, Chen L, et al. Corporate social responsibility and media coverage[J]. Journal of Banking and Finance, 2015, 59(10): 409-422.

Chahine S, Mansi S, Mazboudi M. Media news and earnings management prior to equity offerings[J]. Journal of Corporate Finance, 2015, 35: 177-195.

Chen K C. W., Yuan H Q. Earnings management and capital resource allocation: evidence from China's accounting-based regulation of rights issues. The Accounting Review, 2004, 79(3): 645-665.

Chen X, Lee C W J, Li J. Government assisted earnings management in China[J]. Journal of Accounting and Public Policy, 2008, 27(3):0-274.

Chen Y, Cheng C S A, Li S, et al. The monitoring role of the media: Evidence from earnings management[J]. Social Science Electronic Publishing, 2018.

Cheng Q, Warfield T D. Equity incentives and earnings management[J]. The Accounting Review, 2005, 80(2): 441-476.

Chung R, Firth M, Kim J, et al. Institutional monitoring and opportunistic earnings management[J]. Journal of Corporate Finance, 2002, 8(1): 29-48.

Cornett M M, Marcus A J, Tehranian H. Corporate governance and pay-for-performance: The impact of earnings management[J]. Journal of Financial Economics, 2008, 87(2):357-373.

Cook D O, Kieschnick R L, Van Ness R A, et al. On the marketing of IPOs[J]. Journal of Financial Economics, 2006, 82(1): 35-61.

DeAngelo L E. Managerial competition, information costs, and corporate governance: The use of accounting performance measures in proxy contests[J]. Journal of Accounting and Economics, 1988, 10(1): 3-36.

Dechow P M, Sloan R G, Sweeney A P. Detecting earnings management[J]. The Accounting Review, 1995: 193-225.

Defond M L, Jiambalvo J. Incidence and Circumstances of Accounting Errors. The Accounting Review, 1991, 66(3): 643-655.

Ducharme L L, Malatesta P H, Sefcik S E, et al. Earnings management, stock issues, and shareholder lawsuits[J]. Journal of Financial Economics, 2004, 71(1): 27-49.

Dyck A, Volchkova N, Zingales L. The corporate governance role of the media: evidence from Russia[J]. Journal of Finance, 2008, 63(3):1093–1135

Dyck A, Zingales L. The media and asset prices[J]. Working Paper, Harvard Business School, 2003.

Dyck, A, Morse, A, Zingales, L. Who blows the whistle on corporate fraud?[J] The Journal of Finance, 2010, 65(6): 2213–2253.

Edmans A, Goncalves-Pinto L, Wang, Y, Groen-Xu M. Strategic news releases in equity vesting months[J]. The Review of Financial Studies, 2018, 31(11): 4099-4141.

Elitzur R R, Yaari V. Executive incentive compensation and earnings manipulation in a multi-period setting[J]. Journal of Economic Behavior & Organization, 2004, 26(2): 201-219.

Ellman M, Germano F. What do the papers sell? A model of advertising and media bias[J]. The Economic Journal, 2009, 119 (537): 680-704.

Fang L H, Peress J. Media Coverage and the Cross- section of Stock Returns[J]. Journal of Finance, 2009, 64(5): 2023-2052.

Fang V W, Huang A H, Karpoff J M, et al. Short selling and earnings management: A controlled experiment[J]. Journal of Finance, 2016, 71(3): 1251-1294.

Gurun U G, Butler A W. Don't believe the hype: Local media slant, local advertising, and firm value[J]. The Journal of Finance, 2012, 67(2):561-598.

Gurun U G. Price of publicity[J]. SSRN Electronic Journal, 2015.

Healy P M, Palepu K G. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature[J]. Journal of Accounting and Economics, 2001, 31(1-3): 405-440.

Healy P M, Wahlen J M. A review of the earnings management literature and its implications for standard setting[J]. Accounting Horizons, 1999, 13(4): 365-383.

Jiang J, Petroni K R, Wang I Y, et al. CFOs and CEOs: Who have the most influence on earnings management?[J]. Journal of Financial Economics, 2010, 96(3): 513-526.

Jones, J. J. Earnings management during import relief investigations. Journal of Accounting Research, 1991, 29: 193–228.

Klein A. Audit committee, board of director characteristics, and earnings management[J]. Journal of Accounting and Economics, 2002, 33(3): 375-400.

Li Q, Wang J M, Bao L, et al. Media tone, bias, and stock price crash risk: evidence from China[J]. Asia-pacific Journal of Accounting & Economics, 2019: 1-35.

Louis, H. Earnings management and the market performance of acquiring firms. Journal of Financial Economics, 2004, 74: 121-148.

Miller G S. The Press as a watchdog for accounting fraud[J]. Journal of Accounting Research, 2006, 44(5): 1001-1033.

Mitra S, Cready W M. Institutional stock ownership, accrual management, and information environment[J]. Journal of Accounting, Auditing & Finance, 2005, 20(3): 257-286.

Nelson C L, Ijiri Y. Theory of Accounting Measurement[J]. Journal of Finance, 1976, 31(5).

Park M S, Park T. Insider sales and earnings management[J]. Journal of Accounting & Public Policy, 2004, 23(5): 381-411.

Qi B, Yang R, Tian G. Can media deter management from manipulating earnings? Evidence from China[J]. Review of Quantitative Finance & Accounting, 2014, 42(3): 571-597.

Rangan S. Earnings management and the performance of seasoned equity offerings[J]. Journal of Financial Economics, 1998, 50(1): 101-122.

Reuter J, Zitzewitz E. Do ads influence editors? Advertising and bias in the financial media[J]. The Quarterly Journal of Economics, 2006, 121(1):197-227.

