Research on the Impact of Cost Stickiness on the Performance of Strategic Emerging Companies —The Dual Mediating Effect of Innovation

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Abstract

The strategic emerging enterprises in the A-shares of Shanghai and Shenzhen stock exchanges from 2010 to 2018 are selected as research samples. The innovation factors are used as mediators to study the impact of cost stickiness on firm performance, and the relationship between ownership and nature is analyzed. Regulating effect. The empirical results show that: (1) there is a significant positive correlation between cost stickiness and firm performance; (2) innovation input as a redistribution of redundant resources, there is a full intermediary role in the relationship between cost stickiness and firm performance; (3) innovation ability As a result of redistribution of redundant resources, there is a partial intermediary role in the relationship between cost stickiness and firm performance; (4) Further research finds that the nature of ownership as a regulatory variable of corporate characteristics, through cost innovation and innovation ability The relationship between business performance plays a regulatory role. This research expands the research field of cost stickiness and has practical significance for the development of China's strategic emerging industries.

Keywords

Cost stickiness, Innovation input, Innovation ability, Enterprise performance, Ownership nature.

1. Introduction

Cost stickiness is an important issue in the field of management accounting, and it is related to the level of efficiency of enterprise resource allocation. According to the traditional cost theory, the basic assumption of cost and business volume is that there is a linear correlation, and cost is symmetrical with the change of business volume. However, with the gradual progress of research, foreign scholars such as Baker and Johnston (1993) have discovered the asymmetry between cost and business volume [1]. 7,629 companies listed in the United States have observed and tested the sample data, which proved the existence of cost stickiness and formally proposed the concept of "cost stickiness" for the first time [2]. The main research directions of scholars at home and abroad are in the following three aspects: first, using comparative research, taking financial data from various countries and industries as samples, and comparing its cost stickiness horizontally or vertically [3-6]; Perform qualitative analysis of variables to analyze the cause of cost stickiness [7-13]; Third, use cost stickiness as the explained variable to analyze the economic consequences of it on enterprises [14-16]. However, compared with the comparative and causal studies that have formed a basic research framework, there are still fewer research results on the economic consequences of cost stickiness.

The report of the 19th National Congress clearly pointed out that China's economy has shifted from a high-speed growth stage to a high-quality development stage. And innovation is a key factor affecting economic structure and growth momentum. According to the theory of resource allocation, innovation is a process of continuous investment, and the redistribution of redundant resources increases the innovation investment of the enterprise, thereby improving the innovation ability of the enterprise. As a new kinetic energy industry that promotes China's economic development, strategic emerging industries are also an important carrier for technological innovation to drive economic

development. The resource allocation of an enterprise will affect its innovation investment and innovation ability, and ultimately affect its performance.

Therefore, this article will focus on the following issues: the relationship between cost stickiness and the financial performance of strategic emerging companies. Whether innovation with resource optimization as one of its goals has an impact on the relationship between cost stickiness and corporate performance. An in-depth analysis of whether the nature of different owners will affect the relationship between the three.

The innovation points of this paper are: (1) Different from the previous discussion of the relationship between cost stickiness and corporate performance from the perspective of management, this article introduces innovation investment and innovation capabilities, and explores the impact of cost stickiness on corporate performance from the perspective of enterprise optimization; (2) Considering the resource allocation effect between cost stickiness and corporate performance, the intermediary role of innovation in the relationship between the two is discussed in depth; (3) Based on the openness of the system, cost stickiness is tested from the perspective of ownership through innovation input and The Moderating Effect of Innovation Capability on the Performance of Strategic Emerging Enterprises. This has important theoretical and practical significance for correctly identifying the strategic resources and over-investment of enterprises, increasing their innovation investment, improving their innovation capabilities, and promoting their development.

