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Managers' Incentives, Earnings Management Strategies, and Investor Sentiment

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Abstract

The impact of managers' incentives and earnings management methods on investor sentiment, based on 9581 listed firms in China from 2006 to 2011, is studied. This paper examines the influence of managers' incentives and earnings management methods on investor sentiment and intends to study how managers' incentives influence real earnings management (REM) and earnings management methods, and following on how REM and earnings management methods influence investor sentiment. The empirical results indicate that managers use REM to manipulate the earnings in order to be able to declare a profit, avoid loss, refinance, and change executives. The listed companies with higher executive compensations prefer to use accrual earnings management (AEM). However, making larger profits by using REM activities is not a universal phenomenon in China because the capital market in China is not efficient. This paper also finds that, when a company makes larger profits using REM activities, investors are optimistic. When a company uses AEM activities to increase earnings, investors readily recognize AEM and they become pessimistic.

Key words: real earnings management (REM); accrual earnings management (AEM); management incentives; investor sentiment

JEL classification: F3; G1

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1. Introduction

Investor sentiment has had extensive attention in academic circles. Current literature about investor sentiment are mainly based on empirical measurement of investor sentiment (Wu and Han, 2007) and investor sentiment having a great effect on stock return and stock price fluctuation. In addition, numerous studies have examined the influential factors and economic consequences of accrual earnings management (AEM). A smaller stream of literature has examined the related issues of real earnings management (REM) at present (Gunny, 2010; Cohen et al., 2008). To further study investor sentiment, we try to find the relationships between investor sentiment and earnings management, and management incentives. We believe this research may help academic and professionals to have a better understanding of investors' motivations and behaviors. Will investor sentiment be affected when managers use REM to manipulate report earnings? Can managers give rise to optimistic investor sentiment by making a choice between REM and AEM?

To answer these questions, this paper aims to clarify the effect of earnings management methods and managers' incentives on investor sentiment, and study how managers' incentives affect investor sentiment through earnings management methods. Our study has theoretical value and strong implications for today's realities in improving the corporate governance and information quality of the listed companies, strengthening investors' confidence, and making the capital market develop in a healthy way.

The rest of this paper is arranged as follows. Section 2 discusses the related literature. Section 3 develops empirical research hypotheses. Section 4 describes the research design, including the data sources, sample selection, variable design, and the research model. Section 5 presents the empirical analysis results. Section 6 concludes.

2. Literature Review

2.1 Managers' Incentives and Earnings Management

According to the existing research literature, the earnings management incentives mainly include capital market incentives, contractual incentives, and political cost incentives. Capital market incentives focus on the relationship between a company's accounting earnings and the financing needs, including an IPO (Aharony et al., 2000), refinancing (Toeh et al., 1998), loss reversal (Lu, 1999), and loss avoidance (Zhou, 2004), and cater to the analyst's forecast. Contractual incentives focus on the relationship between the manager's compensation contract (Healy, 1985), the replacement of the CEO (Moore, 1973), debt contracts (such as Sweeny, 1994), and earnings management. The political incentives theory of earnings management suggests that, in order to reduce the transfer of corporate wealth, managers are more willing to manipulate accrued profit to reduce reported net income (Watts and Zimmerman, 1986). However, due to different national conditions and systems, the political hypotheses in our country are not completely

the same as the form of Western countries. Qin et al. (2005) and Li et al. (2011) verified that the political incentives of China differ from those of Western countries, namely, managers with political incentives may make larger earnings through earnings management. Li (2008) finds that when being forced to carry out asset impairment policies, companies with incentives to stop losses, acquire qualification for seasoned equity offerings, or that have critical profit incentives will choose asset impairment policies which can increase (or will not decrease) the current-period income; whereas loss companies, or companies which change executives or income smoothing incentives, will choose asset impairment policies which can increase (or will not decrease) future-period income.

Summarizing the existing research literature on earnings management, it is not hard to find that most of the existing literature on earnings management is based on AEM, and only in recent years some researchers have begun to pay close attention to REM. Zhang (1999) suggested that managers with lower compensation can manage net income in a concealed and relatively safe way so as to maximize their compensation. Chen Xiao (2004) finds that companies with losses prefer to use methods which are less likely to be revealed to indirectly manipulate profits, turn a profit, or avoid losses; Roychowdhury (2006) finds that the enterprise can use REM to turn a profit or avoid losses. Zhang (2008) argues that listed companies can not only manipulate reported earnings by manipulating accounting accrued profits but also manipulate the actual income through some transactions. Zhang (2008) verifies that companies with a small profit will conduct real activities using manipulative behavior. Cohen (2008) finds that after SOX implementation, the level of AEM of listed companies has declined, and the level of REM is increased. Cohen (2010) and Li et al. (2011) confirm that the SEO firms can simultaneously conduct accrued and REM. Zang (2012) finds that managers will trade off AEM and REM based on their relative costs. Cai et al. (2012) finds that a dying firm simultaneously uses AEM and REM, and that REM can have a more negative impact on the future value of the firms. Gu et al. (2012) shows that the nature of property rights not only has an important effect on REM but also has a significant influence on the restrictive effect of corporate governance mechanism on REM. Lin (2012) finds that managers of state-owned listed companies prefer REM, whereas that of non-state-owned firms tend to use AEM.

2.2 Earnings Management and Investor Sentiment

Efficient capital market theory by Fama (1970) and capital asset pricing model by Sharpe (1964) are two major theoretical bases of the capital market operation, but since the 1980s, after more and more accrual anomalies were discovered, many researchers started to cast doubt about investor rationality. Traditional theories clarify that most investors are rational, in fact, they are bounded by rationality, but can be irrational when making investment decisions, and they usually cannot fully understand their situation and therefore produce cognitive bias (Wu et al., 2006). This cognitive bias has a significant effect on stock returns, and the impact of investor sentiment on stock prices is far more than that of a firm's fundamentals

(Shiller, 1984; DeBondt, 1994; Hirshleifer et al., 1998; Fisher et al., 2000). Swaminathan (1996) finds that investor sentiment can not only affect the current stock price but also predict future stock returns and that the prediction ability for small companies is stronger than that for large companies, especially in a bull market peak and a bear market bottom. Based on the above analyses, investor sentiment can be linked with the price drift in a stock market. The results show that there is a significant positive correlation between investor sentiment and stock returns; this result means that during a bull market period, stock prices are always overvalued (Brown and Cliff, 2005). After managers realized that investor sentiment can induce irrational judgment and cause wrong estimation, and since investor sentiment has such a significant effect on asset pricing in the stock market, will managers actively shape investor sentiment to achieve their purpose in some way? Rajgopal et al. (2007) reveals that managers may use AEM in order to cater to the irrational demand of investors. Quan et al. (2010) documents that the managers with more information in the capital market prefer to choose the earnings announcement timing, managers tend to disclose good news when investors are more likely to be highly attentive and disclose bad news when investors are more likely to have limited attention. Pan (2011) finds that the cycle of accounting earnings increasing (decreasing) is consistent with the bull (bear) market positive (negative) cycle, with managers manipulating AEM, which are underestimated in a bear market period and overestimated in a bull market period so as to cater to investor sentiment. Tan et al. (2011) finds that during stable periods (2003–2005), managers can guide investor sentiment using AEM and then let the trend of stock price be beneficial for the company to make investment decisions.

