

Research on Cross-Shareholding Behavior of Chinese Listed Companies

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Abstract: It is an increasingly view that there is a large number of cross-shareholding behaviors in listed companies in China. Cross-shareholding exists in a large number of listed companies, and the cross-shareholding behavior of various industries is different. This paper studies this problem. China's A-share listed companies can be divided into six categories: finance, real estate, comprehensive, industry, public utilities and commerce. This paper first describes the changes and characteristics of cross-shareholding in these different industries by using the network analysis method, and then studies the main factors of enterprises participating in cross-shareholding in these six industries by using the data from 2007 to 2016 according to the financial indicators that can represent the characteristics of listed companies, such as asset scale, debt degree, operation ability and development ability. By studying the characteristics of enterprises participating in and exiting cross-shareholding, the study found that after the global financial crisis in 2008, the number of enterprises participating in cross-shareholding in various industries increased to a certain extent, but in 2014, after the financial crisis was relatively alleviated, the number of enterprises participating in cross-shareholding decreased significantly. On the whole, enterprises with large assets and stable long-term operation and development are easier to participate in and realize cross-shareholding when short-term liabilities and operation difficulties occur. However, this cross-shareholding behavior is relatively unstable. Enterprises will participate in cross-shareholding only when they encounter some operating difficulties. The role of cross-shareholding in integrating enterprise resources and promoting the long-term development of enterprises has not been effectively played in China.

Keywords: Cross-Shareholding, Business Cooperation, Network, Corporate Governance

1. Introduction

Cross-shareholding widely exists in listed companies and plays an important role in the development of enterprises. It can strengthen the information flow among enterprises, weaken the adverse effects brought by competition, disperse operational risks, reduce financial risks [4], promote strategic cooperation among enterprises [10], and effectively realize the cooperation and integration of businesses among enterprises. Although the cross-shareholding phenomenon has been gradually noticed by researchers, the basic questions about when enterprises are more inclined to participate in cross-shareholding and the

characteristics of these enterprises have not been answered yet. Through sorting out the literature on cross-shareholding in China, it can be found that it mainly focuses on the following three aspects: first, to discuss the legitimacy and rationality of cross-shareholding [7]; second, to study the impact of cross-shareholding on corporate governance [3, 9, 14]. The third is to analyze the influence of cross-shareholding on stock price volatility [12]. There are almost no studies on the timing and characteristics of enterprises' participation in cross-shareholding. To understand which enterprises are more willing to participate in cross-shareholding can not only supplement the original research, but also better understand the

significance and role of cross-shareholding for enterprises.

Referring to relevant studies, this paper adopts the methods in most literatures to define the concept of cross-shareholding, including one-way shareholding of listed companies and mutual stock holding of listed companies [11], which is more consistent with the actual situation in China. Domestic and foreign studies specifically on cross-shareholding are mainly based on normative model analysis, lacking empirical studies. In the past, researchers often directly put all the enterprises involved in cross-shareholding in A stock market together for research. As different industries have different characteristics, there may be some deviations in the results of this research method. Therefore, in order to overcome the problems, this paper describes and compares the cross-shareholding of different industries in recent years based on A-share listed companies from the perspective of different industries.

The study found that enterprise in the face of a certain risk or under the condition of certain problems, more likely to choose cross-shareholding in order to reduce operating pressure, due to various industries have their own characteristics, the formation of cross-shareholding has certain difference, but larger, management ability strong companies are more likely to realize the cross-shareholding, so Chinese enterprises' cross-shareholding is combination. This paper consists of five parts, the first part is the introduction; The second part is the change of

cross-shareholding and theoretical assumptions. In this part, the cross-shareholding situation within each industry is studied and it is found that enterprises may be more inclined to participate in cross-shareholding when facing certain operating difficulties. The third part puts forward the hypothesis to the research question; The fourth part is the use of empirical analysis, through the study of enterprises to choose and exit cross-shareholding factors, further study the characteristics and changes of cross-shareholding enterprises; The fifth part is the conclusion.