2. Theoretical analysis and research hypotheses

2.1 Cost stickiness and the performance of strategic emerging companies

As an enterprise's redundant resources, cost stickiness is currently divided into two types of research perspectives on corporate performance. One is called the strategic resource perspective. From the perspective of strategic allocation, companies actively hoard the remaining resources as strategic reserves to deal with the external macro environment. The economic uncertainty brought about by the sudden change can quickly organize resources into production to seize the market when the external environment improves. At the same time, the remaining resources can also provide additional resource support for corporate innovation activities and improve corporate performance. He Yu and Dai Beijia (2019) took the cost stickiness of A-share listed manufacturing enterprises from 2010 to 2018 as the research object, and found that managers tend to actively manage cost stickiness and make it have a strategic effect, thereby promoting the improvement of corporate performance [17]. Hou Xiaohong (2019) took the cost stickiness of A-share listed companies from 2009 to 2016 as the research object and found that when the cost stickiness is less than 2.0467, the cost stickiness is positively related to the company value [18]. The findings of Zhao Ying (2017) also support this view [19].

The other type is called the concept of overinvestment. From the perspective of executive self-interest, executives can have more disposable resources when the enterprise scales up, resulting in overinvestment in the end. On the other hand, when corporate managers adopt a conservative strategy and choose to maintain the status quo, it leads to inefficient decision making and redundant resources, which is not conducive to the improvement of corporate performance. Hou Xiaohong (2019) took the cost stickiness of A-share listed companies from 2009 to 2016 as the research object and found that when the cost stickiness is greater than 2.0467, the cost stickiness is negatively related to the company value and the enterprise is in an over-investment state [18]. Baker's (Banker, 2006) research found that the growth of the company's size and performance positively affects the salary level of managers. In order to maximize personal benefits, managers will accelerate the expansion of the company's size. Therefore, managers do not Will make the decision to reduce resources, to a certain extent exacerbated cost stickiness, is not conducive to corporate performance growth [20]. The findings of Jiang Chunyan and Zhao Ruiming (2004) also support this view [21].

Nan Xiaoli and Zhang Min (2018) stated that the cost stickiness of strategic emerging enterprises is a state of overinvestment [22], but from the perspective of strategic allocation, it is considered that

the cost stickiness caused by resource redundancy is a strategic behavior and is conducive to enterprises As performance increases, the following assumptions are made:

H1: Cost stickiness has a positive impact on the financial performance of strategic emerging companies.

2.2 Cost stickiness and corporate innovation

According to the research by Duan Jie et al. 1 (2019), innovation activities will involve the impact of multiple factors such as R & D personnel, funding, systems, and the environment, which is a process of continuous investment of resources [23]. Therefore, from a strategic perspective, the reserve of resources is necessary for innovative activities. When the research process is disturbed by the external environment, reserve resources can play a buffer role, and will not affect the overall process of innovation activities. At the same time, many studies have shown the relationship between cost stickiness and innovation input. Hu Huaxia et al. (2017) used China 's A-share listed companies from 2008 to 2015 as a sample study and found that cost stickiness helps to increase corporate R & D investment, and cost stickiness plays a part between corporate tax incentives and corporate research and development Mediation [15]. Ye Hongyu and Zhang Shuyao (2018) found that the existence of cost stickiness has a positive impact on the increase of R & D investment by using panel data of listed companies in A-share manufacturing companies from 2010 to 2016 [24]. As a strategic emerging enterprise of innovative industries, the relationship between cost stickiness and enterprise R & D investment should have the same direction. Therefore, based on existing research, this article makes the following assumptions:

H2a: There is a positive correlation between cost stickiness and innovation input.

On the other hand, as the final output of an enterprise's innovation activities, innovation capacity is closely related to resource allocation. From the perspective of input-output analysis, enterprises have sufficient resources input and balanced ratios in innovation activities, so that the innovation output can meet the expected goals of the enterprise, gain a leading edge in competition, and gain the market. Then the existence of redundant resources will adjust the allocation of enterprise resources, thereby improving the innovation ability of new industries. Liu Bei's (2018) research found that there is a positive correlation between low-liquidity redundant resources and innovation performance. More low-liquidity redundant resources can help companies cope with a highly uncertain market environment and achieve long-term Development [25]. The research of Zhen Jianbin et al. (2017) found that non-precipitating redundant resources can avoid the high adjustment cost brought by the fluctuation of innovation investment and ensure the sustainability of innovation [26]. As a product of redundant resources, based on the relationship between redundant resources and corporate innovation capabilities, there must be some correlation between cost stickiness and corporate innovation capabilities. Based on this, this article makes the following assumptions:

H2b: There is a positive correlation between cost stickiness and innovation capability.