Schipper K. Commentary on earnings management[J]. Accounting Horizons, 1989, 3(4): 91-102.

Sobel M E. Asymptotic confidence intervals for indirect effects in structural equation models[J]. Sociological Methodology, 1982, 13: 290-312.

Solomon D H. Selective publicity and stock prices[J]. The Journal of Finance, 2012, 67(2): 599-638.

Stein J C. Efficient capital markets, inefficient firms: A model of myopic corporate behavior[J]. Quarterly Journal of Economics, 1989, 104(4): 655-669.

Teoh S, Welch I, Wong T. Earnings management and the long-run market performance of initial public offerings[J]. Journal of Finance, 1998a, 53(6): 1935-1974.

Teoh S, Welch I, Wong T. Earnings management and the underperformance of seasoned equity offering[J]. Journal of Financial Economics, 1998b, 50(1): 63-99.

Trueman, B., Theories of earnings announcement timing[J]. Journal of Accounting and Economics, 1990, 13(3): 285–301.

Velury U, Jenkins D S. Institutional ownership and the quality of earnings[J]. Journal of Business Research, 2006, 59(9): 1043-1051.

Watts R, Zimmerman J. Positive accounting theory: A ten-year perspective[J]. The Accounting Review, 1990, 65(1): 131-156.

You J, Zhang B, Zhang L, et al. Who captures the power of the pen[J]. Review of Financial Studies, 2018, 31(1): 43-96.

Table 1 Descriptive statistics

This table reports the summary statistics of variables in our sample. The period is from 2007 to 2015. Detailed variable definitions are reported in Appendix A.

Variable	N	Mean	25thPctl.	Median	75thPctl.	Std.Dev.
DAC	11,446	0.002	-0.043	-0.002	0.041	0.089
Ab_Tone1	11,446	-0.008	-0.186	-0.023	0.153	0.272
Ab_Tone2	11,446	-0.006	-0.133	-0.006	0.119	0.198
Control variables						
SIZE	11,446	22.071	21.147	21.891	22.812	1.277
LEV	11,446	0.427	0.256	0.427	0.594	0.215
BM	11,446	0.601	0.413	0.606	0.792	0.241
AGE	11,446	10.044	4.449	10.178	14.951	5.927
SOE	11,446	0.513	0.000	1.000	1.000	0.500
ANLST	11,446	1.472	0.000	1.609	2.565	1.203
INS	11,446	7.833	1.430	4.805	11.192	8.578
ROA	11,446	0.055	0.026	0.0497	0.0817	0.061
EPS	11,446	0.390	0.107	0.296	0.565	0.617
MC	11,446	4.774	4.357	4.804	5.199	0.735
Other mediator and moderator variables						
REDUC	15,967	0.131	0.000	0.000	0.000	0.338
MEDIA	11,446	0.038	0.000	0.000	0.000	0.192
AUDIT	11,446	0.072	0.000	0.000	0.0000	0.259
ANLST_average	11,446	0.087	0.000	0.000	0.000	0.262
△ANLST_average	11,446	0.001	0.000	0.000	0.000	0.102
Forecast	6,317	0.658	0.000	1.000	1.000	0.474
Earnings	4,245	-0.090	0.230	0.050	0.080	0.433

Table 2 Pearson correlation matrix

This table reports the Pearson correlation coefficients between the variables. Bold values indicate statistical significance at the 5% or 1% level.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. *DAC*	1.00																			
2. *Ab_Tone1*	**0.03**	1.00																		
3. *Ab_Tone2*	**0.03**	**0.89**	1.00																	
4. *SIZE*	0.01	**0.04**	**0.02**	1.00																
5 *LEV*	**-0.06**	**-0.03**	**-0.04**	**0.40**	1.00															
6.*BM*	0.01	**-0.07**	**-0.08**	**0.51**	**0.29**	1.00														
7. *AGE*	**-0.08**	**0.03**	**0.03**	**0.25**	**0.32**	**0.04**	1.00													
8. *SOE*	**-0.06**	0.01	0.00	**0.34**	**0.24**	**0.20**	**0.37**	1.00												
9. *ANLST*	**-0.07**	**0.09**	**0.08**	**0.37**	**-0.10**	0.01	**-0.21**	**-0.03**	1.00											
10. *INS*	**-0.03**	**0.10**	**0.09**	**0.11**	**-0.02**	**-0.23**	-0.00	**0.01**	**0.48**	1.00										
11. *ROA*	0.00	**0.06**	**0.06**	**0.02**	**-0.20**	**-0.18**	**-0.09**	**-0.07**	**0.33**	**0.27**	1.00									
12 *EPS*	**0.12**	**0.06**	**0.055**	**0.21**	**-0.13**	**-0.04**	**-0.06**	-0.01	**0.41**	**0.30**	**0.40**	1.00								
13.*MC*	**0.03**	**-0.08**	**-0.09**	**0.40**	**0.08**	**0.05**	**-0.02**	**0.02**	**0.39**	**0.21**	**0.12**	**0.22**	1.00							
14. *REDUC*	**0.03**	**0.03**	0.00	**-0.09**	-0.01	**-0.06**	**-0.14**	**-0.11**	**0.07**	**0.06**	0.00	**0.02**	**0.14**	1.00						
15. *MEDIA*	-0.00	-0.02	0.02	**0.02**	**-0.03**	-0.01	**-0.04**	**0.19**	**0.05**	0.00	-0.01	0.00	**0.07**	0.02	1.00					
16. *AUDIT*	**-0.04**	0.01	-0.01	**0.40**	**0.09**	**0.19**	**0.04**	**0.14**	**0.19**	0.01	**0.04**	**0.10**	**0.22**	-0.00	0.01	1.00				
17 ANLST_average	**0.03**	**0.02**	-0.00	**0.12**	**-0.05**	-0.02	**-0.11**	**0.02**	**0.34**	**0.29**	**0.24**	**0.37**	**0.19**	-0.00	0.01	**0.06**	1.00			
18.⊿ANLST_average	-0.02	0.02	0.01	**0.04**	**0.04**	**-0.08**	**0.07**	**0.05**	0.18	**0.08**	**0.80**	**0.14**	**0.04**	0.01	-0.00	0.09	**0.22**	1.00		
19. *Forecast*	**0.15**	**0.09**	**0.10**	0.00	**-0.11**	**-0.15**	**-0.13**	**-0.07**	**0.24**	**0.21**	**0.29**	0.42	**0.09**	0.01	**0.01**	**-0.02**	**0.18**	**0.15**	1.00	
20. *Earnings*	0.01	**0.06**	**0.05**	**0.08**	**0.08**	**-0.05**	**0.19**	**0.13**	**-0.04**	**0.08**	**0.09**	0.01	0.01	-0.00	**-0.05**	**0.03**	**0.05**	**0.26**	**0.31**	1.00

