

Enterprise Property Rights, Manager Background Characteristics and Cost Stickiness: An Empirical Study Based on Manufacturing Listed Companies

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Abstract

Cost control is essential to enterprises' profits. Since the foreign scholars found that the existence of cost stickiness, the problem has become a hot topic of scholars, and more and more business managers pay attention to. The study of cost stickiness helps managers to deepen their understanding of the cost behavior of the firm, thus implementing more effective control. The causes of cost stickiness are mainly subjective adjustments to cost costs by managers, and the different background of the managers and the nature of the property rights of the enterprises may affect the manager's cost management decision. Therefore, this article distinguishes between state-owned enterprises and non-state enterprises, from the perspective of the characteristics of managers to explore the impact of cost sticky. Based on the analysis of principal-agent theory and high-level ladder theory and the results of domestic and foreign research, this paper investigates the influence of managers' background characteristics on cost stickiness as a research sample from Shanghai and Shenzhen A-share manufacturing listed companies in 2009 and 2015, and further, this paper analyzes the differences between the background characteristics of state-owned enterprises and non-state-owned enterprises managers on the cost stickiness. This study found that China's manufacturing companies do exist in the cost of sticky, the cost of state-owned enterprises is stronger than non-state enterprises. In non-state-owned enterprises, age and tenure have a significant inhibitory effect on cost stickiness, and education has a significant effect on cost stickiness. In state-owned enterprises, the degree of age-to-cost cohesion is equal to that of non-state enterprises, and the effect of reinforcement on cost stickiness is weaker than that of non-state enterprises, but the term has no significant effect on cost stickiness. At the same time, executives' financial experience has had no significant impact on cost stickiness in both state and nonstate enterprises. This study not only enriches the background of manager's background on the study of cost sticky research, but also has some reference for the selection of senior management.

Keywords

Cost stickiness; background features of managers; property rights.

1. INTRODUCTION

In the increasingly competitive economic environment, one of the necessary ways for manufacturing companies to seek more profit is to control costs. However, in the case of the development of traditional cost habits and the application is simple, most enterprises are looking for effective ways to control costs through traditional cost habit analysis. According to the traditional cost performance model, the total cost of the enterprise is linear relationship

with the business volume. The function model is approximated as $y=a+bx$, that is, when the business volume rises or falls by 1%, the cost rises or falls accordingly. The marginal change in cost is independent of the direction of change in business volume. This theory is generated under idealized conditions, focusing only on the driving factor of the most closely related business volume, without considering the external economic, political, industrial and internal managerial characteristics, property rights, organizational structure and other factors, so there are certain limitations.

In response to this problem, American scholars Anderson, Banker, and Janakiraman found that when the volume of business declines and rises by the same proportion, the proportion of cost reduction is less than the proportion of increase [1]. Therefore, the asymmetry of the increase and decrease of the cost with the change of the business volume is called the cost stickiness by using the concept of price stickiness. Since then, domestic and foreign scholars have carried out a lot of research on the existence, root causes, influencing factors and economic consequences of cost stickiness. In recent years, cost stickiness has become a hot issue for scholars at home and abroad, and has been paid more and more attention by managers. However, there is no authoritative research on the influence of manager's background characteristics on cost stickiness. The reason for the cost stickiness is mainly the subjective adjustment of the cost to the manager (Cooper & Kaplan, 1998[2]). According to the high-level ladder theory and demographic theory, different background characteristics of managers may affect managers' cost management decisions, so the manager's background characteristics may have a potential impact on cost stickiness. In addition, there are two types of companies with significant differences in the nature of state-owned and non-state-owned holdings in China's capital market. State-owned holding companies and non-state-owned holding companies are subject to different objective environments, and managers face different constraints. Therefore, the influence of managerial background characteristics on cost stickiness may be different in these two types of enterprises. Therefore, this paper distinguishes enterprises with different property rights as one aspect of research. Manufacturing is the pillar industry of China's national economy, and cost management is crucial for manufacturing companies. It is of great theoretical and practical significance to explore the influence of the background characteristics of managers in manufacturing enterprises on the cost stickiness. Based on this, this study intends to study the impact of managerial background characteristics on cost stickiness under the background of different property rights through the empirical data of the sample of Shanghai and Shenzhen A-share manufacturing listed companies from 2009 to 2015. It is beneficial for enterprises to consider their influencing factors more comprehensively when making cost control, so that they can make more accurate decisions. At the same time, it provides inspiration and suggestions for the selection and appointment of senior executives of different natures.