Summarizing existing research, there is already some preliminary research on the relationship between AEM and investor sentiment; these results can provide our research with a solid theoretical basis. We think that, like AEM, REM can also be very common in a company. Managers can choose different earnings management ways according to the regulation environment and earnings management cost. They can also shape optimistic investor sentiment by choosing AEM or REM so as to achieve their purpose of loss reversal, avoiding losses, refinancing, and obtaining higher compensation. But we should pay attention to that shaping of the optimistic sentiment using earnings management, especially REM, which not only damages the company's long-term value but also seriously infringes on the interests of the investors. This will have a significant impact on the healthy development of capital markets. Based on these considerations, we place managers' incentives, earnings management, and investor sentiment within a research framework, study how managers' incentives influence REM and AEM, and investigate how managers have an impact on investor sentiment by choosing AEM or REM.

3. Theoretical Analysis and Hypothesis Development

3.1 Managers Incentives and Earnings Management

Following Healy (1985), a large body of accounting literature focuses on accrual-based earnings management. A smaller stream of literature investigates the possibility that managers use REM to distort earnings (Zang, 2012). There are some reasons why managers use REM to manipulate reported earnings. (1) Tightened accounting standards and more stringent enforcement motivates managers to switch from AEM to REM. (2) In the long run, accrual-based accounting earnings are equal to cash-based accounting earnings, and this means that current-period AEM will be reversed in the future, in other words, the ability of using AEM to manipulate reported earnings is constrained. (3) REM is more difficult to detect than AEM and for average investors to understand and is normally less subject to monitoring and scrutiny by a regulator, CPA, or other outside stakeholders, and auditing risk becomes lower. Therefore, managers are inclined to use REM to manage reported earnings so as to maintain a shell form of a listed firm, to avoid being specially treated or delisted, and then continue to source finance in the capital market. When the listed firm changes its executives, the new executives implement negative AEM, thus appearing to "take a bath" in order to shed the responsibility upon former executives. At the same time, the new executives also use REM to manage reported earnings in order to cater to investor sentiment. In addition, REM can have a seriously negative impact on long-term development; therefore, when managers have the right incentive mechanisms to align managerial and shareholder interest, they prefer choosing AEM to choosing REM. Hence, we predict the following hypotheses.

Hypothesis 1-a: Ceteris paribus, managers are more inclined to use REM strategies to manipulate earnings in order to declare a profit, avoid loss, and refinance.
Hypothesis 1-b: Ceteris paribus, companies with higher executive bonus are less willing to manage earnings by REM strategies, and they prefer AEM strategies.
Hypothesis 1-c: Ceteris paribus, when a company changes executives, the new executives are more willing to manage earnings through REM strategies, and they are not willing to choose AEM strategies.
Hypothesis 1-d: Ceteris paribus, when high managerial stock ownership let managers be more reluctant to use REM strategies, they are willing to choose AEM strategies.

3.2 Earnings Management and Investor Sentiment

The prospect theory of behavioral finance assumes that the utility function of investors is concave for gains and convex for losses. In other words, investors facing reported profit earnings of firms will continue to be in an optimistic mood, whereas investors facing reported losses of firms will be more risk-averse, and more likely to transfer investments and get out of capital markets. In order to avoid reported losses and prevent risk-averse investors from getting out of the capital market, managers are inclined to manipulate reported earnings to turn a profit or avoid losses and thus to shape the optimistic mood of investors. Investors, however, can also detect AEM strategies by managers. Chan et al. (2001) documents that investors can appear

pessimistic about development prospects of firms because investors can easily detect AEM strategies by firms with high discretionary accrual practices. For example, in order to reduce depreciation expenses for fixed assets and then inflate reported earnings, managers may adopt policies that suggest income minimization, including accelerated depreciation methods in the past year, whereas they actually switch from the accelerated depreciation method to the straight-line method in the current year. At the same time, investors can detect the purpose of the firms and then be in a pessimistic mood about the prospects of firms. In contrast, when managers use REM strategies through manipulating sale, controlling production, managing discretionary expenditures, and so on, investors can find it very difficult to detect these activities and thus will appear optimistic about development prospects of firms (Li et al., 2011). Based on the above analysis, we propose the following hypotheses.

Hypothesis 2-a: Ceteris paribus, the investor can be pessimistic about prospects of firms with high discretionary accrual practices because investors can detect the AEM activities.
Hypothesis 2-b: Ceteris paribus, the investor can be optimistic about prospects of firms inflating reported earnings through using REM strategies because it is very difficult for investors to detect the REM activities.

3.3 Management Incentives, Earnings Management, and Investor Sentiment

Kahneman et al. (1979) and Sellers (2007) find that most investors are not always rational financial investors but are behavioral investors, and their behaviors are not always rational and may not always be risk averse. Therefore, once managers realize these behavioral characteristics of investors, they attempt to shape investor sentiment by sending signals to achieve their own purposes. When the stock market is in a slump, they attempt to encourage optimistic sentiment of investors, boost stock prices, improve capital market liquidity, and safely complete finance objectives. When the stock market is booming, managers may make better use of optimistic sentiment of investors to further boost stock price.

The capital market is an important external environment of firms, and an important marketplace for financial intermediation. In order to boost investors' confidence and obtain financing successfully, information disclosure becomes the only channel for connecting the firms with investors. Higher levels of earnings in the accounting information can boost investors' confidence in the capital market. Since most investors can detect AEM by managers, investors may be pessimistic instead of taking an optimistic view about the development prospects of firms in the face of AEM strategies by managers. Therefore, in order to get good compensation, finance and refinance successfully in the capital market, or maintain the "shell" resources, managers may be inclined to manipulate reported earnings through more subtle ways and then encourage the optimistic sentiment of investors. In summary, earnings management activities and the choice of the earnings management strategies can be the mediating variables. In other words, various managers' incentives can impact investor sentiment through earnings management activities

and the choice of earnings management strategies. Based on the above analysis, we propose one more hypothesis.

Hypothesis 3: Ceteris paribus, whatever their motives, managers may encourage optimistic sentiment of investors by increasing REM activities and reducing the AEM activities.

4. Research Design

4.1 Sample Selection and Data

The data of listed firms in China used in this study is from 2006 to 2011. After excluding firms in the financial industry and firms with incomplete data, we finally obtain 9581 observations. The data of this paper is collected from the CSMAR database. Some data are acquired manually by looking up the annual report of the listed companies or on the HeXun website when the data is not complete enough.

4.2 Design Variables

4.2.1 Investor Sentiment

Lei et al. (2011) thinks that investor sentiment concepts derive from noise trading theory. Due to incorrect subjective beliefs or irrelevant information of stock value, noise traders often expect incorrectly priced stock in the future. They think that a higher price to earnings (P/E) ratio indicates that investors are optimistic about the prospects of firms; a higher price-to-book (P/B) ratio may indicate higher growth of the firms, but this indicator is also easily affected by emotional fluctuation; the turnover rate reflects the degree of investors' pursuit of stock market profit, with a higher turnover rate suggestive of excessive speculation. This paper borrows from Lei's method and selects the P/E ratio, P/B ratio, and turnover rate of listed companies to construct an investor sentiment index of every company using principal component analysis.

