

# The Empirical Study of Shareholding Structure and Firm Performance in China

Liling Yang

Economics & Management College  
Zhaoqing University  
Zhaoqing, China

Pocheng Ko

Topoint Technology Co., Ltd.  
Taipei, China

**Abstract**—Three research hypotheses are proposed for the relationship between enterprise performance and ownership structure by measuring enterprise performance with economic value added. The empirical results show that hypothesis 1 is supported; the ratio of state shares is negatively correlated with corporate performance. Hypothesis 2 is not supported; there is insignificantly negative correlation between the ratio of legal person shares and corporate performance. There is a significant positive correlation between listed stocks and corporate performance supporting hypothesis 3.

**Keywords**—shareholding structure; firm performance; economic value added

## I. INTRODUCTION

Due to the separation of ownership and management, controlling shareholders can often occupy the resources of enterprises and infringe on the interests of minority shareholders. [1] In recent years, due to the defects of corporate governance, there have been many cases of fraud around the world. These include the China Yuanhua case in 1996, the Enron and Worldcom scandals in the us in 2001 and the Procomp scandal in Taiwan in 2004. In these cases, ownership structure were proved to affect corporate governance and thus corporate performance.

With the rapid flow of international capital and the rapid growth of China's economy, investors from other countries are paying more and more attention to the study of Chinese enterprises. First, China's equity structure is seriously unbalanced, with the government taking an obvious majority in the equity structure and the Chinese government having absolute control over enterprises. [2]. Second, China's stock transfer policy is strict and the external influence is seriously weakened. Qiang (2003) points out that in Chinese government enterprises, most managers are appointed by the government. Since promotion is determined by government standards rather than enterprise performance, managers' enthusiasm is not high, leading to the decline of corporate management performance. [3] Clarke (2003) pointed out that in Chinese government enterprises, all people, from the central government to employees, are agents. The multiple agency relationships of Chinese companies lead to different internal goals and different departmental opinions, making it difficult to achieve profit goals. [4]. Many studies have shown that state-owned enterprises have a negative correlation with

their corporate performance, while enterprises with a high proportion of corporate ownership and public shares have a positive correlation with their performance. In this study, we examine the relationship between ownership structure and corporate performance of Chinese listed companies from 2005 to 2010, economic value added (EVA) is used as a tool to evaluate the relationship between corporate governance performance and ownership structure.

## II. LITERATURE AND HYPOTHESIS

In China, the government owns an absolute majority stake in the company, at the under insufficient stock circulation and strict transfer system, making it difficult for China's capital market to reach its full potential. Many studies show that concentrated ownership by institutional owners can bring a positive effect on firm performance [5], inappropriate level of ownership concentration can bring negative effects on firm performance [6]. The state shareholding can also have negative impact on firm performance [7]. When the proportion of state shares is high, the relationship between multiple institutions and internal human resource control problems reduce the incentive for managers. On the contrary, if the corporate ownership ratio is high, the above problems will be reduced. Managers are more likely to work for the benefit of the company and to supervise management more actively. Therefore, we predict that lower state shares and higher legal shares, as well as greater stock liquidity, can improve the management performance of the company. We propose the following three hypotheses:

H1: The state shareholding ratio is negatively correlated with corporate performance.

H2: The legal shareholding ratio is positively correlated with corporate performance.

H3: The public shares proportion is positively correlated with corporate performance.

According to past research literature, this study considers the following as control variables:

**Ownership Concentration:** the more ownership concentration, the greater supervision power. The direct participation of the largest shareholder in management can

effectively solve the information imbalance of external stakeholders and increase the value of the company. [5]

Board-held shares proportion: Jensen and Meckling (1976) proposed the hypothesis of convergence of interests, that is, when the board of directors owns most of the shares, they are more motivated to become effective regulators. [8] However, Jensen and Ruback (1983) support the theory of predatory interests, when the board of directors has a high shareholding ratio, they would use improper practices to maintain the company's stock price, thus leading to poor performance. [9]

Independent board members proportions: Baysinger and Butler (1985) believe that independent directors are positively correlated with corporate performance. [10] Hermalin and Weibach (1991) did not find any correlation. [11]

Board size: Bacon (1973) noted that when size of the board is larger, they have personnel from more diverse backgrounds, skills and perspectives on business decisions, resulting in better performance. [12]

Company size: The bigger the company, the easier it is to execute its economic advantage. This indicates a positive correlation between company size and corporate performance.

Debt: According to the pecking-order theory, the higher the proportion of debt, the lesser the revenue-earning ability, which makes debt negatively correlated to corporate performance.

