An Empirical Research on the Relationship Between Stock Ownership Incentive and Performance of Listed Companies

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Abstract: The U.S. financial crisis is pushing the world economy from prosperity to downturn, China's economy has also been affected. Being not optimistic about the economy, it is very meaningful to have a research on the effectiveness of listed companies' equity incentives. Therefore, this paper selects 32 listed companies which have the implementation of equity incentives in the year of 2008-2009 as the research objects, and uses the principal component analysis to obtain a comprehensive evaluation of the value of business performance, then has an empirical analysis of relationship between equity incentives and corporate performance, the study found the corporate performance and equity incentive have no significant correlationship.
Keywords: Financial crisis; Equity incentive; Principal; Component analysis; Corporate performance

1 Introduction

With the establishment of modern corporate system, the company's separation of ownership and management rights, this separation must have a principal-agent relationship. Company owners retain residual claims, and the company's daily management is entrusted to the operator. As operators and shareholders are rational people, both the objective function is difficult to converge. Since the manager takes the actual control of the company, there is information asymmetry between operators and owners at the same time, the contract between the two does not complete, owners want to maximize the value of their equity holdings, the manager wants their own utility maximized, so between shareholders and managers there is a "moral risk". It is needed to have incentive and restraint mechanisms to guide and limit behavior of managers. With the increasingly dispersed shareholding and management of increasingly complex technology, in order to reduce agency costs, the company owners and operators of the interests of the target line, companies have to implement equity incentives.

Equity incentive refers to the company stock or stock options, it's long-term incentive for operators, enabling them to diligence for the company's long-term development. Equity incentive was used in the 20th century, now it has been widely used in the United States and other Western countries, then Chinese companies have begun to implement the incentives. Since 2005, the share reform make the smooth progress, China Securities Regulatory Commission issued the "Corporate Equity Incentive Opinion (Trial)" program, it began formal implementation on January1, 2006, followed by the "Company Law", "Securities Law", "Accounting Standards for Enterprises No. 11 - Share-based Payment" and "State Holding Listed Companies (Domestic) Trial Measures for Implementing Equity Incentive Plans" and other incentive and equity-related laws and regulations has promulgated, and constantly improve the equity incentive system.

With the maturity of China's policy of equity incentive, stock valuations return to sense, the Chinese equity incentive faces the historic opportunity. In2008, equity incentive programs of listed companies went into the blowout, with the growing number of public equity incentive programs. In Shanghai and Shenzhen, the number of listed companies is as many as 60, representing 3.61% of the total number of listed companies. As the U.S. subprime mortgage crisis, have affected the global economy, China's stock market fell, many listed companies in the implementation of equity incentive stock option exercise prices below. Under this situation, encouraging the expected sharp objects shrink, causing a number of listed companies announced the suspension of the original incentive program. At the same time, as the impact of public opinion and policy environment, the implementation of equity incentive programs of listed companies had to be shelved. Facing the financial crisis, whether equity incentive still inspires executives to improve company performance is a difficult problem which plagued the company. Therefore, this article chooses companies which had the implementation of incentive stock options during that time to analyze.

2 Literature Review

Scholars have a depth study about the relationship between corporate performance and

management equity incentive, but because of different research methods or research angle used by scholars, there are different views. We can see by reading the literature, the main points can be divided into two categories, namely, equity incentive and enterprise performance related theory and unrelated theory. Performance-related incentive and equity of the company consists of three relationships: impact of positive phase, interactions, adverse effects. Jensen & Meckling (1976) represented the interests of the convergence hypothesis -using managerial ownership as an intrinsic incentives to resolve the agency problem, as part of management to hold shares, you can make it with the convergence of the interests of the shareholders has to reduce agency costs and improve corporate value. Chung & Pruitt (1996) empirical study found that not only management option significantly affects performance, and corporate performance management options also have significant impact.

The management of China equity incentive scholars with a corresponding performance of the company Chinese scholars also studied the relationship between equity incentive and corporate performance. For example, Wei Gang (2000) found that the annual remuneration of senior management and operating performance of listed companies have no significantly positive correlation. Li Zengquan (2000) showed that the proportion of senior management ownership is low, it can not play its due role in the incentive. However, the high proportion of significant shareholding has an effect. Zhou Janbo, Sun Jusheng (2003) found a higher growth and improved company performance are due to the holdings of equity incentives, there are positively correlation. Zhang zhongyi, Song zhenji (2002), used ROE and Tobin's Q value as indicators of company performance, they found the relationship between enterprise performance and managers obtained shareholding is cubic, as the manager obtained shareholding increasing, the manager acts from the "interests convergence" to "benefit expropriation", then back to "interest convergence".