Table 3 Media tone and earnings management

This table documents the correlation between earnings management and abnormal media tone. The dependent variables for columns (1) and (2) are $Ab_Tone1_{t+1}$and Ab_Tone2_{t+1}, respectively. The independent variable is accrual earning management (DAC_t). Industry and Fixed Years (Industry and Year dummies) are included in the regression. Figures in parentheses are t-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)
	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
DAC_t	0.071***	0.062***
	(2.65)	(3.06)
$SIZE_t$	0.015***	0.008***
	(3.99)	(2.81)
LEV_t	-0.063***	-0.053***
	(-4.77)	(-5.46)
BM_t	-0.074***	-0.046***
	(-4.20)	(-3.61)
AGE_t	0.001**	0.001***
	(2.19)	(2.64)
SOE_t	0.015**	0.010**
	(2.57)	(2.25)
$ANLST_t$	0.022***	0.017***
	(7.16)	(7.57)
INS_t	0.002***	0.001***
	(5.16)	(4.21)
ROA_t	0.064	0.035
	(1.40)	(1.06)
EPS_t	0.006	0.005
	(1.32)	(1.57)
MC_t	-0.054***	-0.039***
	(-13.32)	(-13.28)
$Intercept_t$	-0.069	0.016
	(-1.00)	(0.32)
Fixed Industry	YES	YES
Fixed Year	YES	YES
N	11,446	11,446
R^2	0.079	0.088

Table 4 Effects of insider sales and media experience

This table documents the influence factors that affect the association between earnings management and abnormal media tone. The results of insider sales are reported in columns (1) and (2), and results for media experience are in columns (3) and (4). Industry and year fixed effects (Industry and Year dummies) are included in the regression. Figures in parentheses are t-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)	(4)
	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
DAC_t	0.014***	0.012***	0.060**	0.054***
	(3.22)	(3.94)	(2.10)	(2.63)
$REDUC_t$	0.010**	0.007**		
	(2.05)	(2.04)		
$REDUC_t \times DAC_t$	0.027**	0.023**		
	(2.08)	(2.43)		
$MEDIA_t$			0.022*	0.014
			(1.65)	(1.48)
$MEDIA_t \times DAC_t$			0.264**	0.176**
			(2.02)	(2.00)
$SIZE_t$	0.006***	0.002	0.015***	0.008***
	(2.71)	(1.46)	(3.97)	(2.79)
LEV_t	-0.031***	-0.023***	-0.063***	-0.052***
	(-3.29)	(-3.37)	(-4.74)	(-5.43)
BM_t	-0.031***	-0.019***	-0.073***	-0.045***
	(-3.11)	(-2.67)	(-4.15)	(-3.57)
AGE_t	0.001***	0.001***	0.012**	0.001***
	(3.56)	(3.79)	(2.25)	(2.70)
SOE_t	0.009***	0.006**	0.016***	0.010**
	(2.34)	(2.27)	(2.60)	(2.28)
$ANLST_t$	0.010***	0.007***	0.022**	0.017***
	(5.13)	(5.23)	(7.09)	(7.51)
INS_t	0.002***	0.001***	0.002***	0.001***
	(6.25)	(5.38)	(5.18)	(4.23)
ROA_t	0.054**	0.036**	0.068	0.038
	(2.17)	(2.00)	(1.48)	(1.13)
EPS_t	-0.004	-0.002	0.006	0.005
	(-1.21)	(-0.96)	(1.33)	(1.58)
MC_t	-0.030***	-0.022***	-0.545***	-0.394***
	(-10.45)	(-10.83)	(-13.37)	(-13.31)
$Intercept_t$	-0.0221	0.030	-0.067	0.017
	(-0.50)	(0.98)	(-0.97)	(0.35)
FixedIndustry	YES	YES	YES	YES
FixedYear	YES	YES	YES	YES
N	15,967	15,967	11,446	11,446
R^2	0.0283	0.0286	0.079	0.088

