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Impact of Debt Financing on Real Earnings Management

Fengchen Qin

School of Management, Shanghai University, Shanghai 200444, China
1508730094@qq.com

ABSTRACT. *Earnings management and debt financing are two hot topics in the financial markets. Based on the literature about the impact of existing debt financing on earnings management motivation, this paper attempts to distinguish the degree of debt financing of the company. The previous literature on this issue has been limited to the study of the earnings management of correspondent projects. Based on the previous literature, this paper extends the perspective to the practice of earnings control in real activities, which has been studied more and more by international academic circles in recent years. Specifically, based on the theoretical analysis, this paper uses the data of Chinese listed companies (from 2008 to 2018) to carry out empirical work on the impact of debt financing on real earnings management. First of all, this paper studies the effect of debt financing on real earnings management from the perspectives of all listed companies. Secondly, this paper further plans the degree of debt financing, discusses the impact of debt financing on real earnings management when debt financing is insufficient and debt financing is overdone. It is found that debt financing will have different effects on the real earnings management due to different degrees.*

KEYWORDS: *Real Earnings Management, Insufficient Debt Financing, Excessive Debt Financing*

1. Introduction

In order to perform well in the market and win the favor of investors, earnings management has always been a topic associated with listed companies. The Enron Incident in 2001 perfectly illustrates the drawbacks of earnings management. From the perspective of a sufficiently long period, earnings management will not increase or decrease the actual earnings of the enterprise, but will change the reflection and distribution of the actual earnings of the enterprise during different accounting periods. So the obsession with the growth of earnings per share (EPS) allows executives to achieve results in the short term, but runs counter to the original goal of the enterprise.

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For debt financing, on the one hand, some managers are reluctant to issue new shares for fear of diluting the EPS, so they leverage their balance sheets through excessive debt and manipulate data for their own use. On the other hand, when the listed company is a debtor, the restrictive terms of creditors will become stricter with the increase of debt level and the increase of bankruptcy risk faced by the enterprise. When the debtor violates the debt contract, the creditor can adopt policies according to the corresponding terms of the debt contract to reduce losses. When the debtor faces bankruptcy, the creditor can control the remaining assets of the enterprise by means of liquidation and reorganization, etc. Therefore, in order to avoid violating the debt contract, when the debt financing is higher, the enterprise managers are more motivated to adjust the profit by using earnings management. However, appropriate debt can balance the distribution of enterprise assets. Meanwhile, creditors may identify the enterprise's earnings management behavior and play a role in restricting and supervising it.

At present, the earnings management method adopted by listed companies is not only the manipulation of accrued items, but also the actual business activities of enterprises, which is called the manipulation of real activities. In order to achieve the goal of surplus, managers often use excessive production to reduce the fixed cost per unit product, so as to reduce the cost of operating cost in the current period. Enterprises can also increase the current operating revenue by means of sales discounts. At the same time, it can increase profits by cutting sales expenses and the controllable part of administrative expenses. Therefore, the paper studies how the level of real earnings management changes when an enterprise's debt financing is excessive or insufficient. In addition, this paper also studies the impact of enterprise size on real earnings management in the case of insufficient and excessive debt financing.

2. Literature review

2.1 Definition of real earnings management

For the understanding of earnings management, William k. Scott, an American accountant, believes that it refers to "the behavior that maximizes the operator's own interests or enterprise's market value through choosing accounting policies to the extent permitted by GAAP". Kathehne SchipPer, an American accountant, believes that earnings management is actually the "disclosure management" of corporate managers to obtain some private interests by purposefully controlling the external financial report. Schipper (1989) extended the definition of earnings management and pointed out the existence of real earnings management. As to earnings management, he points out two ways. One is the accruals earning management that manipulates book earnings by accounting judgment, and the other is the real earnings management that manipulates profits by deliberately constructing trading activities or changing trading time. Baber et al. (1991) found that enterprises usually take into account the impact of research and development decisions on current earnings, so they will cut abnormal current r&d expenditure to achieve profitability

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or increase current earnings. Dechow et al. (2000) pointed out that such real trading activities include abnormal price reduction promotion, relaxation of credit terms and reduction or delay of development costs. The definition of real earnings management is generally accepted by Roychowdhury (2006). He believes that real earnings management refers to "the economic activities deliberately created by managers to mislead information users and deviated from the normal business activities".

Therefore, these economic activities deviating from normal business activities can not create value for the enterprise, even though they are often to achieve some performance targets. That is to say, some real earnings manipulation methods may make enterprises improve their surplus in the short term. However, they would eventually make the enterprise deviates from the normal business orbit. This means the real earnings management.

