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Research on the Influencing Factors of Cash Holdings of Listed Companies
—Based on the Perspective of Dual Principal-Agent Theory

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Abstract

From the perspective of dual principal-agent theory, this paper takes the panel data of A-shares in China from 2012 to 2019 as the research object, uses fixed-effect model to empirically analyze the influencing factors of cash holdings of listed companies from three aspects: ownership structure, board characteristics and quality of internal control information disclosure. At the same time, the empirical results are explained theoretically. The research in this paper is of positive significance to the cash holding management of listed companies in China.

1. Introduction

In the perfect capital market, the complete symmetry of information, no transaction cost and no friction in the market make it easy for a company to solve the financial dilemma by raising insufficient funds with expected internal cost. But strict assumptions, such as that investors, are perfectly rational, make perfect capital markets impossible in reality. Therefore, in the imperfect capital market, cash has become an important means to solve the company's financial difficulties due to its high liquidity, and holding cash to cope with the company's daily operation and investment activities has also become an important part of the company's financial decisions.

In view of cash holding, scholars have put forward trade-off theory, financing priority theory and principal-agent theory. Baumol (1952), Miller & orr (1966), Karus & litzenberger (1973), etc. put forward the trade-off theory, which holds

that the best level of cash holding can be obtained by weighing the cost and income of cash holding. Myers & Majluf et al. (1984) put forward the theory of financing priority. Companies have a preference for financing channels. The financing order of companies is shown as endogenous financing, debt financing and equity financing. This is mainly due to the information asymmetry caused by the imperfection of the capital market, which forces investors to underestimate the company's securities and increases the company's cash cost, thus increasing the company's external financing cost. Therefore, there is no optimal level of cash holding. The company's cash holding is only a function of the company's investment and financing decisions and profitability.

The trade-off theory and the financing priority theory both focus on the influence of the internal financial characteristics of the enterprise on the cash holdings. They think that the goal of the company is to maximize the value of shareholders, thus ignoring the relevant interests of the management. In this context, the principal-agent theory came into being, focusing on the determinants of cash holding from a new perspective. According to the principal-agent theory, the maximization of shareholder value is in conflict with the maximization of management's own interests. At the same time, the separation of ownership and management makes the management unable to fully control the residual income. Therefore, in order to be able to carry out in-service consumption, obtain welfare allowance, acquire and build an empire through mergers and acquisitions, make inefficient investment and evade the supervision of external capital market, the management tends to hold easily manipulated cash to gain their own interests at the expense of shareholders. This is the first type of agency conflict. On the other hand, in the case of equity concentration, the interests of controlling shareholders and minority shareholders are deviated, and the controlling shareholders will transfer a large amount of corporate resources by holding cash to gain control rights and harm the interests of minority shareholders, which is the second type of agency conflict. Both types of agency conflicts make the company's cash holding level higher than normal, reducing the value of cash holding. Therefore, the analysis of the determinants of cash holdings in this paper is mainly based on the dual principal-agent theory.

2. Literature and Hypothesis Development

My research focuses on the influencing factors of cash holdings of listed companies in China, so in this section I will discuss prior literature related to these areas and detail the key hypothesis to be tested. In Sections 2.1 to 2.3, we discuss the relationship between equity structure, board characteristics and the quality of internal control information disclosure and cash holdings. As for whether the hypothesis is correct or not, we will test it in Section 3 by using the fixed-effect model to empirically analyze the relevant panel data.

2.1. Equity Structure and Cash Holdings

Different ownership structure leads to different agency problems, and then af-

fects the company's cash holdings through the financial decisions of management and major shareholders. At the same time, the phenomenon of "owner absence" caused by "one share dominates" of some state-owned shares in our country will also affect the agency conflicts between managers and shareholders, large shareholders and small and medium shareholders. Based on this, this paper also studies the impact of state-owned shares on cash holdings.

2.1.1. The Largest Shareholder Holdings and Cash Holdings

There is a conflict of interest between large shareholders and small and medium shareholders. After the controlling shareholder obtains the control right, it is easy to make the private will rise to the will of the company, so the controlling shareholder may combine with its related parties to borrow the company's funds for compensation or free, hold cash instead of the company's dividend distribution, misappropriate the company's assets with the help of the advantage of insider trading information, and damage the interests of small and medium shareholders, that is to say, there is a profit grabbing effect of large shareholder's holding. From the perspective of corporate governance, Zhang Yuchun (2009) empirically obtains a significant positive correlation between the concentration of equity and the company's cash holdings.

In addition, when the proportion of large shareholders is high, the income from supervision is higher than the cost of supervision. As a rational economic person, large shareholders will be able to supervise the management's cash holding self-interest motivation, so as to reduce the agency conflict between management and shareholders, and then reduce the company's cash holding. At the same time, when the shareholding ratio of the controlling shareholders reaches a certain level, the proportion of the earnings of the controlling shareholders from minority shareholders in the total earnings decreases, and the cost of grabbing increases. At this time, the interests of controlling shareholders and small and medium-sized shareholders tend to be consistent, and controlling shareholders tend to reduce the amount of cash holdings of the company, which is the convergence effect of interest incentive of large shareholders. Wu Jin (2008) pointed out that as the first largest shareholder can actively supervise the management, the shareholding ratio of the first largest shareholder is negatively related to the cash holding level of the enterprise; Wu Xiaoling et al. (2012) proposed that under the improvement of the governance mechanism of China's listed companies, the incentive effect of the large shareholder's shareholding is enhanced, which tends to reduce the company's cash holding in the company's financial decision-making.