2.3 Intermediary role of enterprise innovation

Innovation is an effective way for an organization to acquire and transform resources and shape resource differences. It is an important factor that affects core competencies, and then becomes the basis for an organization to gain a competitive advantage and improve performance. [15] From the perspective of resource allocation, the existence of cost stickiness proves that there are too many resource inputs in the production process of the enterprise, which means that the company has more resources to allocate to innovation activities as innovation inputs. Then, resource allocation is highly optimized within the enterprise. Moreover, the relationship between corporate innovation investment and corporate performance has been proven by a large number of studies. Zhang Yongan et al. (2018) took listed companies in the information technology industry from 2011 to 2016 as research objects and found that the level of internal innovation investment not only has a significant positive impact on the current economic performance of the enterprise, but also has a significant promotion effect on the lagging performance [27] . Ross and Vespagen (Los & Verspagen (2000)) studied listed

companies in the US manufacturing industry and found that there was a significant positive correlation between innovation investment and corporate performance within the enterprise [28]. Based on this, this article makes the following assumptions:

H3a: Innovation investment helps to improve corporate performance, and innovation investment plays an intermediary role between cost stickiness and corporate performance.

On the other hand, from the perspective of input-output analysis, the capital investment of enterprises is to maximize economic output. Wang et al. (Wang & Hang & Sun & Zhao, 2016) Enterprise innovation activities should be divided into two stages, the research and development stage and the achievement transformation stage [29]. As the data performance of the enterprise's innovation ability, the number of patent inventions of the company belongs to the intermediate output of the research and development stage, and finally as the input of the result transformation stage, the data performance of the final output is the financial performance of the company. Ma Lan's (2019) research found that the innovation drive of startups has a significant positive impact on corporate performance [30]. As a strategic resource, cost stickiness is conducive to the output of innovation results and enhances the entrepreneurial ability of the enterprise. Therefore, there will be more input of intermediate output in the last stage of results transformation, which will ultimately improve corporate performance. Based on this, this article makes the following assumptions:

H3b: The ability to innovate helps to improve corporate performance, and the ability to innovate mediates between cost stickiness and corporate performance.

2.4 The moderating role of the nature of the owner

Based on China's special enterprise form, the level of cost stickiness generated by different ownership companies is also different. Cui Yanan (2012) research shows that managers of state-controlled listed companies have more serious agency problems, so the cost stickiness of state-owned enterprises The level will be higher than the average cost stickiness level of non-state-owned enterprises [31]. This is mainly because state-owned enterprises also need to drive local economic development in addition to corporate performance, so the increase and decrease of redundant capital is not as timely as non-state-owned enterprises. Then, cost stickiness will not affect the increase or decrease of strategic resources of state-owned enterprises, nor will it effectively promote corporate performance. Based on this, this article makes the following assumptions:

H4a: The cost stickiness of non-state-owned enterprises has a greater impact on corporate performance than state-owned enterprises, and the adjustment of corporate performance is achieved through innovation investment.

H4b: The cost stickiness of non-state-owned enterprises has a greater impact on corporate performance than that of state-owned enterprises, and the regulating effect on corporate performance is achieved through innovation capabilities.

3. Two. Research design

3.1 Sample Selection and Data Source

This article selects China's listed strategic emerging companies from 2010 to 2018 as the research sample and screens them according to the following criteria: (1) Exclude listed companies that are ST; (2) Exclude companies that lack relevant data between 2010 and 2018; (3)) Exclude data with positive cost stickiness calculation results (explained in variable definition). In the end, 1178 sample observations were obtained, and all the sample data came from the CSMAR database. In order to eliminate the influence of extreme values, this paper performs Winsorize processing on continuous variables at the level of 1%. In order to overcome the possible endogenous problems, in the empirical analysis, this paper refers to the method of Kang Zhiyong (2013) and uses the value of the explanatory variable lagging for regression analysis [32]. Data processing and analysis software are EXCEL, SPSS19.0 and STATA14.0.

