

Ownership Structure and Corporate Performance from the Perspective of Ultimate Ownership: Evidence from Chinese State-owned Listed Enterprises

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Abstract

This paper selects 850 state-owned listed enterprises from 2009 to 2014 in China's Shanghai and Shenzhen Stock Exchange to explore the impact of ownership structure on corporate performance from the perspective of ultimate ownership, and takes the endogeneity of ownership structure into deeper consideration. The study finds that ultimate ownership has no significant influence on corporate performance in state-owned enterprises. The separation of two rights and corporate performance shows a significant inverse U-shaped relationship. Taking the institutional environment into account, the inverse U-shaped relationship only exists in areas with poor institutional environment. To a certain degree, there exists the endogeneity of ownership structure.

Keywords: corporate performance, endogeneity, ultimate ownership, state-owned enterprises

1. Introduction

State-owned enterprises play an important role in the national economy, especially in the public services, natural monopolies and national security. There are 106 Chinese enterprises in the 2015 Fortune 500 companies, and 88 of which are state-owned ones, accounting for up to 93.6%. Since the 1978 reform and opening up, Chinese state-owned enterprises experienced from the devolution of power, institutional innovation to the state-owned development. In 2015, the State Council issued *Guiding Opinions on Deepening the Reform of State-Owned Enterprises* to develop mixed ownership economy, to strengthen and improve the Party's leadership in state-owned enterprises. In the new period, it is an urgent problem to arrange the ownership structure of state-owned enterprises.

Since Berle and Means's first research on ownership structure (Berle & Means, 1932), the relationship between ownership structure and corporate performance gains widespread concern in academic circles. On one hand, Jensen and Meckling propose agency theory that many small shareholders have no willing or ability to monitor managerial performance, but a major shareholder can make it, thereby enhancing corporate performance (Jensen, & Meckling, 1976). On the other hand, Johnson et al. find that the largest shareholder, based on maximizing their own interests, may tunnel against the interests of minority shareholders, thereby reducing corporate performance (Johnson et al., 2000).

Meanwhile, the existing literatures mainly use the first largest shareholder to study its impact on corporate performance. However, it is common that there are ultimate controllers behind the enterprises. The first largest shareholder cannot reflect the real ownership structure. Thus, La Porta et al. propose the theory of ultimate ownership that the ultimate controller gains the ultimate ownership of listed companies through concerted action, pyramid holdings, cross-holdings, etc (Porta et al., 1999). In addition, the existing empirical studies tend to support that the ownership structure is exogenous, Demsetz et al. firstly propose the endogeneity of ownership structure that the ownership structure is the result of trade-offs, there is no fixed relationship between ownership structure and corporate performance (Demsetz, 1983).

Therefore, this paper, from the perspective of ultimate ownership, takes state-owned listed companies in the new era as samples to study the relationship between ownership structure and corporate performance, with more comprehensive consideration of the endogeneity of ownership structure. The rest are as follows: the second part

is the literature review, the third is the research design, and the fourth is empirical analysis, and finally the conclusions and implications.

2. Literature Review

2.1 Ultimate Ownership Theory

There usually exist the ultimate controllers behind the listed companies. They control the company through concerted action, the pyramid structure, and cross-shareholdings, etc. Based on these facts, La Porta et al. propose the ultimate ownership theory. Ultimate Ownership (UO), also known as cash flow right, is the sum of multiplied percentage in each chain to the ultimate controller:

$$UO = \sum_{i=1}^m \prod_{j=1}^n O_{ij} \tag{1}$$

O_{ij} represents the ownership of individuals or organizations in the i layer of the j chain. At the same time, it calculates the ultimate control right (UC), also known as the voting right, is calculated as the sum of the weakest ownership in each chain:

$$UC = \sum_{i=1}^m \min \{ O_{ij} \} \tag{2}$$

Then it defines the degree of separation of ultimate ownership and ultimate control right (SD), calculated as the difference between the ultimate control right and ultimate ownership:

$$SD = UC - UO \tag{3}$$

Beginning in 2004, China Securities Regulatory Commission required all listed companies to disclose the ownership roadmap of ultimate controller. Taking the CATIC Real Estate Co., Ltd. (Stock Code: 000043) as example.