Some scholars also proposed that the relationship between the first largest shareholder's shareholding ratio and cash holding is non-linear. For example, Han Zhongxue and Zhou Tingting (2008) proved that the relationship between the first largest shareholder's shareholding ratio and the company's cash holding is cubic curve. This paper also supports the non-linear relationship between the two. The specific situation is that the shareholding of the largest shareholder is

firstly manifested as the interest grabbing effect, holding a large amount of cash, occupying the interests of small and medium shareholders; When the shareholding ratio exceeds a certain level, the major shareholder's holding of shares shows the effect of interest incentive convergence, and the cost of the major shareholder's grabbing the interests of small and medium shareholders rises, gradually showing the synergistic effect consistent with the interests of small and medium shareholders. And the major shareholders have the ability to supervise the management and restrain the cash holding behavior of the management. Therefore, this paper proposes the following assumptions:

Hypothesis 1: there is an inverted u-shaped nonlinear relationship between the shareholding ratio of the largest shareholder and cash holdings.

2.1.2. Other Major Shareholder Shareholdings and Cash Holdings

Bai Chongen et al. (2005) found through empirical analysis that the higher the shareholding ratio of other major shareholders, the greater the improvement of internal agency conflict, and the higher the market value of the company. Therefore, other major shareholders can effectively improve the internal agency conflict and reduce the company's cash holdings by supervising and checking the behaviors of controlling shareholders that damage the interests of other shareholders in pursuit of private interests. At the same time, the increase of the shareholding ratio of other major shareholders will also help more shareholders to participate in the company's operation and management decisions, effectively restrain the opportunistic behavior of insiders, and reduce the total amount of cash held by the management to maximize their own interests.

However, in addition to the role of supervision and balance, other major shareholders may conspire with controlling shareholders to deprive the interests of small and medium shareholders. These large shareholders embezzle the company's wealth by holding a large amount of cash, and at the same time, they use the internal capital to finance, so as to avoid the supervision from the external capital market. Wu Jin (2008) pointed out that under the condition that other conditions remain unchanged, the shareholding ratio of the top ten shareholders has a positive correlation with the cash holding level of the enterprise. Therefore, this paper proposes the following assumptions:

Hypothesis 2A: there is a positive correlation between the shareholding ratio of other major shareholders and cash holdings.

Hypothesis 2B: there is a negative correlation between the shareholding ratio of other major shareholders and cash holdings.

2.1.3. Management Shareholding and Cash Holdings

Under the modern company system, the ownership and management rights are separated, and there is a conflict of interest between shareholders and the management, which makes the management give priority to their own private interests when making financial decisions in the operation of the company. In the cash holding decision, the management tends to hold more cash, mainly for the

following three reasons: First, the amount of cash affects the power of the management. The management usually refuses to pay dividends to shareholders, but holds a large amount of cash to maintain its power. Second, holding a large amount of cash can not only solve the financial shortage that the company may encounter, but also replace external financing with cash to avoid supervision from the external capital market. In addition, sufficient cash can also improve the risk-taking ability of the company; finally, the management also tends to hold cash for investment, expand the size of the company, so as to obtain high returns. Therefore, in order to alleviate the management's cash holding preference, the company will often make the management hold the company's shares and reduce the agency conflict between them (Jensen & Mekling, 1976). However, when the management's shareholding reaches a certain proportion, its ability to resist external pressure will be improved, and it is difficult for external shareholders to effectively supervise various financial decision-making behaviors of the management. At this point, the management will sacrifice the interests of shareholders to seek private interests.

Based on the analysis, this paper holds that the relationship between the proportion of management holding and cash holding should be non-linear. In the early stage of shareholding, the management lacks sufficient ability to avoid the supervision from external shareholders. The management's shareholding is more in line with the interests of the company's shareholders and reduces the amount of cash holdings. However, once the management's shareholding ratio reaches a considerable level, the management will be able to seek private interests by increasing the company's cash holdings, Such as on-the-job consumption, obtaining welfare allowance and building an empire. Therefore, the following assumptions are proposed:

Hypothesis 3: there is a U-shaped non-linear relationship between the management's shareholding ratio and cash holdings.

2.1.4. State-Owned Shares and Cash Holdings

China's special economic system forms a special holding structure of the company, many companies have the phenomenon of "one share dominates". A few scholars believe that state-owned shares can play the positive role of major shareholders, effectively supervise the management of the company and reduce the cash holdings of the management. For example, Yu Dongzhi et al. (2006) and Zhang Xulei et al. (2007) concluded through empirical analysis that the proportion of state-owned shares is negatively correlated with cash holdings. However, more scholars tend to believe that state-owned shares will increase the cash holdings of companies, mainly for the following reasons: Firstly, the phenomenon of "owner absence" often exists in state-owned holding companies, which leads to the lack of effective supervision mechanism and the inability to supervise the management's operation decision-making behavior. Therefore, the management has more opportunities to carry out on-the-job consumption by holding a large amount of cash, or to invest in projects with negative net present

value in order to build an empire; Secondly, the goal of state-owned shareholders is not limited to the maximization of value, but must also take into account the social and political interests, thus resulting in the company's internal cash resources cannot achieve the optimal allocation; Finally, the special political background of state-owned shareholders makes it difficult for other shareholders to form an effective supervision and balance mechanism. Shi Minchao (2010) believed that the absence of the main body of state-owned shares and the omission of acting shareholders provided opportunities for the self-interest of the management, thus increasing the company's cash holdings. This paper supports the latter and proposes the following assumptions:

Hypothesis 4: there is a significant positive correlation between the proportion of state-owned shares and cash holdings.

