

Internal Control, Managerial Overconfidence and Cost Stickiness

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Abstract: Managers are the makers of enterprise decision-making, and the rationality of their decision-making has an important impact on the management efficiency of the company's cost. This paper takes China's 2013-2017 A-share listed manufacturing companies as a sample to study the impact of managerial overconfidence on cost stickiness and the impact of internal control quality on the relationship between the two. The study finds that managerial overconfidence will increase cost stickiness, and perfect internal control can inhibit it from enhancing the cost stickiness.

1. Introduction

With the development of the market and advancement of technology, the competitive environment faced by enterprises is increasingly fierce. As an important part of improving profitability, cost management cannot be ignored any more. Cost stickiness is the phenomenon that the cost reduction in the case of a decline in business volume is less than the increase in the equivalent amount of business volume (Anderson and Banker et al. 2003). It is a non-efficiency behavior in cost management, which have negative effect on analysts' judgment on company's future profitability, and make corporate bonds face greater credit risk (Anderson and Banker et al. 2003). The control of cost stickiness is an important issue to be solved whether it is the theory or practice of cost management.

Overconfident managers often overestimate their strength and accuracy of judgment, and do not have a clear understanding of the risks of future business activities. Faced with the decline in business volume, such managers will not immediately adjust the cost, but believe that they can reverse the situation by their ability, thus retaining the existing production scale and enhancing cost stickiness.

Internal control is an important means for enterprises to deal with business risks, and has restraining and controlling effect on managers' irrational behaviors. Through the improvement and implementation of the internal control, companies can restrain managers from making mistakes in decision-making due to overconfidence, thus avoiding unreasonable adjustments to resources.

Based on the above two points, this paper takes the 2013-2017 A-share listed manufacturing companies in China as a sample to study the relationship between internal control, managerial overconfidence and cost stickiness. This paper reveals the cost management behavior of enterprises from the perspective of managerial overconfidence. At the same time, from the perspective of enterprise cost management, the restrictive effect of internal control on the irrational behavior caused by manager's overconfidence is revealed, which supplements the economic consequences of internal control.

2. Literature Review and Hypotheses Development

2.1 The relationship between managerial overconfidence and cost stickiness

Anderson & Banker et al. (2003) found that the change in cost does not show a symmetrical change with the rise and fall of income in US listed companies and raised the concept of "cost stickiness". There are also cost stickiness in listed companies in China (Sun Zheng and Liu Hao

2004). When business volume declines, optimistic managers tend not to cut costs, resulting in cost stickiness (Anderson & Banker et al. 2003). Managerial overconfidence has a negative impact on cost stickiness, but under strong debt constraints, this relationship will be weakened (Liang Shangkun 2015).

From the perspective of the subjective causes of cost stickiness, managers' behavioral bias has a major impact on cost management. Managers who are overconfident are generally prone to overestimate their abilities and are blindly optimistic about future. This kind of psychology makes them not adjust the cost immediately if they face the decline in business volume, but thinks that this decline is only temporary. Taking the adjustment cost into account, they prefer to retain the existing production scale, thus enhancing cost stickiness. In summary, the paper proposes hypothesis 1:

H1: Managers' overconfidence has an increase in the company's cost stickiness.

2.2 The influence of internal control on the relationship between managerial overconfidence and cost stickiness

Internal control is an institutional guarantee that strengthens and regulates corporate management and improves operational efficiency through a series of institutional arrangements. Companies with high internal control quality can alleviate the negative impact of overconfidence on accounting robustness (Xing Weiquan and Song Chang 2015). Compared with companies with weak internal control, companies with the well-controlled can inhibit the excessive self-confidence of managers to promote cash flow (Zhang Shuhui and Wang Ruiwen 2017).

High-quality internal control can overcome information asymmetry to a certain extent, improve stakeholder participation in decision-making, and conduct necessary supervision on managers in the implementation process of decision-making. Internal control runs through the whole process of corporate activities, and perfect internal control can suppress the unreasonable allocation of resources brought about by managers' overconfidence. In summary, the paper proposes hypothesis 2:

H2: Perfect internal control can suppress the increase of managerial overconfidence on cost stickiness.