3.2 Variable definition

1. Explanatory variable: cost stickiness. There are two main methods for calculating cost stickiness: ABJ formula and Weiss formula. Among them, the ABJ formula cannot directly measure the cost stickiness of specific companies and specific years. Therefore, the ABJ announcement is not applicable to this calculation. The Weiss model proposed by Dan Weiss (2010) can directly measure the stickiness level of enterprises. This model can quantify the cost stickiness of enterprises [33], which is suitable for the calculation in this paper, so we use the Weiss model to calculate directly The stickiness value of the sample company research year is used as an explanatory variable. The formula is as follows:

$$\mathrm{STICKY}_{i,\ \mu} = \log\frac{\Delta COST}{\Delta SALE_{i,\ \underline{\mu}}} - \log\frac{\Delta COST}{\Delta SALE_{i,\ \bar{\mu}}},\ \underline{\mu},\ \bar{\mu} \in \{t,\ \ldots,\ t-3\}$$

Among them, μ is the most recent quarter in which the sample company 's operating income increased in the four accounting quarters of the sample year, and μ is the most recent quarter in which the sample company 's operating income has decreased in the four accounting quarters. $\Delta\mathrm{COST}_{i,\ \mu} = COST_{i,\ \mu} - COST_{i,\ \mu-1}$, $\Delta\mathrm{SALE}_{i,\ \mu} = SALE_{i,\ \mu} - SALE_{i,\ \mu-1}$, Among them, SALE is the operating income, and COST is the total operating cost. ΔCOST and ΔSALE represent the changes in the cost and revenue of the i enterprise in a certain quarter. The cost stickiness measured using the Weiss model should be negative. The larger the value, the higher the cost stickiness level, the closer the value is to 0, and the lower the cost stickiness level. In order to study the relationship between cost stickiness and corporate performance, the explanatory variable in this article is to exclude the value of anti-cost stickiness.

2. Explained variable: business performance. This article mainly selects financial performance as the measure of corporate performance. Therefore, this article selects the total operating income of a company with a lag of one year as the measure of corporate performance.

3. Mediation variables: innovation. Innovation activities are divided into two measures: innovation input and innovation ability. Considering endogenous issues, innovation takes a lag of one year. Among them, the innovation input selected the total R & D income of the company in the previous year, and the innovation capability selected the total patents and inventions approved by the company in the previous year.

Table 1 Variable definition

Variable type	Variable type	Variable name	Variable description
Explained variable	REV	Financial perfor	Total operating income for the year / yuan
Explanatory variable	STICKY	Cost stickiness	Absolute value of cost stickiness
Intermediate variable	INO	Innovation input	R & D investment amount / yuan
	PAT	Innovative Abilit	Total number of patents and inventions granted / item
Moderator	STATE		Ownership Nature 0, Non-State 1
Controlled variable	SIZE		Total Asset
	LEV	Asset-Liability R	Average Liabilities / Average Assets
	GDP	macroeconomic	GDP growth rate /%
	CONCEN	Ownership struc	Shareholding ratio of the top ten shareholders /%
	TAX	Government inc	Government tax incentives
	ROA	Return on Total	Net Profit / Average Assets
	YEAR	dummy variable	
	Industry	dummy variable	

4. Control variables: This article selects control variable indicators from inside and outside the enterprise. The external indicators of the enterprise choose the GDP growth rate and the preferential tax amount of the enterprise, and the internal indicators of the enterprise choose the four indicators of enterprise size, asset-liability ratio, equity structure and total return on assets. See Table 1 for specific variable definitions.