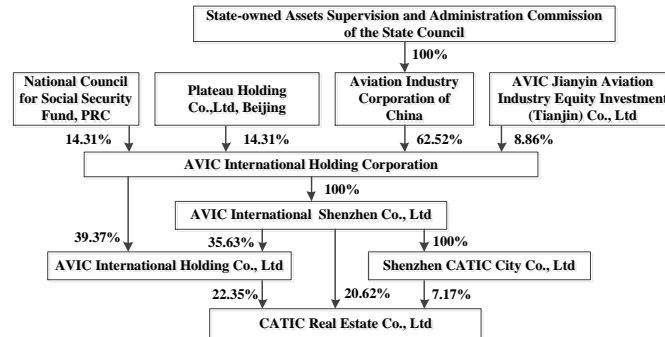


Figure 1. The Roadmap of the CATIC Real Estate Co., Ltd, 2014

The largest shareholder of the CATIC Real Estate Co., Ltd is "The AVIC International Holding Co., Ltd.", holding 22.35% of its ownership. In the ultimate ownership, the ultimate controller is "The State-owned Assets Supervision and Administration Commission."

(1) The ultimate ownership (UO) equals 27.85%, that is:

$$100\% \times 62.52\% \times \left[\frac{39.37\% \times 22.35\% + 100\% \times (35.63\% \times 22.35\% + 20.62\% + 100\% \times 7.17\%)}{100\%} \right] = 27.85\%$$

(2) The ultimate control right (UC) equals 50.14%, that is:

$$22.35\% + 20.62\% + 7.17\% = 50.14\%$$

(3) The degree of separation equals 22.29%, that is:

$$50.14\% - 27.85\% = 22.29\%$$

In Russian publicly traded companies, Federal and regional governments' ultimate control is exercised through extensive use of pyramids (Lucy, 2008). In 13 Western European countries, firms are widely held (36.93%) or family controlled (44.29%). Widely held firms are more important in the UK and Ireland, family controlled firms in continental Europe. Financial and large firms are more likely widely held, while non-financial and small firms are more likely family controlled. State control is important for larger firms in certain countries. Dual class shares and pyramids enhance the control of the largest shareholders, but overall there are significant discrepancies between ownership and control in only a few countries (Mara and Larry, 2002). In China, Liu Shaojia et al. firstly try to study the ultimate ownership of Chinese listed companies (Liu et al., 2003). Cao Tingqiu et al. apply both the largest stockholder ownership and the ultimate ownership to the study of the relationship between ownership concentration and corporate performance; the result is the U-shaped relationship (Cao et al., 2007). Liu Yunguo and Wu Xiaoyun find that companies controlled by the central government have the minimum tunneling level (Liu & Wu, 2009). Li Zhigang's research shows that there is an inverted U-shaped relationship between ultimate control right and corporate in the later ownership reform (Li, 2010). Jiang Chenjie finds that ultimate control right is positively correlated with corporate performance, while the degree of separation is negatively correlated (Jiang, 2013). Wu Guoding find that ultimate ownership significantly has positive impact on corporate performance in competitive industries (Wu, 2015). Liu Xing et al. conclude that the ultimate controller's self-interest level is positively correlated with the degree of separation, and tunneling behavior reduces with the legal protection for investors (Liu et al., 2015) Zhou Jian et al. realize that the over controlling of the ultimate controller significantly damages the value of listed companies (Zhou et al., 2016).