3. Research Design

3.1 Sample Selection and Data Sources

There are industry differences in the cost stickiness of listed companies in China. The competition of manufacturing companies is fierce so the stickiness measure is less interfered by the monopoly price (Weiss, 2010). So, this paper uses China's A-share listed manufacturing companies in 2013-2017 as a sample to study, and does the following sample screening: (1) excluding abnormal business activities such as ST and *ST;(2) excluding samples with missing variable data. After that, this paper does 1% Winsorize for all continuous variables. In the end, a total of 6,018 sample data were obtained. All the data come from CSMAR database and DIB database.

3.2 Definition of Research Variables

(1) Explained variable

Cost change rate (LnC). Cost stickiness means that the change in cost does not show a symmetrical change with the rise and fall of income. In this paper, the rate of selling and administrative expenses' change is used as the explanatory variable to eliminate the impact caused by the difference in enterprise scale, and logarithmically deal with it to avoid sensitivity problems.

(2) Explanatory variables

1) Income change rate (LnR)

The cause of cost stickiness is the change of business volume. Because of difficulty in obtaining it and its measurement, this paper selects the change of main business income to replace this variable.

2) Declining income (D)

Compared with the previous year, if the income drops, the value takes 1, otherwise 0.

3) Managerial overconfidence (OC)

With the development of the economy, more and more companies choose to publish profit forecasts. In this paper, the research methods of Lin & Chen (2005), domestic scholars Jiang Fuxiu and Zhang Min et al. (2009) compare the profit forecast with the actual performance, and believe that the managers who overestimate the performance are overconfident. If the actual net profit is smaller than the lower limit of the predicted value, it is divided into overconfidence, which takes a value of 1, otherwise it takes 0.

(3) Control variables

Referring to the research of Hou Xiaohong and Li Wei (2017), this paper introduces capital intensity (AI), human capital density (EI), manager shareholding ratio (Mshare), and company size (SIZE) as control variables. And this paper also controls the Year and Industry.

Table 1 Definition of variables

Variable	Variable description
LnC	Logarithm of the ratio of the selling and administrative expenses of the year to the previous year
LnR	Logarithm of the ratio of the main business income this year to the income of the previous year
D	If the main business income is lower than the previous year, takes 1, otherwise 0.
OC	If the actual net profit is smaller than the lower limit of the value predicted by managers, it takes 1, otherwise 0.
AI	Ratio of total assets to main business income at the end of the year
EI	Ratio of total number of employees to main business income (million)
Size	Logarithm of total assets at the end of the year
Mshare	The sum of management shareholding ratio
Year	Control
Industry	CSRC (2012) Manufacturing Secondary Classification Standard

3.3 Design of Research Model

Based on the model constructed by Anderson, Banker and Janakiraman (2003), and with reference to Hou Xiaohong and Li Wei (2017), the following research models were established.

$$\ln C = \beta_0 + \beta_1 * \ln R + \beta_2 * D * \ln R + \varepsilon_{i,t} \tag{1}$$

$$\ln C = \beta_0 + \beta_1 * \ln R + \beta_2 * D * \ln R + \beta_3 * D * OC * \ln R + \sum \beta_{i,t} * D * \ln R * \text{Control}_{i,t} + \lambda \sum \text{Industry} + \delta \sum \text{Year} + \varepsilon_{i,t} \tag{2}$$

4. Empirical Results

4.1 Descriptive statistics of variables

Table 2 is a descriptive statistic for the main variables. As can be seen, the mean values of cost changes (LnC) and income changes (LnR) are 0.1509 and 0.1332, respectively, indicating that both are positively increasing, and the cost is more variable than income. The average income decline (D) is 0.2727, indicating that 27.27% of the company's revenue has decreased compared with previous years. The average value of managerial overconfidence (OC) is 0.1529, indicating that about 15.29% of managers have psychological characteristics of overconfidence. The statistical values of other variables are also within the normal range.

In this paper, the correlation of the main variables is analyzed. The absolute value of the correlation coefficient between each explanatory variable is less than 0.7. There is no serious collinearity problem in the regression of this paper.