3.3 Model design

In order to verify H1, the following formula is designed based on previous studies to perform multiple linear regression analysis.

$$\mathrm{REV}_{i,\ t} = \alpha_0 + \alpha_1 \times STICKY_{i,\ t-1} + \sum_{i=2}^{n} \alpha_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (1)$$

In order to verify H2 to H5, this paper conducts hierarchical regression analysis based on Wen Zhonglin et al. And previous studies

$$\mathrm{INO}_{i,\ t} = \beta_0 + \beta_1 \times STICKY_{i,\ t-1} + \sum_{i=2}^{n} \beta_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (2)$$

$$\mathrm{REV}_{i,\ t} = \delta_0 + \delta_1 \times STICKY_{i,\ t-1} + \delta_2 \times INO_{i,\ t-1} + \sum_{i=3}^{n} \delta_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (3)$$

$$\mathrm{PAT}_{i,\ t} = \gamma_0 + \gamma_1 \times STICKY_{i,\ t-1} + \sum_{i=2}^{n} \gamma_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (4)$$

$$\mathrm{REV}_{i,\ t} = \theta_0 + \theta_1 \times STICKY_{i,\ t-1} + \theta_2 \times PAT_{i,\ t-1} + \sum_{i=3}^{n} \theta_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (5)$$

In order to prove the moderating effect of the nature of the owner, and to mediate through mediation variables, that is, to verify H6 and H7, this paper refers to the research of Ye Baojuan and Wen Zhonglin (2014) for hierarchical regression analysis [34].

In order to verify H1, the following formula is designed based on previous studies to perform multiple linear regression analysis.

$$\mathrm{REV}_{i,\ t} = \alpha_0 + \alpha_1 \times STICKY_{i,\ t-1} + \alpha_2 \times STATE_{i,\ t} + \alpha_3 \times STICKY_{i,\ t-1} \times STATE_{i,\ t} + \sum_{i=4}^{n} \alpha_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (6)$$

$$\mathrm{INO}_{i,\ t} = \beta_0 + \beta_1 \times STICKY_{i,\ t-1} + \beta_2 \times STATE_{i,\ t} + \beta_3 \times STICKY_{i,\ t-1} \times STATE_{i,\ t} + \sum_{i=4}^{n} \beta_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (7)$$

$$\mathrm{REV}_{i,\ t} = \delta_0 + \delta_1 \times STICKY_{i,\ t-1} + \delta_2 \times STATE_{i,\ t} + \delta_3 \times STICKY_{i,\ t-1} \times STATE_{i,\ t} + \mu_1 \times INO_{i,\ t-1} + \mu_2 \times INO_{i,\ t-1} \times STATE_{i,\ t} + \sum_{i=4}^{n} \delta_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (8)$$

$$\mathrm{PAT}_{i,\ t} = \gamma_0 + \gamma_1 \times STICKY_{i,\ t-1} + \gamma_2 \times STATE_{i,\ t} + \gamma_3 \times STICKY_{i,\ t-1} \times STATE_{i,\ t} + \sum_{i=2}^{n} \gamma_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (9)$$

$$\mathrm{REV}_{i,\ t} = \theta_0 + \theta_1 \times STICKY_{i,\ t-1} + \theta_2 \times STATE_{i,\ t} + \theta_3 \times STICKY_{i,\ t-1} \times STATE_{i,\ t} + \rho_1 \times PAT_{i,\ t-1} + \rho_2 \times PAT_{i,\ t-1} \times STATE_{i,\ t} + \sum_{i=4}^{n} \theta_i \times CONTROLS_{i,\ t} + \sum YEAR + \sum INDUSTRY + \varepsilon_{i,\ t} (10)$$

4. Empirical analysis

4.1 Descriptive statistics

Table 2 provides descriptive statistics for each variable. It can be seen that the average value of cost stickiness (STICKY) is 0.3007, the maximum value is 3.6175, and the minimum value is 0, which indicates that the level of cost stickiness of strategic emerging enterprises in China is quite different, and this result is also in line with China's current strategic Development characteristics of emerging companies. The average value of innovation investment (INO) is 243065133.13, the median value is 67548441.48, and the maximum value is 9950212000.00, which indicates that different companies in China's listed companies have different degrees of investment in innovation, but this is also related to the size of the enterprise and its income. The average value of innovation capability (PAT) is 103.14, the median is 29, the minimum value is 1, and the maximum value is 3301, which indicates that the innovative capabilities of China's strategic emerging enterprises are significantly different, which is also consistent with the current status of China's strategic emerging enterprises. . The specific descriptive statistics of each variable are shown in Table 2.

