



Controlling Shareholders' Share Pledging and the Strategic Change: Empirical Evidence from the Chinese A-share Market

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Abstract. We use a sample of Chinese A-share listed companies from 2008 to 2019 to explore the impact of controlling shareholders' share pledging on the strategic change. The empirical results show that out of the motive of maintaining control, controlling shareholders' share pledging intensifies the strategic change. A further study based on economic consequences reveals that the strategic change plays a partial mediating role in the relationship between controlling shareholders' share pledging and investment inefficiency, which is manifested as that controlling shareholders' share pledging intensifies the strategic change and increases the level of investment insufficiency. Our study provides empirical evidence on the relationship between the behavior of major shareholders and company strategic change, which has implications for company governance, sustainable development, and investor interest protection.

Keywords: controlling shareholder; share pledging; strategic change; investment inefficiency

1 Introduction

Company strategic behavior is a business activity involving “the overall priorities and goals of the organization, as well as new priorities and directions”.^[1] The strategic change is necessary for companies to achieve their business objectives and are an important tool for them to remain competitive in the market and grow sustainably.^[2] This is especially the case in emerging economies with rapidly changing economic systems, where companies need to respond to the challenges of economic policy uncertainty through proactive strategic change.^[3] Research has shown that management, as the decision-making arm of a company, directly influences its strategic change. For example, Schepker et al. (2017) found that inside CEOs improved long-term performance and engaged in less strategic change, while hiring an outside CEO led to more strategic change that resulted in lower long-term performance.^[4] And Cummings et al. (2022) proposed that former CEOs could inhibit successor CEOs from implementing

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meaningful strategic change, when the successor CEO was hired from outside the firm, boards with a higher proportion of outside directors experienced greater post-succession strategic change.^[5] Besides, the management's fit (Zhang et al., 2021),^[6] CEO entrepreneurial orientation (Wang et al., 2021),^[7] and the diversity of the top management team in terms of ethnic culture, gender and age (Wu et al., 2019) also related to the strategic change.^[8]

As an emerging market country, China has a relatively concentrated shareholding in listed companies, and the controlling shareholders also tend to have a decisive role in major issues and strategic decisions of their companies due to their dominant control positions.^[9] Meanwhile, controlling shareholders' share pledging of listed companies for financing has become a common phenomenon in the Chinese capital market.^[10] Shares have clear ownership and high liquidity, and the control and voting rights of the shareholders are not affected after pledging. As a result, controlling shareholders choose share pledging for financing to increase leverage when the company has liquidity needs, thereby avoiding control dilution due to selling or issuing new shares to raise capital.^[11] The *Wind* database report that a total of 2,485 listed companies in Chinese A-share market have share pledges, accounting for 54.54% of all listed companies as of January 2023, and the total market value of pledges has reached 4.18 trillion RMB, which indicating that share pledging has become a common financing means for shareholders.

However, share pledging is a "double-edged sword", as it exposes the controlling shareholders to certain risks of control transfer while broadening the financing channels for them.^[12] To maintain the interest of control, controlling shareholders tend to leverage their position of control to increase their intervention in company management, which may cause the company resources to be constantly adjusted and reconfigured at different levels and areas, giving rise to affecting the strategic change of the company and its future development. For example, on July 24, 2018, *Zhengye Technology* (Chinese A-share code 300410) announced that "*Zhengye Industrial*, the controlling shareholder, intends to transfer its 10 million shares of the company to *Zhuhai Jiehong New Energy Co., LTD.*, which will become the company's new strategic investor." As of the announcement date, the controlling shareholder *Zhengye Industry's* cumulative share pledging ratio has reached 95.61%, and it was once faced with margin call pressure. Thanks to the introduction of this strategic investment, the risk of controlling shareholder's share pledging of *Zhengye Technology* has been mitigated. Accordingly, in the case of share pledging, the strategic change might be tactics for controlling shareholders to ease the margin call pressure and resolve the risk of share pledging. Therefore, we attempt to empirically examine the impact of controlling shareholders' share pledging on the strategic change. Further, we explore the impact of the strategic change on investment inefficiency behavior in the case of controlling shareholders' share pledging based on a comprehensive assessment of the economic consequences.

