Financial Data Analysis-The Impact of External Auditor Types on Cost Stickiness: Evidence from China

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Abstract. External audit is an important part of corporate governance. It can effectively restrain the behavior of management, so as to restrain the occurrence of corporate cost stickiness. The software tool of this article is SAS, our analysis tool is regression analysis method. We use the data drawn from GSMAR database and the time range is 2011 to 2019. prove that companies in China have cost stickiness or not. Also, the empirical test shows that the companies select 'Big four international' audits will reduce the cost stickiness. The result show that the cost stickiness of companies select the 'Big four international' is significantly reduced. This proves that the audit quality of the 'Big four international' is relatively high to some extent. This study deepens the impact of external audit on cost stickiness. 'Big four international' audit has a positive impact on cost stickiness. It is helpful for our companies to reduce the cost stickiness.

Keywords: 'Big four international'; Cost stickiness; Data analysis

1 Introduction

Cost control and management is an main part of modern administration, and it is also an easy management field for enterprise managers to improve with minimal external interference. To some extent, the cost stickiness reflects the efficiency of the assets operation. According to the traditional cost theory, the change degree of cost is the same as the rise and fall of the company's business volume. However, in recent years, the empirical research on cost management has proved that cost has stickiness, that is, when enterprise cost changes with turnover, the marginal rate of change is asymmetric in the different directions of turnover change. When turnover increases, when turnover decreases by the same amount, the cost increases more than the cost decreases. We use the data to test the cost stickiness still exist. From the financial point of view to verify whether the type of external audit institutions affect cost stickiness, thus broadening the perspective of cost accounting research.

Under the modern enterprise system, ownership and management are highly separated. This arrangement optimizes the allocation of resources and improves the efficiency of economic operation, but it also lays the groundwork for conflicts. That is, the

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agent in the advantage of information has the motivation to infringe the interests of the principal for the purpose of maximizing its own interests. As an important part of the corporate governance, external auditing can effectively alleviate the information asymmetry between the contracting parties through the audit and certification process, which restricts the above-mentioned motivations.

Under opportunistic motivation, when the turnover is improving, the manager will greatly increase various expenses to increase its own utility; when the business volume is reduced, the manager is unwilling to reduce these expenses (or only a small reduction). This makes the rate of change of expenses when incomes fall less than the rate of change when incomes rise, which is manifested as stickiness. High-quality external audits can effectively standardize the company's financial processes and restrain managers' opportunistic behavior, which will inhibit the cost stickiness.

This article focuses on Chinese listed companies, we collect 18,734 company observation samples from 2011 to 2019, and test the impact of the type of external auditing agency on the cost stickiness of the company. Similar to the hypothesis we put forward, corporate managers should choose high-quality external audits. In order to reduce the cost stickiness of listed companies. In summary, a high-quality external audit will reduce the occurrence of cost stickiness.

This research studies the impact of external auditing agencies on cost stickiness. High-quality external audits can reduce the occurrence of cost stickiness. This paper finds that the ‘big four international’ has a significant inhibitory effect on cost stickiness. We added new evidence for a debate about the quality of the ‘big four international’. Enrich the research results of the types of external audit institutions on cost management. Through the problem of cost stickiness of listed companies in China, Chinese companies should be aware of the importance of choosing high-quality external audit institutions in corporate cost management and reduce corporate cost stickiness.

2 Literature and Hypothesis

The early research of cost stickiness examined whether costs vary asymmetrically responding to the sales change (Anderson et al 2003) [1]. Chinese research results show that Chinese listed companies have significant expense stickiness (Sun & Liu 2004) [2].