Based on the research of scholars at home and abroad, this paper distinguishes the nature of corporate property rights and deeply discusses the influence of manager background characteristics on cost stickiness, enriching the literature on manager background characteristics and cost stickiness research. This research is beneficial to enterprises to more comprehensively consider the influencing factors when making cost control, and to make more accurate decisions; at the same time, it provides reference for listed company recruitment managers.

2. LITERATURE REVIEW

2.1. Cost Stickiness

American scholars Anderson, Banker, and Janakiraman (2003)[1] used the log-linear model to test the relationship between expenses and sales revenue by collecting sample data of 7629

listed industrial enterprises, and found that sales expenses and administrative expenses show asymmetry as the volume of business increases and decreases. When the business volume increased by 1%, the sales and administrative expenses increased by 0.55%. When the business volume decreased by 1%, the sales and administrative expenses decreased by 0.35%. Thus the concept of cost stickiness is proposed. Subsequently, Weidenmier and Subramaniam (2003) [3] took into account the main business costs, and sales and administrative expenses are collectively referred to as the total cost. Using the data of US listed companies from 1979 to 2000, the total cost of the company was also sticky. In China, Sun Zheng and Liu Hao [4] studied the viscous behavior of operating expenses of listed companies in China in 2004, and found that the marginal rate of change is asymmetric in the direction of different business volume changes, and China's cost stickiness is higher than that of the US. Liu Wu (2006) [5] conducted a study on the cost stickiness of the Shanghai-Shenzhen A-share listed companies by distinguishing the nature of the industry. It was found that the manufacturing and information technology industries had strong cost stickiness, while the cost stickiness of real estate and other industries did not exist or was not obvious. Based on the research of Weidenmier and Subramaniam on the relationship between sales income change and cost viscous in 2003, he found that the impact of income change is only significant for specific industries, and is not suitable for the overall sample without industry segmentation. Kong Yusheng and Zhu Naiping used the cost of the listed company's operating costs to study the cost stickiness problem in 2007, which confirmed the existence of cost stickiness, the greater the time span, and the weaker the cost viscosity [6].

Balakrishnan (2004) [7] pointed out that the company's productivity level will affect the cost stickiness. He concluded that the cost stickiness of enterprises with full capacity operation is greater than that of enterprises with surplus production capacity. In 2003, Anderson et al. added the macroeconomic variable of GDP growth to the basic model and found a positive effect on cost stickiness. Kong Yusheng and Zhu Naiping (2007) [6] studied the impact of industry and company attributes on cost stickiness. Enterprises in different industries have different degrees of cost stickiness. Enterprises with high capital intensity and labor intensity show strong cost stickiness. Liu Yanwen and Wang Yugang (2009) [8] found that the trend of income and expenses of listed companies in China and the sub-sectors showed positive growth, and the cost increased faster than income.

2.2. Manager Background Characteristics

In the 1970s, Hambrick and Mason (1984) [9] proposed the "high-level echelon theory". The theory holds that managers' existing values and cognitive structures determine their decision-making process. Managers with different background characteristics have different psychological structures, which will form different decisions and affect the behavior and performance of the company. Margarethe and Bantel (1992) [10], by studying the relationship between executive team background characteristics and corporate strategic decision-making, found that the higher the average age of executive teams, the more conservative the strategic decision choices. Therefore the degree of diversification of the company is lower. Peng and Wei (2007) [11], studied the impact of female executives on corporate investment, found that men were more likely to be overconfident than women, and women were more conservative than men's chosen corporate strategies. Wei Liqun and Wang Zhihui (2002) [12] empirically analyzed the relationship between the background characteristics of 114 listed company executives and corporate performance, and concluded that age is significantly positively correlated with corporate performance. Hambrick et al. (1984) [9] argue that teams with higher average academic qualifications are more predictive of decision-making outcomes and respond more quickly to adversary attacks. Jiang Fuxiu et al. (2009) [13] studied the influence of executives and chairman on over-investment and found that the higher the average education level and