2.2. Board Characteristics and Cash Holdings

Under the background of the separation of ownership and management rights, the board of directors becomes a bridge linking ownership and management rights. Board members participate in the company's operation decisions through their own prestige and ability, and supervise the behavior of the management according to the overall interests of the company. Thus, the characteristics of the board of directors have an impact on the company's cash holding decisions. Next, we will specifically analyze the relationship between the characteristics of the board of directors and cash holdings.

2.2.1. Board Size and Cash Holdings

As an important feature of the board of directors, the size of the board of directors not only reflects its ability to participate in the company's business decisions, but also reflects the quality of its supervision over the management. Kusnadi (2003) pointed out that the large scale of the board of directors would lead to the inefficiency of decision-making. Xu Xinhua and Wang Yihong (2012) believe that the larger the board of directors is, the more complex the structure is and the less efficient it is. That is to say, the large number of employees will lead to communication and coordination difficulties among members, the ineffective supervision function of the board of directors, and the inability to effectively supervise the management, and the management's self-interest motive will be stronger, the agency conflict between the management and shareholders will be more serious, and the company will retain more cash. However, some scholars, such as Zhang Dunli and Wang Zhe (2016), pointed out that the larger the board of directors, the more representative it is. Because the members of the board of directors have their own professional knowledge and work experience, they can learn from each other and make up for the shortcomings, so as to better play the role of the board of directors in the supervision of the management and reduce the excessive cash held by the management due to self-interest motivation. Therefore, we propose the following assumptions:

Hypothesis 5A: there is a positive correlation between board size and cash

holdings.

Hypothesis 5B: there is a negative correlation between board size and cash holdings.

2.2.2. Two-Job Combination and Cash Holdings

Whether the chairman of the board and the general manager are in the same position has an important influence on the independence of the board of directors and the management's business decisions. First of all, the combination of two posts is conducive to the speed of information exchange between the board of directors and the management, so as to better make operational decisions. But more importantly, the combination of the two jobs also encourages management's self-interested cash-holding behavior. Because the combination of the two roles makes the management the controller of the board's power, the dominant position of the management over the board makes it more inclined to collude and transfer the shareholder's wealth. The supervision mechanism of the board of directors is ineffective, the phenomenon of corporate insider control is serious, the self-interested behavior of the management cannot be effectively restrained, and the agency conflict within the company is increasingly serious. Luo Junwei (2014) studies how the characteristics of the board of directors affect the cash holding behavior of enterprises under the influence of product market competition. It is found that there is a significant positive correlation between them, which indicates that the combination of two jobs leads to the aggravation of insider control. Wang Yishu (2015) pointed out that the combination of chairman and general manager not only makes the general manager's on-the-job consumption and over investment easier, but also makes the chairman who is also the general manager unable to solve the long-term or short-term financial decision-making in a timely manner. Therefore, the combination of chairman and general manager is difficult to make the company reach the optimal state. Therefore, we propose the following assumptions:

Hypothesis 6: there is a positive correlation between the combination of chairman and general manager and cash holdings.

2.2.3. Proportion of Independent Directors and Cash Holdings

Independent directors, also known as external directors, are usually independent of the shareholders and management of the company. Therefore, independent directors value their own reputation and are autocratic mediators to stimulate and supervise the competition among the management and safeguard the interests of shareholders. Independent directors supervise and check the management's behavior of seeking private interests at the expense of damaging the interests of shareholders, so as to make the interests of the management and shareholders tend to be consistent and restrain the cash holding behavior of the management. At the same time, Independent directors can restrain large shareholders from hollowing out small and medium shareholders and ensure the efficient operation of the board of directors. Therefore, the larger the proportion of

independent directors, the more can alleviate the two kinds of agency problems, promote the company to make wise business decisions and reduce the amount of cash holdings. Borokhovich et al. (1996) found that most independent directors come from outside the company. In order to make a difference, these ceos tend to propose countermeasures against the former ceos' failure policies, so as to highlight their own value. Zhang Dunli and Wang Zhe (2016) measured the proportion of independent directors based on the proportion of the number of independent directors in the total number of the board of directors, and obtained a significant negative correlation between the proportion of independent directors and corporate cash holdings through multiple regression analysis. This shows that the independent director effectively supervises the opportunistic behavior of the management, and the independent director system in China is gradually improved. Therefore, this paper proposes the following hypothesis:

Hypothesis 7: the proportion of independent directors is negatively correlated with cash holdings.