Return on assets (ROA): Companies with high ROA indicated better revenue-generating ability and better corporate performance. Qiang, Q. (2003) found that state shares proportion, legal shares, and ROA had strong correlation, indicating shareholding structure and ROA are closely associated. [3] This study predicts a positive correlation between ROA and corporate performance.

### III. RESEARCH METHODS

#### A. Variables and Empirical Model

1) *Defining variables*: Economic value added in this research is the dependent variable, as shown in the following formula:

$EVA^{\otimes} = (\text{return on capital} - \text{capital cost rate}) * \text{total invested capital}$

$$= (\text{NOPAT} + \text{AccAdjop} - \text{WACC}) * (\text{Capital} + \text{AccAdjc})$$

NOPAT: net operating profit after tax

AccAdjop: net income adjustments  $\times$  (1 - tax rate)

WACC: weighted average capital cost

Capital: capital investment

AccAdjc: invested capital adjustments

2) *Experimental variables*: State shares proportion: Shares purchased by a government-approved investment

department or institution with government capital divided by total circulating shares.

Legal shares proportion: Legal shares are shares issued by an enterprise to both domestic and foreign investors calculated according to the proportion of legal shares divided by total circulating shares.

Public shares proportion: Public shares divided by total circulating shares.

3) *Control variables*: According to past research literature, this study considers the following as control variables, as described below:

Ownership Concentration: the largest shareholder ratio to measure this variable.

Board-held shares proportion: the board-held shares proportion is used to measure this variable.

Independent board members proportions: independent board members proportions.

Board size: board of seats at the end of t years.

Company size: company's total assets as the proxy variable of company size.

Debt: debt as a percentage of total assets.

Return on assets (ROA): net income as a percentage of total assets.

Year: A specific fiscal year is designated, with 1 as dummy variable, and the rest years as 0. This study covers 6 fiscal years from 2005 to 2010. Six dummy variables are set.

4) *Empirical model*: In order to test hypothesis 1: The state shares proportion is negatively correlated with corporate performance, the following empirical model was used:

Model 1:

$$EVA^{\otimes}_{it} = \alpha_i + \beta_1 \text{State}_{it} + \beta_2 \text{OC}_{it} + \beta_3 \text{Board}_{it} + \beta_4 \text{Indep}_{it} + \beta_5 \text{Bsize}_{it} + \beta_6 \text{Size}_{it} + \beta_7 \text{Debt}_{it} + \beta_8 \text{ROA}_{it} + \sum \beta_9 \text{Year}_{it} + \epsilon_{it}$$

In order to test hypothesis 2: The legal shares proportion is positively correlated with corporate performance, the following empirical model was used:

Model 2:

$$EVA^{\otimes}_{it} = \alpha_i + \beta_1 \text{Legal}_{it} + \beta_2 \text{OC}_{it} + \beta_3 \text{Board}_{it} + \beta_4 \text{Indep}_{it} + \beta_5 \text{Bsize}_{it} + \beta_6 \text{Size}_{it} + \beta_7 \text{Debt}_{it} + \beta_8 \text{ROA}_{it} + \sum \beta_9 \text{Year}_{it} + \epsilon_{it}$$

In order to test hypothesis 3: The Public shares proportion is positively correlated with corporate performance, the following empirical model was used:

Model 3:

$$EVA^{\otimes}_{it} = \alpha_i + \beta_1 \text{Public}_{it} + \beta_2 \text{OC}_{it} + \beta_3 \text{Board}_{it} + \beta_4 \text{Indep}_{it} + \beta_5 \text{Bsize}_{it} + \beta_6 \text{Size}_{it} + \beta_7 \text{Debt}_{it} + \beta_8 \text{ROA}_{it} + \sum \beta_9 \text{Year}_{it} + \epsilon_{it}$$

i represents the ith company, t means t years.

EVA®: economic value added; State: government-owned share proportion; Legal: legally-owned share proportion; Public: public share; OC: ownership concentration; Board: board-owned share proportion; Indep: independent board member proportion; Bsize: board size; Size: company size; Debt: debt proportion; ROA: return of assets; Year: fiscal year dummy number;  $\varepsilon$ : the error term.

#### B. Sample Interval and Information Source

This study spans between 2005 and 2010, with its sample group extracted from corporate companies in Shanghai and Shenzhen stock exchanges. The company's financial information comes from TEJ mainland information database in Taiwan, and the selected principles are as follows: China's companies have board of directors information, shareholding structure proportion information, and comprehensive financial reports for sampling; finance and insurance companies were excluded due to their uniqueness.