3 The Study Design

Because securities markets are more perfect, information disclosure is realand the value of the stock price is close to the value of the company, they are more effective securities market, so company's performance is generally measured by Tobin's Q, which is equal to the company market value and replacement value of assets ratio. China's securities market is relatively incomplete, the regulatory mechanisms is poor insight, also the information of listed companies is incomplete disclosure, stock prices departure from the value of the company and it is difficult to estimate the replacement cost of assets. Therefore, Tobin's Q method can not be used to reflect the company's performance. China's scholars generally use the ROE to represent company performance, but the ROE are likely to be artificially modified and altered, and it reflects short-term interests of companies, can not fully reflect the company performance and development potential. In order to fully reflect the company's performance, the paper listed a number of key financial indicators and use the principal component to analyze the operating performance of listed companies. According to the source database, drawing together the financial index system, the main financial indicators, include profitability, growth ability, solvency, operational capacity, per five indicators. Table 1 below as follows:

Table 1 Targets

Financial Indicators	Specific targets
Share index	net assets per share X1, retained earnings per shareX2, earnings per share X3
Ability to grow	sales revenue growth of X4, net profit growth X5, equity capital growth rate X6, growth rate of total assets X7
Profitability	ROE X8, net profit margin X9
Solvency	current ratio X10, quick ratio X11, asset-liability ratio X12
Operating capacity	inventory turnover X13, total asset turnover X14

Sample data used in this paper are chosen from the 2008 to 2009, China announced the implementation of A-share market listed equity incentive provided by the 2009 annual report, the sample object, regardless of industry, mainly from the accumulation of data source database, the China Securities Network. On the basis of primary samples in order to ensure the validity of data, excluding the following types of listed companies: (1) financial listed companies, due to the annual financial statements of listed companies and other types of projects there is a big difference between companies, resulting in financial reduce the comparability between indicators, and given the small number of these listed companies, not considered in this study; (2) ST, PT companies, which are more than two consecutive years of losses or abnormal (2) each year in April during the sample period after 30 annual disclosure of listed companies; (3) the missing data, the data can't obtain. After screening, there were

32 listed companies eligible for the study sample.

3.1Hypotheses

The equity incentive for managers, managers have a stake in the company's shareholders, the interests of managers at this time will be linked with the interests of the company, the manager's behavior will be consistent with the interests of shareholders, consistent with its goals and objectives of the shareholders, management who will be more hard work, the corresponding reduction of agency costs, improve company performance. Thus, we get the following assumptions:

Assumption 1: the proportion of managerial ownership and corporate performance are linear relationship.

Morck (1988) proposed the theory of interest convergence and benefit expropriation. Corporate performance is not a simple linear relationship with manager shareholding, but curve. Therefore, we make the following assumptions:

Assumption 2: the proportion of managerial ownership and corporate performance are curve relationship.

Corporate performance is not only influenced by the effort of managers but also by its ability and the control of resources. make the same Incentives for managers, with the same level of management effort, but different company's asset size, the resulting firm performance is different. Thus, we come to the following assumptions:

Assumption 3: There is a positive correlation between the company's assets and corporate performance.

3.2Research methods

To find the key relationships between equity incentive and corporate performance of listed company, according to the above assumptions 1-3, this paper establishes the following two models:

Model 1: $Y = \beta_0 + \beta_1 SIZE + \beta_2 HER + \varepsilon$

Model 2: $Y = \beta_0 + \beta_1 SIZE + \beta_2 HER + \beta_3 HER^2 + \beta_4 HER^3 + \varepsilon$

Variables are defined as follows in Table 2:

Table 2 Variable Definition

	Variable	Variable code	Definition
Dependent variable	Overall Performance	Y	Comprehensive performance indicators of the company
Control variables	Company size	SIZE	The total assets of the natural logarithm
Argument	The proportion of managerial ownership	HER	The number of shares held by executives of the company's percentage of total shares

4 The Empirical Results and Analysis

In order to further study the relationship between equity incentives and firm performance, we must come to comprehensive performance indicators first and for this, performance evaluation model is established. In this paper, we obtain the 27 listed company's financial indicators by screening, using SPSS17 calculating principal components to identify and build models. Using the ratio of the eigenvalue corresponding to the extracted principal components account and the total eigenvalue value, four principal component scores are linear weighted and we come to the sum value of comprehensive evaluation:

$$Y = 0.198X_1 + 0.201X_2 + 0.193X_3 + 0.134X_4 - 0.043X_5 + 0.046X_6 - 0.076X_7$$
$$- 0.021X_8 + 0.176X_9 + 0.247X_{10} + 0.151X_{11} + 0.103X_{12} + 0.132X_{13} + 0.164X_{14}$$

(1) Descriptive statistics

We make a descriptive statistics of overall performance operators stake, the company assets of the sample data, results are as follows in Table 3.