2.3. Quality of Internal Control Information Disclosure and Cash Holdings

The disclosure of internal control information is the self-evaluation information of the design and execution effectiveness of internal control regularly provided by the company to external investors, and it is also an important channel for the company's stakeholders to supervise the internal control of the company. Effective internal control information disclosure is helpful to alleviate two kinds of agency conflicts within the company. First, the disclosure of internal control information has the function of supervision and evaluation. By checking the internal control evaluation report of the management, the shareholders find the defects in the internal control system, so as to monitor the self-interested behavior of the management and prevent the management from holding cash because of in-service consumption, excessive investment and empire building. Second, the internal control information disclosure has the function of signal transmission. In the imperfect capital market, information asymmetry exists, and the information possessed by major shareholders and minority shareholders is different. Therefore, the large shareholders with more information can make use of the information advantage to harm the interests of the small shareholders with less information. For example, in companies with poor quality of internal control information disclosure, it provides convenience for major shareholders to "hollow out" the interests of minority shareholders by fabricating the information disclosed by the company. Xu Xinxia and Wang Xuejun (2007) pointed out that internal control is an effective way for controlling shareholders to carry out infringement. Therefore, the disclosure of high-quality internal control information can effectively restrain the management and major shareholders to hold cash for self-interested motives. Therefore, this paper proposes the following hypothesis:

Hypothesis 8: the quality of internal control information disclosure is nega-

tively correlated with cash holdings.

3. Research Design

3.1. Sample Selection and Data Source

This paper takes the A-share listed companies from 2012 to 2019 as research samples, and conducts the following screening: 1) financial companies are eliminated; 2) ST and PT companies are eliminated; 3) companies with abnormal data loss are eliminated; 4) in order to eliminate the influence of abnormal values, all continuous variables are processed with 1% - 99% winsorize tail reduction, and finally 10,433 sample observations are obtained. The data in this paper are all from the China Stock Market & Accounting Research (CSMAR) database. As a database product selected for the Research Service System (WRDS) of Wharton Business School in the United States, CSMAR has been adopted by many high-quality academic papers published in authoritative journals. At the same time, we use STATA12.0 for data processing.

3.2. Variable Definition and Model Construction

The variable definitions are shown in Table 1.

Based on the existing literature research, this paper constructs model 1 to test the influence of ownership structure, board characteristics and disclosure quality of internal control information on cash holdings. In this paper, through hausmann test, the fixed effect model is finally selected to test model 1. At the same time, in order to avoid multicollinearity, variables of ownership structure, characteristic variables of board of directors and quality variables of internal control information disclosure were introduced into model 1 for testing.

$$
\begin{aligned}
\mathrm{CASH1}_{i,t}/\mathrm{CASH2}_{i,t} = {} & \beta_0 + \beta_1 X_{i,t} + \delta \mathrm{XSQ}_{i,t} + \beta_2 \mathrm{LNSIZE}_{i,t} + \beta_3 \mathrm{DMS}_{i,t} \\
& + \beta_4 \mathrm{LEV}_{i,t} + \beta_5 \mathrm{BANKDEBT}_{i,t} + \beta_6 \mathrm{NWC}_{i,t} + \beta_7 \mathrm{DIV}_{i,t} \\
& + \beta_8 \mathrm{MB}_{i,t} + \beta_9 \mathrm{STATE}_{i,t} + \alpha_i + \eta_t + \varepsilon_{i,t}
\end{aligned}
$$

where, subscripts i and t refer to the company and year respectively, and $\mathrm{CASH1}_{i,t}$ and $\mathrm{CASH2}_{i,t}$ refer to the measurement of cash holdings by two different methods respectively, X_{it} is the equity structure, characteristics of the board of directors and the quality of disclosure of internal control information that have an impact on cash holdings. $\mathrm{XSQ}_{i,t}$ is the sum of squares when $X_{i,t}$ is the shareholding ratio of the largest shareholder or the shareholding ratio of the management, α_i represents firm fixed effect, η_t represents time effect, and $\varepsilon_{i,t}$ represents residual term.

4. Empirical Analysis Results

4.1. Descriptive Statistical Analysis

Table 2 reports the descriptive statistics of the main variables. It can be seen that there are differences in the cash holdings calculated by the two methods, and the average, median, maximum and standard deviation of CASH1 are lower than

Table 1. Variable description.

Variable	Variable name	Variable symbols	Variable definition or calculation method
Dependent variable	Cash holdings	CASH1	(Cash + cash equivalents)/total assets, with reference to Opler et al. (1999)
		CASH2	(Cash + cash equivalents)/net assets, net assets = total assets − (cash + cash equivalents), referring to Haushalter et al. (2007)
Explanatory variable	Equity concentration	ONESHARE	The shareholding ratio of the first largest shareholder, whose square item is recorded as ONESHARESQ
	Shares held by other major shareholders	OTHERSHARE	Sum of shareholding ratio of the second to tenth largest shareholders
	Management shareholding	MSHARE	The shareholding ratio of the managers, including the directors, supervisors and senior management of the company, whose square item is recorded as MSHARESQ
	Proportion of state-owned shares	GSHARE	Proportion of state-owned shares
	Board size	BSIZE	Total number of board members (excluding honorary directors)
	Proportion of independent directors	IND	Number of independent directors/total number of directors
	Two jobs in one	DUAL	Dummy variable, the chairman and general manager of the two positions in one, take 1; otherwise, take 0
	Quality of internal control information disclosure	ICDI	Internal control information disclosure quality index, based on entropy model measurement
Control variable	Company size	LNSIZE	Logarithm of total assets
	Debt structure	DMS	Total current liabilities/total liabilities
	Asset liability ratio	LEV	Total debt/total assets
	Bank debt ratio	BANKDEBT	(Long term loan + short term loan)/total liabilities
	Net working capital ratio	NWC	(Current assets − cash equivalents − current liabilities)/total assets
	Dividend policy	DIV	Dummy variable, when the company pays cash dividends, take 1; otherwise, take 0
	Investment opportunity	MB	Market value of the company/book value of the company's assets
	Nature of property rights	STATE	Dummy variable, 1 for state-owned enterprises and 0 for non-state-owned enterprises