age of executives and chairman, the less the company would over-invest and the background characteristics of managers over-investing. The impact is somewhat different between state-owned and non-state-owned enterprises. Zhang Zhaoguo et al. (2013) [14] studied how promotion affects corporate over-investment from the perspective of managerial background characteristics. The conclusion is that the sensitivity of managers to promotion and the effect of promotion on over-investment are inverse U-shaped with age, and the relationship between academic qualifications and tenure is positively correlated with the sensitivity of promotion. Jiang Wei and Yao Wentao (2015) [15] found that among state-owned listed companies, the tenure of executives has a significant effect on cost stickiness, a phenomenon that is not obvious in non-state-owned enterprises. In private enterprises, when the executives are close to leaving, the cost stickiness will be weakened.

Domestic and foreign scholars are mainly studying the objective factors of economic environment, company attributes and industry differences in the study of factors affecting cost stickiness. No scholars have discussed the cost stickiness from the perspective of managerial background characteristics. According to the high-level ladder theory, the background characteristics of managers will influence managers to make cost management decisions. Therefore, it is necessary to study the influence of background characteristics of managers on cost stickiness.

In the research of manager's background characteristics, scholars mainly study the relationship between background characteristics and company performance, investment efficiency and strategic decision-making. There is no relationship between background characteristics and cost stickiness.

This study focuses on the adjustment mechanism of managers' age, tenure to the cost of manufacturing listed companies, and provides empirical data support for better identifying managers' psychological motivation and behavioral decision-making. Make up for the shortcomings of domestic and foreign research, deepen the research on the individual characteristics of managers and behavioral decision-making in the field of cost viscous of listed companies in China's manufacturing industry. In addition, this paper also combines the institutional background of China, distinguishes the enterprises with different property rights, and compares and analyzes the influence of the background characteristics of enterprise managers with different property rights on the cost stickiness, so that the conclusions of this paper have certain reference significance for further deepening the reform of enterprise property rights.

3. ASSUMPTION

Since ABJ (2003) [1] proposed the cost viscosity phenomenon, domestic and foreign scholars have confirmed its existence through a large number of empirical studies. Domestic and foreign scholars attribute the motivation to three aspects: adjustment cost, managerial optimistic expectations and agency problems (Jiang Wei, Hu Yuming, 2011[16]). From the perspective of adjusting costs: When the sales volume of the enterprise declines, some of the promised resources are idle, and reducing the promised resources will bring adjustment costs. When sales volume increases, it is necessary to increase resource, which will also bring adjustment costs, such as employee training fees. And the adjustment cost of reducing the commitment resources of enterprises is higher than the adjustment cost brought by increasing the commitment resources. Therefore, when the sales volume declines, the willingness of the manager to reduce the commitment resources is lower than the willingness to increase the commitment resources when the sales volume increases, thus generating cost stickiness. From the perspective of managers' optimistic expectations: the long-term trend of corporate sales is increasing, so managers are more likely to have optimistic estimates of future sales, which tends

to keep redundant costs when managers face lower revenues. This optimistic expectation also led to the existence of cost stickiness. From the point of view of the agency problem, the manager will reduce the cost excessively or less for the sake of personal interests, thereby reducing or enhancing the cost stickiness.

According to Xu Liping's (2006) [17] study, managers' self-interested behavior is more obvious among Chinese state-owned listed companies than non-state-owned listed companies. This is because the owner of the state-controlled listed company is absent, and the company lacks effective supervision, so that the manager has mastered most of the decision-making power. Compared with non-state-owned listed companies, state-owned enterprises have more serious agency problems. When the economy is booming, managers will expand the scale of the company in order to increase the resources they control. When the economy is in downturn, managers will be reluctant to reduce resources in order to retain the "personal company empire". Such self-interested behavior may lead to higher cost stickiness than that of non-state-owned holding companies. So we put forward the hypothesis:

H1: The listed companies in China have cost stickiness; the cost stickiness of state-owned listed companies is greater than that of non-state-owned listed companies.

China's state-owned enterprises are subject to government restrictions in many aspects, and the performance of managers is closely related to promotion. Compared with non-state-owned holding companies, the older managers of state-owned holding companies face greater pressure to promote, so the managers of state-controlled listed companies are older, the more conservative they are when making decisions, and the more they prefer to ensure considerable profits, thereby reducing cost stickiness. Based on the above analysis, the following assumptions are made:

H2: The older the age, the weaker the cost stickiness. Compared with non-state-owned listed companies, state-owned listed companies have a weaker effect.