2 Research Hypotheses

2.1 Controlling shareholders' share pledging and the strategic change

Financing through share pledging offers the advantages of easy transactions, fewer restrictions, etc., while assuring the control of controlling shareholders during share pledging. However, shares as collateral have high liquidation values, and the released additional information on the shareholders allows creditors to monitor and restrict them.^[13] In share pledging, creditors are more concerned about the downside risk of stock prices due to the asymmetry of returns. Creditors limit the risk of pledged shares through the “alert and closeout lines” mechanism and monitor company performance through share price fluctuations, thus placing the cost of default on the shareholders.

As the downward share price puts the controlling shareholders conducting share pledging under pressure to close out, they will face the risk of losing their position of control if a large portion of shares is pledged.^[12] Although strategic change may bring some opportunity costs and risks, the opportunity costs of not making strategic change after share pledging may be greater. Therefore, after share pledging, preventing share price downside risks and boosting the share price become priorities for controlling shareholders, and company strategies will be adjusted accordingly. Studies have shown that controlling shareholders' share pledging strengthens the market value management behavior of their companies. After share pledging, companies reduce cash dividend payments^[14], R&D investments^[15], environmental protection investments^[16], etc., and increase share repurchase behavior^[12], cash holding levels, tunneling behavior^[17], etc. Apparently, these constant “decreases” and “increases” in market value management will cause frequent adjustments and reallocations of company resources at different levels and areas, thus intensifying the strategic change. According to the above analysis, the following hypothesis is proposed:

Hypothesis 1: Controlling shareholders' share pledging intensifies the strategic change.

2.2 Controlling shareholders' share pledging, strategic change, and investment inefficiency

As mentioned before, the strategic change in the case of controlling shareholders' share pledging is mainly for the purpose of controlling shareholders to maintain their own control position and interests. Based on principal-agent theory, the economic consequences of such strategic change may lead to investment inefficiency.

On the one hand, to protect against share price downside risks, controlling shareholders' share pledging causes their companies to reduce risk-taking levels and risky investments with long-term value and higher returns.^[15] This will discourage firms from seizing investment opportunities and will easily result in underinvestment.^[18] Share pledging also increases controlling shareholders' tunneling tendency and encroach behavior by weakening their cash flow rights. This covert strategic change also reduces the available resources for the company to invest, ultimately leading to underinvestment in company value.^[19]

On the other hand, the strategic change in the case of controlling shareholders' share pledging may lead to overinvestment. It has been noted that share pledging by controlling shareholders tends to exacerbate management short-sightedness and speculation psychology.^[12] In order to manipulate and raise share prices, controlling shareholders favor short-term high-yield investment opportunities or send positive messages to the market by investing in "hot businesses" for the purpose of market value management.^[18] As a result, all these short-sighted, speculative strategic adjustments lead to overinvestment in the company.

In summary, as company strategic change in the case of controlling shareholders' share pledging is mainly out of the motive of controlling shareholders to maintain control, such short-sighted strategic change based on market value management will lead to investment insufficiency of the company. According to the above analysis, the following hypothesis is proposed:

Hypothesis 2: The strategic change plays a mediating role in the relationship between controlling shareholders' share pledging and investment inefficiency.