Table 2. Descriptive statistics of main variables.

Variable	Observed value	average value	Median	Maximum	standard deviation
CASH1	10,433	0.16	0.12	0.62	0.11
CASH2	10,433	0.21	0.14	1.60	0.22
ONESHARE	10,433	0.35	0.34	0.75	0.14
OTHERSHARE	10,433	0.24	0.23	0.56	0.13
MSHARE	10,433	0.10	0	0.67	0.17
GSHARE	10,433	0.03	0	0.66	0.10
BSIZE	10,433	8.68	9	15	1.60
IND	10,433	0.37	0.33	0.57	0.05
DUAL	10,433	0.26	0	1	0.44

Continued

ICDI	10,433	0.88	0.94	1	0.16
LNSIZE	10,433	22.29	22.13	26.19	1.23
DMS	10,433	0.81	0.85	1	0.17
LEV	10,433	0.44	0.44	0.86	0.19
BANKDEBT	10,433	0.31	0.31	0.80	0.21
NWC	10,433	0.06	0.06	0.59	0.18
DIV	10,433	0.81	1	1	0.40
MB	10,433	2.44	1.91	11.29	1.61
STATE	10,433	0.30	0	1	0.46

CASH2. Therefore, it is necessary to take both into account to investigate the influencing factors of cash holdings to ensure the accuracy of the results. The average value of CASH1 and CASH2 is 16% and 21% respectively, which indicates that Chinese companies have more cash holdings. The shareholding ratio of the first largest shareholder ranges from 10% to 75%, and the standard deviation is 0.14, which indicates that there is a great difference in the concentration of equity among companies. The average shareholding ratio of management reaches 10%, which indicates that Chinese companies gradually pay attention to the incentive measures for management. The average value of state-owned shares is 3%, which is relatively low, which shows that the situation of "one share dominates" of state-owned shares has been improved. The number of board of directors varies from 5 to 15, with an average of 8.68, indicating that the size of the board of directors in China is relatively moderate. The combination of chairman and general manager accounts for about a quarter of the listed companies in China. The average proportion of independent directors reaches 37%, meeting the requirements of CSRC. The average quality of internal control information disclosure reaches 88%, indicating that the internal control information disclosure of listed companies in China is in good condition.

4.2. Regression Analysis

4.2.1. Regression Analysis of Ownership Structure and Cash Holdings

According to the regression results in Table 3, whether cash holding is measured by CASH1 or CASH2, the results show that: 1) The relationship between the shareholding ratio of the largest shareholder and cash holdings is inverted U-shaped. The shareholding ratio coefficient of the largest shareholder is positive, and the square term is negative. Hypothesis 1 holds. Taking the regression results of CASH1 to measure cash holding as an example, the coefficient of the largest shareholder's shareholding ratio and its square term are 0.237 and −0.141 respectively, which are significant at the significant level of 1% and 5% respectively. According to the value of the regression coefficient, the critical value of the shareholding ratio of the largest shareholder is calculated to be 84.04%. At

Table 3. Regression results of equity structure and cash holdings.

