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ORIGINAL RESEARCH

Media Coverage, Real Earnings Management, and Long-Run Market Performance: Evidence from Chinese IPOs

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Abstract

This study investigates how real earnings management (REM) in the initial public offering (IPO) year affects long-run post-IPO market performance. The empirical results show that the effect of REM on a firm's stock returns varies with the forms of REM. Abnormal production costs are positively associated with long-run returns, whereas abnormal cuts in discretionary expenses are negatively associated with long-run returns. These results suggest that investors are not fully aware of the implications of REM and initially undervalue or overvalue the firm based on different REM activities. Further, this study examines the long-run role of the media in the capital market by examining the impact of media coverage on the consequences of IPO firms' REM practices. The results indicate that the associations between REM and stock returns become weaker if the IPO firm is more visible through the media. Additional analyses show that retail investors are more likely to initially misprice REM activities and be influenced by media information. Compared with media coverage, audit quality or analyst following has a relatively less pronounced effect on the consequences of REM activities. These findings imply that media coverage appears to mitigate the influence of REM on stock returns, facilitating market efficiency after a firm's IPO in the long run.

Keywords Media · Real earnings management · Initial public offering · Market performance

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1 Introduction

The initial public offering (IPO) is considered a very special period when a firm is transferred from private to public ownership. Prior studies suggest that IPO firms have strong incentives to engage in earnings management (Teoh et al., 1998). For example, managers tend to cook the book to avoid future litigation risks due to abnormal stock price declines after the listing (Teoh et al., 1998). Some scholars argue that firms are more likely to engage in real earnings management (REM) relative to accrual earnings management (AEM) because REM is harder to detect (Cohen et al., 2008; Graham et al., 2005; Roychowdhury, 2006) and easier to conduct throughout the year. As the balance sheet accumulates all the previous changes in accounting methods (Barton & Simko, 2002), firms that undertook extensive AEM in previous years potentially use REM in the current period (Barton & Simko, 2002; Gunny, 2010). Therefore, firms may be more willing to engage in REM in the IPO year.

Prior research shows that firms with more earnings management in the IPO year subsequently experience poorer stock performance (Cohen & Zarowin, 2010; Roychowdhury et al., 2012; Teoh et al., 1998). In a seminal paper, Teoh et al. (1998) prove that firms with more AEM behavior in the IPO year exhibit greater underperformance in the subsequent three years. Follow-up research shows that REM activities can also lead to underperformance and have worse consequences than AEM (Cohen & Zarowin, 2010; Roychowdhury et al., 2012). On the other hand, some studies pointed out that firms may use REM as a signaling mechanism for favorable future operating performance (Gunny, 2010), especially when they have weak information environments (Beyer et al., 2018). In the Chinese setting, although some studies have proved significant relationships between various forms of earnings management and the long-run market performance, there is little research on how REM and long-run post-IPO returns are related.

As one of the effective information intermediaries, the media usually serve as an external supervisor of managerial opportunism, alleviating information asymmetry and facilitating market efficiency (Bushee et al., 2009; Drake et al., 2014; Fang & Peress, 2009; Peress, 2014). Consistent with this view, Chen et al. (2021) find that the media improve the information environments of IPO companies, suppressing both AEM and REM practices. Additionally, Chahine et al. (2015) find that informative news could weaken the negative impact of pre-equity carve-outs (pre-ECO) earnings management on long-run ECO performance. Although the media could be helpful for investors, some news reports could be detrimental if they provide biased information or impose short-term performance pressure on managers (Dai et al., 2021). Accordingly, Media coverage may amplify the negative effect of earnings management on future returns. This study investigates the long-run role of the media in the capital market by examining the impact of media coverage on the consequences of IPO firms' REM practices.

In this study, I use a sample of 1,006 Chinese IPOs issued over the 2010–2017 period. I focus on the Chinese setting for three reasons. First, according to the study of Boulton et al. (2011), the Chinese capital market is worth investigating, as it has the highest level of underpricing (120.72%), the highest score in average aggregate earnings management[1] (35.87), and the highest score in average earnings opacity[2] (8.03) among 37 countries in their research. Likewise, Eng and Lin (2012) find that many Chinese companies, even those cross-listed in the US, have significant accounting deficiencies. In this sense, the association between earnings management and the firm's future performance in China is more important than elsewhere. Second, unlike many stock markets around the world, most trades on the Chinese stock market are made by retail investors (Dai et al., 2016). Compared with institutional investors, retail investors typically encounter more difficulties in either acquiring or processing information related to corporate performance. Thus, the media could become one of their important information sources. Finally, most media are owned by the government in China (He et al., 2008). This unique characteristic presents an interesting question: Can media still effectively influence the capital market despite that media are mainly controlled by the government?

Inspired by Teoh et al. (1998) that investors may not have full knowledge of earnings immediately, I hypothesize that earnings management around the IPO temporarily boosts stock prices, which will revert gradually over time. Therefore, I expect a negative relationship between REM and the long-run market performance. Following Roychowdhury (2006), I measure REM through abnormal production costs, abnormal reduction of abnormal discretionary expenses, and abnormal reduction of operating cash flows. The results present that the market consequences of REM vary depending on the form of REM practices. Abnormal reduction of operating cash flows and abnormal reduction of abnormal discretionary expenses are negatively related to long-run returns. This finding implies that the impact of cuts in operating cash flows or discretionary expenses is reversed in the long run, the biased market belief tends to correct itself and prices decline. In contrast, I find that abnormal production costs are positively related to long-run returns, which is not in line with my expectation or some previous research. This finding implies that some REM practices could predict positive long-run stock returns. One potential explanation is that managers engage in

[1] The average aggregate earnings management is defined as the average country ranking of EM1, EM2, EM3, and EM4. EM1 is defined as the median ratio in country *i* of the firm-level standard deviations of operating earnings over the cash flow from operating activities (both scaled by lagged total assets), multiplied by -1. EM2 is defined as the cross-sectional correlation in country *i* between the change in accruals and change in cash flows from operating activities (both scaled by lagged total assets), multiplied by − 1. EM3 is defined as the median ratio in country *i* of the absolute value of accruals over the absolute value of cash flow from operating activities. EM4 is defined as the ratio in country i of the number of firms reporting small profits over the sum of the number of firms reporting small losses and profits. A smaller profit (loss) is defined as a value of net earnings scaled by lagged total assets in the range [0, 0.01] ([− 0.01, 0]).

[2] The average earnings opacity is defined as the average country *i* decile ranking across EM2, EM4, and earnings aggressiveness, where earnings aggressiveness is the median ratio in country *i* of total accruals over the lagged total assets.

overproduction to signal future operating performance. Investors are initially not aware of the implication of managerial behavior and undervalue the firm based on high abnormal production costs. When the firm's performance becomes available, investors revise their belief upward, resulting in positive stock returns in the long term. This argument is examined and confirmed in the additional analyses using data on the IPO firms and their matching non-IPO firms.

Next, I examine whether media coverage could influence the relationship between REM behavior in the IPO year and subsequent stock returns. I find that the positive association between abnormal production costs and stock returns becomes weaker if an IPO firm is more visible through the media. Meanwhile, the negative relationship between the abnormal reduction of discretionary expenses and stock returns is alleviated if an IPO company has more media exposure. These findings suggest that media coverage could mitigate the influence of REM on stock returns, improving market efficiency. Thus, my empirical results support the monitoring role of media in the capital market.

Further, as retail investors may have worse information-processing abilities, they are more likely to temporarily misprice the IPO firms' REM activities based on their biased beliefs than institutional investors. Thus, I expect and confirm that the relationship between REM and future performance is less pronounced when the IPO firm is with higher institutional ownership. I also investigate the different effects of media coverage on retail and institutional investors. Retail investors are more likely to be influenced by news articles than institutional investors because they have less access to corporate information and the media could become one of their important information sources. Consistent with this view, I expect that the media have fewer effects on the relationship between REM and future performance when the IPO firm is with higher institutional ownership. My findings support this conjecture. I also compare the role of audit quality and analyst following with the role of media coverage and the results confirm the effective monitoring role of media coverage in the IPO year.

This study makes several contributions to the literature. First, this study contributes to the earnings management literature by documenting how different forms of REM activities influence post-IPO performance. This study should be useful to market participants and academic researchers who are interested in the consequences of REM on public companies and capital markets. Second, this research adds new empirical evidence to the ongoing debate about the role of the media in the Chinese capital market from the perspective of REM. This study shows that media coverage has a real impact on the market by mitigating the positive (negative) influence of overproduction (reduction of discretionary expenditures) on long-run stock performance. Although these findings imply that the effects of media on the consequences of REM vary with the forms of REM practices, they are generally consistent with the literature about the monitoring role of the media in the capital market (Dai et al., 2015; Liu & McConnell, 2013), suggesting that media coverage plays an important role in improving the market's ability to efficiently incorporate accounting information into stock prices.

The rest of the paper is organized as follows. Section 2 reviews existing literature and describes hypothesis development. Section 3 describes the sample

selection and data. Section 4 shows the empirical results. Section 5 shows the results of additional analyses, and Sect. 6 concludes.

2 Relevant Literature and Hypothesis Development

2.1 REM Around the IPO

REM refers to managers using real activities to manipulate earnings. Roychowdhury (2006) defines REM as "departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting objectives have been achieved in the normal course of operations." REM includes opportunism actions such as reducing discretionary spending (e.g., R&D, advertising, and maintenance), delaying new project launches, overproduction, and accelerating sales.

Prior research suggests that IPO firms have strong incentives to engage in earnings management. Teoh et al. (1998) indicate that the lock-up restriction on managers' stock sales after IPO, avoiding future litigation risks due to abnormal post-IPO share price declines, executive compensation, and meeting earnings forecasts are strong drivers of upward earnings management at the end of the IPO year. Numerous studies have found evidence that IPO firms increase reported earnings through AEM (Aharony et al., 1993; Teoh et al., 1998) and/or REM practices (Darrough & Rangan, 2005; Fedyk et al., 2017) around the IPO to maintain high stock prices.