The tenure of the manager is closely related to his or her understanding of the company and the mentality of decision-making. Finkelstein and Hambrick (1990) [18] found that as the term of executives increases, they will gradually show a tendency to risk aversion. The strategy of choice will tend to be cautious and conservative, and the phenomenon of corporate performance tends to be maintained. Baker and Mueller found that long-term executive teams tend to emphasize stability and efficiency, while short-term executive teams are more willing to take risks and invest more resources in research and development. This shows that the longer the executive's tenure, the more likely he is to make conservative decisions, which will weaken the cost. Managers are likely to avoid risks in order to protect their status. In the face of current demand decline and uncertain future conditions, managers will reduce redundant cost, so cost stickiness is lower.

Compared with non-state-owned enterprises, the longer the manager's tenure of state-owned enterprises, the more they want to beautify their achievements. Because performance is about the future, when demand drops, they will cut resources in time to ensure considerable profits, which will weaken the cost. The empirical results show that the longer the tenure of the managers of state-owned listed companies, the more conservative they are in making decisions to ensure the stability of business operations. Therefore, when demand declines, it is more willing to reduce the cost of redundancy. Not willing to invest too much. Thereby the cost stickiness is at a lower level. Therefore, the following assumptions are made:

H3: The longer the tenure of the executives, the weaker the cost stickiness, and the degree of state-owned listed companies is stronger than that of non-state-owned listed companies.

4. DATA AND EMPIRICAL METHODOLOGY

4.1. Variables and Model

This paper explores the impact of managerial background characteristics on cost stickiness in companies with different property rights. Based on this, based on the research on the cost and cost stickiness of Anderson et al., the paper selects the age, tenure as a substitute indicator of the background characteristics of the manager, and empirically analyzes the index of reaction cost stickiness. The variables are shown in Table 1 below:

Table 1. Variables

Variables	Variable Definitions
Exp	Current cost, including main business costs, sales expenses and management expenses
Rev	Main business income of the year
Age	The age of each member of the executive team
Time	Executives' time in the company
Decrease	The value of the year after the year when the income rises is 0, and the value when the income declines is 1
Controlvariable1	Total fixed assets / operating income
Controlvariable2	Number of employees / operating income
Controlvariable3	Liabilities/total assets
Controlvariable4	Net profit / total assets

In this paper, the variables of the manager's background characteristics are added to the basic model proposed by ABJ (2003) [1], the model is optimized, and the above assumptions are tested using the data of listed companies.

Basic model:

$$\ln\left(\frac{\text{Exp}_{i,t}}{\text{Exp}_{i,t-1}}\right) = \alpha_0 + \alpha_1 \ln\left(\frac{\text{Rev}_{i,t}}{\text{Rev}_{i,t-1}}\right) + \alpha_2 \text{Decrease} * \ln\left(\frac{\text{Rev}_{i,t}}{\text{Rev}_{i,t-1}}\right) + \alpha_3 \text{Controlvariables} * \text{Decrease} * \ln\left(\frac{\text{Rev}_{i,t}}{\text{Rev}_{i,t-1}}\right) + \epsilon_{i,t} \tag{1}$$

Following the study of ABJ (2003) [1], the main variables are logarithmically processed. $\text{Exp}_{i,t}$ represents the cost of the i -th company in the t -year; $\text{Rev}_{i,t}$ represents the sales revenue of the i -th company in the t -year. The dependent variables $\text{Exp}_{i,t}/\text{Exp}_{i,t-1}$ express the rate of change of cost from $t-1$ to t , and the independent variables $\text{Rev}_{i,t}/\text{Rev}_{i,t-1}$ express the income from $t-1$ to t . The rate of change, regression can be found in the relationship between cost changes and income changes. The logarithmic processing is mainly to use the nature of the natural logarithm function to eliminate the influence of excessive data variance caused by different companies and different periods. At the same time, the 1 included in $\text{Exp}_{i,t}/\text{Exp}_{i,t-1}$ and $\text{Rev}_{i,t}/\text{Rev}_{i,t-1}$ is eliminated, and thus converted into a growth rate.