2. Analysis on the Basic Situation of Cross-Shareholding

Using the data of A shares in Shanghai and Shenzhen stock markets from 2005 to 2016 in CSMAR database and Wind database, this paper studies the industry classification of the stock exchange, and divides the listed companies into six categories: finance, real estate, comprehensive, industry, public utilities and commerce. Although there are other more detailed industry classification methods, considering the specific problems studied, if the classification is too detailed, there is little cross-shareholding phenomenon in many industries, which can not accurately reflect the specific situation of the industry, but can not better study the problem.

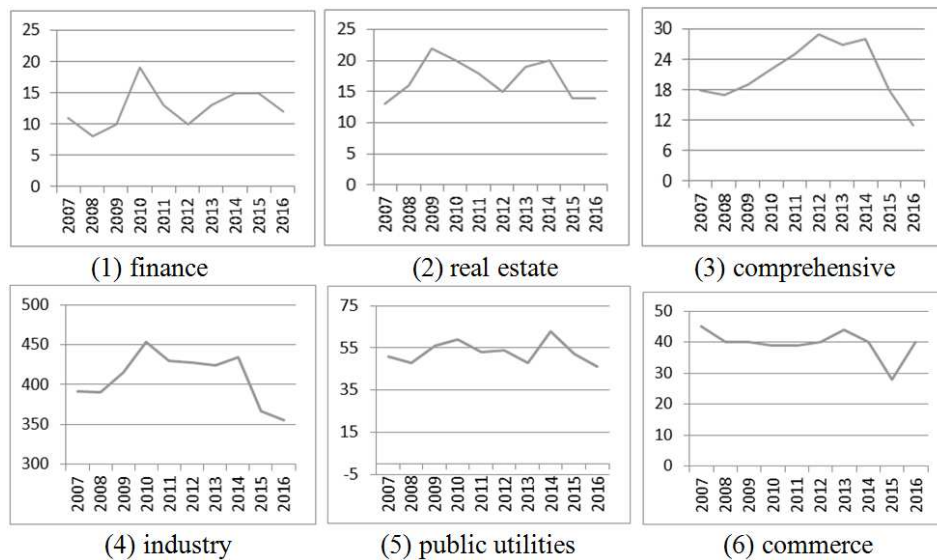


Figure 1. Changes in the number of cross-shareholding enterprises in different industries.

From the change of the number of cross-shareholding enterprises in each industry, there are similarities and differences. According to the division of these industries, the change of cross-shareholding enterprises in each industry is shown in Figure 1. It can be concluded that cross-shareholding in the same industry have the following characteristics: (1) cross-shareholding are widely distributed. A certain number of enterprises in the six industries participate in cross-shareholding. Among them, industry has the most enterprises participating in cross-shareholding, which is much higher than the other five industries. The number of

enterprises participating in cross-shareholding in public utilities and commerce is similar, and the number of enterprises participating in cross-shareholding in finance, real estate and comprehensive is similar. (2) After 2008, the enterprises participating in cross-shareholding in various industries have increased to a certain extent, but after 2014, there has been a significant decline except for business. During the period from 2010 to 2014, the cross-shareholding within various industries fluctuated greatly. For a period of time after 2008, the number of enterprises participating in cross-shareholding has increased to a certain extent, but after

that, the absolute number of cross-shareholding enterprises in different industries has different trends. For example, compared with 2008, the absolute number of cross-shareholding enterprises in finance, real estate, industry and public utilities has decreased significantly, but the number of cross-shareholding enterprises in comprehensive and commercial enterprises has increased steadily. After 2014, the number of cross-shareholding enterprises in finance, real estate, comprehensive, industrial and public utilities decreased significantly, especially in comprehensive and industrial industries, but commerce increased significantly. From the time line, the change trend of the number of cross-shareholding enterprises in the six industries is not completely consistent. (3) Relatively speaking, the degree of fluctuation in the number of cross-shareholding enterprises in public utilities and commerce is small, while the degree of fluctuation in the number of financial, real estate,

comprehensive and industrial industries is more intense.