4.2.2 Earnings Management

Accrual earnings management

In this paper, we use discretionary accruals as a proxy for AEM. The model to estimate discretionary accruals is as follows:

$$DA_{it} = TA_{it} / \bar{A}_{it} - NDA_{it}, \tag{1}$$

where DA_{it} is discretionary accruals; TA_{it} is total accruals, defined as operating income less operating cash flows, that is $TA_{it} = OI_{it} / \bar{A}_{it} - CFO_{it}$, where OI_{it} is the operating income and CFO_{it} is the operating cash flows; $\bar{A}_{it}$ is average assets; and NDA_{it} is non-discretionary accruals, obtained using the following model:

$$NDA_{it} = \alpha_1(1/\bar{A}_{it}) + \alpha_2(\Delta REV_{it} - \Delta REC_{it})/\bar{A}_{it} + \alpha_3(PPE_{it}/\bar{A}_{it}) + \alpha_4(IA_{it}/\bar{A}_{it}), \quad (2)$$

where ΔREV_{it} represents the change in net sales dollars; ΔREC_{it} represents the change in net receivables; PPE_{it} represents fixed assets; IA_{it} represents intangible assets and other non-current assets respectively; and α_1, α_2, α_3, and α_4 are the parameters estimated using the following modified Jones regression cross-sectionally for each industry:

$$TA_{it}/\bar{A}_{it} = \alpha_1(1/\bar{A}_{it}) + \alpha_2(\Delta REV_{it} - \Delta REC_{it})/\bar{A}_{it} + \alpha_3(PPE_{it}/\bar{A}_{it}) + \alpha_4(IA_{it}/\bar{A}_{it}) + \varepsilon_{it}. \quad (3)$$

Real earnings management

Roychowdhury (2006) finds that managers usually manipulate real operational activities by boosting sales, overproducing inventories, and cutting discretionary expenditures. Cohen et al. (2008, 2010), Li et al. (2011), Zang (2012), Cai et al. (2012), Gu et al. (2012), and Lin et al. (2012) use the same metrics and provide further evidence that these measures can capture REM, so this paper also uses the same metrics to measure REM by managers. The normal level of operating cash flows, production costs, and discretionary expenditures is estimated using equations (4), (5), and (6) below and then estimating abnormal operating cash flows, abnormal production costs, and abnormal discretionary expenditures by respectively computing the difference between actual operating cash flows, production costs, discretionary costs, and the normal level of operating cash flows, production costs, and discretionary costs:

$$CFO_{it}/TA_{i,t-1} = \alpha_0 * (1/TA_{i,t-1}) + \alpha_1 * (S_{it}/TA_{i,t-1}) + \alpha_2 * (\Delta S_{it}/TA_{i,t-1}) + \varepsilon, \quad (4)$$

$$PROD_{it}/TA_{i,t-1} = \beta_0 * (1/TA_{i,t-1}) + \beta_1 * (S_{it}/TA_{i,t-1}) + \beta_2 * (\Delta S_{it}/TA_{i,t-1}) + \beta_3 * (\Delta S_{i,t-1}/TA_{i,t-1}) + \varepsilon, \quad (5)$$

$$EXP_{it}/TA_{i,t-1} = \gamma_0 * + \gamma_1 * (1/TA_{i,t-1}) + \gamma_2 * (\Delta S_{i,t-1}/TA_{i,t-1}) + \varepsilon, \quad (6)$$

where CFO_{it} denotes operating cash flows; $PROD_{it}$ denotes the sum of cost of sales and change in inventory; EXP_{it} denotes the sum of sales expenses and management expenses; $TA_{i,t-1}$ denotes the beginning balance of total; S_{it} denotes sales for the current year; ΔS_{it} denotes the change in sales; and $\Delta S_{i,t-1}$ denotes change in sales last year.

To compute the comprehensive measures of REM of firms, we use the same metrics of Sohn (2011) by summing abnormal operating cash flows, abnormal production costs, and abnormal discretionary expenditures as follows:

$$REM_{it} = ABPROD_{it}/TA_{i,t-1} - ABCFO_{it}/TA_{i,t-1} - ABEXP_{it}/TA_{i,t-1}, \quad (7)$$

where REM_{it} denotes REM; $ABPROD_{it}$ denotes abnormal production costs; $ABCFO_{it}$ denotes abnormal operating cash flows; and $ABEXP_{it}$ denotes abnormal discretionary expenditures.

4.2.3 Management Incentives

Following Li et al. (2008), we select four indicator variables reflecting managers' incentives: LP (1 if net income was less than zero last year but net income is greater than 0 this year, and 0 otherwise), SP (1 if return-on-equity [ROE] is between 0 and 0.015, and 0 otherwise), ISSUE (1 if ROE is between 0.055 and 0.075, and 0 otherwise), and CHANGE (1 if the chairman of the board of directors or CEO is changed, and 0 otherwise). Guenther (1994) finds that management incentives can also impact earnings management, so we borrow from the Li et al. (2011) research and select EXES and MANAGE to examine the effects of management incentives on earnings management. EXES denotes monetary remuneration, which is defined as the natural logarithm of total monetary remuneration of the top three executives. MANAGE represents the percentage of managerial share holdings.

4.2.4 Control Variables

Other control variables include ST/PT, an indicator variable equal to 1 when the listed firm is specially treated or particularly transferred, and 0 otherwise; STATE, an indicator variable equal to 1 when the ultimate shareholder is government, and 0 otherwise; ROA, which is the return on assets ratio; SIZE, which is the natural logarithm of total assets; GROW, which is the sales revenue growth rate; and DEBT, which is the debt ratio at the end. In addition, we also control the industry effects and the year effects.

4.3 Research Model

To test the relationship between managers' incentives and earnings management, we construct the simultaneous equation (8) and (9):

$$\begin{aligned} EM_{it} &= \alpha_0 + \alpha_1 LP_{it} + \alpha_2 SP_{it} + \alpha_3 Issue_{it} + \alpha_4 Exes_{it} + \alpha_5 Manage_{it} \\ &\quad + \alpha_6 Change_{it} + \alpha_7 State_{it} + \alpha_8 ST_{it} + \alpha_9 ROA_{it} + \alpha_{10} Debt_{it} \\ &\quad + \alpha_{11} Grow_{it} + \alpha_{12} Size_{it} + \sum \alpha Year + \sum \alpha Industry + \varepsilon, \end{aligned} \tag{8}$$

$$\begin{aligned} IS_{it} &= \beta_0 + \beta_1 EM_{it} + \beta_2 CFO_{it} + \beta_3 LP_{it} + \beta_4 Issue_{it} + \beta_5 Manage_{it} \\ &\quad + \beta_6 change_{it} + \beta_7 State_{it} + \beta_8 ST_{it} + \beta_9 ROA_{it} + \beta_{10} Debt_{it} \\ &\quad + \beta_{11} Grow_{it} + \beta_{12} Size_{it} + \sum \beta Year + \sum \beta Industry + \delta, \end{aligned} \tag{9}$$

where EM_{it} represents earnings management and other variables were described above.

To identify and test the mechanism that underlies a relationship between managers' incentives and investor sentiment via the inclusion of earnings

management, we borrow from research by Wen et al. (2004) and Hua (2011) and use the meditational model:

$$IS_{it} = \alpha_0 + \alpha_1 Motivation_{it} + \sum control + \sum Industry + \sum Year + \mu_1, \quad (10)$$

$$EM_{it} = \alpha_0 + \alpha_1 Motivation_{it} + \sum control + \sum Industry + \sum Year + \mu_2, \quad (11)$$

$$IS_{it} = \alpha_0 + \alpha_1 Motivation_{it} + \alpha_2 EM_{it} + \sum control + \sum Industry + \sum Year + \mu_3, \quad (12)$$

where $Motivation_{it}$ represents managers' incentives and other variables were described above.

