

# An Empirical Study on the Impact of Equity Structure of GEM Listed Companies on Corporate Performance

**Liu Xiaodi<sup>a,\*</sup>, Zhan Lihua**

School of Economics, Shanghai University, Chengzhong Road, Jiading Town, China

<sup>a</sup>2871112602@qq.com

\*Liu Xiaodi

**Keywords:** ownership concentration, equity restriction, corporate performance, listed companies on GEM

**Abstract:** This paper is an empirical study on the relationship between the equity structure of listed companies on the GEM and the performance of the companies. The relevant data of 36 listed companies on the GEM are selected between 2015 and 2017 and combined with statistical software to conclude a relationship between ownership and the company's performance, leading to conclusions: the relation curve between the listed company's largest shareholder  $CR_1$  on the GEM market and corporate performance EPS is the U-shaped, a positive correlation is drawn between the sum ratio of the top five shareholders  $H_5$  and Corporate performance EPS. The relationship between the equity balance Z index and company performance is not significant.

## 1. Introduction

Since 2009, China has created the GEM market, which is the capital market dedicated to providing the newly established high-growth enterprises, especially high-tech enterprises, with financing services and helping them develop and expand. It is also known as the second board market. The second board market broadens the financing channels for SMEs. Most of the companies involved in the GEM trading are SMEs, high-tech enterprises and emerging enterprises. These enterprises generally have high-risk, high-yield and high-growth characteristics. Their growth and performance have an important impact on the management of SMEs. In the modern management system of enterprises, equity concentration and equity balance are the key factors of corporate governance, which play a key role in the production and operation efficiency of the enterprise and the company's performance. Therefore, it is of great significance as the research object of this paper.

The company's shareholding structure includes equity concentration and equity balance. The equity concentration of this paper is mainly based on  $CR_1$  (the shareholding ratio of the first largest shareholder) and  $H_5$  (the sum of the shareholding ratio of the top five shareholders). The equity balance is Z index (Ratio of the shareholding ratio of the second to the fifth largest shareholder to the shareholding ratio of the largest shareholder). This paper mainly uses EPS as the explained variable,  $CR_1$ ,  $H_5$  and Z index are used as explanatory variables to establish two multiple linear regression models to research the relationship between ownership structure and company performance.

## 2. Theoretical analysis and research hypothesis

### 2.1. The assumption of equity concentration and company performance

Equity concentration is the control of a company's major shareholders. If a major shareholder of the company owns a large proportion of stock equity in the listed company, other minority shareholders can't influence the company's decision made by the major shareholder, and the interests of this major shareholder are directly related to the company's interests. Major shareholders will choose high-profit projects in pursuit of their own interests, which will increase

company performance. If the equity is mainly concentrated in the hands of minority shareholders, they will monitor each other's private interests and the large shareholders' short-selling assets, which can improve the company's performance. However, if the company's equity is too concentrated, it is not conducive to the company's long-term development.

In this paper, the impact of equity concentration on company performance has two hypotheses, hypothesis 1: equity concentration  $CR_1$  and company performance's relationship shows inverted U - type. Hypothesis 2: There is a positive correlation between H5 (the sum of the shareholding ratios of five largest shareholders) and company performance.

## 2.2. The assumption of equity balance and company performance

This paper uses the ratio of the sum shareholding ratio of second to fifth largest shareholders to the shareholding ratio of the largest shareholder Z to represent equity balance. A certain degree of equity balance in companies is beneficial to the development of the companies, since large shareholders themselves may contain mutual supervision, which can restrain major shareholders from encroaching on the company's resources and protect the interests of small and medium-sized shareholders and its company value is higher than that of the companies with a single-large shareholder.

In this paper, the impact of equity balance on company performance has another hypothesis, that is hypothesis 3: There is a positive correlation between equity balance and company performance.

## 3. Theoretical analysis and research hypothesis

### 3.1. Variable selection

This paper will select GEM listed companies as the research object, select the related data in GEM from 2015 to 2017, excluding the companies with incomplete data, and finally select 33 listed companies including 99 sample data during these three years. EPS (earnings per share) in these three years is used as an explained variable to represent the company's performance.  $CR_1$  (The shareholding ratio of the largest shareholder) and H5 (the shareholding ratio of the top five shareholders) is used to represent ownership concentration, Z index (the ratio of the sum proportion of the second to fifth largest shareholders to the proportion of the largest shareholder) is used as the explanatory variable of the model as the equilibrium value of the equity, and two linear regression models are obtained. Data source: WIND, the software applications used are EXCEL2003 and SPSS17.0.