Figure 2 shows the change in the proportion of enterprises participating in cross-shareholding in each industry to the total number of enterprises in each industry from 2007 to 2016. It can be found that the change trend of cross-shareholding behavior in these six industries is basically consistent with figure 1. In terms of proportion, industry, commerce and finance have the most enterprises participating in cross-shareholding, while the proportion of enterprises participating in cross-shareholding in real estate, comprehensive and finance is low. From 2007 to 2016, the number of enterprises included in various industries continued to increase, but the enterprises participating in cross-shareholding in various industries failed to show correlation with it. Therefore, it is not that the increase in the number of enterprises in the industry will lead to more enterprises participating in cross-shareholding.

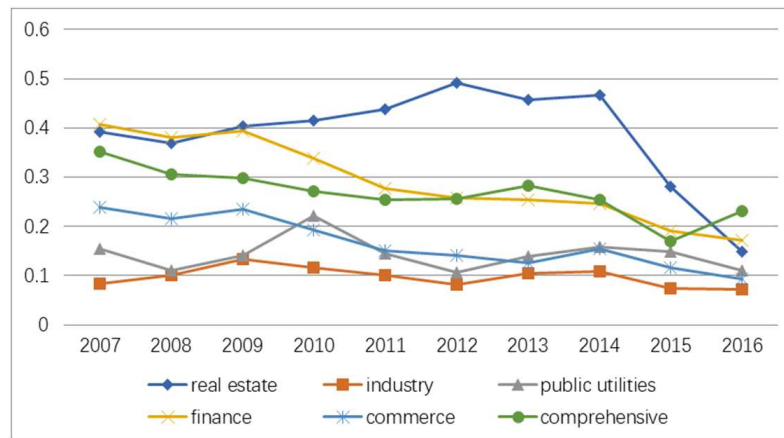


Figure 2. Changes in the number of cross-shareholding enterprises in different industries percentage of cross-shareholding enterprises in each industry.

The cross-shareholding relationship between enterprises may form a certain network. In order to explain the characteristics of cross-shareholding more clearly, we use the network analysis method to study the cross-shareholding behavior within each industry. Centrality is an important factor that can reflect the behavior of cross-shareholding [5]. Figure 3 reflects the changes in the absolute degree centrality of cross-shareholding networks in various industries. It can be seen that the degree centrality of the financial industry was the highest before 2015,

but there was a large decline in 2015. The centrality of real estate, industry, public utilities, commerce and comprehensive should not hover between 1 and 2, which shows that from 2007 to 2016, although the enterprises participating in cross-shareholding in these industries changed greatly (can be seen from Figure 1 and Figure 2), on the whole, the centrality is low. Most of the enterprises participating in cross-shareholding in various industries only hold the shares of one enterprise and form a shareholding relationship with one enterprise.

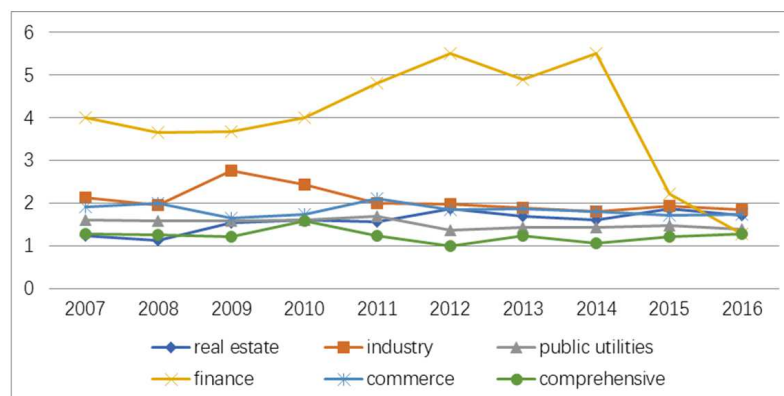


Figure 3. Changes in degree centrality of each industry.

Both the data reflected by the enterprises participating in cross-shareholding and the situation reflected by the network formed by cross-shareholding show that the behavior of enterprises participating in cross-shareholding in different industries has some common ground. After the economic crisis in 2008, the number of enterprises participating in cross-shareholding increased significantly. When the economic situation improved, the number of enterprises participating in cross-shareholding decreased relatively, this can explain from the side that enterprises that encounter certain business problems are more inclined to participate in cross-shareholding, but there are certain differences in each industry. It is necessary and meaningful to study this problem by industry.

