

The Influence of Enterprise Earnings Management on Cost Stickiness

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Abstract. Enterprises' cost and earnings management are important links for the smooth operation of enterprises. Research on earnings management and cost stickiness can help improve corporate governance and reduce managers' cost-management behavior based on their own interests. This paper analyzes the impact of different earnings management motives on cost stickiness, establishes a regression model, and tests whether there is cost stickiness in China's listed companies through empirical analysis, and whether the impact of different earnings management motives on cost stickiness is different.

1. Introduction

The traditional view is that costs will only change mechanically as the volume of business changes, ignoring the role of managers in decision making. However, many practices have shown that when managers' conscious earnings management behavior increases or decreases sales revenue by the same amount, the cost reduction is less than the growth rate, that is, there is cost stickiness. This paper studies the impact of different earnings management motives on cost stickiness. The Shanghai and Shenzhen A-share listed companies are used as research samples, and regression analysis is used to verify the extent to which earnings management affects cost stickiness.

2. Background Literature

Domestic and foreign scholars have achieved certain results from the perspective of earnings management. Anderson found that there is an asymmetry between income and cost, the cost is not synchronized with the rise, and this phenomenon is formally defined as "sticky" phenomenon. Weiss first studied the economic consequences of cost stickiness. He believes that the asymmetry of enterprise costs will lead to fluctuations in income distribution, which will reduce the accuracy of analysts' earnings forecasts. Kama found that managers will consider manipulating costs to avoid losses or revenue declines, and smoothing company performance through earnings management. Jiang Wei has shown that managers' upward adjustment of accrued earnings management will weaken the company's cost stickiness, while downward adjustment will increase cost stickiness.

In summary, scholars have not reached a consistent conclusion on the relationship between the two. The purpose of this paper is to investigate whether and to what extent the earnings management motivation affects cost stickiness.

3. Research Hypothesis

3.1 The Existence of Cost Stickiness

According to agency theory, when the business volume rises, managers are more willing to increase investment and improve their competitiveness. When the business volume declines, managers are often reluctant to cut the costs associated with their on-the-job consumption due to their own interests, so the cost reduction is smaller and the cost is "sticky". First, the first hypothesis is proposed:

H1: The cost of listed companies in China presents nonlinear symmetry with the change of business volume, that is, there is cost stickiness.

3.2 The Impact of Different Earnings Management Motives on Cost Stickiness

When the company's sales decline, the manager who has the incentive to raise the surplus can increase the accounting income by lowering the book cost, thereby reducing the cost reduction and weakening the cost stickiness of the enterprise. On this basis, a second hypothesis is proposed:

H2: Companies' upward adjustment of the surplus can weaken the cost stickiness.

On the other hand, managers with lower earnings incentives can reduce the current accounting surplus by increasing the book cost, which will increase the cost reduction and enhance the cost stickiness of the enterprise. On this basis, a third hypothesis is proposed:

H3: Companies' downward adjustment of the surplus can strengthen the cost stickiness.

4. Research Design

4.1 Sample Selection

This paper selects the A-share listed companies in China's Shanghai and Shenzhen stock markets as research samples from 2012 to 2018. All sample data comes from the Wind database. To ensure the validity and accuracy of the data, the screening of the sample data is as follows:

- (1) According to the industry classification standard of the China Securities Regulatory Commission, financial listed companies are excluded;
- (2) In order to avoid the influence of outliers, companies of ST, *ST and PT are excluded;
- (3) Insolvent companies are excluded (companies with an asset-liability ratio greater than 1);
- (4) Observations with obvious information errors are excluded (total assets, sales revenue, and sales management expenses are less than 0);
- (5) Observations that fail to meet sales management fees or sales revenue data for at least two years are excluded.

4.2 Variable Description

Table 1. Variable description.

Variable Category	Variable Name	Notation	Description
Explanatory variable	Sales management fee	SG&A	Sales expenses + management fees
	Sales revenue	R	Operating income
	Big bath	BD	If $roe < 0$, $BD=1$, otherwise $BD=0$
Explained variable	Low profit	PD	If roe is in the range of $0 \sim 0.02$, $PD=1$, otherwise $PD=0$
	Turning loss	LD	The net profit of the previous period was negative, and the current period is positive, $LD=1$, otherwise $LD=0$
	Sustained loss	SD	When the operating income declines for two consecutive years, $SD=1$, otherwise $SD=0$
Control variable	Economic growth rate	EG	GDP growth rate
	Capital intensity	AI	Total assets / sales revenue
	Employee intensity	EI	Number of employees / (sales income / 10000)

4.3 Research Design

In order to study the impact of enterprise earnings management on cost stickiness, this paper supplements the relevant control variables based on the traditional earnings management cost viscous model, and extends the linear regression model of this paper.