### IV. EMPIRICAL RESULT AND ANALYSIS

#### A. Descriptive Statistics

This study mainly examines the relationship between ownership structure and corporate performance in China, and measures corporate performance by economic added value

TABLE I. THE DESCRIPTIVE STATISTICS OF EACH VARIABLE

	Mean	Standard Deviation	Minimum Value	Maximum Value
<b>EVA®</b>	219,322	1,722,000	28,356,740	58,912,905
<b>State</b>	21.23	23.86	0.00	86.20
<b>Legal</b>	15.16	20.92	0.00	87.95
<b>Public</b>	56.88	24.86	3.23	100.00
<b>OC</b>	53.08	17.12	1.31	97.01
<b>Board</b>	3.63	11.49	0.00	73.03
<b>Indep</b>	0.36	0.05	0.00	0.75
<b>Bsize</b>	9.3	1.96	4.00	19.00
<b>Size</b>	6.39	0.52	2.35	8.99
<b>Debt</b>	52.73	29.64	0.00	714.39
<b>ROA</b>	5.32	9.76	-174.51	233.13

<sup>a.</sup> The number of samples: 4775.

<sup>b.</sup> EVA: economic value added; State: the ratio of state shares; Legal: the ratio of legal person shares; Public: the ratio of public shares; OC: ownership concentration; Board: the ratio of board shareholding; Indep: the ratio of independent directors (seats); Bsize: the size the board (seats); size: the size of firms; Debt: debt ratio; ROA: return on assets.

#### B. Correlation Analysis

"Table II" shows the correlation coefficients of each variable. The lower left is the result of Pearson's correlation coefficient and the upper right is the result of Spearman's correlation coefficient. The correlation coefficient between all variables in the table is less than 0.7. Therefore, it can be inferred that collinearity between variables is not a serious problem in general.

(EVA).The research objects are listed companies in China. The research spanned from 2005 to 2010 and selected 947 listed companies. As can be seen from "Table I", the mean value of the dependent variable EVA is 219,322.76, with a maximum value of 58,912,905.57 dollars and a minimum value of -28,356,740.42 dollars. The huge gap between maximum value and minimum value represents the huge gap in the value of Chinese enterprises. Among the experimental variables, the mean proportion of state shares and legal shares is 21.23 and 15.16 respectively. The mean is less than the standard deviation; In addition, there is a large gap between the maximum and minimum values. This result conveys a large change in three variables. In recent years, the proportion of state shares has been declining, but it still accounts for one fifth of the total number of shares on average. The average value of public shares is 56.88, but the gap between the maximum and minimum value is still wide. The average value of ownership concentration (OC) is 53.08, indicating a high ownership concentration in China.

TABLE II. MATRIX OF CORRELATION COEFFICIENTS

	EVA®	State	Legal	Public	OC	Board	Indep	Bsize	Size	Debt	ROA
<b>EVA®</b>	1	-.008	-.132	.033	.183	.054	.013	.147	.558	.026	.276
		.575	.000	.022	.000	.000	.362	.000	.000	.069	.000
<b>State</b>	.038	1	-.322	-.424	.393	-.270	-.078	.187	.146	.032	-.079
	.008		.000	.000	.000	.000	.000	.000	.000	.025	.000
<b>Legal</b>	-.047	-.420	1	-.354	.122	.045	-.038	-.063	-.227	.076	.029
	.001	.000		.000	.000	.002	.008	.000	.000	.000	.045
<b>Public</b>	-.039	-.410	.899	1	.089	.080	-.031	-.072	-.216	.049	.032
	.008	.000	.000		.000	.000	.030	.000	.000	.001	.025
<b>OC</b>	.119	.444	.231	-.382	1	-.356	-.060	.139	.185	.020	.106
	.000	.000	.000	.000		.000	.000	.000	.000	.177	.000
<b>Board</b>	-.022	-.260	-.060	-.219	-.492	1	-.027	-.018	-.116	-.025	.254
	.124	.000	.000	.000	.000		.067	.216	.000	.080	.000
<b>Indep</b>	-.032	-.079	-.020	.050	-.061	.056	1	-.240	.019	.010	.011
	.026	.000	.170	.001	.000	.000		.000	.197	.477	.463
<b>Bsize</b>	.101	.165	-.085	-.056	.146	-.110	-.262	1	.270	.080	.035
	.000	.000	.000	.000	.000	.000	.000		.000	.000	.016
<b>Size</b>	.288	.164	-.201	.078	.247	-.217	.023	.303	1	.227	-.011
	.000	.000	.000	.000	.000	.000	.104	.000		.000	.439
<b>Debt</b>	-.009	.006	.077	-.046	.046	-.036	.003	.023	.067	1	-.219
	.555	.669	.000	.002	.001	.013	.840	.106	.000		.000
<b>ROA</b>	.039	-.046	.039	-.118	.001	.223	.036	.002	-.027	-.237	1
	.007	.001	.007	.000	.959	.000	.013	.870	.061	.000	

a. The lower left corner displays Pearson correlation coefficients, and the upper right corner exhibits Spearman correlation coefficients.