Table 1 Variable definitions

variable	Variable name	Variable representation	Variable definitions
Dependent variable	Return on total assets	ROA	(total profit + interest expense) / average total assets * 100%
	Earnings per share	EPS	Profit after tax per share, the ratio of profit after tax to total share capital
Independent variables	Equity concentration	$CR_1$	Proportion of the largest shareholder of a listed company
		H5	The sum of the shareholding ratio of the top five shareholders
	Equity balance	Z	Ratio of the shareholding ratio of the second to the fifth largest shareholder to the shareholding ratio of the largest shareholder
Control variables	Assets and liabilities Company Size	LEV	Total liabilities / total assets
		SIZE	Natural logarithm of total assets at the end of the period

### 3.2. Research Design

In this paper, EPS is selected as dependent variables to establish four linear regression models, including two independent variables: equity concentration and equity balance.

This paper selects CR1 (the shareholding ratio of the largest shareholder) and H5 (the sum of the shareholding ratio of the top five shareholders) as the research content of the equity concentration, Z index (the ratio of the shareholding proportion of the second to the fifth largest shareholder to the shareholding proportion of the largest shareholder) as the research content of the equity balance.

Control variables are other variables that may affect company performance. SIZE (The size of a company) is significantly related to company performance. The larger the company is, the better the performance is. The same is that company's LEV (asset-liability ratio) also has a significant impact on the company's performance. It reflects the company's financial position. The low asset-liability ratio means the company's lower financial costs, less risk, stronger solvency and more stable operation.

Based on the above variable definitions and analysis, the following two models are established:

Equity concentration model: (where  $X=CR_1, H_5$ )

$$EPS = \beta_{20} + \beta_{21}X + \beta_{22}X^2 + \beta_{23}SIZE + \beta_{24}LEV + \nu \quad (1)$$

Equity balance model:

$$EPS = \beta_{40} + \beta_{41}Z + \beta_{42}SIZE + \beta_{43}LEV + \nu \quad (2)$$

## 4. Empirical analysis

### 4.1. Descriptive statistical analysis

We The statistical results are shown in Table 2.

Table 2. Descriptive statistics of relevant variables of GEM listed companies from 2015 to 2017

	N	minimum	maximum	mean value	standard deviation
EPS <sub>2015</sub>	33	-1.61	1.99	0.49977	0.6564
LEV <sub>2015</sub>	33	3.00%	84.00%	32.23%	20.82%
GROWTH <sub>2015</sub>	33	19.81	20.38	20.89	0.9161
CR1 <sub>2015</sub>	33	12.00%	86.00%	36.42%	16.33%
Z <sub>2015</sub>	33	0.10997	3.64	0.9377	0.7801
H5 <sub>2015</sub>	33	35.02%	100.00%	62.53%	16.78%
EPS <sub>2016</sub>	33	-0.72	1.0876	0.373179	0.4025167
LEV <sub>2016</sub>	33	5.35%	81.17%	30.81%	20.60%
CR1 <sub>2016</sub>	33	11.88%	64.73%	33.31%	13.31%
GROWTH <sub>2016</sub>	33	20.1532	24.0186	21.4497	0.9679
H5 <sub>2016</sub>	33	34.34%	79.42%	56.71%	12.34%
Z <sub>2016</sub>	33	0.1141	3.6473	0.9168	0.7883
EPS <sub>2017</sub>	33	0.04	1.44	0.466264	0.3969522
LEV <sub>2017</sub>	33	5.46%	78.71%	33.28%	19.55%
CR1 <sub>2017</sub>	33	11.88%	64.05%	32.59%	12.84%
GROWTH <sub>2017</sub>	33	20.2162	24.4572	21.6874	1.0733
H5 <sub>2017</sub>	33	34.06%	77.82%	55.73%	12.20%
Z <sub>2017</sub>	33	0.1147	3.6473	0.9152	0.773