Table 3 Descriptive Statistics

	Y (Overall Performance)	HER (operators of ownership)	SIZE (size of company assets)
Mean (median)	16.00404	4.298859	22.02857
Median (median)	17.24200	4.010000	21.73887
Maximum (Max)	47.17700	9.990000	24.88768
Minimum (Min)	-24.4700	0.016800	19.99541
Std. Dev (standard deviation)	15.48936	3.166052	1.286208

As can be seen from the table, the maximum value of the company's stake comes to 9.99%, and the minimum is 0.0168%, and the standard deviation is 3.166053, so we can know there is no big difference in the incentives of these companies. Levels of Company assets through the post has no big difference, but the maximum of the overall performance value reaches 47.177, and the minimum is -24.47, and the standard deviation is 15.48936, there is a big difference in the level of the company overall performance. So it is can be seen that in different companies the effect of equity incentive is not the same.

(2) Regression analysis

Model 1: The results of model 1 regression are shown in Table 4.

Table 4 Model 1 Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-70.40376	60.42687	-1.165107	0.2554
HER	1.188225	1.071890	1.108532	0.2786
SIZE	3.690651	2.638500	1.398769	0.1747
R-squared	0.085332	Mean dependent var		16.00404
Adjusted R-squared	0.009109	SD dependent var		15.48936
SE of regression	15.41865	Akaike info criterion		8.413471
Sum squared resid	5705.631	Schwarz criterion		8.557453
Log likelihood	-110.5819	Hannan-Quinn criter.		8.456285
F-statistic	1.119512	Durbin-Watson stat		1.967882
Prob (F-statistic)	0.342896			

R2 coefficient of model 1 reaches 0.085332, indicating that equation is not high representativeness of the sample, and the t test is not significant, F test was not significant. It shows the assumption of the model equations is not, and there was no correlation between ownership and corporate performance management, indicating that the equity incentive of the listed company during the financial crisis does not lead to the improvement or decline of corporate performance.

Model 2: The results of model 1 regression are shown in Table 5. R2 coefficient of model 2reaches 0.100988, the same to above, the representative of equation to sample is not high. The t-test of the parameters shown in the table is not significant, and F test is also not significant. So the assumption of model 2 equation is not, the equity incentive of listed companies has nothing to do with company performance.

Through the research, we found that although the implementation of equity incentive has some time, there is still shortfall in the incentive mechanism of Chinese listed companies. At the same time, most of the listed company which are conversion from state-owned enterprises, still retain the characteristics of state-owned enterprises, have inadequate incentives for executives, also there are many companies in which executives have zero-or low-held shares, this is why senior management staff have no Incentive to create value for the company and improve company performance.

Table 5 Model 2 Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-69.71527	62.65632	-1.112661	0.2779
X	7.166436	9.762843	0.734052	0.4707
X ^ 2	-1.483236	2.412883	-0.614715	0.5450
X ^ 3	0.094240	0.157548	0.598166	0.5558
Z	3.464528	2.756452	1.256880	0.2220
R-squared	0.100988	Mean dependent var		16.00404
Adjusted R-squared	-0.062469	SD dependent var		15.48936
SE of regression	15.96583	Akaike info criterion		8.544354
Sum squared resid	5607.968	Schwarz criterion		8.784324

Log likelihood	-110.3488	Hannan-Quinn criter.	8.615710
F-statistic	0.617828	Durbin-Watson stat	2.040444
Prob (F-statistic)	0.654457		

5 Conclusion

This article has used the published data of the equity incentive of listed companies, testing the relationship between the equity incentive and corporate performance, and supporting the unrelated theory. This shows that China's equity incentive still has a long way to go.

China's capital market is not mature enough, and a variety of system is not standardized, so market value does not reflect the true operating results of companies, incentives are likely to result in the manager' pursuit of stock prices, and the formation of the manager's short-term behavior. At the same time, as the executive pay and equity incentives are determined by the board of directors, in other words, the company exists internal control, they can influence decision-making of board of directors for their own personal gain, and there is no incentive to work hard. Although China's Listed Companies incentive mechanism is not perfect, but with the governance structure of listed companies in China continuing to reform, we believe that the listed companies and all levels of government will pay more attention to equity incentives in the future, which will play an important role in improving company performance, and achieve a win-win situation between shareholders and employees.

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