2.2 The Influence of State-owned Ownership on Corporate Performance

As a shareholder, the Government will concern on both political and economic interests, the impact of state-owned shares on corporate performance has two sides. Tian Lihui proposes "two hands of the Government": on the one hand, the government seizes the company wealth through political interference, thus reducing performance; on the other hand, the government supervises managers' behavior and offers special treatment, thus enhance performance. In fact, his empirical studies also show a U-shaped relationship between state-owned shares and corporate performance, and the inflection point is at about 30% (Tian, 2007). In MENA (Middle East and North Africa) countries, state ownership encourages banks to take more risks while foreign ownership reduces risk-taking. In addition, state-owned banks tend to increase capital adequacy ratio to hedge against high level of risk (Naima et al., 2016). State-owned banks operated less profitably, held less core capital, and had greater credit risk than privately-owned banks, and the performance differences are more significant in those countries with greater government involvement and political corruption in the banking system (Marcia et al., 2010). Xu and Wang find that the profitability of enterprises is negatively correlated with state-owned ownership (Xu & Wang, 2009). Li Rui et al. show that the state-owned ultimate controllers have higher motivation of tunneling than the non-state-owned ones (Li et al., 2011). Dong Fenyi and Cheng Lili find that there is no significant relationship between operating performance and state-owned ownership (Dong & Cheng, 2014). Gu Yu shows that securities companies with governmental ultimate controllers have lower profitability than that with individual ultimate controllers (Gu, 2015).

2.3 The Endogeneity of Ownership Structure

The OLS multiple linear regression assumes that explanatory variables are not relevant with error term. When this assumption is not valid, OLS estimation is biased, and then the endogeneity exists in the model. In this case, the explanatory variable is called endogenous explanatory variables (Wooldridge, 2015).

The endogeneity of ownership structure is first proposed by Demsetz, ownership structure is not independent exogenous variables, it is the result of a series of macro and micro factors working together, including political, economic, legal, cultural, etc (Demsetz, 1983). Enterprises will choose a suitable ownership structure that fits the environment. There is no fixed relationship between ownership structure and corporate performance. For example, in the French context, characterised by complex ownership structures, the usual agency theory conclusions are debateable when the legal framework offers little protection of minority shareholders, and when ownership structure is complex and heterogeneous in nature. The study of corporate governance must therefore encompass a twofold analytical perspective, namely, an institutional and a socio-organisational one (Isabelle & Alexis, 2017). In 27 emerging countries, the political institutions in place, namely, the political system and political constraints, are important determinants of residual state ownership in newly privatized firms (Narjess et al., 2011). Zhou Yixiang's study on 509 listed companies from 1999 to 2008 finds that there is mutual influence between ownership structure and corporate performance with endogeneity controlled, and the dynamic impact weakly exists between ownership structure and corporate performance, which depends on different indicators of performance (Zhou, 2012). Ruan Sumei et al. apply structural equation to conclude that the direct impact of

ownership structure on the value creation of listed companies does not exist; there are only indirect effects (Ruan, 2014).

3. Research Design

3.1 Research Hypothesis

State-owned enterprises often have double political and economic motives. The government or its department is the ultimate controller of state-owned enterprises, the greater state-owned ultimate ownership of SOEs leads to the heavier policy burden, against the interests of many small shareholders. For state-owned enterprises, the larger state-owned ultimate ownership is the stronger penetration of SOE's malpractice. Therefore, we propose the following hypothesis:

H1: In state-owned enterprises, ultimate ownership has a negative impact on corporate performance.

The degree of separation means the separation of ultimate control right and ultimate ownership, the greater the degree of separation of ownership and control shows the over control beyond the ultimate ownership. Appropriate degree of separation can supervise management to improve corporate performance. However, when the degree of separation is too high, the government or its department, as the ultimate controller, will cause more non-market intervention in the market, probably reducing the performance of state-owned enterprises. Therefore, we propose the following hypothesis:

H2: In state-owned enterprises, there exists an inverted U-shaped relationship between the degree of separation and corporate performance.