Independent variable	CASH1				CASH2			
	Result 1	Result 2	Result 3	Result 4	Result 5	Result 6	Result 7	Result 8
CONSTANT	0.963***	1.172***	0.896***	1.129***	1.859***	2.227***	1.686***	2.145***
	(21.96)	(29.82)	(21.68)	(28.65)	(21.11)	(28.22)	(20.34)	(27.10)
ONESHARE	0.237***				0.338***			
	(4.31)				(3.07)			
ONESHARESQ	−0.141**				−0.129			
	(−2.06)				(−0.94)			
OTHERSHARE		0.143***				0.271***		
		(12.02)				(11.33)		
MSHARE			−0.042*				−0.167***	
			(−1.31)				(−2.61)	
MSHARESQ			0.380***				0.882***	
			(7.59)				(8.77)	
GSHARE				0.045***				0.076***
				(4.51)				(3.76)
LNSIZE	−0.023***	−0.032***	−0.018***	−0.028***	−0.048***	−0.064***	−0.037***	−0.057***
	(−12.96)	(−18.36)	(−10.07)	(−16.33)	(−13.54)	(−18.57)	(−10.48)	(−16.65)
DMS	−0.112***	−0.111***	−0.112***	−0.111***	−0.202***	−0.200***	−0.202***	−0.200***
	(−14.50)	(−14.44)	(−14.72)	(−14.34)	(−13.05)	(−12.95)	(−13.22)	(−12.87)
LEV	−0.500***	−0.465***	−0.486***	−0.490***	−0.919***	−0.853***	−0.891***	−0.901***
	(−43.64)	(−39.86)	(−42.90)	(−42.43)	(−39.95)	(−36.40)	(−39.24)	(−38.89)
BANKDEBT	−0.080***	−0.081***	−0.079***	−0.080***	−0.163***	−0.164**	−0.160***	−0.163***
	(−12.54)	(−12.67)	(−12.52)	(−12.46)	(−12.68)	(−12.80)	(−12.64)	(−12.60)
NWC	−0.384***	−0.378***	−0.384***	−0.380***	−0.747***	−0.736***	−0.747***	−0.739***
	(−38.64)	(−38.20)	(−39.10)	(−38.04)	(−37.40)	(−36.99)	(−37.89)	(−36.87)
DIV	0.009***	0.009***	0.009***	0.009***	0.011***	0.012***	0.012***	0.013***
	(3.80)	(4.15)	(4.02)	(4.16)	(2.41)	(2.72)	(2.62)	(2.74)
MB	−0.005***	−0.005***	−0.004***	−0.005***	−0.011***	−0.012***	−0.010***	−0.013***
	(−6.97)	(−7.55)	(−5.86)	(−7.27)	(−8.58)	(−9.13)	(−7.44)	(−8.86)
STATE	−0.001**	−0.004**	−0.002**	−0.004***	−0.001*	−0.005*	−0.001***	−0.004***
	(−0.27)	(−0.85)	(−0.48)	(−0.78)	(−0.08)	(−0.44)	(−0.10)	(−0.36)
Adjusted R^2	0.177	0.176	0.185	0.175	0.172	0.170	0.182	0.170
F-value	354.13	404.07	381.38	384.23	351.99	360.90	344.70	343.23
Prob. > F	0. 000	0. 000	0.000	0.000	0.000	0.000	0.000	0.000
N	10,433	10,433	10,433	10,433	10,433	10,433	10,433	10,433

Note: *t* test values are in brackets, *, ** and *** represent significance levels of 10%, 5% and 1%, respectively.

the same time, the inverted U-shaped relationship between the largest shareholder's shareholding ratio and cash holdings can be drawn, as shown in **Figure 1**. It can be seen intuitively that the cash holdings of the company will change qualitatively before and after the shareholding ratio of the largest shareholder reaches 84.04%. When the shareholding ratio of the largest shareholder is less
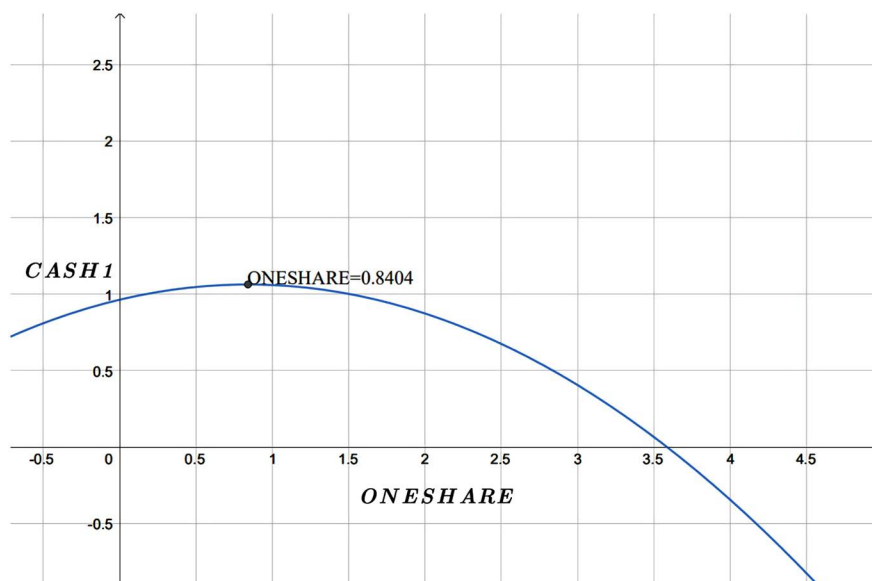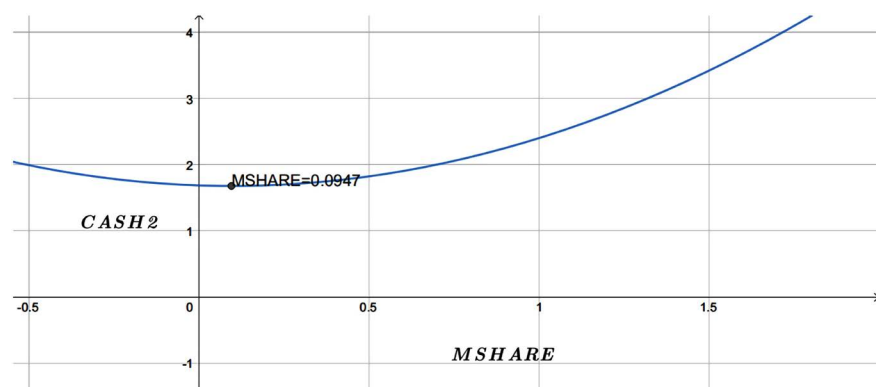
Figure 1. Relationship between ONESHARE and CASH1.