Model (1) is used to test the existence of cost stickiness of listed companies in China. The model complements four control variables: sustained loss (SD), economic growth rate (EG), capital intensity (AI), and employee intensity (EI).

$$\ln\left(\frac{SG \& A_{i,t}}{SG \& A_{i,t-1}}\right) = \beta_0 + \beta_1 \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) + \beta_2 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) + \beta_3 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times SD_{i,t} \\ + \beta_4 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times EG_{i,t} + \beta_5 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times AI_{i,t} + \beta_6 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times EI_{i,t} + \varepsilon_{i,t} \quad (1)$$

In model (1), β_1 and β_2 represent enterprise cost stickiness. $d_{i,t}$ is used to distinguish the difference between cost stickiness in the case of rising and falling sales revenue. If $d_{i,t}$ is 0, the company's sales revenue increases, β_1 indicates the increase in business cost for every 1% increase in sales revenue; if $d_{i,t}$ is 1, the company's sales revenue declines, $\beta_1 + \beta_2$ indicates the decline in business cost for every 1% decline in sales revenue. Therefore, the smaller the value of β_2 , the stronger the cost stickiness of the enterprise.

Model (2) is used to test the impact of corporate earnings management on cost stickiness.

$$\ln\left(\frac{SG \& A_{i,t}}{SG \& A_{i,t-1}}\right) = \beta_0 + \beta_1 \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) + \beta_2 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) + \beta_3 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times EM_{i,t} \\ + \beta_4 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times SD_{i,t} + \beta_5 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times EG_{i,t} \\ + \beta_6 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times \ln(AI_{i,t}) + \beta_7 \times d_{i,t} \times \ln\left(\frac{R_{i,t}}{R_{i,t-1}}\right) \times \ln(EI_{i,t}) + \varepsilon_{i,t} \quad (2)$$

In model (2), EM indicates whether there is a surplus management incentive, which can be replaced by meager profit, a turnaround or big-bath. β_3 measures the impact of corporate earnings management on cost stickiness. If β_3 is greater than 0, earnings management weakens cost stickiness, that is, the speed of cost reduction increases; and if β_3 is less than 0, earnings management enhances enterprise cost stickiness, that is, the rate of cost reduction slows down.

5. Empirical Results

5.1 Descriptive Statistics

Table 2. Descriptive statistics.

Variable	Number	Mean	Standard Deviation	Median	Minimum	Maximum
SG&A	15666	9.59	48.51	2.58	-	-
R	15666	111.42	720.29	19.81	-	-
PD	15666	0.1138	0.3176	0	0	1
LD	15666	0.0569	0.2317	0	0	1
BD	15666	0.0831	0.2587	0	0	1
SD	15666	0.1088	0.3114	0	0	1
EG	15666	7.1343	0.4765	6.91	6.60	7.86
AI	15666	2.4744	2.3989	1.90	0.04	105.23
EI	15666	0.0143	0.0121	0.0115	0	0.4475

The data in Table 2 shows that the average of sales management expenses and sales revenue are significantly higher than the median value, reflecting that both have a clear right bias. In addition, the standard deviation of the two is relatively large, reflecting the volatility of income and expenditure among listed companies in China. The proportion of meager profits, turning losses and big-bath is 11.38%, 5.69% and 8.31%, respectively, which is reasonable. At the same time, the capital intensity of sample companies is significantly different, and the difference in employee intensity is lower, which can better control its impact on cost stickiness.

5.2 Regression Analysis

5.2.1 The existence test of enterprise cost stickiness

Table 3. The existence test of enterprise cost stickiness.

	SG&A	SG&A
_CONS	-0.048** (-2.38)	-0.035* (-1.89)
R	0.622*** (64.38)	0.587*** (64.38)
R*d	-0.383*** (-11.04)	-0.478*** (-4.62)
R*d*SD	—	0.232*** (7.54)
R*d*EG	—	2.158*** (5.83)
R*d*AI	—	-0.004*** (-2.92)
R*d*EI	—	-1.267 (-1.69)
R ² _a	0.3920	0.3950
N	15666	15666

It can be seen from Table 3 that when there are no other control variables, the coefficient of β_1 in model (1) is 0.622, the corresponding t value is 64.38, and the significance level is 1%, which meets the expected requirement, that is, when the company's sales income increases by 1%, the company's sales management fees will increase by 0.622%. The coefficient of β_2 is -0.383, the corresponding t value is -11.04, and the significance level is 1%, which meets the expected requirements.

When there are other control variables, the coefficient of β_1 in model (1) is 0.587, the corresponding t value is 64.38, and the significance level is 1%, which meets the expected requirement, that is, when the company's sales income increases by 1%, the company's sales management fees will increase by 0.587%. The coefficient of β_2 is -0.478, the corresponding t value is -4.62, and the significance level is 1%, which meets the expected requirements, that is, when the business sales income decreases by 1%, the sales management fees will reduce by 0.109%. This shows that with the change of sales revenue, the sales management expenses meet the asymmetric conditions, and there is cost stickiness.