Some scholars argue that firms are more likely to engage in REM relative to AEM for several reasons. First, REM is less likely to be detected by auditors, regulators, and investors than AEM (Cohen et al., 2008; Graham et al., 2005; Roychowdhury, 2006). Second, REM occurs throughout the year, while AEM is only undertaken at the end of a quarter or fiscal year. Managers may not be able to meet their earnings goals if they only manage earnings with accrual accounts. Finally, as the balance sheet accumulates all the previous changes in accounting methods (Barton & Simko, 2002), firms that undertook extensive AEM in previous years tend to use REM in the current period (Barton & Simko, 2002; Gunny, 2010). Therefore, firms may prefer to engage in REM in the IPO year.

Overall, given the strong incentives of REM activities in the IPO year, it is important to investigate whether such activities influence a company's market performance post IPO and whether media coverage can serve as a monitoring mechanism to mitigate the influence of such activities.

2.2 Earnings Management and Post-IPO Market Performance

Earnings management activities could reduce firm value because actions taken to boost current earnings could negatively affect future cash flows (Roychowdhury, 2006). For instance, overproduction creates excess inventories, which increases inventory holding costs in the subsequent periods. Due to the influence of cognitive

bias, investors may not fully understand managed earnings and temporarily overvalue the IPO firms based on their biased beliefs (Shen et al., 2014). As the effects of earnings management are reversed in the long term, the biased market belief tends to correct itself and prices decline (Shen et al., 2014). Consequently, earnings management that occurs in the IPO year potentially negatively influences stock returns in the post-IPO period (Chang et al., 2010; Fang & Peress, 2009; Teoh et al., 1998). Teoh et al., (1998) find that IPOs that conduct accrual earnings manipulation experience declines in long-run stock returns after the IPO. Shen et al. (2014) confirm that IPO firms with more managed accruals tend to be overvalued immediately after going public, leading to poorer stock performance in the long run.

REM activities have also been found to negatively influence subsequent stock returns and operating performance, and the consequences may be severer than those of AEM (Cohen & Zarowin, 2010; Roychowdhury et al., 2012). In the Chinese setting, Li (2010) finds that firms with higher abnormal production costs or lower cash flows from operations potentially have lower subsequent stock returns. Thus, I expect:

H1 REM in the IPO year is negatively related to stock returns in the three years thereafter.

In contrast, some studies document a positive relationship between REM and future performance (e.g. Beyer et al., 2018; Gunny, 2010). Managers can use REM to avoid losses or earnings declines in an effort to enhance the firm's credibility and reputation with stakeholders (Bartov et al., 2002). The enhanced reputation allows the firm to perform better in the future. Consistent with this view, Gunny (2010) finds that REM is positively related to future performance when firms meet earnings benchmarks, suggesting that managers may use REM as a signaling mechanism for future operating performance. Beyer et al. (2018) show that firms with poor information environments are more likely to use REM to signal their favorable prospects. As IPO firms have weak information environments, their managers are more likely to engage in some REM activities to signal a positive future outlook, resulting in a positive relationship between some REM behavior and future operating performance. Meanwhile, as investors are not fully aware of the implication of these REM activities, they may initially undervalue the firm based on REM and correct their belief when information about favorable corporate performance becomes available. Thus, some REM activities may be positively related to long-run market returns. As a result, in the Chinese IPO setting, the relationship between REM and future returns is largely an empirical matter.

2.3 Market Performance and the Interaction Between Media Coverage and Earnings Management

Since earnings management is a common way for managers to maximize their own interests at the expense of the company's long-term value, it is important to examine whether the media have a positive or negative effect on earnings management,

which in turn has an impact on the capital market. The "effective supervision hypothesis" supports that media could serve as an external supervisor of managerial opportunism, alleviating the degree of information asymmetry in the market, and thereby effectively inhibiting earnings management behavior. Accordingly, the more the media attention, the more supervision and governance effects it can have on listed companies and the weaker the association between earnings management and subsequent stock returns. Consistent with this view, Chahine et al. (2015) examine and confirm that a high level of informative news at the time of the equity carve-outs (ECO) will moderate the negative impact of pre-ECO earnings management on long-run ECO performance. Additionally, Drake et al. (2014) find that media attention mitigates cash flow mispricing and media coverage can help the market better understand accounting information.

On the other hand, the "market pressure hypothesis" indicates that media attention could impose short-term market pressure on managers, inducing them to manipulate earnings. When the firm is with more media exposure, managers may manage earnings to avoid announcing negative earnings news or to achieve short-term goals because the negative consequences of unfavorable earnings will be exacerbated by sensational news reports. Accordingly, the more the media attention, the stronger the association between earnings management and subsequent stock returns. Consistent with this view, several studies find a positive relationship between media reporting and REM (Dai et al., 2015; Meng, 2020), but it is unclear whether media coverage mitigates or amplifies the effect of REM in the IPO year on the long-run market performance. Overall, I expect:

H2 Media coverage in the IPO year mitigates the relationship between REM in the IPO year and stock returns in the three years thereafter.

3 Sample and Data

3.1 Sample Selection

This study will use A-share IPOs in Chinese market markets. Financial data and stock returns are obtained from the China Stock Market and Accounting Research (CSMAR) database, and data on media coverage are collected from the “Daily News” section of the RESSET database.[3] This section collects public news on specific stocks from well-known media sources, including Shanghai Securities News, Securities Times, China Economic Net, Sina Finance, and Tencent Finance. The content of these news articles includes financial results, corporate fraud, and product marketing information. The sample includes IPOs during the 2010–2017 period and excludes financial firms. I require that CSMAR coverage of the security includes the necessary data to analyze REM. Based on these restrictions, the sample has 1,006 IPO firms listed from 2010 to 2017. Table 1 presents the distribution of IPO firms by year and by industry. Panel A shows

[3] The CSMAR and the RESSET are two leading economic and financial data providers in China.

Table 1 Sample IPOs characteristics

Panel A: Time distribution

Year	Freq.	Percent
2010	213	21.17
2011	117	11.63
2012	42	4.17
2014	60	5.96
2015	97	9.64
2016	166	16.50
2017	311	30.91
Total	1006	100.00

Panel B: Industry distribution

Industry code	Freq.	Percent	Specification
A	9	0.89	Agriculture
B	8	0.80	Mining
C	783	77.83	Manufacturing
D	11	1.09	Electronic, gas, and water production and supply
E	31	3.08	Construction
F	28	2.78	Wholesale and retail
G	15	1.49	Transportation
H	70	6.96	Accommodation and food services
L	11	1.09	Leasing and business services
M	18	1.79	Science
N	10	0.99	Utilities
Q	1	0.10	Health and social work
R	11	1.09	Media
Total	1006	100.00	

This table consists of 1006 IPO firms going to public in the period from 2010 to 2017. Panel A and Panel B report the distribution by year and industry respectively. The industry codes used in this paper are issued by China Security Regulate Committee

that the largest number of IPO firms was in 2017 (30.91 percent of the sample), while the number of IPOs in 2012 was small (4.17 percent of the sample). None of the IPOs in 2013 is included in this sample.[4] Except for these years, the distribution of IPOs is relatively even (6–21 percent of the sample per year). Panel B shows that the largest number of IPO firms was in the manufacturing industry (77.83 percent of the sample).

[4] China Securities Regulatory Commission suspended IPO from November 2012 to November 2013, so only two firms were listed in 2013. These two IPOs are excluded from the sample due to a lack of necessary data to estimate REM measures.

3.2 Measures of REM

Following prior literature (Cohen & Zarowin, 2010; Roychowdhury, 2006), this study measures REM using abnormal production costs, abnormal discretionary expenses, and abnormal operating cash flows and uses the model developed by Dechow et al. (1998) and implemented by Roychowdhury (2006). I first estimate the normal level of production costs using the following cross-sectional regression for each industry and year for all non-IPO firms.[5]

$$\frac{PROD_{i,t}}{AT_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{AT_{i,t-1}} + \beta_2 \frac{SALE_{i,t}}{AT_{i,t-1}} + \beta_3 \frac{\Delta SALE_{i,t}}{AT_{i,t-1}} + \beta_4 \frac{\Delta SALE_{i,t-1}}{AT_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

where i denotes firm, t denotes year, *PROD* is the sum of the cost of goods sold and the change in inventory from year t-1 to t, *AT* is the firm's book assets; *SALE* is the firm's sales revenue, and ε is the error term. I estimate the equation for each industry in each year and require each industry-year to have at least 6 observations. Abnormal production costs (*ABPROD*) are calculated as actual *PROD* minus the normal level of *PROD* estimated using the coefficients from regression (1). Higher values of *ABPROD* indicate more REM.

Further, the normal level of discretionary expenses can be expressed as follows:

$$\frac{DISX_{i,t}}{AT_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{AT_{i,t-1}} + \beta_2 \frac{SALE_{i,t-1}}{AT_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

where *DISX* is the sum of R&D, advertising, and selling, general and administrative (SG&A) expenses. Following Cohen and Zarowin (2010), I set R&D and advertising expenses to zero if they are missing. All other variables are as defined in Eq. (1). I conduct the same industry-year regressions using non-IPO firms and define abnormal discretionary expenses (*ABDISX*) of IPO firms as actual *DISX* minus the normal level of *DISX* estimated using the coefficients from regression (2). Lower values of *ABDISX* indicate more REM. I multiply *ABDISX* by negative one and get the new variable (*N_ABDISX)* so that higher values of this measure indicate more REM.

Last, the normal level of operating cash flows can be expressed as follows:

$$\frac{CFO_{i,t}}{AT_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{AT_{i,t-1}} + \beta_2 \frac{SALE_{i,t}}{AT_{i,t-1}} + \beta_3 \frac{\Delta SALE_{i,t}}{AT_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

where *CFO* is the firm's operating cash flows. All other variables are as defined in Eq. (1). I conduct the same industry-year regressions using non-IPO firms and define abnormal operating cash flows (*ABCFO*) of IPO firms as actual *CFO* minus the normal level of *CFO* estimated using the coefficients from regression (3). Lower values of *ABCFO* indicate more REM. I multiply *ABCFO* by negative one and get the new variable (*N_ABCFO*) so that higher values of this measure indicate more

[5] The IPO firms and other firms conducting an IPO or SEO firm in the year are not included in the regression.

REM. Finally, I combine the three individual measures into one comprehensive REM measure (*TREM*) as *ABPROD* plus *N_ABDISX* and *N_ABCFO*.