than 84.04%, the amount of cash held by the company will increase with the increase of the shareholding ratio of the largest shareholder. At this point, the shareholding of the largest shareholder is manifested as the benefit grabbing effect, and it will encroach on the interests of the small and medium shareholders by holding cash. When the shareholding ratio of the largest shareholder is higher than 84.04%, the cash holding decreases with the increase of the shareholding ratio of the largest shareholder. The shareholding of the largest shareholder shows the convergence effect of interest incentive, which inhibits the cash holding behavior of the management and tends to be consistent with the interests of the small and medium shareholders. 2) Results 2 and 6 in Table 3 show that the shareholding coefficients of other major shareholders are 0.143 and 0.271 respectively, and both are significant at the 1% level. Therefore, the shareholding of other major shareholders is significantly positively correlated with cash holdings. This shows that in China's listed companies, other major shareholders hold more shares in collusion with the controlling shareholders, depriving the interests of small and medium shareholders, thus holding a large amount of cash. Hypothesis 2a is established. 3) The coefficient of managerial shareholding ratio is significantly negative, and its square term is significantly positive. The nonlinear relationship between managerial shareholding ratio and cash holdings is U-shaped. Hypothesis 3 holds. Taking the regression results of CASH2 to measure cash holdings as an example, the coefficient values of the managerial shareholding ratio and its square term are −0.167 and 0.882 respectively, and both are significant at the 1% significance level, indicating that the managerial shareholding ratio has a significant impact on cash holdings. According to the value of the regression coefficient, the critical value of the managerial shareholding ratio can be calculated to be 9.47%. Meanwhile, the U-shaped relationship between the managerial shareholding ratio and cash holdings can be drawn, as shown in

Figure 2. When the shareholding ratio of the management is lower than 9.47%, the management does not have enough ability to avoid the supervision from external shareholders, and the management, in line with the interests of the shareholders of the company, will reduce the cash holding. Once management's shareholding exceeds 9.47%, management will be able to seek personal gain by increasing the company's cash holdings; 4) As can be seen from the columns of results 4 and 8, the proportion coefficient of state-owned shares is 0.045 and 0.076 respectively, both of which are significantly positive at the 1% level, indicating that the phenomenon of "owner absence" of state-owned shares and the political background strengthen the two kinds of agency conflicts of the company and increase the cash holding. Therefore, hypothesis 4 is established. At the same time, it can be seen that each control variable has statistical significance in the regression results, which verifies the selection of model specification.

4.2.2. Regression Analysis of Board Characteristics and Cash Holdings

Table 4 shows the regression results of board characteristics and cash holdings. The results show that: 1) The coefficients of board size and cash holdings are 0.003 and 0.006 respectively in the columns of results 1 and 4, and the t-test values are 2.83 and 3.07 respectively, which all pass the significance test at the 1% level, indicating that board size has a significant positive correlation with cash holdings, and hypothesis 5a is established. Too large board size makes it difficult for members of the board of directors to communicate with each other and reach an agreement, which leads to inefficient decision-making of the board of directors and the inability to effectively supervise the management, so as to facilitate the management's behavior of holding cash for personal gain; 2) It can be seen from the columns of result 3 and result 6 that the coefficient of dummy variable indicating whether the chairman and the general manager are two in one are 0.014 and 0.025 respectively, which are statistically significant positive at the significant level of 1%. This is consistent with our hypothesis 6. The combination of the two posts means that the general manager has no supervision, avoids many institutional constraints, and increases the individual's control rights and opportunities, which leads to the low efficiency of the company's internal governance

Figure 2. Relationship between MSHARE and CASH2.

Table 4. Regression results of board characteristics and cash holdings.

Independent variable	CASH1			CASH2		
	Result 1	Result 2	Result 3	Result 4	Result 5	Result 6
CONSTANT	1.094*** (26.89)	1.122*** (27.87)	1.114*** (28.26)	2.071*** (25.38)	2.134*** (26.41)	2.118*** (26.77)
BSIZE	0.003*** (2.83)			0.006*** (3.07)		
IND		−0.001 (−0.02)			−0.002 (−0.05)	
DUAL			0.014*** (4.83)			0.025*** (4.45)
LNSIZE	−0.027*** (−15.92)	−0.027*** (−16.06)	−0.027*** (−15.97)	−0.056*** (−16.28)	−0.056*** (−16.42)	−0.056*** (−16.34)
DMS	−0.111*** (−14.36)	−0.111*** (−14.35)	−0.111*** (−14.35)	−0.200*** (−12.90)	−0.200*** (−12.89)	−0.200*** (−12.88)
LEV	−0.495*** (−43.06)	−0.495*** (−43.01)	−0.493*** (−42.97)	−0.910*** (−39.45)	−0.909*** (−39.40)	−0.907*** (−39.34)
BANKDEBT	−0.079*** (−12.34)	−0.080*** (−12.43)	−0.080*** (−12.49)	−0.161*** (−12.48)	−0.162*** (−12.58)	−0.163*** (−12.63)
NWC	−0.381*** (−38.15)	−0.382*** (−38.20)	−0.380*** (−38.14)	−0.741*** (−36.96)	−0.742*** (−37.01)	−0.740*** (−36.96)
DIV	0.009*** (4.11)	0.010*** (4.22)	0.009*** (4.02)	0.012*** (2.67)	0.013*** (2.79)	0.012*** (2.61)
MB	−0.005*** (−7.18)	−0.005*** (−7.24)	−0.005*** (−7.32)	−0.012*** (−8.77)	−0.013*** (−8.83)	−0.012*** (−8.90)
STATE	−0.004*** (−0.76)	−0.003** (−0.66)	−0.003** (−0.56)	−0.004** (−0.36)	−0.003** (−0.26)	−0.002** (−0.17)
Adjusted R^2	0.175	0.175	0.176	0.169	0.170	0.170
F-value	382.26	380.98	384.70	342.50	341.05	344.10
Prob. > F	0.000	0.000	0.000	0.000	0.000	0.000
N	10,433	10,433	10,433	10,433	10,433	10,433

