Earnings Management, Enterprise Scale and Enterprise Value—Research Based on Data and Statistical Analysis Tools

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Abstract: This paper takes China's A-share listed companies in Shanghai and Shenzhen Stock Exchange from 2012 to 2016 as samples to analyze the impact of earnings management on current and subsequent enterprise value. It is found that real earnings management not only affects the current value, but also damages the long-term value of enterprises continuously. Further research finds that the size of the firm has a moderating effect, that is, the larger the size of the firm, the damage effect of real earnings management on the firm value is mitigated.

1 introduction

As for the impact of earnings management on enterprise value, different scholars have different views and conclusions. Some scholars believe that earnings management will damage the value of enterprises. Some scholars believe that earnings management only affects short-term value and will not do harm to the future value of enterprises. S.Rajgopal et al. (2005) [1] found that enterprises that achieve the earnings forecast target through real earnings management have better future performance, meaning that real earnings management will not have a negative impact on the future value of the enterprise. In addition, there are researches point out that enterprises can retain core employees through earnings management (Gao et al.,2015) [2] and stabilize the capital chain of enterprises. Based on the above viewpoints, this paper empirically tests whether earnings management can affect enterprise value or even its subsequent value by using the data of A-share listed companies in Shanghai and Shenzhen Stock Exchange, and provides references and suggestions for the healthy development of enterprise value maintenance and capital market.

2 Literature review and hypothesis development

2.1 Earnings management and firm value

Earnings management behavior will cause accounting information distortion, disrupt the effective allocation of market resources, and damage enterprise value. For the long-term value of the enterprise, accrual earnings management behavior only changes the distribution of accounting earnings in each period and does not affect the real cash flow, so it will not affect the long-term decision of the enterprise. But real earnings management through the control of daily business activities to change the trajectory of enterprise operation, can be implemented in the fiscal year does not involve the behavior of accounting treatment problems, so it can avoid the supervision of auditors. Most scholars believe that the real earnings management of enterprises will change the business planning of enterprises, lead to the decline of business performance, and damage the value of enterprises. It can be seen that there is a consensus that real earnings management damages the current value of the enterprise, but there is disagreement on whether it has an impact on the future value of the enterprise. Some scholars, such as A.GUNNY (2010) [3], found that if an enterprise only conducts earnings management occasionally and can return to the strategic track of normal operation under the change of external environment, such behavior will instead promote the improvement of the enterprise's future performance (A.GUNNY,2010) [3]. Other scholars hold opposite opinions. Cai Chun et al. (2013) [4] showed that the manipulation of real earnings management would cause abnormal future cash flow and damage the future value of the enterprise. To sum up, this paper proposes the first hypothesis:

H1: earnings management manipulation will damage the current enterprise value, but only real earnings management will damage the future value of the enterprise.

2.2 The moderating effect of size

At present, there are two opposite views on the relationship between real earnings management and scale in academic field. One view is that enterprise scale can effectively restrain earnings management behavior because the internal control system of large-scale enterprises will be more effective and can better ensure the reliability of financial information disclosed to the public; large-scale enterprises have higher reputational costs in society, including the reputation of financial information,

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so the cost of earnings management will be higher (M.Cristhian, R. Jory and N. Ngo,2018) [5]. Another part of scholars hold the opposite view: large-scale enterprises face greater pressure on the performance expectation of the market, so that they have greater motivation for earnings management; large-scale firms have an incentive to manipulate earnings management to reduce political costs (Li Zengfu et al.,2011) [6].

There is no final conclusion on whether scale affects real earnings management in academic fields, and how it affects corporate financial theory remains a mystery to be solved (Ji Maoli and Li Xin, 2016) [7]. To sum up, this paper proposes the second hypothesis:

H2: Scale effect moderates the relationship between real earnings management and firm value, that is, scale will inhibit the negative impact of real earnings management on firm value.

3 Research design

3.1 Sample selection

This paper selected A-share listed companies in Shanghai and Shenzhen stock exchanges from 2012 to 2016 as research samples, and did the following processing: (1) according to the industry classification of China Securities Regulatory Commission 2012 edition, financial companies and ST companies are excluded;(2) eliminate the sample data of listing and delisting in this period;(3) the data in this paper are from CSMAR database;(4) for all continuous variables, 1% quantile upper two-sided tailing is used. Stata16.0 is used for processing and regression analysis.

3.2 Variable selection

All variables are chosen according to the relevant research, and Table 1 showed the description and definition.

Table 1 Variable definition

Symbols	Variable definition
tbq_t	Enterprise value
REM	Real earnings management
DA	Accrual earnings management
IDR	Independent directors in board ratio
FSET	First shareholder’s shareholding ratio
SEG	Number of subsidiaries companies
$Dual$	Duality
$Big4$	Whether audited by Big4
$State$	Equity of the enterprise
LEV	Total liabilities/Total assets
ROA	Enterprise net profit/average total assets
$Growth$	The growth rate of business revenue
ROC	Free cash flow/operating income
INN	Year-end inventory/total assets
$Size$	Logarithm of total assets

3.3 Model construction

In order to test H1 and H2, multiple regression models are as follows:

$$tbq_{i,t} = \alpha_0 + \alpha_1 REM(DA)_{i,t} + \sum Controls + \sum year + \sum industry + \varepsilon \quad (1)$$

$$tbq_{i,t} = \alpha_0 + \alpha_1 REM_{i,t} + \alpha_2 REM \times Size_{i,t} + \sum Controls + \sum year + \sum industry + \varepsilon \quad (2)$$

4 Empirical results and analysis

4.1 Descriptive statistics

Table 2 shows the descriptive statistical results of the main variables in this paper. The base period TBQ value of the explained variable enterprise value is 8.087, the minimum is only 0.915, the average value is 2.100, and the standard deviation is 1.298, which indicates that there is a great difference between the enterprise value of the sample companies and there are more low value enterprises. The maximum value of real earnings management rem is 0.425, the minimum value is -1.061, and the average value is -0.140, which indicates that the degree of earnings management of sample companies is not the same, and there are more negative earnings management behaviors. Accrual earnings management DA also shows the same result.