Table 5 Effect of external corporate governance

This table documents the effect of external corporate governance on the association between earnings managements and abnormal media tone. *ANLST* is defined as the natural logarithm of analyst coverage plus 1. *AUDIT* is defined as the reputation of audit firms, it equals 1 if firm's external audit is one of the four major audit organizations, otherwise it is 0. *INS* is the ownership of institutions. Industry and year fixed effects (Industry and Year dummies) are included in the regression. Figures in parentheses are t-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)	(4)	(5)	(6)
	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
DAC_t	0.153***	0.121***	0.085***	0.072***	0.157***	0.107***
	(3.78)	(4.12)	(3.00)	(3.52)	(4.24)	(3.99)
$ANLST_t$	0.022***	0.017***	0.022***	0.017***	0.022***	0.017***
	(7.25)	(7.66)	(7.17)	(7.59)	(7.09)	(7.52)
$ANLST_t \times DAC_t$	-0.064***	-0.046***				
	(-2.79)	(-2.77)				
$AUDIT_t$			-0.011	-0.008		
			(-0.42)	(-1.08)		
$AUDIT_t \times DAC_t$			-0.341***	-0.273***		
			(-2.72)	(-2.79)		
INS_t	0.002***	0.001***	0.002***	0.001***	0.002***	0.001***
	(5.15)	(4.20)	(5.17)	(4.18)	(5.22)	(4.26)
$INS_t \times DAC_t$					-0.011***	-0.006***
					(-3.51)	(-2.86)
$SIZE_t$	0.015***	0.008***	0.015***	0.008***	0.016***	0.008***
	(3.94)	(2.76)	(3.84)	(2.85)	(4.07)	(2.87)
LEV_t	-0.061***	-0.051***	-0.063***	-0.053***	-0.063***	-0.052***
	(-4.61)	(-5.30)	(-4.73)	(-5.45)	(-4.74)	(-5.44)
BM_t	-0.075***	-0.047***	-0.074***	-0.047***	-0.076***	-0.047***
	(-4.29)	(-3.70)	(-4.20)	(-3.65)	(-4.32)	(-3.70)
AGE_t	0.001**	0.001**	0.001**	0.001**	0.001**	0.001***
	(2.09)	(2.54)	(2.14)	(2.57)	(2.13)	(2.60)
SOE_t	0.015**	0.010**	0.016***	0.010**	0.015**	0.010**
	(2.54)	(2.22)	(2.62)	(2.31)	(2.56)	(2.24)
ROA_t	0.062	0.034	0.064	0.035	0.065	0.036
	(1.35)	(1.01)	(1.39)	(1.04)	(1.43)	(1.08)
EPS_t	0.006	0.005	0.006	0.005	0.006	0.005
	(1.20)	(1.45)	(1.33)	(1.58)	(1.18)	(1.47)
MC_t	-0.054***	-0.039***	-0.054***	-0.039***	-0.054***	-0.039***
	(-13.35)	(-13.30)	(-13.30)	(-13.22)	(-13.03)	(-13.26)
$Intercept_t$	-0.065	0.020	-0.068	0.008	-0.076	0.013
	(-0.93)	(0.39)	(-0.93)	(0.14)	(-1.10)	(0.25)
Fixed Industry	YES	YES	YES	YES	YES	YES
Fixed Year	YES	YES	YES	YES	YES	YES

N	11,446	11,446	11,446	11,446	11,446	11,446
R^2	0.079	0.088	0.079	0.088	0.080	0.088

Table 6 The channel effect of earnings pre-announcement

This table documents the channel effect of companies' earnings pre-announcement on the correlation between earnings management and abnormal media tone. Columns (1) is the regression result of *DAC* on *Forecast*. Columns (2) and (3) are the regression results of *Forecast* on *Ab_Tone1* and *Ab_Tone2*. Columns (4) and (5) are the regression results of including both *Forecast and DAC* to model 5. Industry and Fixed Years (*Industry* and *Year* dummies) are included in the regression. Figures in parentheses are t-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)	(4)	(5)
	$Forecast_t$	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
$Forecast_t$		0.039***	0.031***	0.038***	0.030***
		(5.21)	(5.77)	(5.03)	(5.57)
DAC_t	0.369***			0.067**	0.051**
	(7.10)			(2.02)	(2.09)
$SIZE_t$	-0.005	0.012**	0.006*	0.012**	0.006*
	(-0.60)	(2.47)	(1.71)	(2.46)	(1.70)
LEV_t	-0.018	-0.068***	-0.057***	-0.066***	-0.056***
	(-0.71)	(-4.16)	(-4.83)	(-4.08)	(-4.74)
BM_t	-0.100***	-0.057**	-0.035**	-0.057**	-0.035**
	(-2.85)	(-2.55)	(-2.14)	(-2.57)	(-2.17)
AGE_t	-0.004***	0.001*	0.001*	0.001*	0.001*
	(-4.04)	(1.69)	(1.85)	(1.75)	(1.91)
SOE_t	0.010	0.007	0.003	0.008	0.004
	(0.82)	(0.88)	(0.55)	(0.97)	(0.65)
$ANLST_t$	0.018***	0.023***	0.017***	0.023***	0.017***
	(2.90)	(5.89)	(6.12)	(5.84)	(6.06)
INS_t	0.002***	0.002***	0.001***	0.002***	0.001***
	(2.94)	(4.07)	(3.21)	(4.08)	(3.21)
ROA_t	0.849***	0.041	0.029	0.049	0.035
	(10.10)	(0.77)	(0.75)	(0.91)	(0.90)
EPS_t	0.247***	0.007	0.006	0.005	0.005
	(25.01)	(1.01)	(1.32)	(0.76)	(1.06)
MC_t	-0.002	-0.059***	-0.044***	-0.059***	-0.044***
	(-0.25)	(-11.04)	(-11.30)	(-11.03)	(-11.29)
$Intercept_t$	0.646***	-0.013	0.046	-0.010	0.048
	(4.62)	(-0.15)	(0.71)	(-0.12)	(0.74)
FixedIndustry	YES	YES	YES	YES	YES
FixedYear	YES	YES	YES	YES	YES
N	7,317	7,317	7,317	7,317	7,317
R-squared	0.247	0.089	0.101	0.090	0.101