3.3 Measures of Long-Run Market Performance

Following Ritter and Welch (2002), this research estimates the buy-and-hold abnormal returns (*BHAR*) using a market benchmark. Returns are calculated from the beginning of the fifth month after the IPO-year fiscal year-end so that all the earnings information contained in the first financial statement can be known for sure to investors.[6] *BHAR* is given in Eq. (4).

$$BHAR[0,T] = \frac{\sum_{i=1}^{N}\left[\prod_{t=1}^{T}\left(1+r_{i,t}\right)-\prod_{t=1}^{T}\left(1+r_{m,t}\right)\right]}{N} \tag{4}$$

where $r_{i,t}$ and $r_{m,t}$ are monthly raw return for stock i and market return, and N is the number of stocks in the month t. I estimate the long-run performance up to 36 months post-IPO.

3.4 Measures of Media Coverage

To measure media coverage, I first obtain the number of news articles with the firm as the subject in the IPO year from the RESSET database. If the news article is issued on a non-trading day, the issue date is adjusted to the next trading day. The logarithm of one plus the sum of news reports in the sample frame (ln(*News*)) is used in the analyses.

3.5 Control Variables

Following prior studies (e.g., Bergstresser & Philippon, 2006), this research uses the following variables to control for several firm-level characteristics that could affect REM behavior or long-run returns. The Appendix provides detailed definitions of these variables.

Dsale is asset-scaled sales growth in the IPO year. *DNI* is the asset-scaled net income growth in the IPO year. *DCapExp* is the asset-scaled mean capital expenditures in years 1, 2, and 3 less the asset-scaled mean expenditures in years −1 and 0, where the year 0 is the IPO year. *IR* is an IPO firm's initial return. *MktRet* is the contemporaneous three-year value-weight buy-and-hold return from the exchange where the IPO is listed, calculated from the listing month. ln(*AGE*) is the logarithm of one plus the firm's age. ln(*MV*) is the logarithm of market value at the first post-IPO fiscal year-end. ln(*BM*) is the logarithm of the book-to-market ratio (BV/MV). ln(*Analyst*) is the logarithm of one plus the sum of analyst reports covering the firm in the IPO year. *Big10* is an indicator variable, which takes a value of one if the firm has a big-ten auditor and zero otherwise.

[6] The Chinese listed firms are required to release their audited annual reports by the end of the following April.

Underwriter is an indicator variable, which takes a value of one if the underwriter of the IPO firm in the current year ranks in the top ten among all underwriters and zero otherwise. ln(*Days)* is the logarithm of the number of days between the IPO date and the first post-IPO fiscal year end.

Finally, following the modified Jones (1991) model of Dechow et al. (1995), I estimate abnormal discretionary accruals as follows:

$$\frac{TA_{i,t}}{AT_{i,t-1}} = \alpha_0 + \beta_1 \frac{1}{AT_{i,t-1}} + \beta_2 \left(\frac{\Delta REV_{i,t}}{AT_{i,t-1}} - \frac{\Delta AR_{i,t}}{AT_{i,t-1}} \right) + \beta_3 \frac{PPE_{i,t}}{AT_{i,t-1}} + \varepsilon_{i,t} \quad (5)$$

where *TA* is total accruals, calculated as the difference between income before extraordinary items and operating cash flows; ΔREV is the change in sales from year t−1 to t; ΔAR is the change in accounts receivable from year $t-1$ to t; and *PPE* is gross property, plant, and equipment. All other variables are as defined in Eq. (1). I estimate the regression in each year for each industry and require each industry-year to have at least 6 observations. Discretionary accruals are calculated as the residuals from Eq. (5). Because discretionary accruals can be either income-increasing or income-decreasing, I use the absolute value of discretionary accruals (Abs(*DTAC*)) as the control variable. Higher values of Abs(*DTAC*) indicate more AEM.

3.6 Empirical Model

This study examines the long-run post-IPO market consequence of REM and analyzes the effect of media coverage on the relationship between REM and long-run post-IPO returns. In the following models, i denotes firm, t denotes year, and ε is the error term. I test the hypothesis H1 by the significance and direction of β_1 in Eq. (6). Similarly, the significance and direction of the significance and direction of β_3 in Eq. (7) examine the hypothesis H2.

$$\begin{aligned} BHAR_{i,t} =& \alpha_0 + \beta_1 REM_{i,t} + \beta_2 \text{Abs}(DTAC)_{i,t} + \beta_3 Dsale_{i,t} + \beta_4 DNI_{i,t} + \beta_5 CapExp_{i,t} \\ &+ \beta_6 IR_{i,t} + \beta_7 MktRet_{i,t} + \beta_8 \ln(AGE)_{i,t} + \beta_9 \ln(MV)_{i,t} + \beta_{10} \ln(BM)_{i,t} \\ &+ \beta_{11} \ln(Analyst)_{i,t} + \beta_{12} Big10_{i,t} + \beta_{13} UnderWriter_{i,t} \\ &+ \beta_{14} \ln(Days)_{i,t} + Year + Industry + \varepsilon_{i,t} \end{aligned} \quad (6)$$

$$\begin{aligned} BHAR_{i,t} =& \alpha_0 + \beta_1 \ln(News)_{i,t} + \beta_2 REM_{i,t} + \beta_3 REM_{i,t} * \ln(News)_{i,t} \\ &+ \beta_4 \text{Abs}(DTAC)_{i,t} + \beta_5 Dsale_{i,t} + \beta_6 DNI_{i,t} + \beta_7 DCapExp_{i,t} + \beta_8 \text{IR}_{i,t} \\ &+ \beta_9 MktRet_{i,t} + \beta_{10} \ln(AGE)_{i,t} + \beta_{11} \ln(MV)_{i,t} + \beta_{12} \ln(BM)_{i,t} \\ &+ \beta_{13} \ln(Analyst)_{i,t} + \beta_{14} Big10_{i,t} + \beta_{15} UnderWriter_{i,t} + \beta_{16} \ln(Days)_{i,t} \\ &+ Year + Industry + \varepsilon_{i,t} \end{aligned} \quad (7)$$

Table 2 Descriptive statistics

Variable	n	Mean	S.D	Min	0.250	Mdn	0.750	Max
ABPROD	1,006	0.04	0.14	−0.63	−0.03	0.01	0.08	0.92
N_ABDISX	1,006	−0.02	0.17	−0.50	−0.11	−0.04	0.06	1.13
N_ABCFO	1,006	−0.03	0.13	−0.73	−0.06	0.00	0.04	0.38
TREM	1,006	0.00	0.23	−0.94	−0.12	−0.03	0.08	1.59
3-year BHAR	1,006	0.12	1.07	−1.30	−0.50	−0.17	0.37	12.20
ln(*News*)	1,006	3.72	0.72	1.95	3.18	3.61	4.19	6.14
Abs(*DTAC*)	1,006	0.12	0.14	0.00	0.03	0.08	0.16	1.52
Dsale	1,006	0.19	0.26	−0.80	0.05	0.14	0.27	2.96
DNI	1,006	0.02	0.05	−0.19	0.00	0.01	0.04	0.48
DCapExp	1,006	0.12	0.18	−0.30	0.01	0.07	0.17	1.84
IR	1,006	0.40	0.25	−0.23	0.38	0.44	0.44	2.35
MktRet	1,006	0.04	0.29	−0.30	−0.15	−0.02	0.09	1.32
ln(*AGE*)	1,006	8.21	0.64	5.92	7.97	8.35	8.65	9.47
ln(*MV*)	1,006	21.66	0.73	19.94	21.18	21.56	22.03	26.37
ln(*BM*)	1,006	−0.52	0.30	−1.67	−0.69	−0.47	−0.30	−0.01
ln(*Analyst*)	1,006	2.88	1.79	0.00	1.10	3.26	4.29	6.35
Big10	1,006	0.57	0.49	0.00	0.00	1.00	1.00	1.00
Underwriter	1,006	0.32	0.47	0.00	0.00	0.00	1.00	1.00
ln(*Days*)	1,006	4.74	1.08	0.00	4.34	5.13	5.47	5.84

This table presents the summary statistics of the variables for the sample period. Variable definitions are provided in the Appendix

4 Results

4.1 Descriptive Statistics

Table 2 presents the summary statistics of the variables in the regression analysis. To mitigate the effects of outliers, all the continuous variables are winsorized at both the 1st and 99th percentiles. The mean values of the REM measures, *ABPROD*, *N_ABDISX*, *N_ABCFO,* and *TREM* are 0.04, −0.02, −0.03, and 0.00, respectively. The average 3-year *BHAR* is 0.12 and the average ln(*News*) is 3.72. For the control variables, the average Abs(*DTAC*) in the sample is 0.12. On average, these firms have a sales growth (*Dsale*) of 19%, a net income growth (*DNI*) of 2%, a capital expenditures growth (*DCapExp*) of 12%, initial returns (*IR*) of 40%, logged ages (ln(*AGE*)) of 8.21, a logged market value (ln(*MV*)) of 21.66, and a logged book-to-market ratio (ln(*BM*)) of −0.52. The mean value of *MktRet* is 4%. The average ln(*Analyst*) is 2.88 and the average ln(*Days*)) is 4.74. About 57% of firms' first post-IPO financial statements are audited by the Big 10, and about 32% of firms have an underwriter ranking in the top ten.

