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Investor Attention and Earnings Management：Empirical Evidence from the Listed Firms in China

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Abstract
The role of investors in the capital market has not been adequately studied. And what is the effect of investor on corporate governance has not reach the same conclusion. This paper empirically tests the relationship between earnings management and investors' attention. And it also investigates how the firms' type of ownership affects the relationship between earnings management and investors' attention. Using the data of *Baidu* searching volume index of the non-financial Chinese listed firms from 2007 to 2011, we construct a measure of investor attention in this paper and find that firms with higher investors' attention are exposed to higher level of earnings management. Compared with state-owned enterprises, investors' attention has a larger effect on the non state-owned enterprises. This paper enriches our understanding of the corporate earnings management behaviour and the role of investor attention in corporate governance.
Keywords: Earnings management; Investor attention; Ownership

1 Introduction

Information is one of the important goals of corporate governance (Tricker R I,2015). However, earnings management leads to poor quality of accounting information (Cohen and Zarowin 2010). Earnings management means that the operators alters financial reports using accounting means or arranging transactions to mislead stakeholders' understanding of the company's performance. Literature shows that corporate governance has an effect on earnings management. Corporate governance mechanism can be divided into external and internal mechanisms. Internal corporate governance mechanism includes the establishment of the board, the appointment of independent directors, the arrangement of appropriate ownership structure and so on (Beasley 1996). External governance mechanism includes the legal system, media, analysts, and investors. Most existing researches on the topic of earnings management focus on the effect of internal corporate governance mechanisms, such as the audit quality(Becker et al. 1998), the board of director characteristics(Klein 2002), the managers' equity incentives(Cheng and Warfield 2005), and the CEO turnover(Hazarika et al. 2012). A few studies have also discussed the effect of media and analyst coverage (Yu 2008; Qi et al. 2014). However, the external effect of investor attention on earnings management has been ignored by the literature. As a matter of fact, investors' attention plays an important role in the performance of a firm's stock price which not only determines its financing cost, but also serves as an important indicator of the performance of its executives. Therefore, managers' incentives to manage earnings may be closely related to investors' attention.

This paper uses the *Baidu* searching volume index as a proxy for investors' attention and find that investors' attention will cause higher capital market pressure on the managers, which motivate managers to manage earnings. Further results show that investors' attention has less impact on state-owned enterprises than on private-owned ones.

The contribution of this paper mainly lies in two aspects. First, it enriches the existing research on the determinants of earnings management by investigating the role of investor attention, and help us better understand how external pressure affect the executives' motivations of earnings management. Second, this paper find a different effect of investor attention on state owned enterprises and non state owned enterprises, which implicates inherent differences on the motivations of earnings management between state owned enterprises and non-state owned ones.

2 Theory and hypotheses

The separation of ownership and control leads to a conflict of interests between managers and shareholders. Managers have the motivation to conduct earnings management for his/her own interests which may be inconsistent with the interests of the shareholders and investors (Jensen and Meckling, 1976; Bergstresser D, Philippon T, 2006). One of the most popular way for Chinese investors to collect a firm's information is to use *Baidu* search engine which takes up more than 80% of the search engine market share. Therefore, the *Baidu* searching volume index can reflect the degree of investors' attention on each stock in Chinese stock market. Investors will make investment decisions based on the financial statement information of a firm. Their attention on the positive or negative information of a firm may directly affect the extent of upward or downward fluctuations of the firm's stock price, which causes market pressure on the managers. One of the main motivations of managers to manage earnings is to receive a favourable feedback from the capital market. Faced

with high pressure from the capital markets, managers will take strategies to manage the earnings(Healy and Wahlen 1999). The increasing degree of investors' attention will bring managers higher market pressure, and thus stronger motivation of earnings management. We can conclude the above analysis with the following hypothesis:

H1: High degree of investors' attention will lead to greater extent of earnings management by creating more market pressure on managers.

