Research on the Impact of Market Competition, Ownership Structure, and Corporate Social Responsibility

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Abstract: This article takes companies listed from 2014 to 2016 as research objects, relies on principal–agent theory, stakeholder theories, and reputation theories, and examines the ownership structure, market competition, and corporate social responsibility (CSR) using a multiple regression approach based on a hybrid ownership perspective. At the same time, the relationship between market competition and equity structure was studied. Research shows that product competition degree and CSR are in an inverted "U" relationship; ownership concentration is positively related to CSR; equity balance and CSR are negative. When related to market competition variables, the mixed-owned companies listed degree of ownership concentration are still positively related to CSR, and the linear relationship of negative balance of ownership balance becomes an inverted "U"-shaped curve relationship. The market competition has improved the restraint of CSR by the degree of ownership balance.

Keywords: *Market competition; equity structure; corporate social responsibility*

0 Introduction

Corporate social responsibility (CSR) is an important issue for society, country, and enterprises. CSR includes responsibilities to shareholders, employees, creditors, society, suppliers, customers, governments, and companies (Daifu (2001)[1]. The reform of mixed-ownership plays a role in the reform of the shareholding structure, which will affect the concentration of ownership of state-owned enterprises. Therefore, this paper studies the impact of corporate ownership structure and market competition on CSR, and analyzes and whether the participation of market competition can help improve the shareholding structure and its negative effects.

1 Literature review and research hypothesis

1.1 Literature review

1.1.1 Market competition and CSR

The development of listed companies must value the fulfillment of CSR in a fierce competitive environment. Nowadays, the research on the relationship between market competition and CSR has linear or curvilinear relationship. Xiaoxia and Yanjun (2011) found that the smaller the competition intensity of the industry, the higher the level of CSR; the greater the intensity of competition and the lower the level of social responsibility[2]. Flammer (2013) studied the performance of the US manufacturing companies in fulfilling their social responsibilities and finds that market competition helps companies to fulfill their social responsibilities[3]. Campbell (2007) believed that when the market competition is fierce, the contribution rate of CSR is low. Enterprises are in a monopoly position and will be constrained by fulfilling social responsibilities in a low-competition environment, so the relationship between market competition and social responsibility is drawn[4].

1.1.2 CSR and equity structure

Runtian (2009) found that the higher the proportion of foreign ownership, the higher the interests of shareholders and employees[5]. Peixiang *et al.* (2015) believed that the impact of mixed-ownership reform is the ownership structure and nature. The state-owned

shareholding ratio, equity concentration, and equity balance are positively related to CSR[6]. Lijun *et al.* (2016) found that the concentration of equity in financial enterprises is negatively related to CRS[7].

1.1.3 The complementary effect of market competition and ownership structure on CSR

Jinhua and Changwen (2006) believed that the competitiveness of enterprises affects the impact of equity structure on CSR[8]. Congying (2011) found that there is a complementary relationship between market competition and the governance effect of equity concentration. When market competition is not conducive to the effect of governance, equity concentration can compensate for the adverse effects of market competition. When the structure is disciplined agile delivery for governance effects, market competition can also make up for the lack of equity structure[9].

In summary, both domestic and international research on market competition and CSR are focusing on the perspective of corporate level or charitable giving. Few articles measure CSR through all stakeholders. Hence, this paper mainly studies the impact of market competition and equity structure on CSR.

1.2 Research hypothesis

When market competition is motivated, companies will ignore social interests. The pressure of competition is too large, enterprises will call resources to meet the needs of enterprises, and thus, the willingness to social responsibility will decline; when the market competition is not intense, the company will monopolize to obtain benefits. There is not fulfilled social responsibility for enhancing its reputation. Therefore, the moderate competition in the industry will promote the fulfillment of CSR.

H_1: The level of market competition and CSR is "U"-type;

Based on the theory of reputation, equity concentration is conducive to the convergence of major shareholders and company interests. Shareholders will actively cater to the requirements of the policy for the benefit, and increase the degree of fulfillment of CSR to enhance the reputation, which reduces the occurrence of "free riders" between shareholders and is also beneficial to disclose CSR reports.