3. Research Hypothesis

From the existing literature, most articles focus on the impact of cross-shareholding, and few articles discuss the timing and characteristics of enterprises participating in cross-shareholding. However, through the combing of literature and the analysis of cross-shareholding cases, we can summarize the timing of enterprises participating in cross-shareholding, which can be summarized as the following hypotheses: (1) enterprises choose cross-shareholding when avoiding malicious acquisition. Cross-shareholding originated in Japan. The reason for this behavior in Japan is that in order to prevent their malicious acquisition in the secondary market, enterprises disperse their equity through cross-shareholding, which greatly increases the difficulty of malicious acquisition by other enterprises. (2) When enterprises need financing, they choose cross-shareholding. Enterprises may encounter financing difficulties in operation. Enterprises can alleviate the financing pressure of enterprises by participating in cross-shareholding. Zhi and Bi pointed out that enterprises' participation in cross-shareholding can increase the flexibility of financing [17]. (3) When seeking strategic cooperation, enterprises choose cross-shareholding. Cross-shareholding can realize deep cooperation among enterprises and form alliances among enterprises. For example, enterprises can form R&D alliances, use the form of cross-shareholding to deepen the cooperation of this alliance, and formulate a reasonable income distribution method according to each other's shareholding. (4) When improving the corporate governance structure, enterprises choose cross-shareholding. Enterprises participating in cross-shareholding can introduce new shareholders, and the shareholders' meeting will have a certain impact on the operation and management of enterprises, which can improve the capital stock composition and governance structure of the company to a certain extent. (5) When dispersing business risks, enterprises choose cross-shareholding. Enterprises may encounter various risks in operation. In order to disperse the operational risks encountered by enterprises and resist the cyclical impact of economy, enterprises will participate in cross-shareholding. (6)

When seeking monopoly, enterprises choose cross-shareholding. Enterprises participating in cross-shareholding may form collusion and occupy the market by improper means. Amundsen and Bergman believe that enterprises participating in cross-shareholding may seek monopoly and act against market competition [1]. However, from the perspective of enterprises participating in cross-shareholding in recent ten years, there are many enterprises participating in cross-shareholding in China, whether from the perspective of market changes or published information, there have been no large-scale malicious acquisitions. Chinese companies participating in cross-shareholding can avoid malicious acquisitions. In addition to the original monopoly enterprises, the enterprises participating in cross-shareholding have not had obvious market monopoly in recent ten years. Participating in cross shareholding can promote resource acquisition, information disclosure and corporate governance [6, 13]. Therefore, the enterprises participating in cross-shareholding may not be mainly for seeking market monopoly. It can be found from several other factors that when enterprises participate in cross-shareholding, whether for financing, dispersing business risks or improving corporate governance, they often encounter certain problems and bottlenecks in operation and development. According to the previous discussion on the changes of cross-shareholding enterprises in different industries, it can also be found that when facing business risks, Companies may be more inclined to participate in cross-shareholding.

Therefore, we put forward hypothesis 1: enterprises with certain difficulties in operation are more inclined to seek cross-shareholding, but because each industry has its own characteristics, the specific influencing factors may be different.

According to the institutional constraints on cross-shareholding, only the cross-shareholding between parent and subsidiary companies is constrained by the system, and the choice of cross-shareholding objects by enterprises is extremely free and will hardly be subject to too many regulatory restrictions. For enterprises, especially those facing certain problems in operation, this choice will not be blind when choosing cross-shareholding objects. Whether from the perspective of enterprise survival or from the perspective of maximizing enterprise value and shareholders' interests, enterprises will choose enterprises that can solve their own difficulties to a certain extent as the object of cross-shareholding. Participation in cross shareholding can promote reciprocity [8]. After enterprises realize cross-shareholding, they will more or less become a community of interests to a certain extent, and the operation changes of one party will have an impact on the other party. If two enterprises trapped in the operation quagmire cooperate with each other, they may not be able to solve their own operation problems well, but also fall into a more difficult situation due to the drag of partners. Therefore, enterprises that can successfully realize cross-shareholding may have

certain characteristics. These enterprises must at least have strong strength and have certain development potential. Only in this way can this cooperation be win-win. Even if the goal of enterprises participating in cross-shareholding is only to improve investment income and disperse business risks, enterprises will choose enterprises with relatively strong strength when choosing the object of cross-shareholding.