Earnings management motivations are different between state-owned enterprises and private-owned enterprises (Bo and Wu, 2009). The managers of the private-owned companies care more on the firms' stock market performance since their salaries and bonuses are usually closely related to it. . On the other hand, salaries and bonuses of the managers in the state-owned enterprises are less correlated with the stock market performance of the firm, i.e., their income is relatively stable regardless of the change of the firm's stock price. Therefore, they care less on the firm's stock market performance. Instead, the managers of the state owned enterprise may pay more attention to building up a good relationship with the superiors and the government so as to get a promotion more easily (Bo and Wu, 2009). Consequently, the managers of state owned enterprises have a weaker incentive to do earnings management, and the investor attention also has little effect on their behaviour of earnings management. In addition, when faced with high investor attention on the negative information of the state-owned enterprises, the government may use political power to support state-owned enterprises to improve its performance t. Therefore, pressure from capital market on state-owned enterprises is relatively small. In summary, we can conclude that investors' attention in market has less impact on state-owned enterprises' earnings management.

H2: Investors' giving less capital market pressure on state-owned enterprises than private-owned enterprises. State-owned enterprises are given less pressure from capital market by investors than private-owned ones.

3 Data and model

3.1 Variable Definitions

3.1.1 *Earnings management*

Following Dechow et al. (1995) and Aboody et al. (2005), this paper adopts the modified Jone's model. Total accruals (TA) are calculated by equation (1) below, in which ΔCA stands for the changes in current assets, Δ*CL* stands for the change in current liabilities, Δ*CASH* stands for the change in cash and cash equivalents, Δ*STDEBT* stands for the change of short term liabilities maturing within a year, and *DEPN* stands for depreciation and amortization.

$$TA_{it} = (\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STDEBT_{it} - DEPN_{it}) \quad (1)$$

Then we run the following cross-sectional OLS regression shown in model (2) within each industry classified by the Chinese Security Regulatory Commission. $Asset_{it-1}$ represents the book value of total assets for firm *i* at year *t-1*. ΔREV_{it} stands for the change in main operational revenues for firm *i* at year *t*, and *PPE* stands for the book value of fixed assets for firm *i* at year *t*.

$$\frac{TA_{it}}{Asset_{it-1}} = K_{1t}\frac{1}{Asset_{it-1}} + K_{2t}\frac{\Delta REV_{it}}{Asset_{it-1}} + K_{3t}\frac{PPE_{it}}{Asset_{it-1}} + \varepsilon_{it} \quad (2)$$

Using the estimates K_1, K_2, K_3 from the regression above, we can calculate the non-discretionary accruals (NA) with the formula (3), where ΔAR stands for the change in accounts receivable.

$$NA_{jt} = K_{1t}\frac{1}{Asset_{jt-1}} + K_{2t}\frac{\Delta REV_{jt} - \Delta AR_{jt}}{Asset_{jt-1}} + K_{3t}\frac{PPE_{jt}}{Asset_{jt-1}} \quad (3)$$

Finally, the discretionary accruals (DA) can be calculated by the difference between total accruals (TA) and non-discretionary accruals (NA), shown as

$$DA_{jt} = \frac{TA_{j,t}}{Asset_{j,t}} - NA_{j,t} \quad (4)$$

3.1.2 Investors attention

The measure of investor attention in this article comes from the Baidu Index website (http://index.baidu.com). The Baidu Index is a massive data-analysis service based on Baidu web and news searches. *Baidu* searching volume index is used to indicate the degree of network exposure and users' attention of any key words during a defined period. Baidu index can reflect the "user attention" of different key words in a period of time. Investors will use the companies' name or stock code to search for it if they are interested in the company. This paper uses the average of the Baidu searching volume index on both of the two keywords, and then take its logarithm as the measure of investor attention, denoted by *Matt*.

3.1.3 Control variable

According to existing literatures on the determinants of corporate earnings management, we choose a set of control variables including company size (Size), the return on assets (Roa), financial leverage (Lev) , sales growth (Growth), book to market ratio (Bm), auditor's reputation dummy variable showing whether the auditor is one of big four or not (Big4), the share of institutional ownership, and a state ownership dummy variable showing whether the ultimate controller of the firm is state owned or not (dum_gy).