Note: t test values are in brackets, *, ** and *** represent significance levels of 10%, 5% and 1%, respectively.

and the serious phenomenon of insider control; 3) The proportion of independent directors is negatively correlated with cash holdings. However, whether cash holdings are measured by CASH1 or CASH2, the proportion of independent directors has not passed the significance test, and hypothesis 7 is not valid. This may be because under the specific background of China, the independent director system in some listed companies is just a virtual system, and the independent director has not played its due supervisory role, thus unable to restrain the opportunistic behavior of the management.

4.2.3. Regression Analysis of Internal Control Information Disclosure Quality and Cash Holdings

Table 5 shows the regression results of the quality of internal control information

Table 5. Regression between internal control information disclosure quality and cash holdings.

Independent variable	CASH1	CASH2
CONSTANT	1.122***	2.133***
	(28.47)	(26.96)
ICDI	−0.017***	−0.029**
	(−3.41)	(−2.94)
LNSIZE	−0.027***	−0.055***
	(−15.56)	(−15.98)
DMS	−0.111***	−0.200***
	(−14.35)	(−12.89)
LEV	−0.496***	−0.911***
	(−43.11)	(−39.48)
BANKDEBT	−0.080***	−0.163***
	(−12.46)	(−12.61)
NWC	−0.381***	−0.741***
	(−38.20)	(−37.01)
DIV	0.010***	0.013***
	(4.28)	(2.84)
MB	−0.005***	−0.012***
	(−7.17)	(−8.77)
STATE	−0.004**	−0.003**
	(−0.70)	(−0.29)
Adjusted R^2	0.176	0.170
F-value	382.83	342.39
Prob. > F	0.000	0.000
N	10433	10433

Note: t test values are in brackets, *, ** and *** represent significance levels of 10%, 5% and 1%, respectively.

disclosure and cash holdings. When cash holdings are measured by CASH1 and CASH2 respectively, we can find that the regression coefficients of the quality of internal control information disclosure are −0.017 and −0.029 respectively, and both are significantly negative at the 1% significance level, which indicates that the higher the quality of internal control information disclosure, the less the cash holdings of the company. Hypothesis 8 holds. Internal control information disclosure effectively alleviates two kinds of principal-agent conflicts between management and shareholders, large shareholders and small shareholders through the role of supervision and evaluation and signal transmission.

5. Conclusion and Enlightenment

This paper uses China's A-share listed companies in 2012-2019 as a research sample, from the perspective of dual principal-agent theory, analyzes and empirically tests the influencing factors of cash holdings. The empirical results show that there is a significant inverted U-shaped relationship between the pro-

portion of the largest shareholder and the cash holdings; there is a significant U-shaped relationship between the management ownership and the cash holdings; the shareholding of other major shareholders, state-owned shares, the size of the board of directors, the combination of the two posts of chairman and general manager are significantly positively correlated with cash holdings; there is a significant negative correlation between the quality of internal control information disclosure and cash holdings; independent directors have a negative correlation with cash holdings, but there is no significant relationship between them.

The conclusion of this paper has important enlightenment in practice. Firstly, there is a non-linear relationship between the shareholding ratio of the first largest shareholder and that of the management and the cash holdings, so there is an optimal shareholding ratio, which needs to be explored in corporate governance. Secondly, it is worth noting that it is not that the higher the shareholding ratio of other major shareholders other than the controlling shareholders, the better the effect of checks and balances on the controlling shareholders. Small and medium-sized shareholders still need to be alert to collusion tendency among large shareholders. At the same time, the phenomenon that state-owned shares are dominant in some enterprises is still a problem to be solved. Based on this, it is imperative to encourage private investors to participate in the stock market, promote the reform of share structure and optimize the share structure. Moreover, most of the variables reflecting the characteristics of the board of directors contribute to the cash holding behavior in the company, and the board of directors does not play its supervisory function. Therefore, it is necessary for Chinese listed companies to further improve the system of the board of directors and carry out targeted rectification of the board of directors. At the same time, independent directors do not play an effective role in China's listed companies. Finally, the improvement of the quality of internal control information disclosure can effectively alleviate the problem of dual agency conflict. Therefore, the company can improve the internal control information disclosure quality by improving the internal control awareness of internal personnel, establishing and improving the internal audit supervision system, and the regulatory department can develop a unified internal control evaluation standard.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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