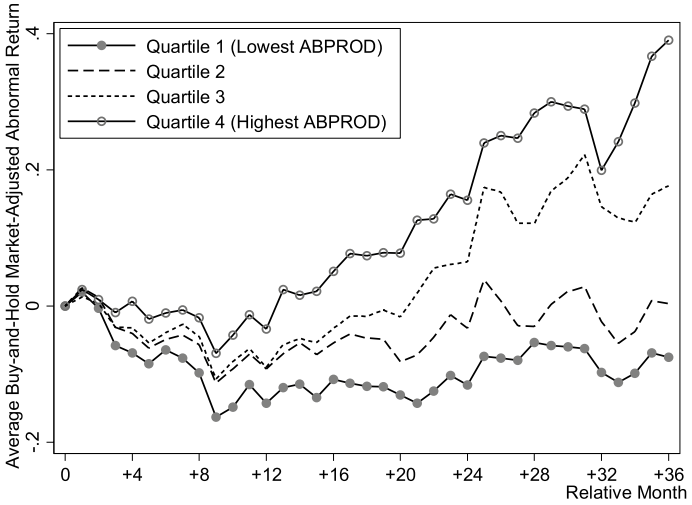

Fig. 1 ABPROD and Average BHAR

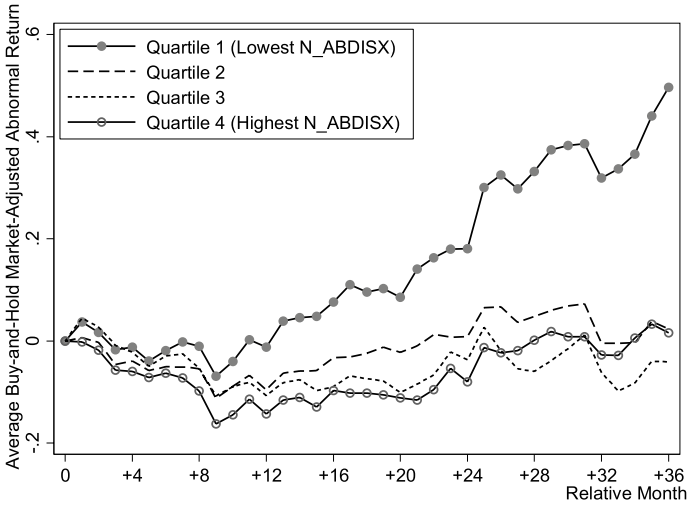

Fig. 2 N_ABDISX and Average BHAR

4.2 REM and the Long-Run Market Performance

4.2.1 Univariable Analysis

In Figs. 1, 2, and 3, IPO firms are ranked in quartiles based on three REM measures, *ABPROD*, *N_ABDISX*, and *N_ABCFO*, respectively. Figures 1, 2, and 3 plot

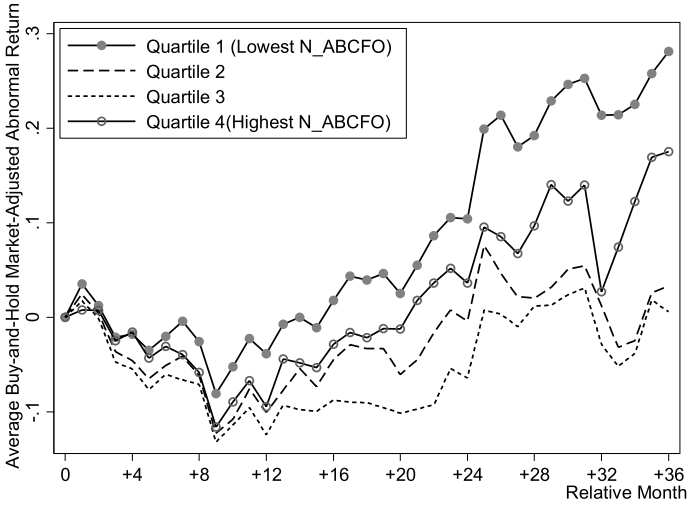

Fig. 3 N_ABCFO and Average BHAR

the time series of the average *BHAR* of four quartile portfolios. Figure 1 shows that IPOs in the fourth quartile overperform those in the first quartile over three years, indicating that firms engaging more in overproduction tend to have higher long-run abnormal returns. Both Figs. 2 and 3 present that the first quartile outperforms the fourth quartile over three years. These results suggest that more abnormal cuts in discretionary expenses or operating cash flows will result in lower long-run abnormal returns.

Table 3 reports the average *BHAR* for each quartile. *BHAR* is provided for each of the one, two, and three subsequent years, calculated from the beginning of the fifth month after the first post-IPO fiscal year-end. IPO firms are ranked in quartiles based on the magnitude of REM. In Columns 1, 2, and 3, *ABPROD* is positively related to *BHAR* for the first, second, and third years. In contrast, Columns 4, 5, and 6 show that *N_ABDISX* is negatively related to *BHAR*. Columns 7, 8, and 9 indicate an insignificant relationship between *N_ABCFO* and *BHAR*. In summary, these results demonstrate the effect of REM on long-run returns varies with the forms of REM activities.

4.2.2 Multivariable Analysis

I further conduct a regression analysis to examine the relationship between various REM activities and 3-year post-IPO abnormal returns. Table 4 reports the results. In Column 1, the coefficient of *ABPROD* is positive, suggesting that IPO firms with more abnormal production costs in the IPO year have higher post-IPO long-run returns. This finding is inconsistent with some previous research (e.g. Li, 2010), which supports that overproduction leads to long-run underperformance. In Columns 2, 3, and 4, the coefficients of *N_ABDISX, N_ABCFO* and *TREM* are negative, indicating that IPO firms reducing more discretionary expenses, operating cash

Table 3 Time-series means of equal weighted portfolio abnormal stock returns

REM =	*ABPROD*			*N_ABDISX*			*N_ABCFO*		
Portfolio	*BHAR*			*BHAR*			*BHAR*		
REM									
Ranking	1-year	2-year	3-year	1-year	2-year	3-year	1-year	2-year	3-year
1	−0.144***	−0.106***	−0.098**	−0.025	0.148***	0.416***	−0.060***	0.072*	0.239***
(t-stat.)	(−9.30)	(−4.05)	(−2.40)	(−1.10)	(3.30)	(4.41)	(−2.94)	(1.72)	(3.23)
2	−0.116***	−0.046	−0.052	−0.067***	0.062	0.143**	−0.104***	−0.009	0.040
(t-stat.)	(−5.67)	(−1.29)	(−0.94)	(−3.26)	(1.48)	(2.27)	(−5.29)	(−0.27)	(0.70)
3	−0.066***	0.063	0.250***	−0.105***	−0.048	−0.023	−0.104***	−0.066*	−0.040
(t-stat.)	(−3.13)	(1.45)	(3.69)	(−5.79)	(−1.53)	(−0.47)	(−5.17)	(−1.89)	(−0.83)
4	−0.031	0.164***	0.399***	−0.162***	−0.088**	−0.037	−0.091***	0.078*	0.260***
(t-stat.)	(−1.42)	(3.49)	(4.39)	(−9.38)	(−2.44)	(−0.77)	(−4.49)	(1.81)	(3.13)
1–4	−0.113***	−0.270***	−0.497***	0.137***	0.236***	0.453***	0.031	−0.006	−0.021
(t-stat.)	(−4.26)	(−5.02)	(−4.99)	(4.73)	(4.10)	(4.26)	(1.09)	(−0.09)	(−0.18)

This table reports the market-adjusted returns of the quartile portfolio for the first, second, or third May-April period. ***, ** , and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in the Appendix

Table 4 The associations between REM and 3-year BHAR

REM =	*ABPROD*	*N_ABDISX*	*N_ABCFO*	*TREM*
Dep. Var. =	(1)	(2)	(3)	(4)
	BHAR	*BHAR*	*BHAR*	*BHAR*
Constant	3.708***	3.918***	3.362***	3.504***
	(3.04)	(3.23)	(2.72)	(2.85)
REM	**0.893*** **	**−1.259*** **	**−0.506** **	**−0.332** **
	(4.05)	**(−5.41)**	**(−2.20)**	**(−2.12)**
Abs(*DTAC*)	−0.360	−0.136	0.164	0.109
	(−1.49)	(−0.57)	(0.54)	(0.38)
Dsale	0.172	0.068	0.260	0.195
	(1.14)	(0.45)	(1.64)	(1.27)
DNI	−1.323*	−1.366*	−1.836**	−1.610**
	(−1.70)	(−1.77)	(−2.19)	(−1.99)
DCapExp	0.964***	0.974***	0.915***	0.925***
	(5.57)	(5.66)	(5.24)	(5.31)
IR	−0.172	−0.142	−0.145	−0.136
	(−1.36)	(−1.13)	(−1.14)	(−1.07)
MktRet	0.280	0.233	0.266	0.253
	(1.20)	(1.01)	(1.14)	(1.08)
ln(*AGE*)	0.034	0.030	0.031	0.027
	(0.71)	(0.64)	(0.64)	(0.55)
ln(*MV*)	−0.214***	−0.219***	−0.203***	−0.206***
	(−4.62)	(−4.77)	(−4.37)	(−4.42)
ln(*BM*)	0.413***	0.398***	0.450***	0.441***
	(3.06)	(2.96)	(3.29)	(3.23)
ln(*Analyst*)	0.124***	0.112***	0.127***	0.126***
	(4.86)	(4.39)	(4.96)	(4.90)
Big10	0.050	0.046	0.039	0.039
	(0.92)	(0.85)	(0.72)	(0.72)
Underwriter	−0.034	−0.026	−0.029	−0.028
	(−0.60)	(−0.48)	(−0.52)	(−0.49)
ln(*Days*)	0.009	0.013	0.016	0.015
	(0.34)	(0.47)	(0.58)	(0.55)
Year, Industry	Yes	Yes	Yes	Yes
Adj. R-squared	0.282	0.292	0.273	0.273
Observations	1006	1006	1006	1006

This table presents the results of OLS regression analysis on the relationship between REM in the IPO year and long-run post-IPO stock returns. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in the Appendix

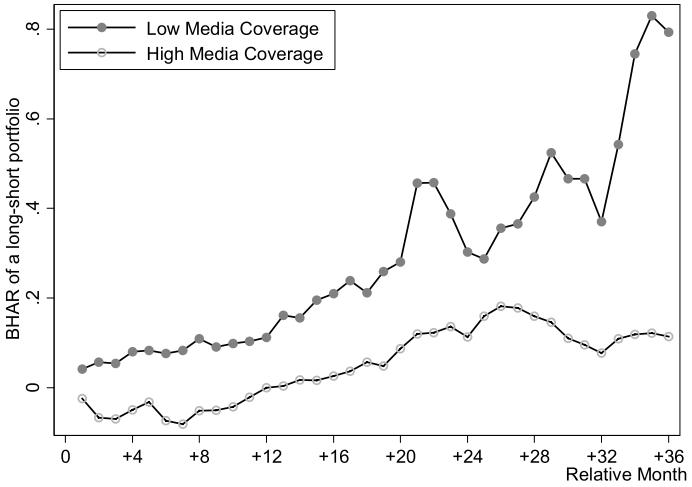

Fig. 4 Hedge portfolio BHAR and ABPROD

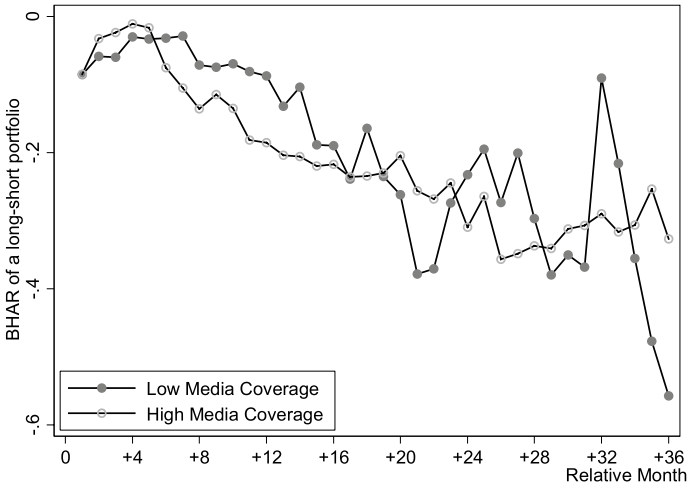

Fig. 5 Hedge portfolio BHAR and N_ABDISX

flows or the total amount of REM have lower long-run returns. These findings are consistent with some prior studies (e.g. Li, 2010; Roychowdhury, 2006), which suggest that REM activities have negative influences on long-run performance.