Table 2 descriptive statistics

	N	mean	sd	min	max
tbq0	4,956	2.100	1.298	0.915	8.087
REM	4,956	-0.140	0.239	-1.061	0.425
DA	4,956	0.0840	0.295	1.84e-05	17.53
IDR	4,956	0.372	0.0525	0.333	0.571
FSET	4,956	0.985	0.0582	0.667	1
Dual	4,956	0.223	0.416	0	1
SEG	4,956	18.58	21.81	1	140
Big4	4,956	0.0609	0.239	0	1
State	4,956	0.437	0.496	0	1
LEV	4,956	1.348	0.944	0	7.189
ROA	4,956	0.0496	0.0403	-0.0521	0.342
Growth	4,956	0.164	0.336	-0.503	11.71
ROC	4,956	0.0748	0.814	-27.50	19.60
INN	4,956	0.171	0.167	0	0.940
Size	4,956	22.31	1.247	20.22	26.27

4.2 The empirical results and analysis

Real earnings management and enterprise value regression results are shown in Table 3. The current real earnings management (REM) t-value is -3.89, and its three consecutive years of deferred t-value is -3.19, - 4.89 and -

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5.58, which are significantly negatively correlated at the level of 1%, and the degree of negative correlation is gradually increasing.

Table 3 regression result

	tbq0	tbq1	tbq2	tbq3
REM	-6.160***	-4.117***	-6.683***	-12.296***
	(-3.89)	(-3.19)	(-4.89)	(-5.58)
IDR	-0.402***	-0.250***	-0.382***	-0.752***
	(-20.65)	(-17.83)	(-23.28)	(-26.52)
FSE	0.253***	0.157***	0.279***	0.530***
	(3.59)	(2.72)	(4.57)	(5.41)
SEG	0.399	0.026	0.567***	0.847**
	(1.56)	(0.14)	(2.80)	(2.50)
Dual	-0.263	0.014	-0.431**	0.185
	(-1.34)	(0.10)	(-2.48)	(0.77)
Big4	0.004***	0.004***	0.004***	0.006***
	(5.57)	(7.32)	(7.25)	(7.05)
State	-0.021	0.006	-0.010	0.026
	(-0.59)	(0.22)	(-0.32)	(0.54)
LEV	0.195***	0.119***	0.225***	0.472***
	(3.96)	(3.42)	(6.62)	(8.05)
ROA	0.116***	0.086***	0.123***	0.068
	(3.61)	(3.31)	(4.21)	(1.45)
Grow	0.006	0.024***	0.010	-0.016
	(0.47)	(3.01)	(1.00)	(-0.76)
ROC	8.242***	7.876***	6.439***	5.645***
	(14.68)	(16.23)	(13.99)	(8.29)
INN	0.032	0.233***	0.187***	-0.119*
	(0.74)	(3.07)	(4.53)	(-1.85)
Cons	-0.015	-0.035**	-0.008	-0.013
	(-0.95)	(-2.46)	(-0.71)	(-0.71)
Ind	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Obs	4,956	4,956	4,956	4,956
$\mathbf{R^2}$	0.524	0.522	0.518	0.529

It shows that the real earnings management behavior not only damages the current enterprise value, but also damages the future enterprise value.

Accrued Earnings Management and Firm Value Regression Results. The t-value of accrual earnings management (DA) data in the current period is -0.089, which is negatively correlated at the level of 1%. However, the t-value of DA data for 3 consecutive years is divided into 0.070, 0.131 and -0.072, which are inconsistent and insignificant in the direction of positive and negative signs, indicating that accrual earnings management has no impact on the future value of enterprises. In conclusion, H1 is verified.

5 Additional analyses and Robustness tests

5.1 The empirical results and analysis

The regression results of real earnings management, scale and enterprise value. The t-value of REM * SIZE is 3.59, and the t-values of three consecutive years are 2.72, 4.57 and 5.41 respectively, which are significantly positive at the 1% level. It shows that firm size plays a moderating role in real earnings management and firm value, which can inhibit the impact of real earnings management on firm value and reduce real earnings management behavior. H2 is verified.

5.2 The empirical results and analysis

EVA as a financial indicator to measure business performance, can overcome the defects of traditional financial evaluation system and measure the ability of enterprises to use capital to create value. Therefore, in this paper, EVA data on the market was selected as a surrogate variable for robustness analysis. The regression results of robustness test are consistent with the results of the main test, it shows that real earnings management will damage and long-term damage the value of enterprises.

6 Conclusion

Through the study, this paper finds that the real earnings management behavior not only affects the short-term development of the enterprise, but also has a continuous negative impact on the future value of the enterprise because of the manipulation cost and the credibility problem. Although real earnings management will produce certain adverse effect, but surely countries if you want to destroy real earnings management is not realistic, and more is not a reasonable choice, because modest real earnings management is also a important symbol of the maturity of the capital market, and a moderate amount of manipulation of real earnings management in accordance with the present laws, have no illegality. However, excessive real earnings management damages the value of enterprises and even endangers the environment of the

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capital market, which requires external laws to regulate and compress the extreme practices of real earnings management, so that the capital market can realize more effective resource allocation.

There is no conclusive conclusion on how size affects real earnings management in the academic circle. The shortcoming of this paper is that there is no in-depth study on this issue, so it is unable to explain how size of enterprises affects earnings management activities.

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