Table 2 Descriptive statistics of the main variables

	Mean	Median	SD	Max	Min
LnC	0.1509	0.1302	0.2386	1.1628	-0.4713
LnR	0.1332	0.1187	0.3009	1.2812	-0.7785
D	0.2727	0.0000	0.4454	1.0000	0.0000
OC	0.1529	0.0000	0.3599	1.0000	0.0000

AI	2.3745	1.9847	1.5506	9.9143	0.4629
EI	1.5762	1.3734	1.0249	5.6890	0.1464
MSHARE	0.1724	0.0512	0.2096	0.6909	0.0000
SIZE	21.8757	21.7395	1.0797	25.2165	19.7306

4.2 Regression Analysis

(1) H1 test: managerial overconfidence and cost stickiness

Table 3 is the regression result of the research model. Column (1) is the regression result of the model (1), which is the cost stickiness existence test. The coefficient of $D \times \text{LnR}$ is -0.385, and is significant at the level of 1%, indicating that the listed companies have cost stickiness. Column (2) is the regression result of model (2). The coefficient of $\text{OC} * \text{D} * \text{LnR}$ is -0.157, which is significant at 1%. This shows that the manager's overconfidence has a significant enhancement effect on the cost stickiness, which verifies the hypothesis 1 of this paper.

Table 3 Managerial Overconfidence and Cost Stickiness

Variables	(1) Full Sample	(2) Full Sample
constant	0.051 ^{***} (14.71)	0.044 ^{***} (2.75)
LnR	0.602 ^{***} (56.08)	0.605 ^{***} (55.73)
$D * \text{LnR}$	-0.385 ^{***} (-15.47)	-0.394 (-1.15)
$\text{AI} * \text{D} * \text{LnR}$		-0.020 ^{***} (-2.69)
$\text{EI} * \text{D} * \text{LnR}$		-0.013 (-0.96)
$\text{Mshare} * \text{D} * \text{LnR}$		0.028 (0.27)
$\text{Size} * \text{D} * \text{LnR}$		0.007 (0.48)
$\text{OC} * \text{D} * \text{LnR}$		-0.157 ^{***} (-4.24)
Year		YES
Industry		YES
Adj.R ²	0.404	0.419

(2) H2 test: the relationship between managerial overconfidence and cost stickiness under different internal control quality

This paper selects the internal control index in the Dib database to measure the company's internal control level, and the company whose internal control index is higher than the median is classified as the internal control perfect sample, and the rest is classified into the weak. Then this paper makes grouping regression and results are shown in Table 4. In the weak group, the coefficient of $\text{OC} * \text{D} * \text{LnR}$ is -0.145, which is significant at the 1% level. While in the perfect group, the coefficient of $\text{OC} * \text{D} * \text{LnR}$ is -0.088 and is not significant, indicating that perfect internal control will inhibit the managerial overconfidence in the enhancement of cost stickiness, which validates the hypothesis 2.

Table 4 Impact of Internal Control on Manager Overconfidence and Cost Stickiness

Variables	Weak internal control	Perfect internal control
constant	0.044 [*] (1.90)	0.047 ^{**} (2.19)
LnR	0.560 ^{***} (32.77)	0.638 ^{***} (45.36)
$D * \text{LnR}$	-0.403 (-1.02)	-0.071 (-0.08)
$\text{AI} * \text{D} * \text{LnR}$	-0.028 ^{***} (-3.27)	0.013 (0.64)
$\text{EI} * \text{D} * \text{LnR}$	-0.016 (-0.99)	0.017 (0.44)
$\text{Mshare} * \text{D} * \text{LnR}$	0.005 (0.04)	0.017 (0.06)
$\text{SIZE} * \text{D} * \text{LnR}$	0.011 (0.62)	-0.014 (-0.33)
$\text{OC} * \text{D} * \text{LnR}$	-0.145 ^{***} (-3.49)	-0.088 (-0.71)
Year	YES	YES
Industry	YES	YES
Adj.R ²	0.351	0.459

5. Conclusion

Based on the relevant literature on cost stickiness research at home and abroad, this paper takes the 2013-2017 A-share listed manufacturing companies in China as a sample to study the relationship between internal control, managerial overconfidence and cost stickiness. The study finds that managerial overconfidence influences cost stickiness, and perfect internal control can inhibit the negative impact of managerial overconfidence on cost stickiness. This paper studies the influencing factors of cost stickiness from the perspective of managerial overconfidence, reveals the inhibitory effect of internal control on the irrational behavior caused by managerial overconfidence, and promotes the scientific decision-making of managers and improves the efficiency of cost management.

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