In both cases, the adjustment R^2 exceeds 0.39, indicating that the model (1) has high explanatory power, reflecting that the cost viscous problem of listed companies in China is more common.

5.2.2 The impact of earnings management on enterprises' cost stickiness

Table 4. The impact of earnings management on enterprises' cost stickiness.

	SG&A EM=PD	SG&A EM=LD	SG&A EM=BD
_CONS	-0.035* (-2.28)	-0.033* (-1.89)	-0.038* (-1.93)
R	0.622*** (63.98)	0.622*** (63.22)	0.622*** (63.02)
R*d	-0.718*** (-3.72)	-0.701*** (-3.64)	-0.571*** (-1.67)
R*d*EM	0.174*** (5.63)	0.561*** (7.87)	-0.360*** (-8.95)
R*d*SD	0.082*** (6.83)	0.153*** (5.39)	0.059*** (7.14)
R*d*EG	3.446*** (4.28)	2.878*** (3.71)	2.458*** (3.24)
R*d*AI	-0.005*** (-3.74)	-0.005*** (-3.91)	-0.005*** (-3.84)
R*d*EI	-1.177 (-1.56)	-1.152 (-1.63)	1.172 (1.59)
R ² _a	0.3955	0.3922	0.3973
N	15666	15666	15666

As can be seen from Table 4, the first column and the second column are the empirical results of the company's upward adjustment of earnings. The coefficients of β_3 are 0.174 and 0.561, and the corresponding t value are 5.63 and 7.87, respectively. Both significance level are 1%, which meet the expected requirements. That is to say, when the sales revenue declines, if the company has the incentive to adjust the surplus upward, it may try to increase the accounting surplus by lowering the book cost, thereby increasing the cost reduction when the sales income declines, and weakening the cost stickiness. The adjusted R^2 is 0.3955, which has strong explanatory power. Therefore, companies' upward adjustment of the surplus will weaken the cost stickiness.

The third column is the empirical result of the big-bath motivation. The coefficient is -0.360, the corresponding t value is -8.95, and the significance level is 1%, which meets the expected requirements. The adjusted R^2 is 0.3973, which has strong explanatory power. Therefore, companies' downward adjustment of the surplus will strengthen the cost stickiness.

6. Summary

Earnings management and cost management are important components of the daily management of an enterprise and they have a critical impact on the improvement of business operations and profitability. This paper examines the impact of different earnings management incentives on cost stickiness. The empirical results show that the listed companies in China have a certain cost stickiness. When the company adjusts the surplus upwards, the cost stickiness will decrease; however, when it adjusts the surplus downwards, the cost stickiness will increase.

References

- [1] S. Roychowdhury, Earnings management through real activities manipulation, *Journal of Accounting and Economics*, vol. 42, pp. 335-370, 2006.
- [2] D. Weiss, Cost behavior and analysts' earnings forecasts, *The Accounting Review*, vol. 85, pp. 1441-1471, 2010.
- [3] W. Jiang, Y. M. Hu, and Z. Lv, Does accrual-based earnings management affect firm cost stickiness, *Nankai Business Review*, vol. 2, pp. 83-91, 2015.
- [4] D. L. Bu, and C. H. Wen, The measure of cost stickiness and earnings conservatism, *Accounting Research*, vol. 1, pp. 31-37, 2016.
- [5] B. Zhou, Corporate strategy, management expectation and cost stickiness: based on empirical data of China's listed companies, *Accounting Research*, vol. 7, pp. 58-65, 2016.
- [6] C. G. Li, and X. F. Quan, Stakeholders, external governance and earnings management: research based on literature, *Commercial Research*, vol. 9, pp. 144-152, 2017.
- [7] G. Q. Ma, and Y. Han, Does the real earnings management of listed companies affect cost stickiness, *Finance and Accounting Monthly*, vol. 29, pp. 3-10, 2017.
- [8] W. H. Yang, Earnings management motivation, ownership nature and enterprise cost stickiness, *Communication of Finance and Accounting*, vol. 24, pp. 80-84, 2017.
- [9] G. X. Kong, Research progress on cost viscosity at home and abroad, *Research of finance and accounting*, vol. 6, pp. 28-32, 2018.
- [10] X. H. Hou, and J. K. Peng, The relationship between cost stickiness and earnings smoothing, *Finance and Accounting Monthly*, vol. 10, pp. 8-15, 2019.
- [11] F. Peng, The empirical analysis of enterprise earnings management to cost stickiness, *Statistics & Decision*, vol. 9, pp. 185-188, 2019.