Overall, these results are in line with those of univariable analysis but inconsistent with H1. One potential explanation for the different effects of various REM practices is that IPO firms with higher abnormal production costs (higher discretionary expenses or operating cash flows) potentially have better (worse) operating performance and the market initially misprices these REM activities,

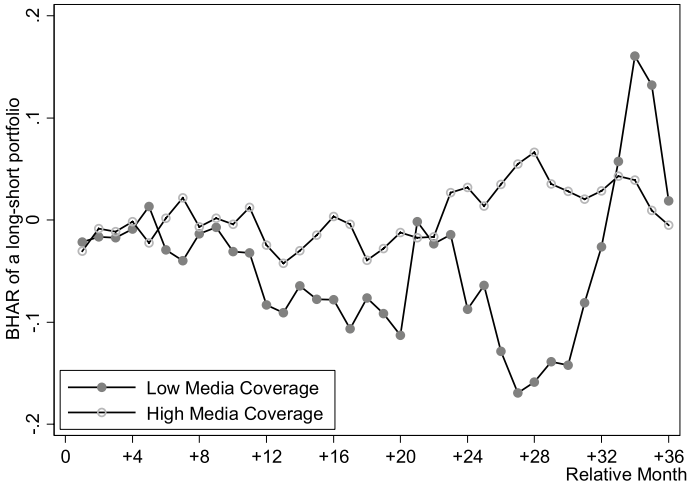

Fig. 6 Hedge portfolio BHAR and N_ABCFO

resulting in higher (lower) long-run stock returns. I will analyze this argument in Sect. 5.1.

4.3 The Effect of Media Coverage on the Relationship Between REM and Returns

4.3.1 Double Sorting on Both Media and REM Measures

I sort individual stocks into five portfolios based on the media coverage measure and select the stocks from the highest and lowest media coverage portfolios. Then I sort selected stocks into five portfolios based separately on the specific REM measures per media coverage portfolio and obtain equal-weighted *BHAR* for each portfolio. In Figs. 4, 5, and 6, I plot the *BHAR* of a long-short portfolio with a long position in the highest REM portfolio and an offsetting short position in the lowest REM portfolio.

Figure 4 shows the hedge portfolio *BHAR* is positive and becomes greater with less media coverage. These results indicate that *ABPROD* is positively related to *BHAR* and this relationship becomes weaker if the firm is more visible through the media. In contrast, Fig. 5 reports that the hedge portfolio *BHAR* is negative and becomes lower with less media coverage. These results suggest that media coverage mitigates the negative association between *BHAR* and *N_ABDISX*. In Fig. 6, the hedge portfolio *BHAR* is positive when the firm is with more media coverage, but it is negative when the firm is with less media coverage in most months within the 36-month post-IPO period. The line for the hedge portfolio *BHAR* and *N_ABCFO* is less volatile if the firms are with more media exposure, indicating that media coverage alleviates the relationship between

BHAR and *N_ABCFO*. Overall, these findings support the prediction that media coverage mitigates the effect of REM on long-run stock returns.

4.3.2 Multivariable Analysis

Further, I conduct a regression analysis to test the effect of media coverage on the relationship between various REM activities and long-run returns. Table 5 presents the results. In Column 1, the coefficient of *ABPROD* * ln(*News*) *i*s significantly negative, suggesting that the association between *ABPROD* and *BHAR* becomes less positive with more IPO-year news articles. Column 2 shows a positive coefficient on the interaction of *N_ABDISX* and ln(*News*). This result suggests that the association between *N_ABDISX* and *BHAR* becomes less negative with more news reports in the IPO year. Column 3 (4) reports that the coefficient of *N_ABCFO* * ln(*News*) (*TREM* * ln(*News*)) is positive but insignificant, indicating that media coverage does not influence the relationship between *N_ABCFO* (*TREM*) and *BHAR*. Overall, these results provide evidence that news coverage mitigates the association between specific REM practices and long-run returns, supporting H2.[7]

In summary, Fig. 7 shows the results of H1 and H2.

4.4 Robustness Tests

I check the robustness of my findings using an alternative measure of media coverage. The RESSET database defines the information level, *InfoLvl*, as the influence of news articles on the market and ranks it on a scale of 1 to 5. *InfoLvl* equals 1 if the information is relatively unimportant, which has no direct impact on the market or has a slight impact on the market. *InfoLvl* equals 2 if the news is about daily information of the general level. *InfoLvl* equals 3 if the information is relatively important, which has a significant impact on the securities market, industry market, and regional market. *InfoLvl* equals 4 if the information is a headline in an important media outlet (except for non-substantive content, such as newspaper suspension notices, information guides, error correction statements, etc.), important economic data disclosures (CPI, PPI, PMI, etc.), or important information released by important national institutions (the China Securities Regulatory Commission, the China Banking Regulatory Commission, the National Development and Reform Commission, the Bureau of Statistics, etc.). *InfoLvl* equals 5 if the information is bombshell news, which has a significant impact on the market and the macro-environment, such as the circuit breaker mechanism. I use the logarithm of one plus the sum of the information level of each news report in the IPO year, ln(*InfoLvl*), as an alternative media coverage proxy to re-examine the effect of media coverage on the relationship

[7] In untabulated tests, I investigate whether the effect of media coverage varies with the types of media sources. I classified media into two categories: state-controlled and market-oriented, based on the ownership structure and control rights shown in the company disclosure, newspapers' websites, and government press releases. The results report that the effect of media coverage on the relationship between REM activities and long-run stock returns is more pronounced when the news reports are from market-oriented media. One possible reason is that information from the market is more comprehensive and accurate (You et al., 2018), improving investors' understanding of managerial earnings manipulation.

Table 5 The effect of media coverage on the associations between REM measures and 3-year BHAR

REM =	*ABPROD*	*N_ABDISX*	*N_ABCFO*	*TREM*
Dep. Var. =	(1)	(2)	(3)	(4)
	BHAR	*BHAR*	*BHAR*	*BHAR*
Constant	3.349***	3.751***	3.196**	3.354***
	(2.72)	(3.08)	(2.57)	(2.71)
REM	2.696**	−4.005***	−0.796	−0.618
	(2.43)	(−3.34)	(−0.86)	(−0.95)
ln(*News*)	−0.085	−0.094	−0.082	−0.087
	(−1.34)	(−1.50)	(−1.28)	(−1.36)
***REM* * ln(*News*)**	**−0.480***	**0.734****	**0.086**	**0.081**
	(−1.66)	**(2.33)**	**(0.35)**	**(0.48)**
Abs(*DTAC*)	−0.371	−0.117	0.145	0.102
	(−1.54)	(−0.49)	(0.48)	(0.35)
Dsale	0.191	0.102	0.260	0.202
	(1.27)	(0.68)	(1.64)	(1.32)
DNI	−1.409*	−1.559**	−1.854**	−1.665**
	(−1.82)	(−2.02)	(−2.21)	(−2.05)
DCapExp	0.962***	0.980***	0.906***	0.916***
	(5.56)	(5.71)	(5.18)	(5.25)
IR	−0.166	−0.113	−0.145	−0.134
	(−1.32)	(−0.90)	(−1.14)	(−1.05)
MktRet	0.334	0.316	0.313	0.307
	(1.42)	(1.35)	(1.32)	(1.29)
ln(*AGE*)	0.036	0.028	0.031	0.026
	(0.75)	(0.60)	(0.63)	(0.53)
ln(*MV*)	−0.189***	−0.202***	−0.185***	−0.188***
	(−3.93)	(−4.23)	(−3.81)	(−3.87)
ln(*BM*)	0.335**	0.339**	0.393***	0.386***
	(2.36)	(2.41)	(2.72)	(2.68)
ln(*Analyst*)	0.133***	0.127***	0.134***	0.134***
	(5.11)	(4.87)	(5.12)	(5.09)
Big10	0.055	0.047	0.041	0.041
	(1.02)	(0.87)	(0.76)	(0.75)
Underwriter	−0.028	−0.019	−0.029	−0.027
	(−0.49)	(−0.35)	(−0.52)	(−0.49)
ln(*Days*)	0.016	0.021	0.025	0.024
	(0.58)	(0.74)	(0.86)	(0.85)
Year, Industry	Yes	Yes	Yes	Yes
Adj. R-squared	0.285	0.296	0.273	0.273
Observations	1006	1006	1006	1006

This table presents the results of the effect of media coverage on the relationship between REM practices in the IPO year and long-run post-IPO stock returns. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in the Appendix

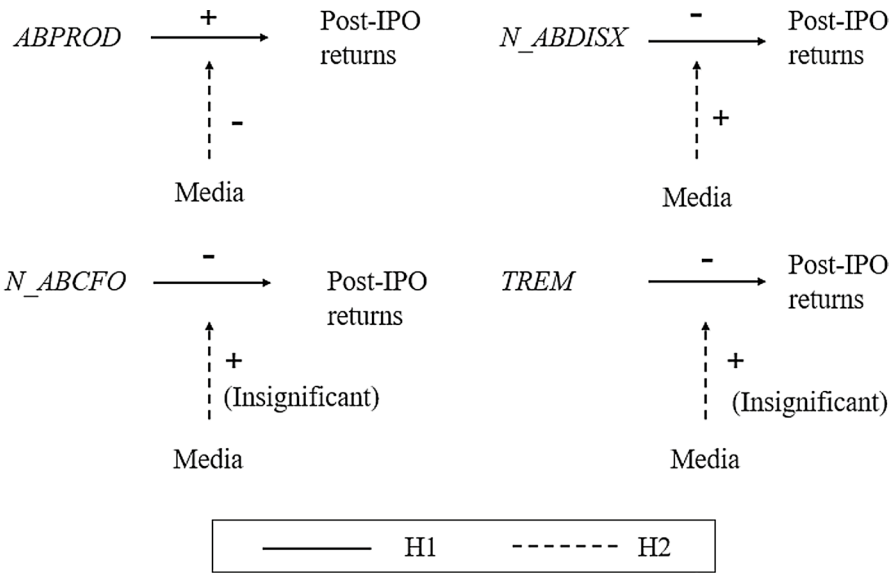

Fig. 7 The results of Hypotheses

between REM and long-run stock returns. The control variables are the same as in the previous analysis. The results in Panel A of Table 6 are similar to those reported in Table 5, verifying that my findings are robust.