According to Wen et al. (2004) and Hua (2011), we use OLS regression analysis in model (10), (11), and (12). If the coefficient α_1 in model (10) is significant, this indicates that managers' incentives have a significant effect on investor sentiment; if the coefficient α_1 in model (11) is significant, this indicates that managers' incentives are a significant predictor of the mediator variable, earnings management. If the coefficients α_1 and α_2 in model (12) are significant, this indicates that earnings management plays a mediating role; in other words, earnings management mediates the relationship between manager's incentives and investor sentiment.

5. Empirical Analysis

5.1 Descriptive Statistics

Table 1 presents descriptive statistics of the main variables in the regression model for the full sample. The maximum investor sentiment (IS) is 26.850, the minimum is 9.400, and the standard deviation is 0.709; this shows that IS of the company's annual sample has a large range. The median value of 0.150 reveals that IS is relatively low for more than half of the firms. The mean ABCFO is 0.015, the median is 0.017; the mean ABPROD is −0.034, the median is −0.033; the mean ABEXP is 0.021, the median is 0.011; the mean of REM is −0.070, the median is −0.069. These results indicate that most of the sample firms manipulate earnings through the sales control, production control, and sales and management cost control methods. AEM's mean and median values are 0.062, indicating that most of the sample companies manipulate earnings through AEM. The mean of LP is 0.0789; this shows that about 8% of the sample companies turn a profit. The mean SP is 0.0793; this shows that about 8% of the sample companies may have loss-avoiding incentives. The mean of ISSUE is 0.112; this indicates that 11% of the sample companies have refinanced. The maximum, minimum, and standard deviation of EXES are 16.645, 0.000, and 0.855 respectively, indicating that the company's executive compensation differ from each other. The mean and the median of MANAGE are 0.031 and 0.000; these results show that most of the sample companies did not implement management incentives. The mean of CHANGE is

0.267, which indicates that 27% of the sample companies during 2006–2011 changed the CEO or chairman.

Table 1. Descriptive Statistics of Main Varibles

	N	Mean	Std Dev	Minimum	Maximum	First Quartile	Median	Third Quartile
IS	9581	0.000	0.709	−9.400	26.850	−0.330	−0.150	0.140
ABCFO	9581	0.015	0.108	−1.386	1.682	−0.032	0.017	0.069
ABPROD	9581	−0.034	0.194	−3.532	4.168	−0.104	−0.033	0.033
ABEXP	9581	0.021	0.084	−1.155	1.301	−0.013	0.011	0.045
REM	9581	−0.070	0.298	−3.588	4.806	−0.196	−0.069	0.054
AEM	9581	0.062	0.119	−1.734	1.104	0.009	0.062	0.116
LP	9581	0.079	0.270	0.000	1.000	0.000	0.000	0.000
SP	9581	0.079	0.270	0.000	1.000	0.000	0.000	0.000
ISSUE	9581	0.112	0.316	0.000	1.000	0.000	0.000	0.000
EXES	9581	13.647	0.855	0.000	16.645	13.124	13.674	14.196
MANAGE	9581	0.031	0.104	0.000	1.316	0.000	0.000	0.000
CHANGE	9581	0.267	0.442	0.000	1.000	0.000	0.000	1.000
STATE	9581	0.569	0.495	0.000	1.000	0.000	1.000	1.000
ST	9581	0.084	0.277	0.000	1.000	0.000	0.000	0.000
ROA	9581	2.366	241.050	−1844.820	23509.769	0.015	0.040	0.074
DEBT	9581	0.719	9.450	0.000	877.256	0.338	0.500	0.645
GROW	9581	1.408	47.733	−1.046	3782.713	0.005	0.154	0.332
SIZE	9581	21.598	1.314	10.842	28.282	20.768	21.471	22.298

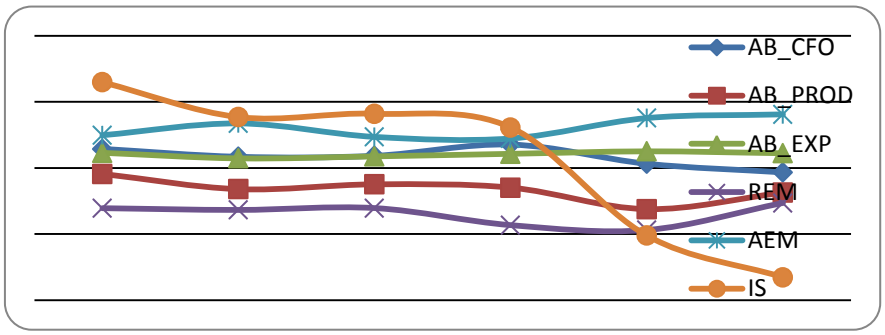
Table 2. The Mean of REM, AEM, and IS by Years

Year	N	ABCFO	ABPROD	ABEXP	REM	AEM	IS
2006	1338	0.029	−0.009	0.023	−0.061	0.050	0.130
2007	1440	0.017	−0.032	0.015	−0.063	0.067	0.077
2008	1501	0.018	−0.025	0.018	−0.061	0.047	0.082
2009	1569	0.035	−0.030	0.021	−0.086	0.045	0.061
2010	1792	0.006	−0.062	0.025	−0.094	0.075	−0.102
2011	1941	−0.007	−0.037	0.022	−0.053	0.081	−0.165
Total sample	9581	0.015	−0.034	0.021	−0.070	0.062	0.000

Table 2 presents mean REM, AEM, and IS by year. Figure 1 plots the trend of REM, AEM, and IS in the period 2006–2011. The IS peaked in 2006, fell in 2007, rose slightly in 2008, began to fall sharply after 2009, and rapidly fell to the lowest point in 2011. REM has always been less than 0, and AEM has always been more

than 0; these show that, on average, the sample companies did not inflate reported earnings through REM but through AEM. Judging from the development trend, both REM and AEM show a decrease first and then an increase.

Figure 1. The Trend of REM, AEM, and IS



5.2 Correlation Analysis

Table 3 reports the correlation matrix of the main variables in the regression model, where the upper triangle presents the Pearson correlation coefficients, and the lower triangle presents the Spearman correlation coefficients. It is not hard to find that REM is positively correlated with AEM at the 1% significance level, indicating that REM and AEM occur at the same time. REM has significantly negative correlation with abnormal operating cash flows (ABCFO) and abnormal discretionary expenditures (ABEXP) and significantly positive correlation with abnormal production costs (ABPROD), consistent with our expectations. This result shows that the listed companies may use three types of REM at the same time. LP, SP, and Change have significantly positive correlation with REM and significantly negative correlation with AEM, indicating that managers may be inclined to use more hidden ways to manipulate earnings so as to avoid delisting, be special treated (ST), and show personal management skills. In detail, managers with three types of incentives may inflate reported earnings by boosting sales, overproducing inventories, and cutting discretionary expenditures; consequently, hypotheses 1-a and 1-c. are supported. Executive compensation (EXES) and managerial share holding (MANAGE) have significantly negative correlation with REM and have significantly positive correlation with AEM; these results are consistent with hypotheses 1-b and 1-d. Correlation analysis results also show that when regulators strengthen supervision, managers apparently reduce AEM activities and increase REM activities. State-owned companies are more willing to use REM strategies and less willing to use AEM strategies, which have higher audit risk. Companies with higher debt ratio are inclined to use AEM strategies. Large companies may use the two types of earnings management at the same time.