Table 7 The channel effect of preliminary accounting data

This table documents the channel effect of the release of preliminary accounting data on the correlation between earnings management and abnormal media tone. *Earnings* equals the difference between EPS in preliminary earnings estimate in year t and the actual EPS in year *t*-1. Columns (1) is the regression result of *DAC* on *Earnings*. Columns (2) and (3) are the regression results of *Earnings on Ab_Tone*. Columns (4) and (5) are the regression results of adding *Earnings* to model 5. Industry and Fixed Years (*Industry* and *Year* dummies) are included in the regression. Figures in parentheses are t-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)	(4)	(5)
	$Earnings_t$	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
$Earnings_t$		0.054***	0.037***	0.053***	0.037***
		(5.01)	(4.76)	(4.98)	(4.74)
DAC_t	0.176**			0.035	0.012
	(2.41)			(0.69)	(0.32)
$SIZE_t$	-0.015	0.023***	0.017***	0.023***	0.017***
	(-1.35)	(3.02)	(3.15)	(3.03)	(3.16)
LEV_t	0.101***	-0.081***	-0.059***	-0.081***	-0.059***
	(2.71)	(-3.14)	(-3.19)	(-3.12)	(-3.18)
BM_t	-0.069	-0.089***	-0.082***	-0.090***	-0.082***
	(-1.51)	(-2.82)	(-3.59)	(-2.83)	(-3.59)
AGE_t	0.008***	-0.001	0.001	-0.007	-0.001
	(5.03)	(-0.66)	(-0.65)	(-0.62)	(-0.64)
SOE_t	0.013	-0.006	-0.007	-0.005	-0.007
	(0.79)	(-0.49)	(-0.83)	(-0.46)	(-0.81)
$ANLST_t$	-0.070***	0.030***	0.023***	0.030***	0.023***
	(-9.34)	(5.79)	(5.98)	(5.76)	(5.96)
INS_t	0.002**	0.002***	0.001**	0.002***	0.001**
	(2.33)	(2.72)	(2.33)	(2.71)	(2.32)
ROA_t	-0.009	-0.094	-0.063	-0.089	-0.062
	(-0.07)	(-1.14)	(-1.07)	(-1.08)	(-1.04)
EPS_t	0.341***	0.001	-0.002	-0.000	-0.003
	(23.39)	(0.07)	(-0.30)	(-0.01)	(-0.33)
MC_t	0.093**	-0.082***	-0.065***	-0.082***	-0.065***
	(0.81)	(-10.29)	(-11.32)	(-10.30)	(-11.32)
$Intercept_t$	0.117	-0.087	-0.051	-0.086	0.137***
	(0.59)	(-0.63)	(-0.52)	(-0.63)	(2.74)
FixedIndustry	YES	YES	YES	YES	YES
FixedYear	YES	YES	YES	YES	YES
N	4,245	4,245	4,245	4,245	4,245
R-squared	0.184	0.104	0.110	0.105	0.118

Table 8 Causal step regression of two channels

This table documents the effect of including both earnings pre-announcement and preliminary accounting data as mediators. The dependent variables for column (1) is *Forecast*, for column (2) is *Earnings*, for columns (3) to (6) are *Ab_Tone*. Industry and Fixed Years (*Industry* and *Year* dummies) are included in the regression. Figures in parentheses are t-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)	(4)	(5)	(6)
	$Forecast_t$	$Earnings_t$	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
DAC_t	0.354***	0.176**			0.026	-0.007
	(4.42)	(2.24)			(0.48)	(-0.19)
$Forecast_t$			0.023**	0.023***	0.022*	0.024***
			(1.98)	(2.86)	(1.95)	(2.87)
$Earnings_t$			0.051***	0.032***	0.050***	0.032***
			(4.36)	(3.80)	(4.35)	(3.80)
$SIZE_t$	-0.019	-0.023*	0.025***	0.010***	0.025***	0.020***
	(-1.52)	(-1.88)	(3.06)	(3.36)	(3.06)	(3.35)
LEV_t	0.154***	0.097**	-0.072***	-0.057***	-0.072***	-0.057***
	(3.75)	(2.40)	(-2.60)	(-2.89)	(-2.60)	(-2.89)
BM_t	-0.122**	-0.041	-0.098***	-0.082***	-0.098***	-0.082***
	(-2.41)	(-0.82)	(-2.87)	(-3.37)	(-2.88)	(-3.37)
AGE_t	-0.009***	0.012***	-0.002	-0.001	-0.002	-0.001
	(-4.74)	(6.12)	(-1.20)	(-0.97)	(-1.18)	(-0.98)
SOE_t	-0.004	0.013	-0.007	-0.008	-0.007	-0.008
	(-0.24)	(0.72)	(-0.59)	(-0.87)	(-0.57)	(-0.87)
$ANLST_t$	0.024***	-0.072***	0.027***	0.020***	0.027***	0.020***
	(2.90)	(-8.87)	(4.89)	(4.96)	(4.86)	(4.96)
INS_t	0.003***	0.003**	0.002**	0.001**	0.002**	0.001**
	(2.34)	(2.56)	(2.46)	(2.03)	(2.45)	(2.03)
ROA_t	0.984***	-0.099	-0.059	-0.034	-0.055	-0.035
	(7.56)	(-0.77)	(-0.67)	(-0.54)	(-0.62)	(-0.56)
EPS_t	0.246***	0.385***	-0.011	-0.010	-0.012	-0.010
	(14.89)	(23.67)	(-0.92)	(-1.13)	(-0.97)	(-1.10)
MC_t	0.031**	0.010	-0.086***	-0.069***	-0.086***	-0.069***
	(2.41)	(0.78)	(-9.97)	(-11.17)	(-9.97)	(-11.17)
$Intercept_t$	0.724***	0.249	-0.007	-0.999	-0.219	0.100
	(3.21)	(1.12)	(-0.86)	(-0.92)	(-0.85)	(-0.92)
FixedIndustry	YES	YES	YES	YES	YES	YES
FixedYear	YES	YES	YES	YES	YES	YES
N	3,828	3,828	3,828	3,828	3,828	3,828
R-	0.229	0.196	0.106	0.121	0.106	0.121