Moreover, I conduct robustness checks using an alternative measure of long-run market performance. I use the HUSHEN 300 Index as the benchmark to adjust stock returns and the untabulated results are qualitatively similar to those reported in Tables 4 and 5, confirming the robustness of my findings.

Further, I use Srivastava (2019)'s model to estimate the abnormal production costs and re-examine the relationship between abnormal production costs and long-run post-IPO stock returns. The untabulated results show abnormal production costs are positively related to stock returns within manufacturing companies but negatively related to stock returns within non-manufacturing firms. These findings indicate that my results do not change qualitatively when using an alternative measure of abnormal production costs and that production cost manipulation can only be fully utilized by manufacturing firms.

5 Additional Analyses

5.1 A Potential Explanation for the Positive Relationship Between Abnormal Production Costs and Future performance

In the previous subsections, I find firms with higher abnormal production costs potentially have better long-run market performance. This finding is inconsistent with many previous studies, which document that more REM activities will result in worse market

Table 6 Robustness check: an alternative measure of media coverage

REM =	*ABPROD*	*N_ABDISX*	*N_ABCFO*	*TREM*
Dep. Var. =	(1)	(2)	(3)	(4)
	BHAR	*BHAR*	*BHAR*	*BHAR*
Constant	3.800***	4.275***	3.979***	4.003***
	(3.51)	(3.98)	(3.65)	(3.68)
REM	3.194**	−3.837***	−0.196	0.161
	(2.39)	(−2.59)	(−0.17)	(0.20)
ln(*InfoLvl*)	−0.074	−0.078	−0.095	−0.091
	(−1.19)	(−1.28)	(−1.53)	(−1.47)
***REM* * ln(*InfoLvl*)**	**−0.562***	**0.651****	**0.021**	**−0.075**
	(−1.86)	**(1.97)**	**(0.08)**	**(−0.41)**
Controls	Yes	Yes	Yes	Yes
Year, Industry	Yes	Yes	Yes	Yes
Adj. R-squared	0.268	0.275	0.257	0.257
Observations	1006	1006	1006	1006

This table presents the results of robustness checks on the effect of media coverage on the relationship between REM practices in the IPO year and long-run post-IPO returns using an alternative measure of media coverage. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in the Appendix

consequences (e.g. Li, 2010; Roychowdhury, 2006). However, my result is consistent with the finding of Gunny (2010). Gunny (2010) finds that REM is positively related to future performance when firms meet earnings benchmarks, which supports that managers may use REM as a signaling mechanism for future operating performance. Managers engage in REM to avoid losses or earnings declines in an effort to enhance the firm's credibility and reputation with stakeholders (Bartov et al., 2002). The enhanced reputation allows the firm to perform better in the future. Thus, I assume that managers are confident in their ability to sell products in the future, so they carry out overproduction, leading to high *ABPROD* in the IPO year. Meanwhile, investors are not fully aware of the implications of *ABPROD* in the IPO year on future performance, so they initially undervalue the firm based on high *ABPROD* and correct their belief until the information about favorable corporate performance becomes available. Accordingly, *ABPROD* is positively related to both operating and market performance in the long run.

To examine this assumption, I test the relationship between *ABPROD* and future performance using the full sample and two subsamples with meeting and missing the earnings benchmark. I use the industry-adjusted change in ROA in the third year following the IPO (ΔROA) to capture the IPO firms' subsequent operating performance. The benchmark is defined as the earnings in the IPO year being higher than the earnings in the year prior to the IPO. Table 7 shows the results. Column 1 indicates a positive relationship between *ABPROD* and ΔROA, suggesting that IPO firms with higher abnormal production costs potentially perform better in subsequent years.[8] Columns 2 and 3 show significant positive coefficients of *ABPROD*,

[8] In the untabulated analysis, I test the relationship between REM and subsequent operating performance (ΔROA) using the other three REM measures (*N_ABDISX*, *N_ABCFO*, and *TREM*). The results report

indicating that firms using abnormal production costs to avoid earnings declines potentially perform better in the future. Columns 4 and 5 report an insignificant relationship between *ABPROD* and ΔROA. This means that the use of abnormal production is not able to improve a firm's reputation or signal future performance when the firm is suffering earnings declines. These results support my expectation that managers can use overproduction as a signaling mechanism for favorable future performance.

Further, Beyer et al. (2018) show that firms with poor information environments are more likely to use REM to signal their favorable prospects. As IPO firms have weaker information environments than established firms, their managers are more likely to engage in REM to signal a positive future outlook. To test this assumption, I match each IPO firm with a non-IPO firm based on a host of firm characteristics—including assets, age, return on assets, Big 10 auditor, analyst following, industry, and year. I follow Rosenbaum and Rubin (1985) in implementing the propensity score matching and finally select a non-IPO listed firm that has the closest propensity score as the matched non-IPO firm for each IPO firm. I examine whether *ABPROD* is positively related to future operating and market performance within these non-IPO firms. Columns 6 and 7 of Table 7 show negative and significant coefficients of *ABPROD*, confirming my assumption that firms with better information environments are less likely to use REM to signal future performance.

Overall, these results confirm the positive effect of abnormal production costs on future performance, which is opposite to the effect of abnormal reductions of discretionary expenses or operating cash flows on future performance shown in Sect. 4.2. These findings suggest that in a Chinese IPO setting, the impact of REM on future performance depends on the form of REM activities.

5.2 Different Effects of Media Coverage on Retail and Institutional Investors

Compared with institutional investors, retail investors may have worse information-processing abilities and be more likely to temporarily misprice firms' REM activities based on their biased beliefs (Collins et al., 2003). Thus, I expect the relationship between REM and future performance is less pronounced when the IPO firm is with higher institutional ownership. Moreover, retail investors may be more likely to be influenced by news articles than institutional investors. Compared with institutional investors, retail investors have less access to corporate information. Therefore, the media could become one of their important information sources and influence their investment decisions. Bushee et al. (2020) document that retail investors are more susceptible to media-driven trade immediately following the IPO, resulting in worse investing outcomes. However, few studies have investigated the different

Footnote 8 (Continued)

negative coefficients of these measures, qualitatively similar to those reported in Table 4. These results support the expectation that investors are not fully aware of these REM activities and initially overvalue the firm based on these REM activities, leading to negative associations between these REM activities and subsequent stock returns.

Table 7 Abnormal production costs and future performance

Dep. Var	Full Sample	Meet Benchmarks		Miss Benchmarks		Non-IPO Firms	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Δ*ROA*	*BHAR*	Δ*ROA*	*BHAR*	Δ*ROA*	*BHAR*	Δ*ROA*
Constant	−0.114*	1.665	−0.174**	10.402***	0.015	1.280	−5.229**
	(−1.67)	(1.08)	(−2.11)	(4.44)	(0.11)	(1.13)	(−2.49)
ABPROD	**0.022***	**1.010*****	**0.040*****	**0.655**	**−0.033**	**−1.019*****	**−1.442****
	(1.82)	**(3.96)**	**(2.92)**	**(1.33)**	**(−1.12)**	**(−3.17)**	**(−2.42)**
Abs(*DTAC*)	−0.047***	−0.287	−0.038**	−0.689	−0.101***	−0.785**	0.998
	(−3.47)	(−1.03)	(−2.55)	(−1.21)	(−2.95)	(−2.32)	(1.59)
Dsale	−0.006	0.167	−0.005	0.463	−0.006	0.148	1.683***
	(−0.75)	(0.92)	(−0.55)	(1.50)	(−0.30)	(1.41)	(8.61)
DNI	−0.086**	−1.371	−0.169***	−3.904*	−0.122	−0.000***	−0.000***
	(−2.00)	(−1.31)	(−3.02)	(−1.78)	(−0.93)	(−5.40)	(−24.16)
DCapExp	0.024**	1.132***	0.016	0.143	0.044*	−0.182	−7.109***
	(2.47)	(5.78)	(1.53)	(0.34)	(1.71)	(−1.01)	(−21.27)
IR	−0.011	−0.153	−0.017**	0.073	−0.003		
	(−1.52)	(−1.02)	(−2.18)	(0.27)	(−0.19)		
MktRet	−0.024*	0.053	−0.040**	0.161	0.020		
	(−1.85)	(0.18)	(−2.53)	(0.39)	(0.82)		
ln(*AGE*)	0.007***	0.013	0.005*	0.152	0.015***	−0.044	−0.528***
	(2.58)	(0.23)	(1.75)	(1.63)	(2.60)	(−0.65)	(−4.19)
ln(*MV*)	0.003	−0.132**	0.004	−0.543***	−0.004	−0.030	0.352***
	(1.19)	(−2.36)	(1.48)	(−5.56)	(−0.73)	(−0.80)	(5.05)
ln(*BM*)	0.005	0.362**	−0.003	0.644**	0.030	−0.008	0.212**
	(0.68)	(2.29)	(−0.33)	(2.07)	(1.60)	(−0.17)	(2.58)
ln(*Analyst*)	−0.001	0.132***	−0.001	0.106*	−0.002	0.019	0.008
	(−0.89)	(4.39)	(−0.74)	(1.92)	(−0.51)	(1.57)	(0.34)
Big10	−0.000	0.088	0.001	0.026	−0.006	0.165***	0.454***
	(−0.09)	(1.34)	(0.42)	(0.25)	(−0.99)	(3.37)	(5.01)
Underwriter	0.001	−0.083	−0.003	0.095	0.009		
	(0.32)	(−1.22)	(−0.85)	(0.89)	(1.44)		
ln(*Days*)	0.000	0.013	−0.001	−0.007	0.004		
	(0.09)	(0.40)	(−0.75)	(−0.11)	(1.10)		
Year, Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.054	0.231	0.104	0.436	0.045	0.354	0.957
Observations	1006	717	717	289	289	1006	1006

This table presents the results of OLS regression analysis on the relationship between abnormal production costs and long-run future performance. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in the Appendix

effects of media coverage on retail and institutional investors from the view of the relationship between REM and long-run stock returns.