Table 3. Correlation Matrix of Main Variables in Regression Managers' Incentives on Earnings Management

	ABCFO	ABPROD	ABEXP	REM	AEM	LP	SP	ISSUE	EXES	MANAGE	CHANGE
ABCFO	1.000	**−0.336** (0.000)	**0.135** (0.000)	**−0.618** (0.000)	**−0.547** (0.000)	0.015 (0.133)	**−0.054** (0.000)	−0.024 (0.018)	**0.031** (0.002)	**−0.039** (0.000)	−0.009 (0.395)
ABPROD	**−0.410** (0.000)	1.000	**−0.496** (0.000)	**0.911** (0.000)	**0.091** (0.000)	**0.048** (0.000)	**0.058** (0.000)	−0.014 (0.164)	**−0.055** (0.000)	**−0.092** (0.000)	**0.054** (0.000)
ABEXP	**0.153** (0.000)	**−0.552** (0.000)	1.000	**−0.653** (0.000)	**−0.116** (0.000)	−0.011 (0.280)	**−0.042** (0.000)	**−0.030** (0.003)	**0.051** (0.000)	**0.058** (0.000)	−0.011 (0.268)
REM	**−0.663** (0.000)	**0.903** (0.000)	**−0.619** (0.000)	1.000	**0.290** (0.000)	**0.029** (0.005)	**0.069** (0.000)	0.008 (0.436)	**−0.061** (0.000)	**−0.062** (0.000)	**0.041** (0.000)
AEM	**−0.520** (0.000)	**0.034** (0.001)	**−0.052** (0.000)	**0.251** (0.000)	1.000	**−0.049** (0.000)	**−0.087** (0.000)	**0.034** (0.001)	**0.084** (0.000)	**0.102** (0.000)	**−0.080** (0.000)
LP	−0.006 (0.585)	**0.063** (0.000)	0.004 (0.724)	**0.035** (0.001)	**−0.059** (0.000)	1.000	**−0.086** (0.000)	**−0.104** (0.000)	**−0.179** (0.000)	**−0.069** (0.000)	**0.107** (0.000)
SP	**−0.077** (0.000)	**0.103** (0.000)	**−0.042** (0.000)	**0.102** (0.000)	**−0.085** (0.000)	**−0.086** (0.000)	1.000	**−0.104** (0.000)	**−0.143** (0.000)	**−0.060** (0.000)	**0.060** (0.000)
ISSUE	−0.018 (0.081)	−0.003 (0.743)	−0.015 (0.144)	0.005 (0.604)	**0.033** (0.001)	**−0.104** (0.000)	**−0.104** (0.000)	1.000	**0.031** (0.003)	**0.074** (0.000)	**−0.034** (0.001)
EXES	**0.063** (0.000)	**−0.116** (0.000)	**0.040** (0.000)	**−0.100** (0.000)	**0.075** (0.000)	**−0.172** (0.000)	**−0.152** (0.000)	**0.028** (0.005)	1.000	**0.042** (0.000)	**−0.116** (0.000)
MANAGE	−0.013 (0.208)	**−0.099** (0.000)	**0.100** (0.000)	**−0.075** (0.000)	**0.101** (0.000)	**−0.089** (0.000)	**−0.072** (0.000)	**0.050** (0.000)	**0.169** (0.000)	1.000	**−0.109** (0.000)
CHANGE	−0.008 (0.458)	**0.061** (0.000)	−0.017 (0.089)	**0.042** (0.000)	**−0.092** (0.000)	**0.107** (0.000)	**0.060** (0.000)	**−0.034** (0.001)	**−0.107** (0.000)	**−0.148** (0.000)	1.000

Notes: The samples are 9581 firms during 2006–2011. The upper triangle contains the Pearson correlation coefficients; the lower triangle contains the Spearman correlation coefficients. P values are in parentheses (0.000 means < 0.001). Bolded coefficients are significant at the 1% level.

Table 4 shows the correlation matrix of the main variables in the regression earnings management on IS, the upper triangle presents the Pearson correlation coefficients, and the lower triangle presents the Spearman correlation coefficients. IS has a positive correlation with REM at the 1% level and a negative correlation with AEM at the 1% level, suggesting that investors can detect AEM, and can't detect REM, so managers may choose the REM strategies to inflate the reported earnings, and then raise investor optimistic sentiment. Specifically, IS is significantly negatively correlated with ABCFO and ABEXP and positively related to ABPROD. This also illustrates that the managers may boost IS by boosting sales, overproducing inventories, and cutting discretionary expenditures; this result supports hypotheses 2-a and 2-b. Correlation analysis results also show that the listed firms turning a profit (LP), changing executives (CHANGE), specially treated in a regulated market (ST), and creditors are beneficial to refresh optimistic IS and are helpful to boost investor confidence.

Table 4. Correlation Matrix of Main Variables in Regression Earnings Management on Investor Sentiment

	IS	ABCFO	ABPROD	ABEXP	REM	AEM	CFO	LP	ISSUE	MANAGE	CHANGE
IS	1.000	**−0.042** (0.000)	**0.060** (0.000)	**−0.045** (0.000)	**0.067** (0.000)	**−0.074** (0.000)	**−0.067** (0.000)	**0.185** (0.000)	**−0.065** (0.000)	**−0.085** (0.000)	**0.067** (0.000)
ABCFO	**−0.117** (0.000)	1.000	**−0.336** (0.000)	**0.135** (0.000)	**−0.618** (0.000)	**−0.547** (0.000)	**0.964** (0.000)	0.015 (0.133)	−0.024 (0.018)	**−0.039** (0.000)	−0.009 (0.395)
ABPROD	**0.225** (0.000)	**−0.410** (0.000)	1.000.	**−0.496** (0.000)	**0.911** (0.000)	**0.091** (0.000)	**−0.282** (0.000)	**0.048** (0.000)	−0.014 (0.164)	**−0.092** (0.000)	**0.054** (0.000)
ABEXP	**−0.079** (0.000)	**0.153** (0.000)	**−0.552** (0.000)	1.000	**−0.653** (0.000)	**−0.116** (0.000)	**0.056** (0.000)	−0.011 (0.280)	**−0.030** (0.003)	**0.058** (0.000)	−0.011 (0.268)
REM	**0.194** (0.000)	**−0.663** (0.000)	**0.903** (0.000)	**−0.619** (0.000)	1.000	**0.290** (0.000)	**−0.548** (0.000)	**0.029** (0.005)	0.008 (0.436)	**−0.062** (0.000)	**0.041** (0.000)
AEM	**−0.168** (0.000)	**−0.520** (0.000)	**0.034** (0.001)	**−0.052** (0.000)	**0.251** (0.000)	1.000	**−0.540** (0.000)	**−0.049** (0.000)	**0.034** (0.001)	**0.102** (0.000)	**−0.080** (0.000)
CFO	**−0.163** (0.000)	**0.950** (0.000)	**−0.368** (0.000)	**0.090** (0.000)	**−0.606** (0.000)	**−0.515** (0.000)	1.000	−0.001 (0.927)	**−0.027** (0.008)	**−0.037** (0.000)	−0.017 (0.105)
LP	**0.226** (0.000)	−0.006 (0.585)	**0.063** (0.000)	0.004 (0.724)	**0.035** (0.001)	**−0.059** (0.000)	−0.026 (0.011)	1.000	**−0.104** (0.000)	**−0.069** (0.000)	**0.107** (0.000)
ISSUE	**−0.051** (0.000)	−0.018 (0.081)	−0.003 (0.743)	−0.015 (0.144)	0.005 (0.604)	**0.033** (0.001)	−0.021 (0.039)	**−0.104** (0.000)	1.000	**0.074** (0.000)	**−0.034** (0.001)
MANAGE	**−0.175** (0.000)	−0.013 (0.208)	**−0.099** (0.000)	**0.100** (0.000)	**−0.075** (0.000)	**0.101** (0.000)	0.004 (0.695)	**−0.089** (0.000)	**0.050** (0.000)	**1.000** (0.000)	**−0.109** (0.000)
CHANGE	**0.120** (0.000)	−0.008 (0.458)	**0.061** (0.000)	−0.017 (0.089)	**0.042** (0.000)	**−0.092** (0.000)	−0.019 (0.069)	**0.107** (0.000)	**−0.034** (0.001)	**−0.148** (0.000)	1.000

Notes: The samples are 9581 firms during 2006–2011. The upper triangle contains the Pearson correlation coefficients; the lower triangle contains the Spearman correlation coefficients. P values are in parentheses (0.000 means < 0.001). Bolded coefficients are significant at the 1% level.