H_2: Equity concentration is positively related to CSR;

The diversification of equity makes the rights of each shareholder not concentrated. Some shareholders will ignore the fulfillment of social responsibility for their benefits when their making decision. To seek personal benefits, the shareholders and internal managers are not willing to disclose CSR reports. While the company pursues excess profits, different equity properties represent different interests and balance each other, so they will not pay attention to the investment and disclosure of social responsibility.

H_3: The balance of equity is negatively related to CSR;

Market competition as a business environment factor, based on resource dependence theory, ownership structure, and product market competition has a complementary relationship to CSR.

H_4: In the implementation of CSR, market competition and ownership structure complement each other.

2 Variable design and model building

2.1 Variable selection and data source

This paper selects the financial data of listed companies in Shenzhen and Shanghai from 2014 to 2016. The data comes from Csmar database, and the empirical analysis uses Spss17.0 for processing. Among them, this article excludes samples with missing values, ST and ST* companies, and financial industry data. The specific variables showed in Table 1.

2.2 Model building

Establish a model for market competition and CSR based on hypothesis 1

$$csri=\alpha_0+\alpha_1*hhi+\alpha_2*hhi^2+\alpha i*control+\varepsilon_i \qquad \text{(model 1)}$$

Establish a model for equity structure and CSR based on hypothesis 2

$$csri=\beta_0+\beta_1*H_5+\beta_2*S+\beta_i*control+\varepsilon_i \qquad \text{(model 2)}$$

Modeling the complementary effect of ownership structure and CSR

$$csri=\beta_0+\beta_1*H_5+\beta_2*H_5*hhi+\beta_3*H_5*hhi^2+\beta_i*control+\varepsilon_i$$
$$\text{(model 3)}$$

$$csri=\beta_0+\beta_1*S+\beta_2*S*hhi+\beta_3*S*hhi^2+\beta_i*control+\varepsilon_i$$
$$\text{(model 4)}$$

3 Empirical results and analysis

3.1 Descriptive statistics

Table 2 is a descriptive statistic. It can be seen that the average value of crsi is 0.54, indicating that the sample enterprises have better social responsibility. The mean value of hhi is 0.06, which indicates that the company

Table 1. Related metrics

Variable	Metric variable	Definition
Explained variable	CSR contribution rate (CSRI)	Customer responsibility contribution rate + Supplier responsibility contribution rate + Employee responsibility contribution rate + Government responsibility contribution rate + Shareholder responsibility contribution rate + Legal and legal contribution rate
Explanatory variable	Market competition (hhi)	Operating profit/operating income
	Equity concentration (H_5)	The sum of the squares of the shareholding ratio of the top five shareholders
	Balance of equity (S)	The sum of the shareholding ratio of the second to the 10th largest shareholder
Control variable	Total net profit margin (roa)	Total net asset interest rate = net profit/average balance of total assets
	Assets and liabilities (debt)	Assets and liabilities = debt/asset
	Total assets (size)	Logarithm of total assets

CSR: Corporate social responsibility

Table 2. Descriptive statistics

Variable	n	Minimum value	Maximum value	Mean value±Standard deviation
csri	2283	0.006305	1.16055	0.54164±0.55367
hhi	2283	−8.47048	8.38478	0.06821±0.47503
hhi^2	2283	0	7.17489	0.23021±2.88498
H_5	2283	0.00272	0.79384	0.16419±0.12327
S	2283	0.39470	60.13840	18.50621±12.08674
roa	2283	−0.64485	7.24931	0.03320±0.161288
debt	2283	0.03512	0.99466	0.50257±0.196931
size	2283	1.76413	2.85087	2.27458±1.43870

CSR: Corporate social responsibility

is generally in a competitive industry. The maximum value of H_5 is 0.79, which indicates that there are enterprises with too high proportion of the top five holdings. The maximum value of S is 60.14, indicating that some companies have a relatively concentrated shareholding ratio, but from the minimum value, it can be seen that some companies have a situation in which the largest shareholder is overcontrolled.