Table 9 Bootstrapping result of dominant mediator

This table documents the results using the Bootstrap test to self-sample for 1,000 times. Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	coefficient		Bootstrap test
Impact of *DAC on Forecast*	α		0.354^{***} (4.42)
Impact of *DAC on Earnings*	β		0.176^{**}(2.24)
Mediating effect of preliminary accounting data	αγ	Ab_Tone1_{t+1}	0.018^{***} (3.03)
		Ab_Tone2_{t+1}	0.017^{***} (3.75)
Mediating effect of earnings pre-announcement	βω	Ab_Tone1_{t+1}	0.006^{*} (1.89)
		Ab_Tone2_{t+1}	0.004^{*} (1.73)
The difference in mediating effect	αγ-βω	Ab_Tone1_{t+1}	0.012^{*} (1.70)
		Ab_Tone2_{t+1}	0.013^{***} (2.64)

Table 10 Robustness check with alternative independent variable

This table documents the results of using two alternative measures of earnings management. Figures in parentheses are *t*-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)	(4)
	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
$DAC1_t$	0.064**	0.056***		
	(2.31)	(2.79)		
$DAC2_t$			0.017***	0.012***
			(3.44)	(3.41)
$SIZE_t$	0.015***	0.008***	0.015***	0.008***
	(4.00)	(2.82)	(4.04)	(2.86)
LEV_t	-0.063***	-0.053***	-0.063***	-0.053***
	(-4.76)	(-5.45)	(-4.77)	(-5.49)
BM_t	-0.074***	-0.046***	-0.073***	-0.046***
	(-4.20)	(-3.61)	(-4.19)	(-3.60)
AGE_t	0.001**	0.001***	0.001**	0.001***
	(2.17)	(2.61)	(2.21)	(2.64)
SOE_t	0.015**	0.097**	0.015**	0.009**
	(2.56)	(2.24)	(2.50)	(2.16)
$ANLST_t$	0.022***	0.017***	0.022***	0.017***
	(7.16)	(7.57)	(7.07)	(7.49)
INS_t	0.002***	0.001***	0.002***	0.001***
	(5.17)	(4.22)	(5.20)	(4.25)
ROA_t	0.064	0.035	0.065	0.034
	(1.40)	(1.06)	(1.41)	(1.04)
EPS_t	0.007	0.006	0.006	0.006
	(1.37)	(1.63)	(1.31)	(1.62)
MC_t	-0.054***	-0.039***	-0.054***	-0.039***
	(-13.32)	(-13.27)	(-13.32)	(-13.27)
$Intercept_t$	-0.070	0.016	-0.081	0.008
	(-1.01)	(0.31)	(-1.17)	(0.15)
Fixed Industry	YES	YES	YES	YES
Fixed Year	YES	YES	YES	YES
N	11,446	11,446	11,446	11,446
R^2	0.078	0.088	0.079	0.088

Table 11 Robustness check with alternative dependent variable

This table documents the analysis using two alternative measures of media tone. Industry and year fixed effects (*Industry* and *Year* dummies) are included in the regression. Figures in parentheses are *t*-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)	(4)
	Ab_Tone3_{t+1}	Ab_Tone4_{t+1}	Ab_Tone5_{t+1}	Ab_Tone6_{t+1}
DAC_t	0.036***	0.035***	0.006***	0.007***
	(3.37)	(2.80)	(2.64)	(2.70)
$SIZE_t$	-0.002	-0.004**	-0.001	-0.001*
	(-1.14)	(-2.50)	(-1.51)	(1.91)
LEV_t	-0.008	-0.008	-0.001	-0.000
	(-1.58)	(-1.32)	(-1.16)	(-0.08)
BM_t	-0.002	0.018**	-0.005***	-0.005***
	(-0.25)	(2.29)	(-3.55)	(-3.03)
AGE_t	0.000	0.000*	0.000***	0.000***
	(0.14)	(1.87)	(5.36)	(4.79)
SOE_t	-0.003	-0.000	0.002***	0.001
	(-1.21)	(-0.15)	(3.13)	(1.20)
$ANLST_t$	0.007***	0.004***	0.002***	0.001***
	(5.76)	(2.69)	(8.08)	(5.14)
INS_t	0.000***	0.000**	0.000***	0.000***
	(3.19)	(2.41)	(7.16)	(6.96)
ROA_t	0.036**	0.071***	0.006	0.008**
	(2.04)	(3.46)	(1.52)	(2.04)
EPS_t	0.010***	0.012***	0.002***	0.003***
	(5.27)	(5.35)	(5.69)	(6.18)
MC_t	-0.006***	-0.010***	-0.001***	-0.000
	(-3.59)	(-5.14)	(-3.07)	(-1.07)
$Intercept_t$	-0.029	0.043	0.048***	0.055***
	(-1.09)	(1.37)	(8.47)	(8.84)
Fixed Industry	YES	YES	YES	YES
Fixed Year	YES	YES	YES	YES
N	11,446	11,446	11,446	11,446
R^2	0.082	0.046	0.440	0.337