5.3 Univariate Analysis

Table 5 presents mean and median comparisons of earnings management for managers' incentives. It is not hard to find that the managers with profit turning incentives may implement REM by overproducing inventories and reduce the level of AEM so as to reduce the probability of being detected. Managers having loss-avoidance incentives may decrease the level of AEM and increase the level of REM through sales control, production control, and discretionary expenditure control at the same time. Managers with refinancing incentives may inflate reported earnings by using sales manipulation, discretionary expenditure manipulation, and AEM; these results support hypothesis 1-a. When the listed firms change their executives, the new executives may inflate earnings by overproducing inventories and adopt the negative AEM strategies to shed the responsibility of previous poor management, consistent with the expectation of hypothesis 1-c. Managers with higher monetary remuneration tend to switch from REM strategies damaging the company's long-term value to AEM in order to maintain long-term good salaries, consistent with the expectation of hypothesis 1-b. Managerial share holdings align executives' interests with shareholders' interests, so managers holding their

company's shares are also inclined to switch from REM to AEM; this result supports hypothesis 1-d.

Table 5. Mean and Median Comparison of Earnings Management

Panel A

Variables	LP (756)		NLP (8825)		Mean value difference	T	Z
	Mean	Median	Mean	Median			
ABCFO	0.021	0.012	0.015	0.018	0.006	1.504	−0.546
ABPROD	−0.002	−0.010	−0.037	−0.035	0.034	4.669***	−6.170***
ABEXP	0.018	0.013	0.021	0.010	−0.003	−1.054	−0.353
REM	−0.041	−0.048	−0.072	−0.072	0.032	2.795***	−3.470***
AEM	0.042	0.045	0.064	0.063	−0.022	−3.658***	−5.813***

Panel B

Variables	SP (760)		NSP (8821)		Mean value difference	T	Z
	Mean	Median	Mean	Median			
ABCFO	−0.005	−0.002	0.017	0.019	−0.021	−5.041***	−7.523***
ABPROD	0.004	−0.001	−0.037	−0.037	0.041	8.437***	−10.099***
ABEXP	0.009	0.007	0.022	0.011	−0.013	−4.394***	−4.072***
REM	0.000	−0.012	−0.076	−0.076	0.076	9.346***	−10.032***
AEM	0.027	0.039	0.065	0.064	−0.038	−7.314***	−8.279***

Panel C

Variables	Issue (1076)		Not issue (8505)		Mean value difference	T	Z
	Mean	Median	Mean	Median			
ABCFO	0.008	0.015	0.016	0.017	−0.008	−2.704***	−1.742*
ABPROD	−0.042	−0.037	−0.033	−0.032	−0.009	−1.266	−0.328
ABEXP	0.014	0.009	0.022	0.011	−0.008	−3.556***	−1.461
REM	−0.063	−0.077	−0.071	−0.069	0.008	0.803	−0.518
AEM	0.073	0.068	0.061	0.061	0.012	4.255***	−3.239***

Panel D

Variables	Change (2556)		Not change (7025)		Mean value difference	T	Z
	Mean	Median	Mean	Median			
ABCFO	0.014	0.015	0.016	0.018	−0.002	−0.851	−0.742
ABPROD	−0.017	−0.021	−0.040	−0.037	0.023	5.256***	5.937***
ABEXP	0.019	0.009	0.021	0.011	−0.002	−1.107	−1.700*
REM	−0.050	−0.056	−0.077	−0.075	0.027	4.037***	4.096***
AEM	0.046	0.050	0.068	0.066	−0.022	−7.126***	−8.966***

Table 5. Mean and Median Comparison of Earnings Management (Continued)

Panel E

Variables	Higher salaries (4785)		Lower salaries (4796)		Mean value difference	T	Z
	Mean	Median	Mean	Median			
ABCFO	0.019	0.023	0.012	0.012	0.007	3.139***	−5.145***
ABPROD	−0.044	−0.044	−0.024	−0.023	−0.020	−5.034***	−9.482***
ABEXP	0.024	0.011	0.018	0.010	0.006	3.462***	−2.649***
REM	−0.086	−0.088	−0.054	−0.053	−0.032	−5.386***	−8.004***
AEM	0.070	0.066	0.054	0.057	0.016	6.735***	−6.143***

Panel F

Variables	Shareholding (5150)		Not shareholding (4431)		Mean value difference	T	Z
	Mean	Median	Mean	Median			
ABCFO	0.015	0.017	0.015	0.016	0.000	0.001	−0.286
ABPROD	−0.040	−0.039	−0.027	−0.028	−0.013	−3.231***	−4.656***
ABEXP	0.026	0.014	0.015	0.007	0.011	6.177***	−6.952***
REM	−0.081	−0.076	−0.057	−0.063	−0.023	−3.834***	−4.282***
AEM	0.066	0.064	0.058	0.059	0.008	3.152***	−3.866***

Notes: The T-statistics are for mean comparison and Z-statistics are for median comparison. ***, **, and * denotes significance at the 1%, 5%, and 10% levels, respectively.

Table 6. Mean and Median Comparison of Investor Sentiment

Variable	High AEM (4793)		Low AEM (4788)		Mean difference	T	Z
	Mean	Median	Mean	Median			
IS	−0.052	−0.210	0.052	−0.090	−0.104	−7.166***	−13.954***
Variable	Positive AEM (7510)		Negative AEM (2071)		Mean difference	T	Z
	Mean	Median	Mean	Median			
IS	−0.022	−0.170	0.079	−0.040	−0.101	−4.997***	−12.127***
Variable	High REM (4791)		Low REM (4790)		Mean difference	T	Z
	Mean	Median	Mean	Median			
IS	0.069	−0.090	−0.069	−0.210	0.138	9.567***	−16.939***
Variable	Positive REM (3318)		Negative REM (6263)		Mean difference	T	Z
	Mean	Median	Mean	Median			
IS	0.055	−0.100	−0.029	−0.180	0.084	5.434***	−11.177***

Notes: The T-statistics are for mean comparison and Z-statistics are for median comparison. ***, **, and * denotes significance at the 1%, 5%, and 10% levels, respectively.

Table 6 reports the mean and median comparisons of IS for different levels of

earnings management. Analysis of results shows that IS will be pessimistic when managers use AEM; this suggests that investors can detect AEM activities. Investors have optimistic sentiment when managers implement more REM activities, indicating that investors can't detect REM activities. Therefore, managers can lift investor optimistic sentiment by implementing REM activities so as to realize its various incentives. Hypotheses 2-a and 2-b are supported.