3.2 Correlation analysis

Table 3 correlates the variables of Model 1 and Model 2. It can be seen that except for the concentration of ownership and the control variables are positively related to CSR, other explanatory variables are negatively related to CSR. Except for roa and size, all explanatory variables and control variables are related to corporate society. The correlation coefficients in the table are all <0.5, so there is no linear correlation between all variables.

Table 4 compares the relevant variables of Model 3 and Model 4. The results are shown in Table 4. Crsi is positively related to roa and size, but not significant. Crsi and debt are significantly positively correlated at

the 1% level. There is a significant negative correlation between CSR and the interaction between equity structure and market competition. This shows that after the competition in the market, the relationship between CSR and ownership structure has changed, and the concentration of ownership has changed from positive correlation to negative correlation. It can be seen that the correlation coefficient between H5*hhi and S*hhi is 0.886 from Table 4. The correlation coefficient of the quadratic term is 0.734. There is a strong correlation, but these two variables are needed by different models, so there is no linear correlation between all variables.

3.3 Multiple regression analysis

3.3.1 Market competition and CSR

Table 5 shows the relationship between model one CSR and market competition. Regression analysis shows that hhi^2 and csri are negatively correlated at a significant level of 1%, so hhi and crsi have an inverted "U"-type relationship. Through hypothesis 1, it indicates that market competition has both promoting and inhibiting

Table 3. Correlation analysis of market competition and shareholding structure on CSR

	csri	hhi	hhi^2	H$_5$	S	roa	debt	size
csri	1	−0.052*	−0.069**	0.076**	−0.084**	0.033	0.148**	0.004
hhi		1	−0.086**	0.100**	0.039	0.162**	−0.159**	0.082**
hhi^2			1	−0.030	0.019	−0.041*	−0.018	−0.053*
H$_5$				1	−0.223**	0.021	0.049*	0.403**
S					1	0.035	0.004	0.126**
roa						1	−0.092**	−0.008
debt							1	0.384**
size								1

*, **The table is significantly correlated at the 0.05 and 0.01 levels, respectively. CSR: Corporate social responsibility

Table 4. Correlation analysis of complementary effects on CSR

	csri	H$_5$*hhi	H$_5$*hhi^2	S*hhi	S*hhi^2	roa	debt	size
csri	1	−0.052*	−0.072**	−0.054*	−0.060**	0.033	0.148**	0.004
H$_5$*hhi		1	0.373**	0.886**	0.167**	0.162**	−0.159**	0.082**
H$_5$*hhi^2			1	0.401**	0.734**	−0.001	−0.030	0.018
S*hhi				1	0.404**	0.135**	−0.112**	0.073**
S*hhi^2					1	−0.031	−0.024	−0.042*
roa						1	−0.092**	−0.008
debt							1	0.384**
size								1

*, **The table is significantly correlated at the 0.05 and 0.01 levels, respectively. CSR: Corporate social responsibility

Table 5. Regression analysis of product market competition and CSR

Model 1	B	Standard error	t	Significant
Constant	0.837	0.187	4.465	0.000
hhi	−0.040	0.025	−1.592	0.112
hhi^2	−0.013	0.004	−3.367	0.001
roa	0.173	0.072	2.411	0.016
debt	0.476	0.064	7.411	0.000
size	−0.024	0.009	−2.703	0.007

CSR: Corporate social responsibility

CSR. When the market competition is moderate, that is, the turning point of "U," the enterprise is most willing to fulfill CSR. When the degree of competition exceeds 1.54, the degree of fulfillment of CSR will decline. When the degree of competition gradually approaches 1.54 from the left, the CSR will gradually increase.

3.3.2 Equity structure and CSR

Table 6 is a regression analysis of equity structure and CSR. H$_5$ and csri are positively correlated at a significant level of 1%, which is consistent with hypothesis 2. It shows that when the shareholding ratio of the top five shareholders is relatively concentrated, the interests of major shareholders and corporate interests tend to be the same. The controlling shareholder increased the supervision of the manager to avoid the first type of agency problem, which increased the willingness of the company to disclose the CSR report. S is negatively correlated at a significant level of 5%, which is consistent with hypothesis 3. Equity balances tend to result in a relative dispersion of equity. There is no absolute controlling shareholder. When the equity is more balanced, the second type of agency problem will happen. The company's shareholding structure is inconsistent, and their interests are inconsistent. Hence, there are different views on fulfilling CSR. Therefore, equity balances are not good for CSR.