2.2 Theory analysis of debt cost

In order to obtain debt financing, enterprises need to provide creditors and relevant institutions financial information, especially earnings information. Then creditors and relevant institutions can make financing decisions. From this perspective, it can be seen that there are some important links between debt financing and earnings management. Although there are some literatures about earnings management in China, they basically focus on the capital market and take equity financing as the main basis point. However, in reality, debt financing accounts for the main part of enterprise financing.

Sometimes information is lack of transparency, so enterprises will protect themselves by increasing their debt financing costs. According to the theory of information asymmetry, Admati (1985) believes it explains why information risk can cause the difference in debt financing cost. Amihud and Mendelson (1986) regarded the demand for higher return on investment as compensation for being exploited by traders who master enterprise insider information. According to the information risk theory, Easley and O'hara (2004) point out that information risks caused by information asymmetry cannot be dispersed, which will lead investors to engage in adverse selection behavior. That is to say, those who can obtain inside information from the enterprise will "exploit" those who have limited information, resulting in the information non-holders to demand a higher rate of return.

2.3 The relationship between debt financing and real earnings management

The conclusion that debt financing has certain influence on earnings management is generally accepted by domestic and foreign researches. Most of the current empirical studies about the impact of debt financing on earnings management examine how the debt leverage put influence on earnings management, and the research conclusions are not consistent. On the one hand, it is found that debt financing can reduce the propensity of earnings management. Chung (2005)

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and Lee (2007) all found that debt financing has certain governance effect on earnings management. Lei qiang (2010) found in his research about Banks' supervision of borrower's earnings management that there was a significant negative correlation between loan size and borrower's earnings management. On the other hand, some studies found that debt financing is positively correlated with earnings management when enterprises plan to avoid violating the terms of debt contracts or improve their bargaining power in debt negotiations. Watts and Zimmeman (1986) were the first to explore the influence of debt financing on earnings management through empirical methods and put forward the famous debt contract hypothesis. Assuming nothing else changes, they think if the enterprise have greater probability of default behavior, enterprise managers will conduct earnings management to enhance the current net profit by decreasing the probability of default and reducing the cost of corporate defaults. Li Zengfu, Zeng Qingyi and Wei Xiahai (2011) also found that the higher the debt level, the higher the degree of earnings management.

In view of the different research conclusion, some scholars consider the non-monotonic relationship between debt financing and surplus management. Ghosh and Moon (2010) studied the correlation of debt financing and earnings quality. They considered accrued quality as proxy variable of earnings quality, and found a non-monotonic relationship between them: with the increase of liability, accrued quality rises first then falls, and inflection point is around 41%. Enterprises that are overly dependent on debt financing are more willing to bear the increased interest costs of lower earnings quality, because the benefits of avoiding possible debt defaults outweigh the higher interest costs. Wan Hongbo, Ruan Minghua and Wang Beibei (2010) also put forward that the relationship between debt financing and earnings management is not monotonous, which is closely related to asset-liability ratio of enterprises. They take manipulated accrual profit as substitution variables of earnings quality, concluding when the enterprise under low debt levels, debt financing is negatively related to the enterprise surplus management, and debt financing can governance effect of. On the contrary, when the enterprise under high debt levels, debt financing and earnings management are positively related to each other.

3. Theoretical analysis and model building

3.1 The theoretical analysis

3.1.1 Hypothesis one

According to the information transfer theory, when the external market cannot distinguish the real situation of enterprises, investors can evaluate the enterprise value effectively by judging some decisions of enterprises. The information of corporate debt financing implies the information of corporate prospect. Different asset-liability ratios convey different value signals to the outside world. By adjusting the appropriate capital structure, listed companies transmit positive investment signals to potential investors in the capital market, while avoiding negative investment signals. When the information between the manager and the creditor is

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asymmetric, creditors tend to give loan at the average market interest rate to the enterprise. A high-quality enterprise can invest in projects with a rate of return above the average interest rate, which will increase debt financing to obtain more excess returns. This means high asset-liability ratio tend to give the outside investors and borrowers a signal of high quality enterprise. On the contrary, a poorly managed enterprise is difficult to make effective investment at an average interest rate. It will abandon the investment with a positive net present value, resulting in insufficient investment and reduced credit financing. Therefore, when the enterprise is in high debt, the enterprise can attract many investors, and will decrease the motivation of earnings management.

H1: The degree of debt financing has a negative impact on the level of earnings management.