5.4 Multiple Regression Analysis

5.4.1 The Impact of Management Incentives on Earnings Management

To test the impact of managerial incentives on the choice of earnings management strategies, we choose ABCFO, ABPROD, ABEXP, REM, and AEM as response variables and regress these on managerial incentives. Table 7 reports the regression analysis results.

Table 7. The Effect of Managerial Incentives on Earnings Management

Variable	ABCFO	ABPROD	ABEXP	REM	AEM
(Constant)	−0.053**	−0.263***	0.071***	−0.281***	−0.029
	(0.029)	(0.000)	(0.000)	(0.000)	(0.276)
LP	0.006	0.032***	−0.014***	0.039***	0.004
	(0.139)	(0.000)	(0.000)	(0.001)	(0.418)
SP	−0.021***	0.034***	−0.016***	0.071***	−0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ISSUE	−0.009**	0.008	−0.011***	0.028***	0.001
	(0.012)	(0.186)	(0.000)	(0.003)	(0.752)
EXES	0.008***	−0.027***	0.015***	−0.050***	0.003**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.048)
MANAGE	−0.027**	−0.057***	0.007	−0.037	0.067***
	(0.016)	(0.005)	(0.425)	(0.232)	(0.000)
CHANGE	−0.003	0.012***	0.001	0.014**	−0.012***
	(0.271)	(0.007)	(0.777)	(0.037)	(0.000)
STATE	0.001	0.014***	−0.003	0.015**	−0.016***
	(0.753)	(0.002)	(0.167)	(0.020)	(0.000)
ST	−0.013***	0.024***	0.015***	0.022*	−0.049***
	(0.003)	(0.003)	(0.000)	(0.067)	(0.000)
ROA	0.000	0.000	0.000	0.000	0.000***
	(0.969)	(0.109)	(0.123)	(0.142)	(0.005)
DEBT	0.000	0.000	0.000***	0.000	−0.001***
	(0.382)	(0.572)	(0.002)	(0.361)	(0.000)
GROW	0.000	0.000***	0.000	0.000***	0.000***
	(0.342)	(0.000)	(0.543)	(0.000)	(0.002)
SIZE	−0.002**	0.029***	−0.012***	0.043***	0.001
	(0.036)	(0.000)	(0.000)	(0.000)	(0.344)
YEAR	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control
N	9581	9581	9581	9581	9581
R-square	0.078	0.088	0.080	0.092	0.091
Adj. R-square	0.075	0.086	0.077	0.089	0.088
F value	28.739***	33.082***	29.616***	34.479***	34.170***

Notes: P-values are in parentheses (0.000 means < 0.001). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

According to the results, the coefficients of LP are significantly positive at the 1% level in the regression model for ABPROD and REM, significantly negative in the model for ABEXP, and not significantly associated with LP and AEM, indicating that managers are more inclined to use REM by controlling production and discretionary expenditures so as to realize the purpose of declaring a profit. The coefficients of SP are significantly negative at the 1% level in models for ABCFO,

ABEXP, and AEM, and are significantly positive at the 1% level in the regression models for ABPROD and REM; this implies that in order to avoid losses, managers are more willing to inflate reported earnings through the sales control, production control, and discretionary expenditure control instead of implementing AEM activities. In order to refinance, managers mainly carry out REM through sales control and discretionary expenditure control, so the results are consistent with hypothesis 1-a. The coefficients of EXES show that managers with higher monetary remuneration can switch from REM to AEM, consistent with hypothesis 1-b. The coefficients of MANAGE indicate that when managers hold a higher proportion of company stock, they are less inclined to use REM, consistent with hypothesis 1-d. The coefficients of CHANGE show that when executives are changed, the new executives can abrogate responsibility to the former executives using AEM. Meanwhile, the new executives can enhance their authority by using REM to inflate earnings; this result supports hypothesis 1-c.

In addition, state-owned companies are more willing to use REM instead of AEM. Strict market regulation has a negative impact on AEM and has a positive impact on REM because AEM is easy to detect and REM is difficult to detect. Creditors have the ability to detect AEM. Large companies are more willing to inflate reported earnings by using REM strategies, such as sales control and production control.

5.4.2 The Impact of Earnings Management on Investor Sentiment

To test the impact of earnings management strategies on IS, we choose ABCFO, ABPROD, ABEXP, REM, and AEM as covariates and regressed IS on these earnings management strategies. Table 8 shows the results of the regression analysis. The coefficient of ABPROD is significantly positive at the 1% level in model 2 and significantly positive at the 5% level in model 4. The coefficient of ABEXP is significantly negative at the 1% level in models 3 and 4. The coefficient of REM is significantly positive at the 1% level in models 5 and 7. The coefficient of AEM is significantly negative at the 1% level in models 6 and 7. The results of regression analysis indicate that investors are able to detect AEM activities but cannot detect REM activities. Therefore, the listed firms may boost IS by reducing AEM activities and increasing REM activities, consistent with hypotheses 2-a and 2-b.

In addition, the coefficients of CFO in 7 models are all negative at the 1% significance level, inconsistent with the results of Lei et al. (2011). This may be because Lei et al. (2011) focused on the small and medium size enterprise stock market, whereas our research focusses on the companies in the A-share stock market. If the A-share listed companies hold more cash, investors will think that the companies do not have more investment opportunities, the future development ability of these companies is limited, and therefore the investors are pessimistic.

Table 8. The Impact of Earnings Management on Investor Sentiment

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
(Constant)	2.248***	2.372***	2.392***	2.384***	2.387***	2.272***	2.359***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ABCFO	1.495***			2.349***			
	(0.000)			(0.000)			
ABPROD		0.155***		0.098**			
		(0.000)		(0.026)			
ABEXP			−0.515***	−0.661***			
			(0.000)	(0.000)			
REM					0.128***		0.126***
					(0.000)		(0.000)
AEM						−0.697***	−0.695***
						(0.000)	(0.000)
CFO	−1.945***	−0.401***	−0.453***	−2.694***	−0.282***	−0.917***	−0.720***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LP	0.376***	0.372***	0.370***	0.362***	0.372***	0.386***	0.380***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ISSUE	−0.086***	−0.084***	−0.089***	−0.094***	−0.085***	−0.085***	−0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MANAGE	−0.493***	−0.484***	−0.489***	−0.474***	−0.484***	−0.456***	−0.444***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CHANGE	0.043***	0.041**	0.042***	0.041***	0.041**	0.032**	0.030*
	(0.006)	(0.010)	(0.008)	(0.009)	(0.010)	(0.042)	(0.055)
STATE	0.043***	0.038**	0.038**	0.040***	0.037**	0.029*	0.026*
	(0.006)	(0.016)	(0.014)	(0.010)	(0.017)	(0.065)	(0.094)
ST	−0.043	−0.040	−0.031	−0.043	−0.037	−0.082***	−0.083***
	(0.135)	(0.168)	(0.281)	(0.137)	(0.196)	(0.005)	(0.004)
ROA	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DEBT	0.000	−0.001	0.000	0.000	0.000	−0.001	−0.001
	(0.526)	(0.477)	(0.590)	(0.783)	(0.500)	(0.156)	(0.179)
GROW	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.610)	(0.336)	(0.499)	(0.501)	(0.354)	(0.769)	(0.567)
SIZE	−0.095***	−0.102***	−0.103***	−0.100***	−0.103***	−0.096***	−0.100***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year	Control	Control	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control	Control	Control
N	9581	9581	9581	9581	9581	9581	9581
R-square	0.101	0.100	0.101	0.108	0.100	0.106	0.108
Adj. R-square	0.098	0.097	0.099	0.105	0.097	0.104	0.106
F value	38.354***	37.722***	38.535***	38.621***	37.863***	40.662***	40.001***

Notes: P-values are in parentheses (0.000 means < 0.001). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

In addition, declaring a profit may allow investors to be optimistic, while refinancing behavior will cause investors to be pessimistic; investors do not want managers to hold a high ratio of shares, they may worry about managers who are holding shares will control the company. Investors have higher expectations for new executives, they hope new executives can bring new changes, and then they will be optimistic. Investors have optimism about the SOE firms which can easily be propped up by the government. Investors are more likely to invest in small companies, consistent with Wu et al. (2007) and Lei et al. (2011).