Therefore, we put forward hypothesis 2: the enterprises that can successfully realize cross-shareholding must also have certain development potential, and the enterprises with strong strength are easier to realize cross-shareholding.

4. Empirical Results

In order to explore the characteristics of enterprises participating in cross-shareholding, according to the research on cross-shareholding in previous literature and combined with its own research problems and research purposes, the explanatory variables are whether to participate in cross-shareholding, 0 is not participating in cross-shareholding, and 1 is participating in cross-shareholding. In order to verify the above hypothesis, the explanatory variables selected in the empirical study include the net goodwill reflecting the comprehensive strength of the enterprise, the total assets measuring the absolute scale of the enterprise, the quick ratio and asset liability ratio measuring the long-term and short-term capital tension and debt degree of the enterprise, and the total asset turnover rate and operating revenue growth rate measuring the operating capacity of the enterprise. About the growth rate of total assets showing the development potential and growth of enterprises.

Goodwill represents the reputation and goodwill of an enterprise, can bring profitability beyond the normal profit level to the enterprise, and can reflect the soft power of an

enterprise. The greater the net value of goodwill, the stronger the soft power of the enterprise. Total assets reflect the size of the absolute scale of the enterprise. The larger the scale of the enterprise, the stronger the hard power of the enterprise. In the empirical analysis, the net value of goodwill and total assets are analyzed by logarithm. The growth rate of total assets is the ratio of the growth of total assets at the end of the year to the total assets at the beginning of the year. It is the main index to analyze the capital accumulation ability and development ability of the enterprise in the current year. Quick ratio is an important indicator to measure the ability of an enterprise's current assets to be immediately realized to repay current liabilities. It can measure the enterprise's short-term solvency and cash constraints. When measuring short-term liquidity and solvency pressure, it is more accurate than the current ratio commonly used to measure the enterprise's short-term solvency. The higher the quick ratio, the stronger the enterprise's short-term debt repayment ability and the lower the pressure of short-term debt repayment. Asset liability ratio is not only a measure of the long-term debt situation of an enterprise, but also the most commonly used indicator to measure the operation risk of an enterprise. The larger the asset liability ratio is, the more serious the long-term debt is, the greater the operation risk is. The total asset turnover rate reflects the management quality and utilization efficiency of all assets of the enterprise. The higher the total asset turnover rate, the stronger the sales ability of the enterprise and the better the benefit of asset investment. The growth rate of operating income indicates the increase or decrease of main business income compared with the previous year. It is an important indicator to evaluate the growth status and development ability of an enterprise. In addition to these explanatory variables, the year is also added as the control variable in the model.

Table 1. Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Goodwill	9,524	-1.44193	2.583761	-18.4207	6.133333
Asset	24,339	3.438447	1.506103	-7.57848	12.3941
Growth	24,340	0.267805	1.218708	-1	107.1283
QuikRatio	23,953	2.043923	4.248116	-5.13165	179.5783
DebtRatio	24,339	0.565011	5.96975	-0.1947	877.2559
Turnover	24,291	0.636327	0.616271	-0.01833	12.37286
Revenue	23,048	4.70071	398.6827	-6665.31	59411.55

Table 2. Correlation test results.