3 Research Design

3.1 Model construction and variable description

To prove Hypothesis 1, the following one-period lagged regression model (1) is developed, where the fixed effects of Industry and Year are controlled, and the regression standard errors are clustered and adjusted at the company level.

$$SC_t = \beta_0 + \beta_1 Pledge_{t-1} + \sum_k \beta_k CV_{t-1} + \sum Industry + \sum Year + \varepsilon_{t-1} \quad (1)$$

In Model (1), dependent variable SC is the strategic change of the company, defined as the extent to which the level of resource allocation for each business dimension of the company changes over a period of time.^[2] According to Datta et al. (2003),^[20] the absolute differences or changes in company strategic resource allocation ratios comprehensively reflect the magnitude of the company's strategic changes. In this paper, we measure the extent of a company's strategic change by calculating the fluctuations in its strategic resource allocation level over the annual interval. First, indicators for 6 dimensions of company strategic resources are obtained, including 3 basic resource allocation pointers and 3 cost structure pointers. The 6 dimensions are as follows: the ratio of advertising expenditure to sales revenue; the ratio of R&D expenditure to sales revenue; the ratio of net fixed assets to total fixed assets; the ratio of non-productive expenditure to sales revenue; the ratio of inventory to sales revenue; and financial leverage factor. Then, using 2008 to 2016 as the base period T, the variance $(\sum [t_i - T]^2 / [n - 1])$ of each of the above indicators over a 5-year period (T-1, T+3) is measured and calculated; The annual variance is then normalized based on industry. Finally, the 6 normalized indicators are summed to obtain the annual strategic change index $SA_{i,t}$ for each company.

The independent variable Pledge represents the controlling shareholders' share pledging, which is measured here using dummy variables (Ple_dum) and continuous

variables (*Ple_rate*), respectively. *Ple_dum* marks the existence of controlling shareholders' share pledging in the listed company at the end of the year, which equals 1 if it exists and 0 otherwise; *Ple_rate* is the ratio of controlling shareholders' share pledging to the total number of shares they hold at the end of the year.

CV represents a set of control variables. Referring to existing studies, we select company size (*Size*), debt asset ratio (*Lev*), operating growth rate (*Grow*), operating cash flow level (*Cf*), company age (*Age*), and board size (*Board*) as control variables.

To prove Hypothesis 2, including model (1), the following mediating effect regression models are constructed. Model (2) is to exam the relationship between share pledging and investment inefficiency, and model (3) is to exam the mediating effects of the mediating variable (*SC*).

$$IIE_t = \alpha_0 + \alpha_1 Pledge_t + \sum_k \alpha_k CV_t + \sum Industry + \sum Year + \varepsilon_t \quad (2)$$

$$IIE_t = \gamma_0 + \gamma_1 Pledge_{t-1} + \gamma_2 SC_{t-1} + \sum_k \gamma_k CV_{t-1} + \sum Industry + \sum Year + \varepsilon_{t-1} \quad (3)$$

where *IIE* denotes the level of investment inefficiency. Based on the investment expectation model built by Richardson (2006),^[21] the level of investment inefficiency can be expressed by the absolute value of the residuals from the regression. Then, the examination is completed in three steps based on the mediating effect analysis by Judd and Kenny (1981)^[22] and Baron and Kenny (1986)^[23]. Step one is to exam the relationship between share pledging and the strategic change to obtain the regression coefficient β_1 in model (1). If β_1 is statistically significant, we then proceed to step two to exam the relationship between share pledging and investment inefficiency to obtain the regression coefficient α_1 in model (2). If α_1 is statistically significant, we then proceed to step three to exam the mediating effects of the mediating variable (*SC*) by adopting model (3). If γ_1 remains significant and γ_2 is significant, then there is a partial mediating effect; If γ_1 is no longer significant and γ_2 is significant, then there is a full mediating effect. The specific definitions and descriptions of all variables are detailed in table 1.

Table 1. Variable definitions and descriptions.