3.2 Data sources and sample selection

The sample of this paper includes all the non-financial A share Chinese listed firms in Shanghai and Shenzhen exchanges from 2007 to 2011. Except for the data of Baidu searching volume index manually collected from the Baidu's website, the data of all the other variables are collected from CSMAR data base. To exclude the effect of outliers, All the variables are winsorised at 1% level. The summary statistics is presented in Table 1.

Table 1: summary statistics

Variable	Mean	Median	Sd	Max	Min
Da	0.168	0.123	0.160	0.802	0.002
Matt	5.262	5.199	0.697	7.228	3.568
Bm	0.629	0.620	0.261	1.193	0.090
Growth	0.230	0.159	0.503	3.588	-0.687
Size	21.76	21.62	1.251	25.41	18.69
Lev	0.505	0.503	0.257	1.968	0.054
Roa	0.040	0.037	0.065	0.239	-0.289
Inst	0.181	0.122	0.180	0.728	0.000
Audit	0.063	0.000	0.243	1.000	0.000
Dum_gy	0.608	1.000	0.488	1.000	0.000

3.3 Empirical model

To test the hypotheses proposed in part 2, this article employs the following benchmark regression model

$$DA_{it} = \alpha_0 + \alpha_1 matt_{it-1} + \alpha_2 Size_{it} + \alpha_3 Lev_{it} + \alpha_4 ROA_{it} + \alpha_5 Growth_{it} + \alpha_6 MB_{it}$$

$$+\alpha_7 Big4_{it} + \alpha_8 Inst_{it} + \alpha_9 dum\_gy_{it} + \sum_{j=1}^{n} \beta_j IND_j + \sum_{k=1}^{m} \gamma_k year_k + \varepsilon_t \qquad (5)$$

Where DA_{it} represents the discretionary accruals for firm *i* at year t, $matt_{it-1}$ represents the measure of investor attention for firm i at year t. Besides of controlling the effect of firm size (Size), financial leverage, return on assets (ROA), sales growth (Growth), market to book ratio (MB), auditor's reputation (Big4), share of institutional ownership (Inst) and state ownership (dum_gy), we also control the industry (IND) and year fixed effects. Based on the benchmark regression, we further divide the sample into two groups, state-owned enterprises and non state-owned ones to run subsample regressions.

4 Empirical results

The regression results are shown in table 2. It can be seen from the result that state-ownership is negatively related to the degree of earnings management, indicating that the earnings quality of state-owned enterprises is higher than private-owned enterprises'. The first column shows that investor attention has a positive and significant effect on the company's earnings management behaviour, reflecting that investors can produce market pressure on the company. Hypothesis 1 is thus verified. The second column and the third column show the regression results on the group of non state-owned enterprises and state-owned enterprises respectively. It can be found that investor attention has a significant and positive effect on earnings management in the non state-owned enterprises group, while its effect on earnings management in the state-owned enterprises group is not significant. This result indicates that compared with non state-owned enterprises, investor attention has little impact on earnings management in state-owned enterprises. This evidence supports Hypothesis 2.

Table 2 Earnings management and investor attention

	(1)	(2)	(3)
	All sample	Non state owned enterprises	State owned enterprises
	DA	DA	DA
Matt	0.020***	0.040***	0.004
	(0.005)	(0.008)	(0.005)
Bm	0.033***	0.111***	-0.025*
	(0.013)	(0.023)	(0.014)
Growth	0.061***	0.054***	0.070***
	(0.006)	(0.010)	(0.009)
Size	-0.020***	-0.048***	0.000
	(0.004)	(0.006)	(0.004)
Lev	0.058***	0.048**	0.063***
	(0.017)	(0.024)	(0.019)
Roa	-0.009	0.155*	-0.149**
	(0.051)	(0.080)	(0.060)
Inst	-0.013	-0.004	-0.010
	(0.012)	(0.025)	(0.012)
Audit	-0.007	-0.015	-0.015*
	(0.007)	(0.021)	(0.008)
Dum_gy	-0.030***		
	(0.005)		
constant	0.410***	0.990***	0.151**
	(0.062)	(0.114)	(0.070)
N	6222	2436	3786
r2	0.086	0.108	0.091

Note: The standard errors are shown in parentheses. ***p < .001. **p < .05. *p < .01.