Decrease is a dummy variable. If it is 1, it means that sales revenue in the t year is less than that in the $t-1$ year. Otherwise, the value is 0. α_1 measures the percentage increase in costs when revenue increases by 1%. $\alpha_1 + \alpha_2$ means the percentage decrease in costs when revenue decreases by 1%. The higher the negative value of α_2 is, that is, the smaller $\alpha_1 + \alpha_2$ is, the higher the cost stickiness of the enterprise is. The control variables Controlvariables, modeled after the

literature of ABJ (2003) [1] and Kong Yusheng et al. (2007)[8], are capital intensity (total fixed assets/operating income), labor intensity (number of employees/operating income), financial leverage (liabilities/total assets), and return on equity (net profit/total assets).

The model after adding the manager's background characteristics:

$$\begin{aligned} \ln\left(\frac{\text{Expi}_{i,t}}{\text{Expi}_{i,t-1}}\right) = & \alpha_0 + \alpha_1 \ln\left(\frac{\text{Revi}_{i,t}}{\text{Revi}_{i,t-1}}\right) + \alpha_2 \text{Decrease} * \ln\left(\frac{\text{Revi}_{i,t}}{\text{Revi}_{i,t-1}}\right) + \alpha_3 \text{Decrease} * g_{i,t} * \\ & \ln\left(\frac{\text{Revi}_{i,t}}{\text{Revi}_{i,t-1}}\right) + \alpha_4 \text{Controlvariables} * \text{Decrease} * \ln\left(\frac{\text{Revi}_{i,t}}{\text{Revi}_{i,t-1}}\right) + \varepsilon_{i,t} \end{aligned} \quad (2)$$

$g_{i,t}$ represents the manager's background feature variable. When $\alpha_3 > 0$, it indicates that the manager's background feature has a negative correlation with cost stickiness; when $\alpha_3 < 0$, it indicates that the manager's background feature is positively correlated with cost stickiness.

4.2. Sample Selection and Data Sources

This paper takes the company information and financial data of the manufacturing companies listed in the Shanghai Stock Exchange from 2009 to 2015 as the preliminary sample, because the research of scholar Liu Wu (2006)[5] has confirmed that the impact of different industries on the cost and cost stickiness is different. And the manufacturing costs are more sticky, so we choose manufacturing companies as research samples.

The research data is from the GuoTaiAn database, and based on this, the following screenings are made:

Excluding the listed companies that are ST and *ST, these companies may be excluded because they may be delisted.

Listed companies that exclude income, lack of cost data, and incomplete executive gender data, because these companies are incomplete and cannot be compared with other companies, they should be excluded.

Since some companies are listed after 2009, the data is flawed and cannot be compared with other companies. Therefore, companies listed after 2009 are excluded.

Through the screening of the above steps, a total of 1040 manufacturing companies of the Shanghai-Shenzhen A-share listed companies from 2009 to 2014 were selected as the empirical research objects. The statistical analysis software for the data processing and analysis of the paper is SPSS 19.0 and Excel 2010.

5. EMPIRICAL RESULTS

This paper uses the cross-sectional data and time series data of the sample company's financial data to perform regression analysis on the model. This paper uses spss19.0 for regression processing.

5.1. Descriptive Statistics

Table 2 shows descriptive statistics for full-sample company data. The average growth rate of operating income is 19.63%, and the average cost growth rate is 20.51%. It can be seen that the average growth rate of cost is greater than the average growth rate of operating income, which indicates that cost stickiness exists in listed companies in manufacturing. Moreover, the minimum growth rate of operating income is -91.06%, the maximum value is 3336.95%, and the standard deviation is 80.20%; the minimum cost growth rate is -75.72%, the maximum value is 2847.55%, standard deviation It is 72.34%, which shows that the changes in operating income and cost of listed companies are huge, and the fluctuation of operating income growth

rate is more different than the fluctuation of cost and expense growth rate, which further reflects the existence of cost stickiness. Through the study of age and tenure, the average age of executives is 46.13 years old, and the average tenure is 3.5339 years. This shows that executives have certain social experience, most of them have higher education, have certain skills and management methods. And the average tenure of executives is more than 3 years, they has a familiar understanding of the company, which may have a certain inhibitory effect on cost stickiness.