Table 12 Robustness check with alternative time windows

This table documents the effect of earnings management on abnormal media tone. we choose 20, 40 and 60 days before the annual report as alternative time windows. Industry and year fixed effects (*Industry* and *Year* dummies) are included in the regression. Figures in parentheses are *t*-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	20 days		40 days		60 days	
	(1)	(2)	(3)	(4)	(5)	(6)
	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
DAC_t	0.041*	0.041**	0.069***	0.069***	0.077***	0.076***
	(1.92)	(1.97)	(2.63)	(3.67)	(3.36)	(4.58)
$SIZE_t$	0.008***	0.008***	0.017***	0.009**	0.016***	0.008***
	(2.62)	(2.75)	(4.71)	(3.45)	(5.07)	(3.69)
LEV_t	-0.053***	-0.053***	-0.073***	-0.058***	-0.070***	-0.057***
	(-5.20)	(-5.22)	(-5.79)	(-6.41)	(-6.33)	(-7.16)
BM_t	-0.041***	-0.042***	-0.075***	-0.051***	-0.086***	-0.056***
	(-3.09)	(-3.18)	(-4.52)	(-4.27)	(-5.89)	(-5.32)
AGE_t	0.001**	0.001**	0.001***	0.001***	0.002***	0.001***
	(1.95)	(2.12)	(2.65)	(2.69)	(3.56)	(4.12)
SOE_t	0.010**	0.011**	0.020***	0.013***	0.023***	0.015***
	(2.28)	(2.41)	(3.59)	(3.31)	(4.72)	(4.19)
$ANLST_t$	0.013***	0.013***	0.021***	0.016***	0.022***	0.016***
	(5.38)	(5.57)	(7.15)	(7.50)	(8.52)	(8.87)
INS_t	0.001***	0.001***	0.002***	0.001***	0.002***	0.001***
	(4.72)	(4.68)	(5.33)	(4.35)	(5.31)	(4.37)
ROA_t	0.036	0.033	0.098**	0.052*	0.089**	0.052*
	(1.03)	(0.95)	(2.26)	(1.67)	(2.35)	(1.89)
EPS_t	0.005	0.005	0.006	0.005	0.011***	0.009***
	(1.41)	(1.39)	(1.39)	(1.59)	(2.79)	(3.05)
*MC*t	-0.033***	-0.032***	-0.055***	-0.039***	-0.057***	-0.040***
	(-10.54)	(-10.26)	(-14.29)	(-14.20)	(-16.82)	(-16.28)
$Intercept_t$	-0.025	-0.014	-0.110*	-0.012	-0.090	-0.005
	(-0.48)	(-0.27)	(-1.68)	(-0.25)	(-1.55)	(-0.11)
Fixed Industry	YES	YES	YES	YES	YES	YES
Fixed Year	YES	YES	YES	YES	YES	YES
N	11,446	11,446	11,446	11,446	11,446	11,446
R-squared	0.058	0.032	0.092	0.106	0.139	0.157

Table 13 Robustness check with province-fixed effects

This table shows the Robustness check with province-fixed effects. *Province, Industry* and *Year* refer to province, industry and year fixed effects, respectively. Figures in parentheses are *t*-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)
	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
DAC_t	0.074***	0.064***
	(2.67)	(3.20)
$SIZE_t$	0.012***	0.005*
	(2.95)	(1.84)
LEV_t	-0.055***	-0.044***
	(-4.12)	(-4.69)
BM_t	-0.057***	-0.034***
	(-3.20)	(-2.60)
AGE_t	0.001***	0.001***
	(2.68)	(3.16)
SOE_t	0.014**	0.009**
	(2.24)	(1.96)
$ANLST_t$	0.023***	0.017***
	(7.33)	(7.69)
INS_t	0.002***	0.001***
	(5.41)	(4.46)
ROA_t	0.079*	0.046
	(1.73)	(1.39)
EPS_t	0.007	0.006
	(1.20)	(1.58)
MC_t	-0.051***	-0.037***
	(-12.18)	(-12.36)
$Intercept_t$	-0.009	0.062
	(-0.13)	(1.17)
Fixed Province	YES	YES
Fixed Industry	YES	YES
Fixed Year	YES	YES
N	11,446	11,446
R-squared	0.098	0.098

Table 14 Endogeneity by instrumental variables

This table shows the results that using two stage least square method (2SLS). Specifically, *DAC_Industry* is the average of industry of earnings management. Columns (1) is the result of the first stages and columns (2) and (3) are the results of the second. Industry and year fixed effects (*Industry* and *Year* dummies) are included in the regression. Figures in parentheses are *t*-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1)	(2)	(3)
	DAC_t	Ab_Tone1_{t+1}	Ab_Tone2_{t+1}
$DAC\_Industry_t$	0.981***		
	(17.85)		
DAC_t		0.075***	0.065***
		(2.65)	(3.18)
$SIZE_t$	0.000	0.015***	0.008***
	(0.35)	(4.00)	(2.82)
LEV_t	-0.022***	-0.065***	-0.054***
	(-4.86)	(-4.89)	(-5.61)
BM_t	0.047	-0.073***	-0.046***
	(0.80)	(-4.17)	(-3.58)
AGE_t	-0.001***	0.001**	0.001**
	(-4.77)	(2.08)	(2.50)
SOE_t	-0.008***	0.015**	0.017**
	(-4.09)	(2.48)	(2.14)
$ANLST_t$	0.002**	0.022***	0.015***
	(2.38)	(7.22)	(7.64)
INS_t	-0.000	0.002***	0.001***
	(-0.19)	(5.15)	(4.20)
ROA_t	-0.098***	0.057	0.029
	(-6.43)	(1.25)	(0.88)
EPS_t	0.018***	0.008	0.007*
	(11.21)	(1.59)	(1.90)
MC_t	-0.001	-0.054***	-0.039***
	(-0.34)	(-13.32)	(-13.27)
$Intercept_t$	0.007	-0.071	0.015
	(0.28)	(-1.02)	(0.30)
Fixed Industry	YES	YES	YES
Fixed Year	YES	YES	YES
N	11,446	11,446	11,446
R-squared	0.057	0.079	0.088
F-statistics for the joint significance of the instruments		559.51***	545.90***

Table 15 Endogeneity by analyst expectations

This table documents the effect of earnings management on abnormal media tone after controlling analyst expectations. *△ANLST_average* equals the average of analyst expectations of company *i* in 30 days before the annual report of year t minus actual EPS in year *t*-1. The dependent variable for columns (1) and (3) are Ab_Tone1_{t+1} and Ab_Tone2_{t+1} are for columns (2) and (4). Industry and Fixed Years (*Industry* and *Year* dummies) are included in the regression. Figures in parentheses are t-statistics, which are based on standard errors adjusted for firm and time clustering (Petersen, 2009). Levels of significance are denoted by *(10%), **(5%), and ***(1%).