Table 2 Descriptive statistics

VAR	STICKY	INO	PAT	GDP/%	TAX	LEV	SIZE/yuan	ROA	CONCEN/%	REV/yuan
N	1178	1178	1178	1178	1178	1178	1178	1178	1178	1178
Mean	0.3007	243065133.1	103.14	7.24	0.189	0.4389	15135615705	0.0298	55.8858	8782755311
Median	0.17	67584441.48	29	6.9	0.124	0.4405	4011474766	0.0293	55.38	1931112823
SD	0.3644	711194359.8	254.268	6.2	0.1949	0.1905	51153755595	0.0593	14.6818	3759180832 7
Min	0	13692.75	1	6.7	0	0.008	306604008.3	-1.016	14.9	127160740.6
Max	3.6175	9950212000	3301	9.54	0.9879	1.0372	7.23533E+11	0.2964	101.16	8.679771E+11

4.2 Regression analysis

To verify H1, this paper uses Model 1. In order to verify the mediating role of H2a, that is, innovation investment, this paper uses Model 1, Model 2 and Model 3. In order to verify the mediating role of

H2b innovation ability, this paper uses Model 1, Model 4 and Model 5 for analysis. The results are shown in Table 3.

Table 3 Results of regression analysis

VAR	Model1	Model2	Model3	Model4	Model5
EXPVAR	REV	INO	REV	PAT	REV
STICKY	-0.0321**	0.0676***	0.0133	0.0471**	0.0260*
	(-2.1719)	(3.2956)	(-0.9759)	(2.0503)	(1.7946)
INO			0.2736***		
			(14.8896)		
PAT					0.1367***
					(7.9957)
GDP	0.0312**	-0.0159	0.0384***	-0.0330	0.0387***
	(2.0878)	(-0.7650)	(2.7905)	(-1.4237)	(2.6420)
TAX	-0.0163	0.0077	-0.0199	0.0530**	-0.0216
	(-1.0983)	(0.3762)	(-1.4557)	(2.3045)	(-1.4883)
LEV	0.0094	0.1242***	-0.0265	0.1899***	-0.0156
	(0.5862)	(5.5508)	(-1.7635)	(7.5772)	(-0.0719)
SIZE	0.8638***	0.6759***	0.6934***	0.4832***	0.8007***
	(55.7723)	(31.4763)	(37.9470)	(20.1500)	(46.9146)
ROA	0.0342**	0.0584***	0.0269*	0.0823***	0.0288*
	(2.1566)	(2.6557)	(1.8441)	(3.3442)	(1.8543)
CONCEN	-0.0143	0.0384*	-0.0287**	0.0362	-0.0213
	(-0.9302)	(1.7966)	(-2.0155)	(1.5119)	(-1.4124)
N	1184	1157	1178	1149	1178
R^2	0.7463	0.5230	0.7857	0.3190	0.7595
AdjR^2	0.7448	0.5200	0.7842	0.3153	0.7578

Note: The values in parentheses are t values, where * represents p <0.1, ** represents p <0.05, and *** represents p <0.01.

It can be seen from Table 3 that the correlation coefficient of the sticky regression coefficient in Model 1 is positive and significant, indicating that the cost stickiness positively affects the financial performance of strategic emerging companies, which is consistent with the assumption H1. In both Model 2 and Model 4, the regression coefficient of Sticky cost is also significantly positive at a confidence level of 1%, which indicates that the firm's cost stickiness positively affects the company's innovation investment and capacity, thus supporting this article. Hypotheses H2a and H2b. That is, cost stickiness is positively affecting the R & D investment of strategic emerging companies. In Model 3, the regression coefficient of innovation investment (INO) is significantly positive at a confidence level of 1%. According to the mediation test procedure designed by Wen Zhonglin et al. [28], it is shown that innovation investment is cost sticky and has an impact on the company's R & D investment. The mediating variable of the company plays a full mediating role in the relationship between the two, that is, cost stickiness will not only directly affect the company's R & D investment, but will also affect the company's R & D investment through cost stickiness, thereby verifying the hypothesis H3a in this paper. In Model 5, the regression coefficient of innovation capability (PAT) is significantly positive at a confidence level of 1%. According to the mediation test procedure designed by Wen Zhonglin et al. [28], it is shown that innovation capability is a cost stickiness for the company's R & D investment. The intermediary variables affected and part of the intermediary role

in the relationship between the two, that is, cost stickiness will not only directly affect the company's R & D investment, but also indirectly affect the company's R & D investment through innovation capabilities, and then verify the hypothesis H3b in this paper.