Table 2. Descriptive Statistics

	Sample Size	Min	Max	Median	Average	STDEV
Revenue growth rate	5296	-91.06%	3336.95%	11.71%	19.63%	80.20%
Cost growth rate	5296	-75.72%	2847.55%	12.37%	20.51%	72.34%
Age	36414	23.0000	75.0000	46.0000	46.1300	6.9190
Tenure	36414	0.0833	19.0000	2.7500	3.5339	2.8209
Capital intensity	5296	0.1314	287.5105	1.7586	2.2157	5.5216
Labor intensity	5296	0.0000	0.0001	0.0000	0.0000	0.0000
Financial leverage	5296	0.0070	13.7114	0.3721	0.3950	0.3657
Roe	5296	-0.9586	10.0322	0.0419	0.0485	0.1520

5.2. Cost Sticky Existence Regression Results and Analysis

Using the above basic model to test the existence of cost stickiness, the test results of all samples and state-owned enterprises and non-state-owned enterprises are obtained. For a sample-owned manufacturing company, when the income increases by 1%, the cost increases by 0.950%, and when the income drops by 1%, the costs decrease by 0.693% ($0.950\% - 0.257\% = 0.693\%$), which indicates that China's manufacturing industry Enterprises have cost stickiness. And the result is significant at the 1% level. The comparative analysis of the results of state-owned enterprises and non-state-owned enterprises, $\alpha_2 = -0.274$ for state-owned enterprises and $\alpha_2 = -0.145$ for non-state-owned enterprises, indicating that the cost stickiness of state-owned enterprises is stronger than that of non-state-owned enterprises. This is consistent with the assumptions in this paper, probably because the managers of state-controlled listed companies have stronger self-interested behavior than the managers of non-state-controlled listed companies, which leads to stronger cost stickiness.

Table 3. Cost sticky existence test result

	Full sample	State-owned enterprise	Non-state-owned enterprise
α_0	0.013*** (27.203)	0.008*** (8.234)	0.014*** (26.623)
α_1	0.950*** (621.253)	0.943*** (301.058)	0.953*** (548.397)
α_2	-0.257*** (-39.734)	-0.274*** (-17.082)	-0.145*** (-15.117)
α_3	-0.007*** (-10.751)	-0.011*** (-10.512)	0.003*** (3.315)
α_4	3767.049*** (9.200)	6225.434*** (9.081)	-61053.071*** (-17.763)
α_5	0.284*** (27.647)	0.280*** (10.430)	0.250*** (21.036)
α_6	0.707*** (28.898)	1.038*** (13.798)	0.558*** (19.876)
AdjR2	0.940	0.941	0.940
F Value	94497.79	27380.96	68301.780
Sig	0.000	0.000	0.000
N	36414	10327	26087

Note: t is the value in parentheses, *** is significant at the 1% level, ** is significant at the 5% level, and * is significant at the 10% level.

5.3. Regression Results and Analysis of the Influence of Manager's Background Characteristics on Cost Stickiness

Table 4. Regression analysis results of the influence of manager's age on cost stickiness

	Full sample	State-owned enterprise	Non-state-owned enterprise
α_0	0.013*** (27.223)	0.008*** (8.281)	0.014*** (26.616)
α_1	0.950*** (621.477)	0.943*** (301.096)	0.953*** (548.647)
α_2	-0.358*** (-17.826)	-0.373*** (-8.980)	-0.252*** (-10.538)
α_3	0.002*** (5.284)	0.002*** (2.593)	0.002*** (4.889)
α_4	-0.007*** (-10.860)	-0.011*** (-10.509)	0.003*** (3.066)
α_5	3830.387*** (9.354)	6274.417*** (9.151)	-60799.791*** (-17.695)
α_6	0.281*** (27.236)	0.278*** (10.349)	0.248*** (20.808)
α_7	0.693*** (28.141)	1.019*** (13.483)	0.546*** (19.377)
AdjR2	0.940	0.941	0.940
F Value	81061.982	23483.373	58599.197
Sig	0.000	0.000	0.000
N	36414	10327	26087

Table 5. Regression analysis results of the influence of manager's tenure on cost stickiness