High-quality external audits can help curb the cost stickiness of the company. (Francis et al., 1999, Becker et al., 1998) [3] [4] pointed out that high-quality external auditing has an important impact on corporate behavior, such as effectively regulating financial processes, reducing internal and external information asymmetry, and reducing management level of financial fraud, earnings management behavior etc. High-quality external audits have better identification and error correction functions, and can directly inhibit management fraud, earnings management and other behaviors during the audit process (Qi et al., 2004) [5], and can also issue non-cleanliness way of audit opinion to alert shareholders (Jiang et al., 2007) [6], and indirectly restrain the opportunistic behavior of management. When the management creates a “personal empire" that over-expands or generates a large amount of non-productive expenditures, if the management is under low-quality audit supervision, these expenditures can be packaged or earnings management can be carried out to hide their negative impact on the company's performance. And if the management is under high-quality audit supervision, the negative impact is difficult to cover up. Taking into account the difficulty of financial fraud and the surge in earnings management, the management under the supervision of high-quality audits will reduce the above-mentioned opportunistic behavior, so that the company's expenses will be less sticky. In addition, by sorting out and standardizing financial processes, high-level external audits can also improve the overall information quality of financial reports, help shareholders accurately and timely compare with other companies in the same industry, identify abnormal proportions of expenses and income, and make relevant decisions such as management remuneration and replacement. It will further strengthen the constraints on the management, thereby suppressing the stickiness of expenses.

At the same time, 'big four international' have high professionalism and independence, they can well represent high-quality external audits. Dopuch and Simunic (1980) [7] pointed out that large firms tend to conduct more specialized training and face stricter certification and peer inspections. O'keefe and Westort (1992) [8] believe that large firms will invest more in knowledge than others. At the same time, as the expansion of the size of the firm, each client's quasi-rental ratio will be smaller, and the likelihood of the firm catering to a particular client will decrease, so the firm's independence will become stronger (DeAngelo, 1981) [9]. Accordingly, we propose the following hypotheses:

Hypothesis I: The enterprises still have cost stickiness.

Hypothesis II: The 'big four international' audit institutions have a significant inhibitory effect on the cost stickiness of listed companies in China.

3 Model, Data, and Statistics

3.1 Model

This study uses Anderson (2003) [1] classical method to build a model (1) to test whether Chinese listed companies have cost stickiness; We build model (2) on the basis of model (1) to test whether hypothesis II is valid. The model is as follows:

$$\Delta COST_{i,t} = \beta_0 + \beta_1 \times \Delta S_{i,t} + \beta_2 \times \Delta S_{i,t} \times D_{i,t} + \text{All interaction terms}_{i,t} + \beta_c \times \text{Controls}_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$\Delta COST_{i,t} = \beta_0 + \beta_1 \times \Delta S_{i,t} + \beta_2 \times \Delta S_{i,t} \times D_{i,t} + \beta_3 \times \Delta S_{i,t} \times D_{i,t} \times Big4_{i,t} + \text{All interaction terms} + \beta_c \times \text{Controls}_{i,t} + \varepsilon_{i,t} \quad (2)$$

Table 1. Definition of Dependent/Independent Variables [Table credit: Original]

Dependent Variables	
ΔCOST	Natural logarithm of (SG&A costs/ lagged SG&A costs) for company i in year t

Independent Variables	
ΔS	Natural logarithm of (sales / lagged sales) for company i in year t
D	Dummy variable equal to 1 if sales in year t is lower than one in year t-1, and 0 otherwise
Big4	Dummy variable that equals 1 if the companies that choose the ‘big four international’ audit institutions and 0 otherwise.
SIZE	Natural logarithm of book value of assets of company i in year t
INT	Natural logarithm of book value of assets divided by sales of company i in year t
CFO	Natural logarithm of cash flows for operating divided by book value of assets of company i in year t

Table 1 shows the all variables definitions in model 1 and 2, according to Anderson et al. (2003) [1], Chen et al. (2013) [10] and Yang (2015) [11], we control three control variable that affect cost stickiness: SIZE, FCF and asset INT.