In addition, in order to further test the hypotheses H4a and H4b, and to test the moderating effect of the nature of ownership on the relationship between cost stickiness and corporate performance through innovation inputs and innovation capabilities, the adjustment variables need to be tested before the intermediary variables are verified. Therefore, this paper performs regression analysis on models 6 to 10 in turn. The empirical regression results are shown in Table 4.

Table 4 Regression results of regulatory effects

VAR	Model6	Model7	Model8	Model9	Model10
EXPVAR	REV	INO	REV	PAT	REV
STICKY	0.0709***	0.1481***	0.0134	0.1169***	0.0238*
	(3.1384)	(4.7152)	(0.9850)	(3.1230)	(1.6694)
STATE	0.0158	0.0836***	0.0410***	0.1021***	0.0539***
	(0.8043)	(3.0758)	(2.6851)	(3.1303)	(3.3088)
STICKY*STATE	0.0583**	0.1219***		0.1070**	
	(2.2604)	(3.4009)		(2.5067)	
INO			0.2998***		
			(15.5277)		
INO*STATE			0.0603***		
			(3.9971)		
PAT					0.2037***
					(10.2343)
PAT*STATE					0.1100***
					(6.2276)
GDP	0.0319**	-0.0175	0.0366***	-0.0353	0.0369**
	(2.1299)	(-0.8447)	(2.6686)	(-1.4179)	(2.5572)
TAX	-0.0188	0.0047	-0.0219	0.0405*	-0.0209
	(-1.2603)	(0.2298)	(-1.6146)	(1.6410)	(-1.4629)
LEV	0.0124	0.1154***	-0.0134	0.1767***	-0.0030
	(0.7439)	(4.9990)	(-0.8640)	(6.3495)	(-0.1863)
SIZE	0.8658***	0.6717***	0.6896***	0.4691***	0.7888***
	(54.9514)	(30.9582)	(37.6119)	(17.8923)	(46.1185)
ROA	0.0347**	0.0591***	0.0245*	0.0864***	0.0252*
	(2.1867)	(2.7001)	(1.6873)	(3.2706)	(1.6503)
CONCEN	-0.0135	0.0424**	-0.0273*	0.0431*	-0.0208
	(-0.8741)	(1.9891)	(-1.9278)	(1.6769)	(-1.3986)
N	1178	1163	1178	1149	1178
R^2	0.7475	0.5284	0.7901	0.3186	0.7675
AdjR^2	0.7456	0.5247	0.7883	0.3132	0.7655

Note: The values in parentheses are t values, where * represents p <0.1, ** represents p <0.05, and *** represents p <0.01.

It can be seen from Table 4 that the cross-product of cost-viscous ownership (STICKY * STATE) is significantly positive in model 6, indicating that the nature of ownership has a positive regulating effect on the relationship between cost-viscosity and corporate performance, which is in line with our assumptions. That is, compared with non-state-owned enterprises, the cost stickiness of state-owned enterprises has a greater impact on R & D investment. At the same time, after adding the innovation input and innovation capability factors to Model 8 and Model 10, it can be seen that the regression coefficient of the crossover term is still significant, and the regression coefficient of the two is also significant. According to the test method of the intermediary regulation effect, the intermediary regulation model is established and the regulation effect of ownership is achieved through two mediating variables: innovation input and innovation capability, that is, innovation input plays a complete role in the regulation of ownership nature. Intermediary role, innovation ability plays a part of mediating role in the regulation of the nature of ownership, thus testing the hypotheses H4a and H4b in this paper.