b. EVA: economic value added (RMB million); State: the ratio of state shares; Legal: the ratio of legal person shares; Public: the ratio of public shares; OC: ownership concentration; Board: the ratio of board shareholding; Indep: the ratio of independent directors (seats); Bsize: the size the board (seats); size: the size of firms; Debt: debt ratio; ROA: return on assets.

**C. The Analysis of Empirical Result**

This study treats economic value added as the dependant variable to test the correlation between ownership structure and firm performance in China, and evidence the hypotheses with multivariate regression analysis respectively. "Table III" shows that all variable VIF values is less than 10. The results show that there is no collinearity between variables.

To test the hypothesis 1: the correlation between the ratio of state shares and firm performance is negative. An empirical research is conducted with Model 1, and its result is registered in Table 3. The empirical result shows: the coefficient between the ratio of state shares (State) and economic value added (EVA) is -2868.936, which conveys significant negative correlation (the significance level reaches 5%). The result supports the hypothesis 1 — the higher the ratio of state shares is, the lower the firm performance is.

Test hypothesis 1: the proportion of state shares is negatively correlated with corporate performance. Model 1 was used for empirical research, and the empirical results showed that the proportion of state shares was significantly negatively correlated with economic added value (t=-2868, significance level reached 5%)(see Table 3).The results support hypothesis 1, the higher the proportion of state shares, the lower the corporate performance.

Test hypothesis 2: legal shareholding ratio is positively correlated with corporate performance. Model 2 is adopted for empirical research, and the results are shown in "Table III". The empirical results show that there is no significant negative correlation between legal shareholding ratio and economic value added (t=-520), hypothesis 2 is not proven.

One possibility is that both legal and state shares are non-tradable and cannot be listed or traded on exchanges. In

addition, the Chinese government sets strict restrictions on transfers, which hinder market investors' supervision of business operations and the proper market mechanism. It also hinders the speed of capital flow and the flexible use of enterprise capital. In addition, the legal person can consider his own profit, which is in conflict with the profit of the invested enterprise. When the shareholding ratio of legal persons increases, the influence of legal persons on the invested enterprises will be relatively expanded. Therefore, the profits of the invested enterprises can be transferred to the legal person through transfer pricing. In addition, legal person shares may also be manipulated by the short-selling mechanism, which can make arbitrage profits by driving down the share price, or by deliberately raising the share price by releasing information, which damages the long-term profits of enterprises. Therefore, this negative influence may lead to the insignificance of the empirical results.

To test the hypothesis 3: the correlation between the ratio of public shares and firm performance is positive. An empirical research is conducted with Model 3, and its result is registered in "Table III". The empirical result shows that the coefficient between the ratio of public shares and economic value added is 2687.854, which proves significant positive correlation (the significance level reaches 5%). The result supports the hypothesis 3, the higher the ratio of public shares is, the better corporate performance.

In terms of control variables, the three models manifest the results as follows: ownership concentration (OC) is significant positive correlation, showing that the more ownership concentrates, the better firm performance. The result is the same as expected. The empirical result of the ratio of board shareholding (Board) is significant positive correlation, which is the same as expected, the higher the ratio of boarding shareholding, the better firm performance. The empirical result of the ratio of independent director

(Indep) proves significant negative correlation, contrary to the expectation. Presumably, the China securities regulatory commission explicitly stipulates that the number of independent directors should be one-third of the board of directors. However, companies covered up government regulations, selected people indiscriminately and put the unprofessional in the position of independent directors. As a result, company performance began to decline.

The empirical results of the size of board (Bsize) show positive correlation in Model 1 and Model 3, negative in

Model 2, but all of them do not reach the significance level; therefore, the size of board is not much related to firm performance. The size of firm (Size) is positively correlated with expectation in empirical results. Therefore, the larger the enterprise scale, the better the enterprise performance. The debt ratio (debt) is negatively correlated with the empirical results, but all results do not reach a significant level, so the debt ratio is not highly correlated with enterprise performance. Return on assets (ROA) is positively correlated; Model 1 did not reach the level of significance, and model 2 and model 3 showed a significant positive correlation.