From the statistical results, the average value of EPS ranges from 0.4997 to 0.3179 and then to 0.4662, showing decreasing firstly and then rising. While the minimum value of EPS is negative in both 2015 and 2016, it indicates that operating performance of some companies among the GEM listed companies is relatively poor. The maximum value of EPS in these three years also decline firstly and then rise. For the control variable LEV, the maximum value and the minimum value differ greatly, with the minimum value below 10% and the maximum value above 80%. While the

maximum value and minimum value of GROWTH are not much different, they are nearly maintained at 20-25. The average value of equity concentration CR1 and H5 is gradually decreasing from 36.42% and 62.53% to 32.59% and 55.73% respectively, indicating that China's reform of the shareholder structure has given initial results, and listed companies have gradually realized that the single-large shareholder has detrimental side effects on the company. From the mean value of H5, they are 62.53%, 56.71% and 55.73% respectively and are all more than 55%. It shows that the top five shareholders are fully capable of controlling the running of the company independently and the GEM listed companies still have relatively high ownership concentration. The listed companies' equity balance Z index has remained above 0.9, indicating that on average, the second to fifth largest shareholders have strong control right over the largest shareholder. CR1 and H5 (the concentration of ownership) are both declining year by year, but the change from 2016 to 2017 is fewer than that from 2015 to 2016. On the whole, the change is not great. The Z index of equity balance has changed very little from 0.9377 to 0.9152

#### 4.2. Relevance test

The purpose of the correlation test is to observe the correlation between the variables in order to prevent the multi-collinearity problem caused by the excessive correlation coefficient and pave the way for regression analysis. Test results show that both CR1 and H5 are significantly related to EPS. And correlation coefficients are 0.374 and 0.434 respectively. However, there is no significant correlation between Z (the equity balance degree) and the company's performance, while the correlation coefficient between the equity balance degree and the equity concentration index is above 0.5, the correlation is significant. And if the correlation coefficient between the variables in the same model does not exceed 0.5, the problem of multicollinearity will not occur. In this model, the models of equity concentration and equity balance degree are respectively established, so multi-collinearity does not exist and regression analysis can be performed.

Table 3. Correlation test results

		EPS	LEV	CR <sub>1</sub>	Z	H <sub>5</sub>	GROWTH
Pearson correlation	EPS	1.000	-.236	.374	.030	.434	-.138
	LEV	-.236	1.000	-.042	-.160	-.131	.081
	CR <sub>1</sub>	.374	-.042	1.000	-.651	.703	-.292
	Z	.030	-.160	-.651	1.000	-.046	-.137
	H <sub>5</sub>	.434	-.131	.703	-.046	1.000	-.463
	GROWTH	-.138	.081	-.292	-.137	-.463	1.000

The relation curve between ownership concentration CR<sub>1</sub> and corporate performance is inverted U-shaped. From the process of listed companies' actual operations point of view, if the largest shareholder's equity proportion is too high, due to the phenomenon of the single-large shareholder emergence, minority investors cannot be protected. And China's existing laws and regulations still cannot effectively stop the deprivation and aggression of major shareholders to minority shareholders. Therefore, the highly concentrated ownership structure has the adverse effects on the company's development. However, if CR<sub>1</sub> is too low, the company's equity will be more dispersed, leading to the lack of enthusiasm for the major shareholders to manage the company. The minority shareholders are not willing to manage because the interests are too small, which is not good for the long-term development of the company. Therefore, the impact of CR<sub>1</sub> on the company's performance is twofold, and the shareholding ratio of major shareholders must have a proper range.

**Table 4. Model summary and parameter estimates**

 Dependent variable: EPS, independent variable: CR<sub>1</sub>

equation	Model summary					Parameter estimation		
	R <sup>2</sup>	F	Df <sub>1</sub>	Df <sub>2</sub>	Sig.	constant	B <sub>1</sub>	B <sub>2</sub>
Linear	0.088	2.988	1	31	.094	28.116	9.596	
quadratic	.104	12.744	2	32	0.002	25.283	24.610	-11.259

In addition, for another measure of equity concentration H<sub>5</sub>, it reflects the sum of the shareholding ratio of the top five shareholders. The higher H<sub>5</sub> is, the more favorable it is to the company. From the regression results of the model, the positive correlation between H<sub>5</sub> and corporate performance EPS is significant, that is, Sig is less than 0.05, indicating that the regression result of the model is significant, so it is consistent with hypothesis 2. Overall, the top five shareholders are fully capable of controlling the company independently, which is conducive to better management of the company and is more beneficial to the overall development of the company.