Ownership structure is one of the most important mechanisms of corporate governance, which is influenced by their own characteristics, as well as political, economic, legal and cultural factors. The formation of ownership structure is a complex process. Furthermore, in econometrics, it is difficult for any multiple regression models to determine whether the variables are really independent with the residuals. Therefore, we propose the following hypothesis:

H3: In state-owned enterprises, ownership structure is endogenous.

3.2 Variable Selection and Regression Model

This paper aims at the impact of ownership structure on corporate performance from the perspective of ultimate ownership theory, we select ultimate ownership, ultimate control right and the degree of separation to measure ownership structure. At the same time, in order to fully understand the impact of ownership structure on corporate performance, this paper uses three different indicators, Tobin's Q (Q), the total return on assets (ROA) and return on equity (ROE), to measure corporate performance. In addition, this paper, based on previous studies, selects the company's size, leverage, growth, age, industry and year as control variables, see Table 1.

Table 1. Variable description

	Variable	Description
Corporate Performance	<i>Q</i>	Tobin's Q, the market value / replacement cost
	<i>ROA</i>	Return on assets, net profit / total assets
	<i>ROE</i>	ROE, net profit / shareholders' equity
Ownership Structure	<i>UO</i>	Ultimate ownership
	<i>UC</i>	Ultimate control right
	<i>SD</i>	The degree of separation
Control	<i>Size</i>	The natural logarithm of the total assets (unite: RMB)
	<i>Leverage</i>	Asset-liability ratio, total liabilities / total assets
	<i>Growth</i>	The main business growth, with respect to the previous year's
	<i>Age</i>	The difference between annual year and founded year (unit: Year)
	<i>Industry</i>	Industry dummies
	<i>Year</i>	Year dummies

According to previous theoretical assumptions, we establish the following model:

$$Performance_{it} = \alpha + \beta Ownership_{it} + \sum \gamma Control_{it} + \varepsilon_{it} \quad (4)$$

Among them, α is the intercept; β , γ are parameters to be estimated; ε is the disturbance; i is the observation; t is the annual year. Performance is corporate performance, representing Tobin's Q, return on assets and return on equity, respectively. Ownership means ownership structure, representing ultimate ownership, ultimate control right and the degree of separation, respectively. Control is control variables, including firm's size, leverage, growth, age, industry and year.

3.3 Data Sources and Sample Selection

The data mainly comes from GTA CSMAR database; address and date of establishment of the company are from the RESSET database, using the Stata13.0 software to analyse.

This study's objects are state-owned enterprises. Learning from Wei Chenglong et al., Chen Shihua and Lu Changchong, we select state-owned enterprises according to the nature of ultimate controller. Furthermore, in order to avoid the impact of the 2008 financial crisis and the 2015 stock market volatility, the paper selects data from 2009 to 2014. On this basis, the following steps are for further sample selection: (1) excluding companies in the financial industry (Industry Code: J); (2) excluding issued B shares or H shares; (3) excluding observations with ST, PT and other special treatment; (4) excluding observations with no ultimate controller or with missing values. In the end, there are 3,897 observations left. In order to eliminate the effects of extreme values, the main continuous variables are winsorized at 1% and 99% points.

4. Empirical Analysis

4.1 Descriptive Statistics

Table 2 reports the descriptive statistics of the main variables. For corporate performance, the average of Tobin's Q is 1.5201, indicating that the high valuation of the market value; the average of ROA is 0.0342, and that of ROE is 0.0634, equivalent twice with ROA. For ownership structure, the average of ultimate ownership is 0.3716, which shows certain concentration of ownership; the average of ultimate control right is 0.4149, which shows deep concentration; the average the degree of separation is 0.0428, indicating that a certain separation exists between ultimate ownership and ultimate control. For control variables, the natural logarithm of total assets ranges from 19.8975 to 25.7883, indicating that there is some difference in enterprises' size; the average of leverage is 0.5223, over than shareholders' equity; the average of growth is 0.5083, which shows that the main business develops well; the average age is 16.0434, with respect to general private enterprises, state-owned enterprises have a longer life.