3.1.2 Hypothesis two

Modigliani and Miller (1963) put forward the modified MM theory, holding that debt financing has tax shield effect, the more debt financing enterprises carry out, the better, and the optimal basic structure is 100% debt financing. But if companies borrow more and own less capital, they are likely to face bankruptcy risk. According to the principal-agent theory, an enterprise is an arrangement formed by a series of contracts. Due to information asymmetry and other reasons, various stakeholders have conflicts of interest. The main feature of debt financing lies in clear provisions on repayment of principal and interest. Meanwhile, creditors have the right to file for bankruptcy liquidation in the process of contract performance. Therefore, under this background, debt financing puts forward higher requirements on cash flow of listed companies. If the enterprise defaults or even causes bankruptcy liquidation, the consequences will bring operational risks and affect the personal career development of managers. The separation of the right to use funds and ownership makes the creditor and debtor have a certain entrustment relationship. In the process of production and operation of listed companies, creditors may, for their own interests, supervise and manage the use of funds and the business activities of the enterprises. If creditors have a higher ability to recognize earnings manipulation, it will urge the management to replace accrual earnings management with real activity earnings management.

If the creditor to demand higher interest payments, the debtor in the process of performance of the contract need to pay a high cost of debt financing. This paper argues that accrual earnings management behavior is far from satisfying the requirement of creditors of the debtor and constraint. The high cost of debt financing will urge the debtor for debt capital to adopt improper behavior, and increase the possibility of real earnings management, such as funds invested by excessive production of real earnings management means.

H2: When debt financing is excessive, debt financing will increase enterprises' earnings management behavior.

H3: When debt financing is inadequate, debt financing will inhibit enterprises' earnings management behavior.

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3.2 Model

Model 1:

$$\mathrm{Debt}_t = \partial_0 + \partial_1 Growth_{t-1} + \partial_2 Lev_{t-1} + \partial_3 Cash_{t-1} + \partial_4 Age_{t-1} + \partial_5 Size_{t-1} + \partial_6 ROIC_{t-1} + \partial_7 \mathrm{Debt}_{t-1} + \sum IND + \sum Year + \varepsilon$$

Model 2a:

$$\mathrm{absACFO}_t = \partial_0 + \partial_1 \mathrm{u}_t + \partial_2 Lev_t + \partial_3 Age_t + \partial 4 Size_t + \partial_5 Comt_t + \partial_6 Audt_t + \sum IND + \sum Year + \varepsilon$$

Model 2b:

$$\mathrm{absACFO}_t = \partial_0 + \partial_1 \mathrm{OverDebt}_t + \partial_2 Lev_t + \partial_3 Age_t + \partial 4 Size_t + \partial_5 Comt_t + \partial_6 Audt_t + \sum IND + \sum Year + \varepsilon$$

Model 2c:

$$\mathrm{absACFO}_t = \partial_0 + \partial_1 \mathrm{BelowDebt}_t + \partial_2 Lev_t + \partial_3 Age_t + \partial 4 Size_t + \partial_5 Comt_t + \partial_6 Audt_t + \sum IND + \sum Year + \varepsilon$$

3.3 Variable definition

Table 1 Variable Definition

Variable name	**Variable definition**	
absACFO	Abnormal cash flow	Absolute value of abnormal cash flow is under means of cash flow manipulation.
absDebt	Debt financing	Residual in Model 1.
OverDebt	Excessive debt financing	The value of residuals in Model 1 is more than zero.
BelowDebt	Insufficient debt financing	The value of residuals in Model 1 is less than zero.
Com	Nature of company	If state-owned enterprise belong to the country, value is 1; otherwise, value is 0.
Growth	Growth opportunity	Growth rate of main business income in T-1.
Lev	Asset-liability ratio	Total liabilities/Total assets

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Cash	Cash holdings	(The ratio of cash + short-term investments)/ Total assets
Age	Listage	Ln(age of listed companies)
Size	Scale of company	Ln(Total assets)
ROA	Return on assets	Net income/Average total assets
Aud	The audit opinion	If the audit opinion is standard, take 1 without reservation; otherwise, take 0.
IND	Dummy variable	Industry dummy variable
Year	Dummy variable	Control the influence of macroeconomic factors in different years

4. Data analysis

4.1 Descriptive statistics

We performed descriptive statistics and Pearson correlation coefficient analysis on the main variables. According to the descriptive statistical results, the mean value of residual u_t is 0, indicating the rationality of sample selection, and the maximum value of u_t is 0.576, the minimum value -0.549. It proves that the distribution of debt financing in positive and negative values can be obtained from model 1. In addition, it can be seen from table 3 that the mean absolute value of real earnings management is 0.003.