To test the above predictions, I split the original sample into two subsamples with low- and high-institutional ownership at the end of the IPO year. Panel A of Table 8

shows the relationship between REM and long-run stock returns in these two subsamples. The control variables in Table 8 are the same as in the main analysis. In Columns 1 to 4, the coefficient of each REM measure is significant. In columns 5 to 8, the coefficients of *ABPROD* and *N_ABDISX* are significant, while the coefficients of *N_ABCFO* and *TREM* are insignificant. The signs of these coefficients are the same as those in Table 4. These findings are consistent with my prediction that retail investors are more likely to misunderstand managed earnings and misprice the IPO firms based on their biased beliefs than institutional investors.

Panel B of Table 8 reports the different effects of media coverage on retail and institutional investors. In Columns 1 to 4, the coefficients of *ABPROD* * ln(*News*) and *N_ABDISX* * ln(*News*) are significant and the signs of these coefficients are the same as those in Table 5. In contrast, Columns 5 to 8 show that none of the coefficients on the interaction of REM measure and media coverage measure is significant. These findings confirm my prediction that media coverage can help investors, especially retail investors, understand managerial activities.

5.3 The Role of Audit Quality and Analyst Following

Extensive studies document the effect of audit quality on earnings management activities (e.g. Balsam et al., 2003; Francis & Yu, 2009). High-quality auditors can detect managerial opportunism in financial reporting and take corrective actions to improve the earnings quality of their client firms. Therefore, I expect that high-quality auditors can also play a monitoring role in mitigating the influence of REM on long-run stock returns. Additionally, I test whether other information intermediaries play a similar role as media coverage in the capital market. Prior literature shows that analyst earnings forecasts are informative about stock prices (Lys & Sohn, 1990) and that analyst following improves the market's ability to efficiently incorporate information about future earnings into stock prices (Ayers & Freeman, 2003). Thus, I expect that analyst following can mitigate the relationship between REM activities and long-run stock returns.

I employ *Big10* and ln(*Analyst*) as the measure of audit quality and analyst following, respectively. The control variables are the same as in the previous analysis. Table 9 presents the results. The coefficient of the interaction term between each REM measure and *Big10* (ln(*Analyst*)) is insignificant. These findings are inconsistent with my predictions and suggest that compared with media coverage, audit quality or analyst following has a relatively less important effect on the consequences of REM activities in the Chinese IPO setting.

6 Conclusions

The paper examines the relationship between REM activities in the IPO year and the market performance in subsequent years. The result shows abnormal reduction of discretionary expenses or operating cash flows is negatively related to subsequent three-year stock returns. These results suggest that investors are unable to fully

Table 8 Different effects of media coverage on retail and institutional investors

REM =	*ABPROD*	*N_ABDISX*	*N_ABCFO*	*REM*	*ABPROD*	*N_ABDISX*	*N_ABCFO*	*REM*
	Low institutional ownership				High institutional ownership			
Dep. Var. =	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	BHAR	*BHAR*	*BHAR*	*BHAR*	*BHAR*	*BHAR*	*BHAR*	*BHAR*
Panel A: The different consequences of REM among retail and institutional investors								
Constant	2.339	2.663	1.819	1.945	6.121***	6.320***	5.880***	6.124***
	(1.43)	(1.64)	(1.10)	(1.18)	(3.11)	(3.23)	(2.94)	(3.08)
REM	**0.848*** **	**−1.228*** **	**−0.532***	**−0.447***	**1.033*** **	**−1.388*** **	**−0.572**	**−0.273**
	(2.71)	(−3.94)	(−1.65)	(−1.95)	(3.04)	(−3.74)	(−1.56)	(−1.14)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year, Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.245	0.259	0.237	0.239	0.282	0.289	0.270	0.268
Observations	503	503	503	503	503	503	503	503
Panel B: The different roles of media coverage among retail and institutional investors								
Constant	1.856	2.450	1.583	1.717	5.833***	6.253***	5.799***	6.139***
	(1.14)	(1.52)	(0.95)	(1.04)	(2.90)	(3.15)	(2.86)	(3.04)
REM	5.448***	−6.973***	−1.118	−0.839	2.165	−4.166**	−0.921	−0.969
	(3.19)	(−3.76)	(−0.80)	(−0.82)	(1.32)	(−2.41)	(−0.65)	(−1.01)
ln(*News*)	−0.150*	−0.167**	−0.135	−0.136	−0.031	−0.017	−0.032	−0.045
	(−1.82)	(−2.04)	(−1.60)	(−1.62)	(−0.28)	(−0.15)	(−0.28)	(−0.39)
***REM** * ln(*News*)*	**−1.233*** **	**1.538*** **	**0.173**	**0.114**	**−0.300**	**0.744**	**0.099**	**0.190**
	(−2.73)	(3.13)	(0.47)	(0.43)	(−0.70)	(1.64)	(0.26)	(0.75)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year, Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.261	0.279	0.239	0.241	0.279	0.291	0.267	0.266
Observations	503	503	503	503	503	503	503	503

This table examines the different consequences of REM and different roles of media coverage among retail and institutional investors. The original sample is split into two subsamples with low- and high-institutional ownership at the end of the IPO year. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in the Appendix

understand managed earnings and behave as if they are fixated on these high earnings, resulting in disappointing investment outcomes in the long term.

Surprisingly, I find that abnormal production costs are positively related to subsequent stock performance. This finding is inconsistent with some previous studies (e.g. Li, 2010; Roychowdhury, 2006), but provides evidence to support the studies of Gunny (2010) and Beyer et al. (2018). This result indicates that IPO firms potentially use some REM activities (e.g. overproduction) to signal their favorable prospects. As investors may not fully understand managerial behavior, they initially undervalue the firms based on high abnormal production costs.

Table 9 The role of audit quality and analyst following

REM =	*ABPROD*	*N_ABDISX*	*N_ABCFO*	*TREM*
Dep. Var. =	(1)	(2)	(3)	(4)
	BHAR	*BHAR*	*BHAR*	*BHAR*
Panel A: The role of audit quality				
Constant	3.707***	3.897***	3.342***	3.506***
	(3.03)	(3.21)	(2.70)	(2.85)
REM	0.887***	− 1.038***	− 0.584**	− 0.309
	(2.94)	(− 3.15)	(− 2.06)	(− 1.61)
Big10	0.049	0.039	0.039	0.040
	(0.88)	(0.73)	(0.72)	(0.73)
REM * Big10	**0.010**	**− 0.397**	**0.156**	**− 0.049**
	(0.03)	**(− 0.95)**	**(0.47)**	**(− 0.21)**
Controls	Yes	Yes	Yes	Yes
Year, Industry	Yes	Yes	Yes	Yes
Adj. R-squared	0.281	0.292	0.273	0.272
Obs	1,006	1,006	1,006	1,006
Panel B: The role of analyst following				
Constant	3.706***	3.914***	3.352***	3.499***
	(3.03)	(3.22)	(2.71)	(2.84)
REM	0.918**	− 1.507***	− 0.750*	− 0.644**
	(2.11)	(− 3.24)	(− 1.84)	(− 2.13)
ln(*Analyst*)	0.124***	0.114***	0.128***	0.126***
	(4.83)	(4.43)	(4.96)	(4.88)
***REM* * ln(*Analyst*)**	**− 0.008**	**0.076**	**0.073**	**0.089**
	(− 0.07)	**(0.62)**	**(0.73)**	**(1.21)**
Controls	Yes	Yes	Yes	Yes
Year, Industry	Yes	Yes	Yes	Yes
Adj. R-squared	0.281	0.291	0.273	0.273
Observations	1006	1006	1006	1006

Panel A and Panel B of this table presents the effects of audit quality and analyst following on the relationship between REM practices in the IPO year and long-run post-IPO returns, respectively. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are provided in the Appendix

When more information on corporate performance becomes available, investors revise their beliefs upward, resulting in a positive relationship between abnormal production costs and long-run stock returns.

Moreover, this study tests the effects of media coverage on the relationship between REM activities in the IPO year and long-run returns. The empirical results show that both the positive relationship between overproduction and returns and the

negative relationship between abnormal reduction of discretionary expenses and returns become weaker when the firm is with more media exposure. These results indicate that media coverage serves as a monitoring mechanism, which mitigates the influence of REM and improves the market's ability to efficiently incorporate accounting information into the stock price. These findings are useful for investors who want to utilize earnings information and media coverage to differentiate issuers.

In the additional tests, I confirm that a negative relationship between abnormal production costs and long-run future performance exists in non-IPO firms, supporting my prediction that firms with better information environments are less likely to use REM activities to signal their future performance. I also find that the relationship between REM activities and long-run returns is more pronounced and that the media has a more important effect on this relationship when the IPO firm is with high institutional ownership. This result suggests that institutional investors have a better understanding of REM activities, and their investment decisions are less likely to be influenced by the media than retail investors. Finally, my study compares the role of audit quality and analyst following with the role of media coverage and confirms the effective monitoring role of media coverage in the IPO year.