In addition, in order to rule out the distortion of the model estimation due to the high correlation between the explanatory variables in the model, Hu Huaxia et al. (2015) used the variance expansion factor to test the multicollinearity problem of models 1-10 [15]. When 0 <VIF <10, it means that there is no multicollinearity. As shown in Table 5, it can be considered from the test results that there is no multicollinearity problem in the regression equation.

Table 5 collinear diagnosis results

Model / VAR	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9	Model10
STICKY	1.013	1.012	1.022	1.014	1.016	2.360	2.399	1.022	2.342	1.017
INO			1.850					2.070		
PAT					1.420					1.987
STATE						1.783	1.795	1.297	1.777	1.330
STICKY*STATE						3.071	3.124		3.043	
INO*STATE								1.266		
PAT*STATE										1.565
GDP	1.038	1.040	1.039	1.035	1.041	1.038	1.040	1.042	1.036	1.043
TAX	1.022	1.019	1.022	1.016	1.024	1.026	1.023	1.023	1.020	1.025
LEV	1.204	1.206	1.236	1.206	1.252	1.294	1.296	1.340	1.295	1.343
SIZE	1.112	1.111	1.829	1.114	1.415	1.148	1.145	1.867	1.149	1.467
ROA	1.165	1.164	1.167	1.166	1.168	1.166	1.165	1.169	1.168	1.169
CONCEN	1.103	1.101	1.108	1.101	1.107	1.107	1.104	1.112	1.104	1.109
MEAN	1.094	1.093	1.284	1.093	1.180	1.555	1.566	1.321	1.548	1.217

4.3 Robustness test

In order to test the stability of the nature of ownership and innovation on the adjustment and intermediation of cost stickiness and corporate performance, and to enhance the credibility of the conclusions, this paper conducts the following two robustness tests:

First, in terms of variable measurement, this article changed the net interest rate of total assets to the net interest rate of net assets, and used a new control variable index for regression analysis of all the content in Part IV. The research conclusions remain unchanged.

Second, in terms of sample selection, this article is to study the relative relationship between cost stickiness and corporate performance, so we have eliminated the anti-cost stickiness. In order to

enhance the persuasion, refer to the research by He Yu and Dai Beijia (2019). The anti-cost stickiness is also selected into the sample data and the model is re-regressed [17]. The direction and significance of the regression coefficient obtained are basically the same as the previous one. There is no substantial difference in the conclusions. The research conclusions remain unchanged, but the space is limited, so the results are omitted.

5. Research conclusions and outlook

This article takes resource allocation as the starting point, explores the relationship between cost stickiness and the performance of strategic emerging companies, combines the two mediating variables of innovation input and innovation capability, and explores the relationship between the cost stickiness and performance of strategic emerging companies. The role of ownership in mediating the cost stickiness and corporate performance through innovation input and capacity is further analyzed. Through data research on China's A-share listed strategic emerging companies from 2010 to 2018, we found that: (1) there is a significant positive correlation between cost stickiness and corporate performance; (2) the redistribution of innovation investment as redundant resources. There is a full intermediary role in the relationship between corporate performance, that is, cost stickiness can affect corporate performance by affecting innovation input; (3) the ability to innovate as a result of the redistribution of redundant resources, and there is a partial intermediary role in the relationship between cost stickiness and corporate performance That is, cost stickiness can affect corporate performance by affecting innovation capabilities; (4) It is further found that the nature of ownership, as a moderator of corporate characteristics, will affect the relationship between cost stickiness and the performance of strategic emerging companies through innovation inputs and innovation capabilities. Play a regulatory role.

The research conclusions of this article provide new ideas for how companies can effectively improve the efficiency of resource allocation. First, China's current strategic emerging enterprises have not been in an over-investment situation. Appropriate redundant capital as strategic capital in the production process can help companies to obtain more The related enterprises can consider their current resource allocation situation based on this conclusion. Secondly, innovation investment is the redistribution of redundant resources, and innovation capacity is the product of redundant resource redistribution, which can enhance cost stickiness for corporate performance Therefore, enterprises should increase their own investment in innovation and strengthen their innovation capabilities when carrying out strategic resource allocation, so that at the same time that the performance of the enterprise increases, the resources can also achieve maximum production utility.

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