3.3.3 The complementary effect of market competition and equity structure on CSR

Table 7 shows the regression results of market competition and the complementary structure of equity structure. The coefficients of H$_5$ and csri are positive, which are consistent with hypothesis 2. The coefficients of S and csri are negative, which

Table 6. Regression analysis of ownership structure and CSR

Model 2	B	Standard error	t	Significant
Constant	1.099	0.200	5.502	0.000
H_5	0.419	0.107	3.899	0.000
S	−0.002	0.001	−2.482	0.013
roa	0.168	0.071	2.368	0.018
debt	0.521	0.064	8.199	0.000
size	−0.037	0.010	−3.829	0.000

CSR: Corporate social responsibility

Table 7. Regression analysis of the complementary effects of market competition and equity structure on CSR

Variable	Model 3	Model 4
Constant	1.112 (5.632)***	0.823 (4.393)***
H_5	0.621 (5.891)***	
S		−0.077 (−3.668)***
H_5*hhi	0.808 (3.618)***	
H_5*hhi^2	0.018 (0.346)	
S*hhi		0.007 (0.320)
S*hhi^2		−0.049 (−2.176)**
roa	0.195 (2.742)***	0.172 (2.401)**
debt	0.477 (7.383)***	0.481 (7.555)***
size	−0.040 (−4.222)***	−0.020 (−2.320)**

*, **The table is significantly correlated at the 0.05 and 0.01 levels, respectively. The value of T is in parentheses. CSR: Corporate social responsibility

are consistent with hypothesis 3. From the Model 3 in Table 7, it is seen that the coefficients of H_5*hhi and H_5*hhi^2 are positive, but the regression results of H_5*hhi^2 are not significant, indicating that there is a linear relationship between equity concentration and CSR. After joining the interactive items of competition level, the concentration of ownership and CSR is still significantly and positively correlated, indicating that the change in ownership structure has no adverse impact on CSR. From the model 4 in Table 7, it is seen that after joining the market competition, the coefficient of S*hhi^2 is negative, and it is inverted "U" type at a significant level of 5%. The relationship between equity balance and CSR has changed from a linear relationship to a curve relationship. When market competition approaches the inflection point of "U" from the left side, the equity balance has a positive impact on the CSR. Hypothesis 3 can be known that equity checks and balances are negatively related to CSR, indicating that market competition to make equity balance is beneficial to enterprises to fulfill their social responsibilities. Therefore, hypothesis 4 was partially confirmed.

4 Research conclusions and recommendations

First of all, market competition and CSR are inverted "U" type. As the market competition becomes more and more fierce, the CSR first rises and then declines. When the degree of competition in the industry reaches a moderate level, the CSR is the highest.

Second, the equity structure affects the CSR. The more concentrated the equity, the more it can promote the fulfillment of social responsibility, due to the concentration of equity, the interests of major shareholders and the convergence of corporate interests, which are conducive to the development of enterprises, enterprises are willing to disclose CSR reports. On the contrary, the balance of equity is negatively related to the CSR because the equity is scattered, and the efficiency of the shareholders' meeting is lower, which is not conducive to the CSR.

Finally, the complementary effects of equity structure and market competition are analyzed. After joining the interactive items of market competition and equity concentration, the concentration of ownership and CSR is still significantly and positively correlated. After joining the interaction between market competition and equity balance, the original linear relationship is transformed into the curve relationship of the inverted "U." In the case that equity balances are not conducive to the CSR, market competition plays a complementary role and is conducive to the CSR.

Therefore, on the one hand, enterprises should realize that CSR is still the focus of the state, and enterprises must pay attention to the CSR, so as to enhance the reputation of enterprises and reduce the burden of investment and financing. On the other hand, according to the research, it is found that the balance of equity and CSR has an inflection point. At this turning point, the market competition is moderate and the CSR is the best. Hence, enterprises should try their best to find the inflection point and take the lead, grasp the market's reflection, and fulfill CSR more efficiently.

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