Nevertheless, I recognize the limitations of my research, which should be addressed in future studies. In this study, the control variable, initial returns, is found insignificantly related to long-run future performance. One potential explanation is that initial returns consist of pre-market deliberate underpricing and aftermarket overpricing and only the overpricing component influences long-run post-IPO performance in the Chinese stock market (Gao, 2010). Considering the procedure to measure the overpricing component is complicated and many relevant studies use initial returns as the control variable, I keep using initial returns in my analysis. Future studies can continue to improve research designs by separating initial returns into underpricing and overpricing components.

Appendix

See Table 10.

Table 10 Variables and definitions

Variable	Definition	Source
ABPROD	Abnormal production costs in the IPO year, estimated following Roychowdhury (2006). Higher value of *ABPROD* means more REM	CSMAR Database
N_ABDISX	Abnormal reduction of discretionary expenses in the IPO year, estimated following Roychowdhury (2006). Higher value of *N_ABDISX* means more REM	CSMAR Database
N_ABCFO	Abnormal reduction of operating cash flows in the IPO year, estimated following Roychowdhury (2006). Higher value of *N_ABCFO* means more REM	CSMAR Database
TREM	The total amount of real earnings management, measured as *ABPROD* plus *N_ABDISX* and *N_ABCFO*	CSMAR Database
BHAR	Cumulative buy-and-hold abnormal returns net of market return calculated from the beginning of the fifth month after the first post-IPO fiscal year-end (e.g. 1-year *BHAR* is contemporaneous one-year buy-and-hold abnormal returns net of market return calculated from the beginning of the fifth month after the first post-IPO fiscal year-end.) I use 3-year *BHAR* as the proxy for long-run stock returns in this study unless otherwise noted	CSMAR Database
ln(*News*)	The logarithm of one plus the sum of news reports with the firm as the subject in the IPO year	RESSET Database
Abs(*DTAC*)	The absolute value of discretionary accruals in the IPO year, estimated from the modified Jones model of Dechow et al. (1995)	CSMAR Database
Dsale	Asset-scaled sales growth in the IPO year	CSMAR Database
DNI	Asset-scaled net income growth in the IPO year	CSMAR Database
DCapExp	Asset-scaled mean capital expenditures in years 1, 2 and 3 less the asset-scaled mean expenditures in years -1 and 0, where the year 0 is the IPO year	CSMAR Database
IR	Initial return on the listing date	CSMAR Database
MktRet	A contemporaneous three-year value-weight buy-and-hold market return from the exchange where the IPO is listed, calculated from the listing month	CSMAR Database
ln(*AGE*)	The logarithm of one plus the firm's age	CSMAR Database
ln(*MV*)	The logarithm of market value at the first post-IPO fiscal year end	CSMAR Database
ln(*BM*)	The logarithm of book-to-market ratio (BV/MV)	CSMAR Database
ln(*Analyst*)	The logarithm of one plus the sum of analyst reports covering the firm in the IPO year	CSMAR Database
Big10	An indicator variable taking a value of one if the firm has a big-ten auditor and zero otherwise	CSMAR Database
Underwriter	An indicator variable taking a value of one if the underwriter of the IPO firm in the current year ranks in the top ten among all underwriters and zero otherwise	CSMAR Database

Table 10 (continued)

Variable	Definition	Source
ln(*Days*)	The logarithm of the number of days between the IPO date and the first post-IPO fiscal year end	CSMAR Database
ln(*InfoLvl*)	The logarithm of one plus the sum of the information level of each news report in the IPO year, where information levels are classified by the RESSET Database according to specific standards	RESSET Database
Δ*ROA*	The industry-adjusted change in return on assets (ROA) in the third year (Year 3) following the IPO minus the ROA in the IPO year (Year 0), where the industry-adjusted change in ROA is calculated as the difference in change in ROA for a specific firm from the median for the same year and the same industry	CSMAR Database

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Declarations

Conflict of interest The author declares no conflict of interest.

Ethical approval The author declares that the experiments comply with the current laws of the country in which they were performed.

References

Aharony, J., Lin, C.-J., & Loeb, M. P. (1993). Initial public offerings, accounting choices, and earnings management. *Contemporary Accounting Research, 10*(1), 61–81.

Ayers, B. C., & Freeman, R. N. (2003). Evidence that analyst following and institutional ownership accelerate the pricing of future earnings. *Review of Accounting Studies, 8*(1), 47–67.

Balsam, S., Krishnan, J., & Yang, J. S. (2003). Auditor industry specialization and earnings quality. *Auditing: A Journal of Practice & Theory, 22*(2), 71–97.

Barton, J., & Simko, P. J. (2002). The Balance Sheet as an Earnings Management Constraint. *The Accounting Review, 77*(s-1), 1–27.

Bartov, E., Givoly, D., & Hayn, C. (2002). The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics, 33*(2), 173–204.

Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics, 80*(3), 511–529.

Beyer, B. D., Nabar, S. M., & Rapley, E. T. (2018). Real earnings management by benchmark-beating firms: Implications for future profitability. *Accounting Horizons, 32*(4), 59–84.

Boulton, T., Smart, S. B., & Zutter, C. J. (2011). Earnings quality and international IPO underpricing. *The Accounting Review, 86*, 483–505.

Bushee, B. J., Core, J. E., Guay, W. R., & Hamm, S. J. W. (2009). The Role of the Business Press as an Information Intermediary. *Journal of Accounting Research, 48*(1), 1–19.

Bushee, B., Cedergren, M., & Michels, J. (2020). Does the media help or hurt retail investors during the IPO quiet period? *Journal of Accounting and Economics, 69*(1), 101261.

Chahine, S., Mansi, S., & Mazboudi, M. (2015). Media news and earnings management prior to equity offerings. *Journal of Corporate Finance, 35*, 177–195.

Chang, S.-C., Chung, T.-Y., & Lin, W.-C. (2010). Underwriter reputation, earnings management and the long-run performance of initial public offerings. *Accounting & Finance, 50*(1), 53–78.

Chen, Y., Cheng, C. S. A., Li, S., & Zhao, J. (2021). The monitoring role of media: evidence from earnings management. *Journal of Business Finance & Accounting*, 48(3–4), 533–563.

Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review, 83*(3), 757–787.

Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50*(1), 2–19.

Collins, D. W., Gong, G., & Hribar, P. (2003). Investor sophistication and the mispricing of accruals. *Review of Accounting Studies, 8*(2), 251–276.

Dai, L., Parwada, J. T., & Zhang, B. (2015). The governance effect of the media's news dissemination role: Evidence from insider trading. *Journal of Accounting Research, 53*(2), 331–366.

Dai, L., Shen, R., & Zhang, B. (2021). Does the media spotlight burn or spur innovation? *Review of Accounting Studies, 26*(1), 343–390.

Dai, Z., Yong, M., & Odin, N. (2016). A Portrait of the individual investor: Survey evidence from different provinces in China. *Available at SSRN 2722051*.

Darrough, M., & Rangan, S. (2005). Do insiders manipulate earnings when they sell their shares in an initial public offering? *Journal of Accounting Research, 43*(1), 1–33.

Dechow, P. M., Kothari, S. P., & Watts, R. L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics, 25*(2), 133–168.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193–225.

Drake, M. S., Guest, N. M., & Twedt, B. J. (2014). The Media and Mispricing: The Role of the Business Press in the Pricing of Accounting Information. *The Accounting Review, 89*(5), 1673–1701.
Eng, L. L., & Lin, Y. C. (2012). Accounting quality, earnings management and cross-listings: evidence from China. *Review of Pacific Basin Financial Markets and Policies, 15*(02), 1250009.
Fang, L., & Peress, J. (2009). Media coverage and the cross-section of stock returns. *The Journal of Finance, 64*(5), 2023–2052.
Fedyk, T., Singer, Z., & Soliman, M. (2017). The sharpest tool in the shed: IPO financial statement management of STEM vs non-STEM firms. *Review of Accounting Studies, 22*(4), 1541–1581.
Francis, J. R., & Yu, M. D. (2009). Big 4 office size and audit quality. *The Accounting Review, 84*(5), 1521–1552.
Gao, Y. (2010). What comprises IPO initial returns: Evidence from the Chinese market. *Pacific-Basin Finance Journal, 18*(1), 77–89.
Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*(1–3), 3–73.
Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks: Real activities manipulation and future performance. *Contemporary Accounting Research, 27*(3), 855–888.
He, J., Wei, M., & Liu, F. (2008). Benefit transfer, media coverage, and corporate governance: The casestudy of Wuliangye. *Management World, 10*, 141–150. (in Chinese).
Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193–228.
Li, X. (2010). Real earnings management and subsequent stock returns. *Available at SSRN 1679832.*
Liu, B., & McConnell, J. J. (2013). The role of the media in corporate governance: Do the media influence managers' capital allocation decisions? *Journal of Financial Economics, 110*(1), 1–17.
Lys, T., & Sohn, S. (1990). The association between revisions of financial analysts' earnings forecasts and security-price changes. *Journal of Accounting and Economics, 13*(4), 341–363.
Meng, Y. (2020). An empirical study on the influence of media attention on real earnings management. In *6th International Conference on Humanities and Social Science Research (ICHSSR 2020),* 228–233.
Peress, J. (2014). The media and the diffusion of information in financial markets: Evidence from newspaper strikes. *The Journal of Finance, 69*(5), 2007–2043.
Ritter, J. R., & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *The Journal of Finance, 57*(4), 1795–1828.
Rosenbaum, P. R., & Rubin, D. B. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *The American Statistician, 39*(1), 33–38.
Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335–370.
Roychowdhury, S., Kothari, S. P., & Mizik, N. (2012). Managing for the moment: the role of real activity versus accruals earnings management in SEO Valuation. Working Paper.
Shen, Z., Coakley, J., & Instefjord, N. (2014). Earnings management and IPO anomalies in China. *Review of Quantitative Finance and Accounting, 42*(1), 69–93.
Srivastava, A. (2019). Improving the measures of real earnings management. *Review of Accounting Studies, 24*(4), 1277–1316.
Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings management and the long-run market performance of initial public offerings. *The Journal of Finance, 53*(6), 1935–1974.
You, J., Zhang, B., & Zhang, L. (2018). Who captures the power of the pen? *The Review of Financial Studies, 31*, 43–96.