	Full sample	State-owned enterprise	Non-state-owned enterprise
α_0	0.013*** (27.262)	0.008*** (8.224)	0.014*** (26.649)
α_1	0.950*** (621.363)	0.943*** (301.022)	0.953*** (548.753)
α_2	-0.275*** (-35.874)	-0.271*** (-15.349)	-0.179*** (-16.008)
α_3	0.004*** (4.417)	-0.001 (-0.363)	0.009*** (5.947)
α_4	-0.007*** (-10.229)	-0.011*** (-10.515)	0.004*** (4.015)
α_5	3494.136*** (8.440)	6254.818*** (9.060)	-61432.194*** (-17.882)
α_6	0.285*** (27.704)	0.279*** (10.322)	0.249*** (20.946)
α_7	0.702*** (28.692)	1.039*** (13.802)	0.550*** (19.566)
AdjR2	0.940	0.941	0.940
F Value	81042.077	23467.483	58626.596
Sig	0.000	0.000	0.000
N	36414	10327	26087

Table 3 shows regression analysis results after adding the age of managers. The whole sample manufacturing listed company was tested, $\alpha_3=0.002$, and passed the significance test, which indicates that the manager's age is negatively correlated with the cost stickiness. The older the age, the weaker the cost stickiness. This conclusion is more likely to be overconfident with managers of younger ages discovered by Premdergast and Stole, and older managers are more conservative in making decisions. This is also consistent with the conclusions based on optimistic expectations. Compared with state-owned enterprises and non-state-owned enterprises, α_3 are equal to 0.002, and both are significant at the level of 1%, indicating that the characteristics of managerial age have a restraining effect on cost stickiness in both state-owned enterprises and non-state-owned enterprises, and the degree of effect is the same. The nature of corporate property rights has no significant effect on the weakening effect of age on cost stickiness.

After introducing the manager's tenure variable, the full sample manufacturing company's $\alpha_3=0.004$ indicates that there is a significant negative correlation between manager's tenure and cost stickiness for listed companies in manufacturing. The longer the tenure, the weaker the cost viscous, which is consistent with the assumptions in this paper. This is consistent with the findings of Finkelstein and Hambrick (1990) that as the term of executives increases, the strategy of choice tends to be cautious and conservative, and the performance of the firm tends to be maintained. Moreover, the longer the term of the executive is, the shorter the time from the departure, and the expected benefit of good performance in the future when approaching the post, so it is easy to ignore the long-term benefits in the choice of behavior, which can also explain the term of office. A phenomenon that is inversely related to cost stickiness. Compared with state-owned enterprises and non-state-owned enterprises, $\alpha_3=0.009$ among non-state-owned enterprises, the result is significant at the 1% level, indicating that in non-state-owned enterprises, the longer the manager's term, the weaker the cost. In the state-owned enterprises, $\alpha_3=-0.001$, did not pass the significance test. This may be related to the objective environment in which state-owned enterprises are located. State-owned enterprises have complex problems such as lack of ownership, outstanding governance issues, multiple corporate goals, and low financing constraints, which make managers suffer from various interferences, so background characteristics will be weakened in state-owned enterprises. On the contrary, non-state-owned enterprises have clear property rights, complete functions, and effective supervision, so the background characteristics of managers are more prominent. This can also explain the more significant phenomenon of the positive correlation between the secondary school calendar and the cost stickiness in non-state-owned enterprises.

6. CONCLUSIONS

Based on the domestic and international literature on cost stickiness and manager background characteristics, this paper takes China's Shanghai and Shenzhen A-share manufacturing listed companies as samples from 2009 to 2015. First, we examined the existence of cost viscosity, and then introduced the manager background feature variables to examine the correlation between different background features and cost stickiness. At the same time, the state-owned enterprises and non-state-owned enterprises are distinguished. At the same time, this paper distinguishes state-owned enterprises and non-state-owned enterprises to analyzes the strength of cost stickiness and relationship between manager background characteristics and cost stickiness. The following conclusions are drawn:

China's manufacturing listed companies do have cost stickiness, and the cost stickiness of state-owned enterprises is greater than non-state-owned enterprises. This result is consistent with the results of previous studies. The cost stickiness of state-owned enterprises is stronger than that of non-state-owned enterprises, indicating that managers of state-controlled listed

companies have stronger self-interested behavior than managers of non-state-owned listed companies. The existence of agency problems makes state-owned enterprises have stronger cost stickiness.