	Goodwill	Asset	Growth	QuikRatio	Turnover	DebtRatio	Revenue	year
Goodwill	1							
Asset	0.3892	1						
Growth	0.0898	0.0128	1					
QuikRatio	-0.079	-0.1792	0.1142	1				
Turnover	-0.0116	0.0501	-0.0616	-0.1189	1			
DebtRatio	0.0806	-0.0684	-0.0087	-0.0253	-0.0054	1		
Revenue	0.0058	0.0112	0.0032	-0.0027	0	0.0004	1	
year	0.304	0.1902	0.0184	0.0556	-0.0809	-0.0285	0.0082	1

This study uses logit model for analysis. As the financial industry is quite different from other industries in cross-shareholding behavior, and the driving factors are more

complex, the financial industry is excluded by referring to the practices of other articles. Because there is a certain correlation between cross-shareholding behavior and

corporate performance, in order to minimize the impact of endogenous, the financial indicators lagging behind the first period are used as explanatory variables, and the relevant data from 2006 to 2017 are used to study the cross-shareholding behavior of enterprises. The descriptive statistics of the data are shown in Table 1. Before the specific regression, the correlation test is carried out first. The results of the correlation test are shown in Table 2. The correlation between each variable is small, all less than 0.4, and most of them are concentrated between 0.1 and 0.001.

In fact, these enterprises participating in cross-shareholding not only have the intention of cross-shareholding, but also successfully realize the cross-shareholding and reach a

cooperative relationship. Therefore, in the analysis, we can not only study the motivation and intention of enterprises participating in cross-shareholding, but also reflect which enterprises are easier to realize cross-shareholding. The regression results are shown in Table 3. According to the regression results, for the whole industry, when the strength of the enterprise is measured by the absolute assets of the enterprise, there is an obvious characteristic of strong combination in cross-shareholding, but this strong combination occurs more when the enterprise is facing certain financial and development difficulties. In China, cross-shareholding enterprises are more likely to be an act of strong alliance.

Table 3. *Influencing factors of participating in cross-shareholding enterprises.*

	ALL	real estate	industry	public utilities	commerce	comprehensive
<i>Goodwill</i>	-.02892668**	0.058214	-0.01862414	-0.01603568	-.07427441*	.26673154**
<i>Asset</i>	.55081542***	.67538855***	.58093256***	.42720741***	.40707045***	1.8774672***
<i>Growth</i>	-.3500007***	0.021571	-.32412008***	-0.26706286	-.65641811*	-1.1751937
<i>QuickRatio</i>	-.03704834**	-.99010734*	-0.03698664	.04275431**	-.51427368***	-0.6535772
<i>DebtRatio</i>	-1.2019533***	-3.3683593*	-1.1547571***	0.73863997	-2.5104227***	-7.180326***
<i>Turnover</i>	.09351897*	1.0482549**	.23372041***	-0.06628568	-.93553931***	-1.7323412**
<i>Revenue</i>	-.02460867*	-.41441248**	-0.01411431	0.00225153	-0.02422157	0.04614786
<i>year</i>	-.26838478***	-.18045827***	-.29818561***	-.23151318***	-.22408083***	-.55304138***
<i>cons</i>	537.05039***	360.46345***	596.98124***	461.87334***	451.13744***	1107.5487***

*, ** and *** respectively present significant differences at the levels of 10%, 5% and 1%.

From the perspective of explanatory variables, the impact of quick ratio on cross-shareholding is significantly negative. The greater the pressure of short-term repayment, the more likely enterprises are to seek opportunities for cross-shareholding. The growth rate of total assets and operating income have a negative effect on enterprises' participation in cross-shareholding, that is, enterprises are more willing to participate in cross-shareholding when their development speed slows down and their operating income decreases. The debt ratio is significantly negative, indicating that the larger the long-term debt of the enterprise, the greater the risk it faces, and the more difficult it is to form cross-shareholding. In addition, this may be caused by two other factors: one is that the enterprise alleviates the capital pressure through long-term debt borrowing; the other is that the enterprise with serious long-term debt does not have enough capital to hold shares of other enterprises, and finds that the enterprise has large long-term debt, other enterprises that are unwilling to hold shares of the enterprise. The same is true in other industries. The impact of net goodwill on cross-shareholding is negative, which shows that the better the reputation of the enterprise and the stronger the soft power of the enterprise, the less cross-shareholding is needed. When facing the short-term problems of operation, there are other ways to alleviate the pressure and solve the problems. In addition, when an enterprise with good reputation has business problems, its existing problems may be expanded. Even if there is a strong willingness to participate in cross-shareholding, other enterprises are unwilling to cooperate with him. Enterprises' participation in cross-shareholding is directly proportional to the scale of total