	(1) Ab_Tone1_{t+1}	(2) Ab_Tone2_{t+1}	(3) Ab_Tone1_{t+1}	(4) Ab_Tone2_{t+1}
DAC_t	0.072***	0.061***	0.071**	0.061***
	(2.59)	(3.04)	(2.56)	(3.05)
$ANLST\_average_t$	0.009	-0.003		
	(1.04)	(-0.52)		
$\triangle ANLST\_average_t$			0.002	-0.010
			(0.15)	(-0.88)
$SIZE_t$	0.015***	0.008***	0.015***	0.008***
	(3.95)	(2.83)	(3.99)	(2.82)
LEV_t	-0.064***	-0.053***	-0.063***	-0.052***
	(-4.79)	(-5.44)	(-4.77)	(-5.42)
BM_t	-0.073***	-0.046***	-0.074***	-0.046***
	(-4.14)	(-3.63)	(-4.19)	(-3.64)
AGE_t	0.001**	0.001***	0.001**	0.001***
	(2.23)	(2.61)	(2.18)	(2.66)
SOE_t	0.015**	0.010**	0.015**	0.010**
	(2.56)	(2.26)	(2.57)	(2.26)
$ANLST_t$	0.022***	0.017***	0.022***	0.017***
	(7.13)	(7.57)	(7.14)	(7.47)
INS_t	0.002***	0.001***	0.002***	0.001***
	(5.06)	(4.24)	(5.15)	(4.23)
ROA_t	0.063	0.036	0.064	0.035
	(1.38)	(1.07)	(1.40)	(1.06)
EPS_t	0.004	0.006*	0.006	0.006*
	(0.88)	(1.66)	(1.26)	(1.72)
MC_t	-0.054***	-0.039***	-0.054***	-0.039***
	(-13.35)	(-13.25)	(-13.32)	(-13.26)
$Intercept_t$	0.079	0.015	-0.069	0.015
	(1.14)	(0.30)	(-1.00)	(0.30)
FixedIndustry	YES	YES	YES	YES
FixedYear	YES	YES	YES	YES
N	11,446	11,446	11,446	11,446
R^2	0.079	0.088	0.079	0.088

Appendix A Variable definitions.

Variable	Definitions
DAC	The regression residual is calculated by modified Jones model.
Ab_Tone1	The difference between the news tone of report j of firm i during the 30 days and the average media tone of the other companies in the same industry in 30 days before earnings announcement.
Ab_Tone2	The difference between the news tone of report j of firm i during the 30 days and the average media tone during the period between last earnings announcement and 30 days before this earnings announcement.
REDUC	*REDUC*=1 if the CEO reduces his equity in the 180 days after the annual report and *REDUC*=0 otherwise.
MEDIA	*MEDIA*=1 if managers of the company have worked or studied in media industry and if not, *MEDIA*=0.
AUDIT	The indicator variable for audit firms, equals 1 if the audit firm belong to top 4 audit firms and zero otherwise.
ANLST_average	The average of analyst expectations of company *i* in 30 days before the annual report of year *t.*
△ANLST_average	The difference between analyst prediction and the firm's EPS of the previous year.
Forecast	If the performance forecasts are "*big increase*", "*slight increase*", "*turn loss into profit*" or "*continued profit*", *Forecast* =1; and *Forecast*=0 otherwise.
Earnings	*Earnings* equal to the difference between EPS in preliminary earnings estimate in year *t* and the actual EPS in year *t*-1
SIZE	The natural logarithm of the book value of total assets at the end of the fiscal year.
LEV	Firm financial leverage, calculated as total liabilities divided by total assets.
BM	The market-to-book ratio.
AGE	The natural logarithm of the years after IPO.
SOE	The indicator variable for executive ownership, equals 1 if the company is owned by state and zero otherwise.
ANLST	The natural logarithm of one plus the number of firm's followed analysts.
INS	The proportion of institutional shareholding in total shares.
ROA	Return on assets measured at the end of fiscal year t.
EPS	The ratio of profit after tax to total equity.
MC	The natural logarithm of media attention plus 1.
*DAC*1	The regression residual is calculated by modified Jones model.
*DAC*2	*DAC*2=1 if DAC>0 and *DAC*2=0 otherwise
Ab_Tone3	The news tone calculated by Eq. (2) is divided into quintiles and we define *Firm_Tone1* by Eq. (8). The measurement of abnormal media

	tone is calculated by Eq. (3).
Ab_Tone4	The news tone calculated by Eq. (2) is divided into quintiles and we define *Firm_Tone1* by Eq. (8). The measurement of abnormal media tone is calculated by Eq. (4).
Ab_Tone5	The news tone is calculated by Eq. (9) in which we use the intensity of news tone as weights. The measurement of abnormal media tone is calculated by Eq. (3).
Ab_Tone6	The news tone is calculated by Eq. (9) in which we use the intensity of news tone as weights. The measurement of abnormal media tone is calculated by Eq. (4).