There are different relationships between different manager background characteristics and cost stickiness. Age and tenure have a weakening effect on cost stickiness. This may be more conservative with managers who are older and have longer term decisions, and they tend to make less risky decisions.

The relationship between different background characteristics of managers and cost stickiness is different between state-owned enterprises and non-state-owned enterprises. The results show that the weakening effect of executive age on cost stickiness has nothing to do with the nature of corporate property rights. The weakening effect of executives' tenure on cost stickiness is significant in non-state-owned enterprises and not significant in state-owned enterprises.

To sum up, the listed companies in China's manufacturing industry do have cost stickiness, and the cost of different property rights companies is different. The background characteristics of managers will have an impact on cost stickiness, and the nature of property rights of enterprises will affect the relationship between manager background characteristics and cost stickiness.

REFERENCES

- [1] Anderson M.C., R.D. Banker, and S.N. Janakiraman. Are Selling, General, and Administrative Costs Sticky? [J]. *Journal of Accounting Research*, 2003(41).
- [2] Cooper, R., Kaplan, R., Cost and Effect-Using Integrated Cost Systems to Drive Profitability and Performance [M]. Harvard Business School Press, Boston, 1998a.
- [3] Subramaniam, C., Weidenmier, M., Additional Evidence on the Sticky Behavior of Costs [R]. Working Paper, Texas Christian University, 2003.
- [4] Sun Z. and Liu H. Research on the "Stickiness" Behavior of Chinese Listed Companies [J]. *Economic Research*, 2004, (12): 26-34+84.
- [5] Liu Wu. Corporate Sticky Behavior: An Empirical Study Based on Industry Discrepancies [J]. *Journal of Chinese industrial economy*. 2006. 12(12): 105-112.
- [6] Kong Y.S. and Zhu N.P., Kong Q.G. Cost Sticky Study: Empirical Evidence from Chinese Listed Companies [J]. *Accounting Research*, 2007, (11): 58-65.
- [7] Balakrishnan R., Peterson M., Soderstrom N., Does Capacity Utilization Affect the Stickiness of Costs? [J]. *Journal of Account, Audit, Finance*, 2004, 19(3): 283-299.
- [8] Liu Y.W. and Wang Y.G. An Empirical Analysis of the Sticky Behavior of Chinese Listed Companies [J]. *Management Review*, 2009, (03): 98-106.
- [9] Hambrick D.C., Mason P.A. Upper Echelons: Organization as a Reflection of Its Managers [J]. *Academy Management Review*, 1984(9): 193-206.
- [10] Margarethe F.W, Bantel K.A. Top management team demography and corporate strategic change [J]. *The Academy of Management Journal*, 1992.
- [11] Peng, W. Q. and Wei, K. J. Women Executives and Corporate Investment: Evidence from the S&P 1500 Working paper, Hong Kong University of Science and Technology, 2006.
- [12] Wei L.Q. and Wang Z.H. An Empirical Study on the Characteristics of Executives and Firm Performance of Listed Companies in China [J]. *Journal of the Nankai Management Review*, 2002(4): 16-22.

- [13] Jiang F.X. and Yi Z.H. and Su F. and Huang L. Manager's background characteristics and corporate over-investment behavior [J]. Journal of Management World, 2009(1): 130-139.
- [14] Zhang Z.G. and Liu Y.W. Manager background characteristics, promotion incentives and over-investment research [J]. Journal of the Nankai Management Review, 2013, (04): 32-42.
- [15] Jiang W. Yao W.T. Nature of Ownership, Executive Tenure and Corporate Cost Stickiness [J]. Journal of Shanxi University of Finance and Economics, 2015, 04: 45-56.
- [16] Jiang W. Hu Y.M. Review and Prospect of the Literature on Enterprise Cost and Expense [J]. Journal of Accounting Research, 2011, (9): 74-79.
- [17] Xu L.P. The Nature of Controlling Shareholders and the Company's Business Performance [J]. Journal of World Economy, 2006, (10): 78-89+96.
- [18] Finkelstein S, Hambrick D.C. Strategic leadership: Top executives and their effects on organization [M]. St. Paul: West, 1996.