assets and the turnover rate of total assets, which shows that when enterprises have the willingness of cross-shareholding, enterprises with strong absolute assets and stronger sales ability are easier to reach cooperation. For real estate, the impact of net goodwill and growth rate on cross-shareholding is not significant. When real estate enterprises face greater cash pressure and development pressure, the willingness to participate in cross-shareholding is stronger. This is because the growth rate of real estate enterprises is basically the same and the scale is large. These factors are relatively the same. The lack of short-term funds is more likely to affect their development. However, at the same time, enterprises will avoid cooperation with enterprises with high risk (high asset liability ratio). Therefore, long-term liabilities are inversely proportional to cross-shareholding. For industry, the impact of net goodwill, quick ratio and business growth rate on cross-shareholding is not significant. Enterprises with strong absolute strength and strong operation ability but development bottlenecks are more likely to realize cross-shareholding. Public utilities are mainly affected by capital scale and current ratio. In public utilities, enterprises with stronger strength and less capital pressure are more likely to realize cross-shareholding, which is a very different point between this industry and other industries. The characteristics of strong combination are more obvious in public utilities. For business, the difference from other industries is that when the total asset turnover rate is negative, enterprises are more willing to participate in cross-shareholding, which is determined by the characteristics of the business industry. Business related enterprises often need a higher turnover rate to maintain their own development. When the turnover rate is low, they often

face greater business risks and need to cooperate to tide over the difficulties. The cross-shareholding behavior of comprehensive enterprises is mainly affected by net goodwill, capital scale and long-term debt ratio. It can be found that comprehensive enterprises with strong soft and hard strength and facing operational risks are more likely to participate in cross-shareholding. Therefore, hypothesis 1 and hypothesis 2 are proved statistically.

The explanatory variables in the previous empirical part are only divided into two categories: 0 and 1, which represent whether a listed enterprise participates in cross-shareholding. In order to further explain the situation of cross-shareholding and verify the robustness of the previous regression results, we use the absolute centrality of the network formed by cross-shareholding to analyze the factors affecting cross-shareholding. The absolute centrality in the cross-shareholding network represents the absolute number of

cross-shareholding relationships formed between an enterprise and other enterprises. If an enterprise has cross-shareholding relationships with other n enterprises, the absolute centrality of the enterprise is n . Using this index, we can show the influencing factors of enterprises' participation in cross-shareholding. When the explanatory variable is replaced by absolute centrality, logit regression is carried out according to the above method, and the regression results are shown in Table 4. According to the results shown in Table 4, it can be found that the significance and symbols of the influencing factors of enterprises participating in cross-shareholding in each industry are basically consistent with those in Table 3, which can explain the robustness of the above results and the rationality of the analysis to a certain extent. Listed companies often participate in cross-shareholding when they encounter certain difficulties, and enterprises with strong strength are easier to realize cross-shareholding.

Table 4. Influencing factors of participating in cross-shareholding enterprises: Based on absolute centrality.

	ALL	real estate	industry	public utilities	commerce	comprehensive
Goodwill	-.02514445*	0.071438	-0.01199	-0.03964	-.06954735*	.31468786***
Asset	.57632908***	.76009176***	.60807238***	.41824395***	.51031337***	1.8612516***
Growth	-.28446401***	0.07068	-.28164363***	-0.17016	-.55404367*	-0.48357
QuikRatio	-.05317239***	-0.86052	-.04482361**	0.03086	-.49292576***	-.85933049*
DebtRatio	0.061882	.84995141**	.19227172***	-0.16794	-.83941933***	-1.8759296**
Turnover	-1.2882123***	-3.8608472**	-1.2200488***	0.765469	-2.9112692***	-7.065797***
Revenue	-.03056874**	-.47648881**	-0.01166	-0.00598	-0.01726	0.056628
year	-.17721943***	-0.07635	-.19873136***	-.20260555***	-.11420021**	-.4701824***
cons	353.77035***	151.1834	397.041***	403.70892***	229.74427**	941.34786***

*, ** and *** respectively present significant differences at the levels of 10%, 5% and 1%.

Table 5. Influencing factors of enterprises' withdrawal from cross-shareholding.