5.4.3 Management Incentives, Earnings Management, and Investor Sentiment: The Test of Mediating Effect

The above analysis shows that the managerial incentives can affect earnings management, and earnings management can also shape optimistic IS; in order to examine whether managerial incentives have direct impacts on IS or do managerial incentives influence IS through earnings management, we employ mediation analysis, drawn from Wen et al. (2004) and Hua (2010), and constructed using regression models (10), (11), and (12). The results are shown in the table 9.

Model 1 in Table 9 shows the impacts of managerial incentives on IS. Regression results show that controlling for other variables, the managerial incentives, such as LP, SP, EXES, and MANAGE, are significant at the 1% level, indicating that the managerial incentives can influence IS.

Model 2 in Table 9 presents the impact of management incentives on earnings management. Regression results show that when the nature of the ultimate shareholders, regulatory status, profitability, debt ratio, growth, size, year, and industry are controlled for, turning a profit, avoiding loss, seasoned equity offerings, executive compensation, and changing executive have significant effects on REM. Avoiding loss, executive compensation, managerial stock holding, and changing executive also have significant effects on AEM.

Model 3 in Table 9 shows the influence of managerial incentives on IS. Combined with models 1 and 2, we may safely draw the conclusion that mediating relationships occur when earnings management strategies play an important role in governing the relationship between managerial incentives and IS; this result supports hypothesis 3.

5.4.4 Robustness Test

In order to evaluate the reliability of the results, we also compute AEM on the basis of earnings before interest and tax (gross income), with AEM classified into positive AEM and negative AEM. We also draw from Cohen (2010) to construct REM measures and eliminate other control variables. We conduct regression analysis again. Un-tabulated regression results show that the major research conclusion remains qualitatively unchanged.

Table 9. The Test of Mediating Effect of Earnings Management

	Model 1	Model 2		Model 3		
	IS	REM	AEM	IS	IS	IS
(Constant)	2.425***	−0.281***	−0.029	2.459***	2.382***	2.417***
	(0.000)	(0.000)	(0.276)	(0.000)	(0.000)	(0.000)
REM				0.073***		0.074***
				(0.008)		(0.007)
AEM					−0.404***	−0.405***
					(0.000)	(0.000)
LP	0.486***	0.039***	0.004	0.482***	0.489***	0.485***
	(0.000)	(0.001)	(0.418)	(0.000)	(0.000)	(0.000)
SP	0.761***	0.071***	−0.024***	0.759***	0.745***	0.743***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ISSUE	−0.017	0.028***	0.001	−0.018	−0.020	−0.021
	(0.411)	(0.003)	(0.752)	(0.388)	(0.352)	(0.331)
EXES	−0.069***	−0.050***	0.003**	−0.067***	−0.064***	−0.062***
	(0.000)	(0.000)	(0.048)	(0.000)	(0.000)	(0.000)
MANAGE	−0.387***	−0.037	0.067***	−0.382***	−0.367***	−0.361***
	(0.000)	(0.232)	(0.000)	(0.000)	(0.000)	(0.000)
CHANGE	0.015	0.014**	−0.012***	0.014	0.010	0.009
	(0.317)	(0.037)	(0.000)	(0.344)	(0.510)	(0.546)
CFO	−0.299***			−0.187**	−0.558***	−0.445***
	(0.000)			(0.015)	(0.000)	(0.000)
STATE	0.018	0.015**	−0.016***	0.017	0.012	0.011
	(0.218)	(0.020)	(0.000)	(0.256)	(0.405)	(0.463)
ST	−0.127***	0.022*	−0.049***	−0.127***	−0.151***	−0.151***
	(0.000)	(0.067)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.000***	0.000	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.142)	(0.005)	(0.000)	(0.000)	(0.000)
DEBT	0.000	0.000	−0.001***	0.000	−0.001	−0.001
	(0.634)	(0.361)	(0.000)	(0.661)	(0.370)	(0.390)
GROW	0.000	0.000***	0.000***	0.000	0.000	0.000
	(0.800)	(0.000)	(0.002)	(0.670)	(0.961)	(0.824)
SIZE	−0.067***	0.043***	0.001	−0.070***	−0.067***	−0.070***
	(0.000)	(0.000)	(0.344)	(0.000)	(0.000)	(0.000)
Year	Control	Control	Control	Control	Control	Control
Industry	Control	Control	Control	Control	Control	Control
N	9581	9581	9581	9581	9581	9581
R-square	0.185	0.092	0.091	0.185	0.188	0.188
Adj. R-square	0.182	0.089	0.088	0.183	0.185	0.186
F value	74.632***	34.479***	34.170***	72.426***	73.474***	71.385***

Notes: P-values are in parentheses (0.000 means < 0.001). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

6. Conclusion

Using a large sample of listed companies in China over the period 2006–2011,

we examine the effect of managerial incentives and earnings management on investor sentiment. We find that managers of listed firms prefer choosing real earnings management strategies to choosing accrual earnings management strategies for the purpose of turning a profit, avoiding loss, refinancing, and changing their executives. Managers with higher monetary remuneration and managerial stock holdings may switch REM strategies to AEM strategies in order to avoid damaging the long-term development of listed firms. Investors in the capital market have different reactions to different types of earnings management by managers. When a company uses more AEM activities, investors are able to detect it and become pessimistic. Because it is difficult to detect REM activities by managers, when companies employ REM strategies to inflate reported earnings, investors are optimistic, indicating that managers may arouse investors' optimistic sentiment by decreasing AEM activities and increasing REM activities, and create favorable conditions for declaring a profit, avoiding loss, and refinancing. The results also indicate that regulators and creditors have the ability to detect AEM, strengthening the likelihood that marketing supervision can significantly reduce the AEM activities, but they do not have the ability to detect and govern the REM activities. Therefore, the managers of listed companies may switch AEM to REM. In addition, investors are pessimistic about the firms which are regulated but do not have a clear attitude towards the creditors governance.

This paper not only contributes to the research literature on investor sentiment from a new angle, providing theoretical analysis and empirical evidence for the impacts of managerial incentives and earnings management strategies on investor sentiment. It also provides regulatory authorities and individual investors with policy implications; for example, regulatory authorities should strengthen their supervision on earnings management activities, especially REM activities, and strictly monitor profit declarations, loss avoiding techniques, refinancing, and changes of executives. Investors should also improve their awareness, particularly the ability to detect REM activities.

We believe this paper can be a milestone for any future studies that are relevant to managers' incentives, earnings management strategies, and investor sentiment. This study may also be valuable for practicing professionals and investors as it is difficult to predict share movements when they concern management strategies and other relevant factors.

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