TABLE III. EMPIRICAL RESULT

	Model 1	Model 2	Model 3
<b>Constant(t value)</b>	-6003458(-5.89)	-5819546(-15.42)	-6176243(-14.91)
<b>State</b>	-2868(-2.40 <sup>**</sup> )	--	--
<b>Legal</b>	--	-52(-.42)	--
<b>Public</b>	--	--	2687(1.81 <sup>**</sup> )
<b>OC</b>	10162(5.79 <sup>***</sup> )	8951(5.23 <sup>***</sup> )	11035(5.32 <sup>***</sup> )
<b>Board</b>	11769(4.717 <sup>***</sup> )	1193(4.78 <sup>***</sup> )	14985(4.97 <sup>***</sup> )
<b>Indep</b>	-1343352(-72 <sup>***</sup> )	-1340531(-.72 <sup>***</sup> )	-1319574(-.67 <sup>***</sup> )
<b>Bsize</b>	1740(.13)	-455(-.03)	171(.013)
<b>Size</b>	970406(18.64 <sup>***</sup> )	950224(17.979 <sup>***</sup> )	951474(18.40 <sup>***</sup> )
<b>Debt</b>	-1336(-1.62)	-1238(-1.49)	-1173(-1.42)
<b>Roa</b>	4062(1.56)	4458(1.71 <sup>*</sup> )	4409(1.70 <sup>*</sup> )
<b>Y05</b>	-14112(-.15)	-75777(-.83)	11680(.11)
<b>Y06</b>	73268(.81)	21740(.25)	100028(1.01)
<b>Y07</b>	203121(2.34 <sup>**</sup> )	161596(1.89 <sup>*</sup> )	226890(2.44 <sup>**</sup> )
<b>Y08</b>	-167705(-1.98)	-201512(-2.41 <sup>**</sup> )	-150098(-1.70 <sup>*</sup> )
<b>Y09</b>	22858(.28)	11237(.14)	35516(.43)
<b>F value</b>	40.15	36.68	39.94
<b>Adj. R<sup>2</sup></b>	0.10	0.10	0.10

a. Note1:\*\*\* 1% significance level;\*\* 5% significance level; \* 10% significance level.

b. Note2: The variable definitions are the same as in table 4.

c. Note3: Each variable VIF is shown below:state1.61 legal 1.19 ; Public2.42.

d. Note4:Control variables in the three models VIF are: OC:1.46,1.53,2.25.

e. Board:1.1,1.46,2.14 ; Indep:1.22,1.1,1.1 ; Bsize:1.29,1.22,1.21.

f. Size:1.07,1.32,1.27 ; Debt:1.45,1.08,1.08Roa:1.96,1.46,1.14.

V. CONCLUSION

This study examines the relationship between ownership structure and corporate performance of Chinese listed companies from 2005 to 2010. Three research hypotheses are proposed for the relationship between enterprise performance and ownership structure by measuring enterprise performance with economic value added .The empirical results show that hypothesis 1 is supported, the ratio of state shares is negatively correlated with corporate performance. The results show that the Chinese government's strict supervision on the transfer of state shares reduces the supervision and restraint mechanism on the management through the acquisition market and agency competition. In addition, the state shares also involve multiple agency relationship. From the central government to

the employees of the enterprise, they are all agents. When these agents pursue different goals, they naturally do not take corporate performance as the main consideration. This multi-level relationship increases moral hazard.

Hypothesis 2 is not supported. There is insignificantly negative correlation between the ratio of legal person shares and corporate performance. This is different from the conclusion drawn by most previous studies that the ratio of legal person shares is positively correlated with corporate performance. This may be the previous literature adopted traditional performance measurement indicators, but this study adjusted from the perspective of economic added value (EVA). The actual value of enterprises is negatively correlated with the ratio of legal person shares That is, the larger the ratio of legal person, the worse the company

performance. It is speculated that may be because both legal person shares and state shares are non-tradable shares, hindering the operation of the market mechanism. The introduction of institutional investors is often seen as connecting with the world, however, when the relevant complementary market regulatory mechanisms are not sound, even if the introduction of institutional investors is expected to improve the market environment, it will not bring much benefit.

Finally, there is a significant positive correlation between listed stocks and corporate performance supporting hypothesis 3. This result shows that listed stocks are the outstanding stocks traded on the stock market and have the characteristics of "voting with feet" in corporate governance. Once the public shareholding ratio and external regulatory forces increase, the management will face greater pressure to work hard. Therefore, when using EVA to measure corporate performance, the ratio of state shares and listed shares have significant impact on corporate performance in China.

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