Here we control for the value of Di, t is 0 as revenue increases. That is to say, when revenue increases to 0, β1 can show the change of total cost relative to the increase in revenue. When revenue increased by 1% and total cost increased by β1%. When operating income decreases Di, t takes 1, (β1+β2) measures the change of total cost to operating income decrease, that is, operating income decrease 1%, total cost decrease (β1+β2) %. If the traditional model of cost morphology is valid, that is, costs increase or decrease proportionally with the increase or decrease of business volume, then β2 = 0, β1 = 1. However, if the total cost is viscous, then β1>β1+β2 can be further inferred as β2 < 0, and β2 is statistically significant. The smaller the β2, the greater the cost viscosity. Big4i, t in the virtual variable being (virtual variable equal to 1 if a listed company with "Big Four International" audit firm is selected, otherwise 0)1, and (β1+β2 +β3) measuring cost stickiness under hypothesis II; β3 measures the extent to which the type of external auditor influences the size of cost stickiness.

3.2 Data

The data in this paper is taken from the intersection of the CSMAR database between 2011 and 2019. We strip out the default values and get final sample contains annual observations of 18734 samples.

3.3 Descriptive Statistics

As Table 2 we can see the mean of ΔCOST is 0.11, median is 0.09. The mean of ΔS is 0.13, median is 0.12. The two main variables distribution are basically symmetrical and concentrated, the dispersion is low. The mean of Big4 variable is 0.06, indicating 6% of the companies in our data have the situation of hypothesis II.

Table 2. Descriptive Statistics [Table credit: Original]

	Mean	Standard Deviation	Minimum	Median	Maximum
ΔCost	0.11	0.32	-4.05	0.09	5.71
ΔS	0.13	1.21	-7.69	0.12	7.78
D	0.43	0.50	0.00	0.00	1.00
BIG4	0.06	0.24	0.00	0.00	1.00
SIZE	22.21	1.37	14.94	22.04	28.64
INT	2.95	0.98	0.13	2.76	11.50
CFO	-3.51	1.34	-11.94	-3.37	0.77

4 Empirical test results and analysis

The result for Hypothesis I is shown in Table 3. From Table 3, β1 is 0.070 and β2 is -0.043, so β1+β2 = 0.027. Overall, Each 1% increase in revenue, the total cost will increase by 0.070%. When the prime operating revenue is reduced by 1%, the operating costs is only reduced by 0.027%. 0.043% total cost cannot be shown. The stickiness of the total cost is 0.043%. This suggests the companies still have cost stickiness. Verify hypothesis I.

Table 3. Impact OF Cost stickiness Using Model 1 [Table credit: Original]

	Estimate	t-stat
Intercept	-0.21	-3.93
ΔS	0.070 ***	16.29
ΔSi,t × Di,t	-0.043 ***	-4.32
SIZE	0.014 ***	5.90
INT	0.024 ***	4.92
CFO	0.022 ***	8.92
R^2	0.04	

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

The results for hypothesis II are shown in Table 4. From Table 4 we find β1 is 0.070, β2 is -0.045, and β3 is 0.064. β3 >0 Verify hypothesis II.

As statistical view, the "big four international" audits have a significant inhibitory effect on cost stickiness, which can reduce the cost stickiness, and the result is consistent with the expected result.

Table 4. Impact Of External Audit Types on Cost Stickiness [Table credit: Original

	Estimate	**t-stat**
Intercept	-0.23	-4.25
ΔS	0.070***	16.09
ΔSi,t× Di,t	-0.045***	-4.46
ΔSi,t× Di,t×Big4i,t	0.064**	1.92
SIZE	0.015***	6.15
INT	0.024***	4.92
CFO	0.022***	8.76
R^2	0.04	

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

5 Conclusion

Cost stickiness is an important point in the category of cost behavior. At the same time, it is also an important embodiment of enterprise management efficiency. This research examines the impact of external audit on cost stickiness. Based on the financial data from 2011 to 2019, we conduct an empirical research on the cost stickiness of companies. The conclusion is as follows: First the listed companies in China still have cost stickiness. Second the "big four international" audits have a significant inhibitory effect on the cost stickiness.

This paper reveals the impact of external governance factors on enterprise cost stickiness from the perspective of external audit. This paper powerfully extends the research of cost stickiness factors to corporate external governance. As for other situation of cost stickiness, also need to be further studied and explored.

6 References

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