Table 2. Descriptive statistics of the main variables

Variable	Average	Standard Deviation	Min	Max
<i>Q</i>	1.5201	1.2647	0.1650	6.9377
<i>ROA</i>	0.0342	0.0461	-0.1311	0.1759
<i>ROE</i>	0.0634	0.1232	-0.6650	0.3596
<i>UO</i>	0.3716	0.1671	0.0671	0.7590
<i>UC</i>	0.4149	0.1527	0.1218	0.7713
<i>SD</i>	0.0428	0.0768	0.0000	0.2793
<i>Size</i>	22.2939	1.1983	19.8975	25.7883
<i>Leverage</i>	0.5223	0.1983	0.0749	0.9241
<i>Growth</i>	0.5083	1.6151	-0.7186	12.1957
<i>Age</i>	16.0434	4.8377	5.0000	32.0000

Table 3 reports the Pearson correlation coefficient and Spearman correlation coefficients of the main variable. Both ultimate control right and the degree of separation is negatively correlated with Tobin's Q, while ultimate ownership is not. Respectively, ultimate ownership and ultimate control are positively correlated with ROA and ROE, while the degree of separation is not.

Table 3. Correlation analysis

	<i>Q</i>	<i>ROA</i>	<i>ROE</i>	<i>UO</i>	<i>UC</i>	<i>SD</i>
<i>Q</i>						
<i>ROA</i>	0.32***					
<i>ROE</i>	0.15***	0.79***				
<i>UO</i>	-0.01	0.14***	0.11***			
<i>UC</i>	-0.03**	0.15***	0.12***	0.89***		
<i>SD</i>	-0.04**	0.00	0.01	-0.41***	0.06***	

Note. The lower-left corner is the Pearson correlation coefficient; ***, **, * represents significant at 1%, 5%, 10% level, respectively.

4.2 Regression Analysis

In the analysis of panel data, we need to select a fixed effect model or random effects model. We carry out the Hausman Test on our sample, the results significantly reject random effects model. Therefore, the following are fixed effect regression model. As is known, the degree of separation is the difference between ultimate control right and ultimate ownership. To avoid multicollinearity, the model only includes ultimate ownership and the degree of separation.

Table 4 reports the impact of ultimate ownership and the degree of separation on corporate performance. As it can be

seen, ultimate ownership has no significant impact on corporate performance. However, there exists a significant inverted U-shaped relationship between the degree of separation and corporate performance. The company's size, leverage, growth, age and other control variables have different influence on different indicators corporate performance.

Table 4. The impact of ultimate ownership and the degree of separation on corporate performance

	(1)	(2)	(3)
	<i>Q</i>	<i>ROA</i>	<i>ROE</i>
<i>UO</i>	-1.3330 (-1.6422)	0.0460 (1.0975)	0.0967 (0.6930)
<i>UO2</i>	2.5416*** (2.8538)	0.0221 (0.4812)	0.0810 (0.5287)
<i>SD</i>	3.9190*** (3.4296)	0.1948*** (3.2996)	0.5526*** (2.8118)
<i>SD2</i>	-12.7840*** (-2.7236)	-0.4380* (-1.8063)	-1.5598* (-1.9321)
<i>Size</i>	-0.7497*** (-17.0158)	0.0088*** (3.8688)	0.0312*** (4.1144)
<i>Leverage</i>	-1.0991*** (-7.4830)	-0.1271*** (-16.7501)	-0.2531*** (-10.0180)
<i>Growth</i>	-0.0010 (-0.1246)	0.0017*** (4.0879)	0.0052*** (3.8303)
<i>Age</i>	0.0899* (1.8726)	-0.0046* (-1.8735)	-0.0265*** (-3.2037)
<i>Industry</i>	controlled	controlled	controlled
<i>Year</i>	controlled	controlled	controlled
<i>Constant</i>	17.2347*** (13.0085)	-0.0584 (-0.8535)	-0.1368 (-0.6004)
<i>R-squared</i>	0.4527	0.1811	0.0977
<i>F</i>	49.59	13.26	6.487
<i>Observations</i>	3,897	3,897	3,897

Note. T values in parentheses; ***, **, * represents significant at 1%, 5%, 10% level, respectively.