**Table 5 Anova<sup>b</sup>**

model		Sum of square	Df	Mean square	F	Sig.
1	return	4.870	4	1.218	3.822	0.013 <sup>a</sup>
	Residual	8.921	28	.319		
	total	13.791	32			

 a predictive variables: (constants), H<sub>5</sub><sup>2</sup>, LEV, GROWTH, H<sub>5</sub>.

b. Dependent variable: EPS/yuan

**Table 6 Coefficient**

model		Non-standardized coefficient		Standard coefficient	t	Sig.
		B	Standard error	Trial version		
1	(constant)	-4.442	3.188		-1.393	.174
	LEV	-.005	.005	-.145	-.930	.360
	GROWTH	.114	.123	.160	.926	.362
	H <sub>5</sub>	.064	.042	1.645	1.539	.045
	H <sub>5</sub> party	-.032	.031	-1.068	-1.012	.320

a. Dependent variable: EPS / yuan

#### Regression analysis of equity balance and EPS

From the regression results, there is a negative correlation between Z(the equity balance degree) and the company performance EPS, but the relationship is not significant, which is inconsistent with the hypothesis 3 of this paper. There are many reasons for the inconsistency. The data selected in this paper could not actually reflect the company's real situation, and listed companies with complete data of three years is not enough, so the research itself has certain limitations. However, from the perspective of equity balance in 2015-2017, the overall change is not large, but it is gradually decreasing. And the company's performance EPS declines first and then rises. Thus it can be seen that the company's shareholding structure is also in constant adjustment. From the actual situation of listed companies, we still believe that there is a positive correlation between equity balance and company performance, but it is not significant.

Table 7 coefficient <sup>a</sup>

model	Non-standardized coefficient		Standard coefficient	t	Sig.	Collinear statistic	
	B	Standard error	trial version			Tolerance	VIF
1 (constant)	2.562	2.788		.919	.366		
LEV	-.007	.006	-.226	-1.204	.239	.942	1.062
GROWTH	-.086	.133	-.119	-.642	.526	.959	1.042
Z	-.076	.468	-.091	-.163	.872	.107	9.306
Z <sup>2</sup>	.018	.143	.072	.128	.899	.104	9.594

a. Dependent variable: EPS

As for the assumption of equity balance, the hypothesis 3 has not been verified. The monopoly phenomenon has been alleviated, resulting in the loss of some shares in the capital market. The overall economy declined in the early period, but it recovered in the later period.

## 5. Research conclusions

There are some conclusions as below: the relation curve between CR1 and EPS are inverted U-shaped; There is a positive correlation between H5 and the company performance; The relationship between Z index and company performance is not significant. However, the research in this paper still supports a positive correlation between the Z index and company performance. Therefore, the suggestion based on the research results is that the shareholding ratio of the GEM listed company's largest shareholder should be determined in a reasonable range, neither too high nor too low. Too low proportion of the largest shareholding will lead to the dispersion of equity and make the company difficult to manage. Too high proportion will appear the single-large shareholder in the company make it easy to damage the interests of small and medium investors. But on the other hand, the index H5 is to maintain the ownership concentration not too fragmented. The higher, the better. Although the Z index of equity balance is not significant, we still believe that there must be a certain degree of balance, which is conducive to the company's development.

## References

- [1] Liu Bin, Guo Jiaojie. Empirical Study on Ownership Concentration, Equity Balance and Corporate Performance –Taking Listed Company in Liaoning Province as an Example [J]. China Market, 2017 (1): 144-147.
- [2] Ding Yinyin. Study on the Influence of Ownership Concentration and Equity Balance on Corporate Performance –Empirical Test based on Small and Medium Enterprise Board Listed Companies [J]. Management and Administration, 2017 (12): 26-29.
- [3] Jian Chen. (2001) Ownership Structure as Corporate Governance Mechanism: Evidence from Chinese Listed Companies[J]. Economics of Planning, 34, 53-72.
- [4] Zhou Yixiang. (2011) Empirical Research on Ownership Structure and Corporate Performance Based on the Perspective of Dynamic Endogeneity [J]. Energy Procedia 5, 1878–1884.
- [5] Harold, Belen. (2001) Ownership structure and corporate performance[J]. Journal of Corporate Finance 7, 209–233.
- [6] Tuan Nguyen, Stuart Locke, Krishna Reddy. (2015) Ownership concentration and corporate performance from a dynamic perspective: Does national governance quality matter? International Review of Financial Analysis 41, 148–161.