Variables	Definition
<i>SC</i>	The extent of strategic change, see the description in this paper.
<i>Ple_dum</i>	The existence of share pledging by controlling shareholders, which equals 1 if it exists and 0 otherwise.
<i>Ple_rate</i>	Ratio of shares pledged to the total shares held by controlling shareholders.
<i>IIE</i>	Refer to Richardson (2006) ²¹ 's study.
<i>Size</i>	The natural logarithm of total assets.
<i>Lev</i>	Ratio of total liabilities to total assets.
<i>Grow</i>	The annual rate of change of the operating income.
<i>Cf</i>	Ratio of net operating cash flow to total assets.

Age	The number of years from the time of the listing of the company.
Board	The natural logarithm of boardsize.

3.2 Sample selection and data sources

The research sample here is Chinese A-share non-financial listed companies, and the data from 2008 to 2019 are sampled. To improve the accuracy of the research findings, the sample data of ST companies, companies listed for less than one year, and companies with missing variables are excluded from the initial sample data. In addition, a Winsorize treatment of $\pm 1\%$ is applied to all continuous variables to eliminate the effect of outliers. The final data of 10,353 samples are obtained from *China Stock Market Accounting Research Database*.

4 Empirical Analysis and Discussion of Results

4.1 Descriptive statistics

Table 2 lists the results of descriptive statistics for the study variables. Variable SC has a mean value of -0.312, a minimum value of -3.979, and the maximum value of 5.710, indicating large strategic change degree variations in the sampled listed companies. Among the listed companies in the sample, 37.7% have controlling shareholders' share pledging, with a mean pledge ratio of 0.222, which is generally consistent with the existing literature. In addition, investment inefficiency is common in the sample companies according to the statistical results of variable IIE. The results of descriptive statistics for other control variables are similar to existing related studies and will not be repeated here.

Table 2. Descriptive statistics.

Variables	Observation	Mean	SD	Min	Median	Max
SC	10353	-0.312	1.761	-3.979	-0.513	5.710
Ple_dum	10353	0.377	0.485	0	0	1
Ple_rate	10353	0.222	0.341	0.000	0.000	1
IIE	9754	0.046	0.049	0.000	0.033	0.084
Size	10353	22.188	1.261	19.506	22.047	25.910
Lev	10353	0.477	0.200	0.066	0.484	0.900
Grow	10353	0.178	0.443	-0.520	0.103	2.891
Cf	10353	0.049	0.073	-0.164	0.047	0.250
Age	10353	15.811	4.817	4	16	40
Board	10353	2.166	0.201	1.609	2.197	2.708

4.2 Empirical results

(1) Controlling shareholders' share pledging and the strategic change.

Table 3 reports the regression results of controlling shareholders' share pledging and the strategic change. Among them, the regression results in column (1) show that the coefficient of the dummy variable Ple_dum with SC is significantly positive at the 1% level. Similarly, the coefficient of continuous variable Ple_rate with SC in column (2) is also significantly positive at the 1% level. The above regression results indicate that controlling shareholders' share pledging is significantly and positively correlated with the strategic change.

Therefore, listed companies with more controlling shareholders' share pledging have a higher degree of strategic change, and Hypothesis 1 is proved. It is thus clear that while the strategic change is a risky decision-making activity, the opportunity cost of not making a strategic change after share pledging may be relatively greater. Therefore, after share pledging, the motive to maintain control will prompt controlling shareholders to strengthen their intervention in the market value management of the listed company, thus intensifying company strategic change.

Table 3. Regression results of controlling shareholders' share pledging and the strategic change.

	(1) SC	(2) SC
Ple_dum	0.814*** (23.014)	
Ple_rate		1.404*** (28.428)
Size	-0.160*** (-10.075)	-0.140*** (-8.923)
Lev	1.114*** (11.149)	0.998*** (10.092)
Grow	-0.148*** (-3.978)	-0.147*** (-4.002)
Cf	-3.661*** (-15.560)	-3.521*** (-15.144)
Age	0.001 (0.303)	-0.005 (-1.452)
Board	-0.129 (-1.492)	-0.058 (-0.676)
Const	2.928*** (8.131)	2.470*** (6.929)
Industry	Yes	Yes
Year	Yes	Yes
N	10353	10353

	(1)	(2)
	SC	SC
R ² _adj	0.116	0.138

Note: t statistics in parentheses, * p<0.10, ** p<0.05, *** p<0.01.