	ALL	real estate	industry	public utilities	commerce	comprehensive
Goodwill	.0673338***	-0.07882	.06077284***	0.033003	0.024804	-0.15109
Asset	-.24045029***	-0.17767	-.26516859***	-0.10488	.41683028***	-.79846303**
Growth	.14664794**	-1.30156	.17822042**	0.049855	.53524169*	0.48946
QuikRatio	-0.00282	2.5272797**	0.006961	-.09250689***	0.017041	.9256506**
DebtRatio	-0.09188	10.451425***	0.17728	-2.0277578***	0.500848	2.396152
Turnover	-2.0111261***	-2.2251029***	-.31581671***	-0.08689	.79708476***	0.146382
Revenue	.01617932*	.12952189**	0.01465	-0.05378	0.030125	0.010786
year	.00043772***	0.000468	.00045939***	.00041501***	0.000159	.00082137***
cons	1.1132813***	-8.0345882***	1.1058841***	1.8719719***	-3.3864164***	0.845861

*, ** and *** respectively present significant differences at the levels of 10%, 5% and 1%.

In order to study the factors that cross-shareholding enterprises withdraw from cross-shareholding, the same method is used to select enterprises from cross-shareholding to non cross-shareholding from 2007 to 2016 for empirical research. The empirical results are shown in Table 4. After comparison, it can be found that the symbols of each coefficient in Table 5 are almost all opposite to those in Table 4. It shows that when an enterprise changes from cross-shareholding to non cross-shareholding, the influencing factors mentioned above play the opposite role, but individual factors are different. For the whole industry, the impact of quick ratio and overall debt ratio is no longer significant. When the capital pressure of enterprises decreases, they will gradually break away from cross-shareholding. The smaller the scale of enterprises forming cross-shareholding, the lower

the possibility of enterprises giving up cooperation. For industry, in addition to several other factors, the net goodwill has changed from insignificant to significant, which shows that in addition to other improvements, the soft power of industrial enterprises has improved, and enterprises will no longer participate in cross-shareholding. For public utilities, the abandonment of cross-shareholding by public utility enterprises is mainly affected by quick ratio and long-term liabilities. When the cash pressure increases and the risk increases, public utility enterprises will give up cross-shareholding. For commercial enterprises, different from other industries, affected by the asset growth rate and turnover rate, when the asset scale becomes larger and the turnover rate increases, it is easier for enterprises to break away from cross-shareholding. For enterprises in

comprehensive industries, the quick ratio is directly proportional to the cross-shareholding of enterprises, the stronger the repayment ability of enterprises, the less enterprises will participate in cross-shareholding. For all enterprises, no matter which industry they are in, they will gradually withdraw from cross-shareholding when their business situation gradually gets better. This further illustrates the rationality of hypothesis 1 and verifies hypothesis 2 from the side, because when enterprises get rid of their own business problems, they will reduce cross-shareholding.

5. Conclusion

There are many cross-shareholding behaviors in China's A-share listed companies. These enterprises participating in cross-shareholding will unite when they encounter development problems, but with the improvement of business situation and economic environment, enterprises will withdraw from cross-shareholding. In the past, some articles pointed out that cross-shareholding may make large enterprises collude with each other, monopolize the market, affect the normal business activities of enterprises and interfere with the normal order of the market. If the cross-shareholding behavior of enterprises really causes a large number of monopolies, it is necessary to restrict the cross-shareholding behavior of at least some enterprises. According to the empirical results, this situation may not exist in China's listed companies, which shows that China's market economic system is becoming more and more perfect and the degree of market competition is more intense. It also shows that enterprises have a stronger willingness to cooperate in crisis and emphasize their own independent development in normal development. Cross-shareholding is more of a mutual aid behavior in difficult situations, and this mutual aid behavior mainly occurs in large-scale enterprises with certain development potential, which may also mean that the expected role of cross-shareholding has not been fully realized in China, and enterprises have not been able to use cross-shareholding to effectively integrate resources. In fact, cross shareholding also plays an important role in creating value and promoting green development of industry [15, 16]. These effects need to be further explored in enterprises of China.

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