5 Robustness test

Our robustness test uses the working capital model proposed by Dechow and Dichev (2002) to re-measure the extent of earnings management. Total working capital accruals(TWCA) is expressed as follows:

$$TWCA_{jt} = (\Delta CA_{jt} - \Delta CL_{jt} - \Delta CASH_{jt} + \Delta STDEBT_{jt}) \quad (6)$$

ΔCA、ΔCL、ΔCASH、ΔSTDEBT is defined the same as modified Jones model. The projected total working capital accruals is then regressed on the cash flows from operating activities at previous, current and the next one period, by each industry and year. The regression model can be expressed as follows:

$$\frac{TWCA_{jt}}{Asset_{j,t-1}} = a_{0,t} + a_{1,t}\frac{CFO_{j,t-1}}{Asset_{j,t}} + a_{2,t}\frac{CFO_{j,t}}{Asset_{j,t}} + a_{3,t}\frac{CFO_{j,t+1}}{Asset_{j,t}} + \varepsilon_{j,t} \quad (7)$$

Where CFO represents cash flows from operating activities. The absolute value of the regression residuals represents the level of earnings management on working capital, denoted as EMWC in this paper. Replacing the dependent variable in model (5) with EMWC, we can get the regression results shown in Table 3. It shows that our main results do not change significantly. The regression results still support the result that investor attention has a significant and positive effect on the earnings management of non state owned enterprises, but not on state-owned enterprises.

Table 3 Robustness test

	(1)	(2)	(3)
	All sample	Non state owned enterprises	State owned enterprises
	EMWC	EMWC	EMWC
Matt	0.023***	0.044***	0.006
	(0.005)	(0.008)	(0.005)
Bm	0.025**	0.106***	-0.033**
	(0.012)	(0.023)	(0.014)
Growth	0.062***	0.058***	0.065***
	(0.007)	(0.010)	(0.009)
Size	-0.026***	-0.055***	-0.006
	(0.004)	(0.006)	(0.005)
Lev	0.065***	0.051**	0.081***
	(0.016)	(0.021)	(0.023)
Roa	0.049	0.193**	-0.058
	(0.053)	(0.076)	(0.072)
Inst	0.003	0.015	0.005
	(0.011)	(0.023)	(0.012)
Audit	0.002	-0.005	-0.007
	(0.007)	(0.020)	(0.007)
Dum_gy	-0.030***		
	(0.005)		
_cons	0.588***	1.007***	0.219***
	(0.059)	(0.102)	(0.078)
N	6227	2449	3778
r2	0.099	0.125	0.083

Note: The standard errors are shown in parentheses. ***p < .001. **p < .05. *p < .01

6 Conclusion

Using the data of *Baidu* searching volume index of the non-financial Chinese listed firms from 2007 to 2011, this paper constructs a measure of investor attention on each firm and investigates the relationship between investor attention and earnings management. According to the regression results, investor attention can produce a market pressure on the company. The higher is the degree of investor attention, the higher is the extent of earnings management. Further empirical evidence found in sub-sample regressions shows that the ownership type of the firm plays a key role in the relationship between Higher investor attention causes market pressure and leads to significantly higher earnings management in non-state-owned enterprises, while it has no significant impact on earnings management in state-owned enterprises. The Conclusions of this study indicate that outside investors cannot play an efficient supervisory role in corporate earnings management behaviour but may instead reinforce it. This means that the market needs more powerful and efficient compelling force to restrict the corporate earnings management and convey true information of a firm. Therefore, it is necessary to improve regulatory agencies' monitoring efficiency and market supervision mechanism, and strengthen law enforcement to promote the formation of an efficient capital market. There are some weakness in my research? We can investigate these in the future. What causes the investor attention? Does the media or the analyst affect investor attention? And what is the relationship between investors' attention and the stock price synchronicity?

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