(2) Controlling shareholders' share pledging, strategic change, and investment inefficiency.

Table 4 presents the regression results for controlling shareholders' share pledging, strategic change and investment inefficiency. First for step one, the empirical results of table 3 indicate that controlling shareholders' share pledging is positively correlated with the strategic change. Then, step two the regression results in column (1) show that the coefficient between Ple_dum and IIE is 0.010 and is significantly positive at the 1% level, indicating that the controlling shareholders' share pledging is positively related to the level of investment inefficiency. Finally, step three the regression results in column (3) show that the coefficient of Ple_dum and IIE is 0.008, and that of SC and IIE is 0.003, both of which are significantly positive at the 1% level.

Table 4. Regression results for controlling shareholders' share pledging, strategic change, and investment inefficiency.

	(1)	(2)	(3)	(4)
	IIE	IIE	IIE	IIE
Ple_dum	0.010*** (8.523)		0.008*** (6.718)	
Ple_rate		0.014*** (8.113)		0.011*** (5.955)
SC			0.003*** (7.922)	0.003*** (7.739)
Size	-0.000 (-0.348)	-0.000 (-0.253)	0.000 (0.412)	0.000 (0.417)
Lev	-0.010*** (-2.734)	-0.010*** (-2.843)	-0.013*** (-3.543)	-0.013*** (-3.571)
Grow	0.032*** (22.813)	0.032*** (22.830)	0.032*** (23.105)	0.032*** (23.122)
Cf	0.002 (0.276)	0.003 (0.352)	0.013 (1.521)	0.013 (1.537)
Age	-0.000 (-0.752)	-0.000 (-1.353)	-0.000 (-0.761)	-0.000 (-1.239)
Board	-0.004 (-1.331)	-0.004 (-1.232)	-0.004 (-1.183)	-0.003 (-1.140)
Const	0.052*** (4.046)	0.052*** (4.011)	0.044*** (3.406)	0.045*** (3.464)
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
N	9754	9754	9754	9754

R ² adj	0.085	0.085	0.091	0.090
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Note: t statistics in parentheses, * p<0.10, ** p<0.05, *** p<0.01.

Similarly, the examination results based on the continuous variable Ple_rate of controlling shareholders' share pledging in columns (2) and (4) of Table 4 are largely consistent with those above. The above results indicate that the strategic change play a partial mediating role in the relationship between controlling shareholders' share pledging and investment inefficiency. That is, controlling shareholders' share pledging intensifies the strategic change of listed companies, which in turn exacerbates investment inefficiency, and Hypothesis 2 is proved.

These findings suggest that share pledging exacerbates the short-sightedness and tunneling tendency of controlling shareholders. Controlling shareholders tend to adopt more short-sighted market value management behaviors in order to maintain their control position and self-interest. Since the strategic change in the case of controlling shareholders' share pledging are mainly out of the motive of controlling shareholders to maintain their control position and interest, such short-sighted strategic change based on market value management eventually lead to investment inefficiency of the company.

4.3 Endogeneity problem and robustness test

(1) Propensity score matching.

We employ the propensity score matching (PSM) method to address the possible sample selection bias. The idea of PSM method is to match listed companies without controlling shareholders' share pledging (control group) with similar characteristics for those with controlling shareholders' share pledging (treatment group) according to propensity match score, so that the values of measurable variables of the two groups of listed companies are as similar as possible (matching). Thus, the selection bias problem can be alleviated to some extent. Balance test results in table 5 show that the means of matched sample are not significantly different.

Table 5. Balance test results for matched samples.