Table 2 Descriptive Statistic

variable	N	mean	sd	max	min	p25	p50	p75
$absACFO_t$	16976	0.003	0.003	0.018	0	0.001	0.002	0.003
u_t	16976	0	0.083	0.576	-0.549	-0.041	-0.002	0.044
$Size_t$	16976	21.69	1.125	24.101	19.96	20.824	21.553	22.403
Age_t	16976	15.453	5.056	65	1	12	15	19
Com_t	16976	0.481	0.5	1	0	0	0	1
Lev_t	16976	0.462	0.211	0.821	0.1	0.294	0.471	0.63
Aud_t	16976	0.953	0.211	1	0	1	1	1
ROA_t	16976	0.062	0.053	0.174	-0.047	0.03	0.056	0.093

4.2 Pearson Correlation analysis

As can be seen from the table 3, the correlation coefficient between $absACFO_t$ and u_t is -0.032, indicating a strong correlation, and the correlation is significant at the level of 1%, which preliminarily indicates the hypothesis 1. $Size_t$, Com_t, Lev_t,

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Aud_t and ROA_t show significant positive correlation with absACFO. There is also a significant positive correlation between explanatory variables and control variables, but the coefficients are all less than 0.4, so there is no potential multicollinearity problem in the model in this paper.

Table 3 Pearson Correlation Analysis

	$absACFO_t$	u_t	$Size_t$	Age_t	Com_t	Lev_t	Aud_t	ROA_t
$absACFO_t$	1							
u_t	-0.032***	1						
$Size_t$	0.483***	0.021***	1					
Age_t	0.005	0.002	0.112***	1				
Com_t	0.177***	-0.004	0.325***	0.013*	1			
Lev_t	0.208***	0.300***	0.389***	0.170***	0.283***	1		
Aud_t	0.031***	-0.032***	0.143***	-0.050***	-0.003	-0.192***	1	
ROA_t	0.083***	-0.113***	0.063***	-0.100***	-0.123***	-0.317***	0.235***	1

4.3 Empirical analysis

4.3.1 Debt financing and real earnings management

Table 4 Empirical Analysis

	(1)u	(2)BelowDebt	(3)OverDebt
Variables	absACFO	absACFO	absACFO
Deb_t	-0.000951***	-0.00225***	0.000915*
	(-4.07)	(-5.05)	-1.97
$Size_t$	0.00185***	0.00205***	0.00164***
	-90.58	-68.87	-58.81
Age_t	-0.00000930*	-0.0000126*	-0.00000486
	(-2.31)	(-2.22)	(-0.86)
Lev_t	0.000373**	0.000187	0.000409*
	-3.21	-1.15	-2.32
ROA_t	0.00206***	0.00184***	0.00124*
	-5.39	-3.37	-2.31
Com_t	-0.0000329	0.0000527	-0.000108
	(-0.80)	-0.88	(-1.91)
Aud_t	-0.000722***	-0.000764***	-0.000559***
	(-7.86)	(-5.04)	(-4.91)
_cons	-0.0368***	-0.0412***	-0.0328***
	(-87.27)	(-65.41)	(-57.46)
Industry	Control	Control	Control
Year	Control	Control	Control
N	16976	8736	8240

The table shows the regression results of model 2a, model 2b and model 2c respectively. In column (1), the coefficient of explanatory variable u is -0.000951,

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which is significant at the level of 1%, indicating that the higher the company's debt financing degree is, the more it can restrict the real earnings management.

In table 4 regression (1), the debt financing degree also restricts the absolute value of abnormal cash flow. Regression (2) shows that insufficient financing has an inhibitory effect on the absolute value of abnormal cash flow. In regression (3), enterprises with excessive debt financing have a significant promoting effect on manipulating cash flow, which also verifies that enterprises with excessive debt financing attempt to change their cash flow conditions by whitewash their operating conditions. The conclusion is consistent with the previous research.

5. Conclusion

Debt financing is closely related to real earnings management. In general, debt financing has a significant inhibiting effect on the actual earnings management of enterprises. For enterprises with insufficient debt financing, debt financing has a significant inhibiting effect on their actual earnings management. For enterprises with excessive debt financing, debt financing plays a significant role in promoting their actual earnings management.

The research of this paper has certain theoretical and practical significance. Theoretically speaking, real earnings management is one of the rich research achievements, which complements the research literature on macroeconomic environment and corporate financial behavior. On the other hand, this paper studies the different effects of different debt financing levels on the actual earnings management of enterprises. In practice, the research of this paper can provide some reference value for regulators to supervise listed companies with different debt financing levels.

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