4.3 Endogenous Inspection

Taking the endogeneity of ultimate ownership into consideration, we use instrumental variable method for testing. Based on Song Min et al. experience, we select the natural logarithm of the number of shareholders as ultimate ownership's instrumental variable. In general, the greater number of shareholders, the more difficulty to obtain ultimate ownership and the number of shareholders isn't correlated with corporate performance. After using the instrumental variable of ultimate ownership, the relationship between ownership structure and corporate performance is no longer stable. Regardless of the weak instrumental variable, there exists possible endogeneity of ownership structure.

As one of the most important mechanisms of corporate governance, ownership structure relies on the institutional environment. Shao Shuai et al. show that the direct holding of ultimate controller only leads to the effect of incentive and supervision in areas with good legal environment. Learning from Chen Ling and Wang Hao, we use Fan Gang et al.'s marketization index to represent institutional environment, and divide 31 provinces into two groups, areas with good institutional environment and areas with poor institutional environment. However, the inverted U-shaped relationship between the degree of separation and corporate performance is established only in areas of poor institutional environment.

Besides, we also add the lags of ultimate ownership into the model, and finds that the lags have little influence on corporate performance. Meanwhile, there is little simultaneity, between corporate performance and ultimate ownership (Limited to the space, the specific results are not listed here).

5. Conclusions and implications

5.1 Conclusions

This paper selects 850 state-owned listed companies in Shanghai/Shenzhen Stock Exchange from 2009 to 2014, with a total of 3897 observations. From the perspective of ultimate ownership, this paper studies on the impact of ownership structure on corporate performance in state-owned enterprises, with more comprehensive consideration of the endogeneity of ownership structure. The main conclusions are as follows:

In state-owned enterprises, ultimate ownership and its square have no significant impact on corporate performance, and then Hypothesis 1 is not verified. There exists a significant inverted U-shaped relationship between the degree of separation and corporate performance, so Hypothesis 2 is verified. When using the

instrumental variable of ultimate structure, the relationship between ownership structure and firm performance is no longer stable, ownership structure is probably endogenous, and then Hypothesis 3 is also verified. Hypothesis 1 has not been proven; the possible reason is that, the state-owned ultimate controller controls the company not only by ultimate ownership, but also by ultimate control right. And the degree of separation is the joint result of ultimate ownership and ultimate control right, which also strengthens the Hypothesis 2, to some degree.

Besides, considering different institutional environments, ultimate ownership and its square still have no significant effect on corporate performance; but the inverted U-shaped relationship only exists in areas with poor institutional environment. There are different relationships between ownership structure and corporate performance in different institutional environments. Taking into account the lagged terms, the lag of ownership structure has no significant effect on firm performance. There is only little simultaneity between ownership structure and corporate performance.

5.2 Implications

According to the conclusions above, there are some implications as follows:

At the beginning, the degree of separation is under a low level. The governmental ultimate controller in state-owned enterprises can promote corporate performance through reasonable allocation of resources and effective supervision. However, with the growing degree of separation, it can damage the performance by over control, especially nonmarket intervention. Therefore, the government cannot influence the company just by holding the shares, but also by the way of holding shares, to make the degree of separation of two rights in a reasonable range.

The government plays an important role in the development of state-owned enterprises, especially in areas with poor institutional environment. In these areas, the market mechanism is not perfect, and the legal protection of investors is not enough. So as the ultimate controller of state-owned enterprises, the government can offer financial help and protect its rights. Therefore, the reform of state-owned enterprises in the new era should consider the different institutional environment in regions. In areas with good institutional environment, the government can give more autonomy to the enterprises; and in the areas with poor institutional environment, the government can offer more guidance and support.

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