Variable	Unmatched	Mean		t-test	
	Matched	Treated	Control	t	p> t
Size	U	22.243	22.501	-10.98	0.000
	M	22.243	22.249	-0.27	0.786
Lev	U	47.237	47.942	-1.88	0.060
	M	47.237	48.896	-4.03	0.190
Grow	U	0.022	-0.013	1.740	0.082
	M	0.022	0.017	0.220	0.823
Cf	U	3.4971	4.6252	-8.49	0.000
	M	3.4971	3.4074	0.63	0.532
Age	U	0.008	-0.005	0.670	0.503

	M	0.008	0.015	-0.320	0.746
Boardsize	U	2.1226	2.1784	-15.21	0.000
	M	2.1226	2.1356	-3.34	0.101

Meanwhile, the regression results with the matched samples in columns (1) of Table 6 show that the regression coefficients of Ple_rate with SC are significantly positive at the 1% level. The results are consistent with the main findings of this study, suggesting that the problem of sample selection bias is unlikely to exist here.

(2) Heckman two-stage regression.

To overcome the self-selection problem of the sample, we use the Heckman two-stage regression method for testing. The explained variable of the sample selection model is Ple_dum, which takes the value of 1 if there is controlling shareholders' share pledging and 0 otherwise. In the first stage, the Inverse Mills Ratio (IMR) is obtained using the Probit model regression. The Inverse Mills Ratio obtained from the first stage is substituted into the second stage for regression. The regression results in columns (2) of Table 6 show that the regression coefficients of Ple_rate with SC are still significantly positive at the 1% level after controlling for the self-selection problem.

(3) Control company fixed effect.

The strategic change behavior of listed companies may be related to company-level characteristics and factors. For this reason, we conduct a regression analysis of the sample again by controlling company fixed effects (FE). The regression results in columns (3) of Table 6 show that the relationship between Ple_rate with SC remains significantly positive at the 1% level after controlling for the effects of individual characteristics at the company level. In summary, the baseline results of this study remain significant after various endogeneity and robustness tests, indicating that the research findings are robust.

Table 6. Regression results for endogeneity problem and robustness tests.

	PSM	Heckman	FE
	(1)	(2)	(3)
	SC	SC	SC
Ple_rate	1.312*** (23.097)	1.400*** (28.364)	0.602*** (10.075)
Size	-0.167*** (-8.318)	-0.453*** (-4.764)	0.106*** (3.510)
Lev	0.980*** (8.041)	2.404*** (5.551)	3.052*** (25.102)
Grow	-0.162*** (-3.536)	-0.061 (-1.353)	-0.336*** (-12.844)
Cf	-4.232***	-5.342***	-2.675***

	(-14.709)	(-8.997)	(-14.662)
Age	-0.004	-0.030***	-0.023***
	(-0.898)	(-3.631)	(-3.175)
Board	-0.139	-0.933***	0.145
	(-1.299)	(-3.378)	(1.252)
IMR		2.473***	
		(3.333)	
Const	3.332***	7.339***	-3.983***
	(7.307)	(4.881)	(-6.217)
Industry/Company	Yes	Yes	Yes
Year	Yes	Yes	Yes
N	7748	10353	10353
R ² _adj	0.133	0.139	0.087

Note: t statistics in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

5 Conclusion

This study explores the impact of controlling shareholders' share pledging on the strategic change, the findings suggest that controlling shareholders' share pledging significantly intensifies the strategic change, indicating that out of the motive of maintaining control, controlling shareholders' share pledging increases their intervention in the management of the listed company, thus intensifying the strategic change. Further analysis reveals that the strategic change play a partial mediating role in the relationship between controlling shareholders' share pledging and investment inefficiency. These results indicate that as the strategic change in the case of controlling shareholders' share pledging are mainly out of the motive of controlling shareholders to maintain their control position and interest, such short-sighted strategic adjustments based on market value management eventually lead to investment inefficiency of the company. This not only harms the interests of investors but is also detrimental to the value enhancement and sustainable development of the company.

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