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Group Relations and Stock Crash Risk in China

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Abstract

Compared with independent enterprises, the group has internal talent market and provides a broad development space for the management, which can partially alleviate the management agent problem in original governance model. We use all the A shares of the company data from the CSMAR data base as the sample. We find that the group relations can reduce risk of stock price collapse, and correlation may weaken in state-owned group.

Keywords

Stock Price Crash Risk, Enterprise Group, State-Owned Group

1. Introduction

China is the largest developing country in the world and its economic stability has a significant impact on the China and the world. As a part of market economy, stock has been the focus of scholars for a long time. The risk of the stock-price crash is the probability of cliff fall in market indices or stock prices without any omen. The capital market maturity and stability in China is poor, and a big slump of stock prices occurs five times during 1997-2016. The risk of stock price collapse brings great wealth loss to investors, which seriously affects the efficiency of resource allocation in the stock market. Therefore, the research on the risk of stock price collapse has become one of the hot issues in the study of securities market, and it is very important for our country to stabilize the securities market and promote the healthy development of economy.

As the economic builders, enterprises play a key role in the economic development. The business conglomerate is the typical intermediate tissue with the enterprise and the market attribute in the modern market economy. Compared with the independent enterprise, the pluralism relations between the groups will affect each other, and the structure of the organization is more diverse, which makes the operation of the internal capital market of the enterprise unique and

complex and is different in corporate governance.

On the October 14, 2016, foreign media (Bloomberg) exposed the so-called "exclusive news", said that the Chinese chemical group (in China) and China's chemicals groups (Chinese) will merge. As soon as the news released, it caused people's wide attention in domestic capital markets and media, which led to the shares soaring of companies involved and some shares trading. The Enterprise groups are the most important participants in the stock market of our country, whose behavioral characteristics may have an important influence on the stability of the capital market. The influence of the enterprise groups is also greater than that of the average enterprise. So in stabilizing the market, do the enterprise group relationships affect the risk of stock price collapse?

2. Theoretical Analysis and Research Assumptions

2.1. Assumption One Puts Forward

Through group control, the enterprise can partly change the invalidation of the original governance mode in solving the management agency problem. First of all, under the control mode of Enterprise group, the Enterprise group has more power to supervise the management layer. Under the control of the group, Enterprises make the enterprise's original complex and unclear ownership relationship more clear (Ma et al, 2006), and make sure the status of controlling shareholders in state-owned enterprise group. The establishment of the controlling shareholders status will increase the incentive for the enterprise group to supervise the management (Demsetz, 1983; Xie, 2006). Secondly, under the control mode of Enterprise group, the Enterprise group has the ability to supervise the management layer. According to agency theory, the agency problem is proportional to the asymmetric information between the principal and the agent (Eisenhardt, 1989). Enterprise groups have more management knowledge than the average investor and the government, so supervision costs to the management in control of groups are lower. Moreover, the internal administrative control procedure of the state-owned enterprise group further reduces the information asymmetry between the management layer and the Enterprise group. According to the annual survey of China's large enterprise groups, more than 95% of the enterprise groups in China gather strategic planning and important investment decisions at the group level. Third, the group control model can better stimulate the enterprise management layer. The enterprise group provides the internal talent market for the management in the controlled enterprises, and makes up for the lack of the external talent market for the enterprise management (Khanna & Palepu, 1997). The existence of internal talent market makes internal promotion the main incentive mode for the management of the enterprises (Zhang, 2005), which can effectively reduce the inconsistency between the goal of the enterprise management and the enterprise group, make up the invalidation of the traditional incentive mode based on the compensation, and reduce the agency problem of the management layer. The relationships of enterprise

group can reduce the management agent problem and improve the level of corporate governance, so that it reduces the risk of stock price collapse.

H1: When enterprises are conglomerates, the risk of stock price collapse is smaller.

2.2. Assumption Two Puts Forward

Since state-owned enterprises belong to all citizens, government at all levels and business operators are agents. There is a multi-level agent relationship in the state-owned enterprises, where it is almost impossible for the ultimate owner to affect directly the behavior of business operators. It works step by step through the various layers of agent (Huang & Zhang, 1995), is difficult to the manager constraints and incentives, and increases the agency problem. Multi-layer agent relationship leads to difficulties in information transmission, reduces the quality of information (Lin Yu, 1995), and increases the risk of stock price collapse (Jin & Myers, 2006; Hutton et al., 2009).

On the other hand, the management compensation in state-owned listed companies is strictly controlled by the government, and the management compensation of state-owned enterprises should not exceed 20 times the average wage of the employees, so the incentive effect of performance-type compensation contract is limited (Shang, 2015). Besides there is a significant positive correlation between the incentive level and the stock crash risk (He & Ye, 2017). A wide range of incentives, such as stock compensation, tax avoidance and career development, will spur managers to conceal bad news about the company's performance (Kothari, Shu, & Wysocki, 2009). So the risk of stock price collapse of state-owned enterprises is relatively small.

H2: Compared with non-state enterprises, the state-owned group has less influence on the risk of stock price collapse.

3. Research Design

3.1. Sample Selection and Data Sources

We use All A-share data from 2005 to 2015 in CSMAR, and do the following treatment for the initial data: 1) This article excludes the financial listed companies; 2) In order to exclude the influence of some special stocks (Wang & Zhu, 2011), the transaction data of ST stock are eliminated; and 3) the sample of missing data is eliminated.

3.2. Variables Definition

Referring to the methods of Hutton et al. (2009) and Kim et al. (2016), this paper uses two methods to measure the risk of stock price collapse of listed companies.

$$r_{i,t} = \alpha + \beta_{1,i} r_{m,t-2} + \beta_{2,i} r_{m,t-1} + \beta_{3,i} r_{m,t} + \beta_{4,i} r_{m,t+1} + \beta_{5,i} r_{m,t+2} + \varepsilon_{i,t} \quad (1)$$

where $r_{i,t}$ means the earnings of T week in the every year of stock I, $r_{m,t}$ is weekly market index yield of all A-shares stocks in the T week. We define market adjusted rate of return $w_{i,t}$ of Stock i in the T week as firm-specific weekly return:

$$W_{i,t} = \ln\left(1+\varepsilon_{i,t}\right) \tag{2}$$

We use the firm-specific weekly return to construct the negative coefficient of skewness of firm-specific daily returns after market adjustment.

$$NCSKEW_{i,t} = \frac{-n(n-1)^{3/2}\sum W_{i,t^3}}{(n-1)(n-2)\left(\sum W_{i,t^2}\right)^{3/2}} \tag{3}$$

And the difference in the volatility of the up and down price *Duvol*:

$$DUVOL_{i,t} = \ln\left\{\left[\left(n_{up}-1\right)\sum_{\text{down}} R_d^2 \Big/ \left(n_d-1\right)\sum_{up} R_u^2\right]\right\} \tag{4}$$

where $n_u(n_d)$ is the number of weeks if $r_{i,t}$>(<) median return over the fiscal year t. For any stock i over a one-year period, we separate the sample into "up" and "down" two group when firm-specific weekly returns above (below) the mean of the return. $\sum_{\text{down}} R_d^2$ means the sum of square $w_{i,t}$ using the "down" group, and $\sum_{up} R_u^2$ means the sum of square $w_{i,t}$ using the "up" group.

It means whether the controlling shareholder and the actual controller exist other economic business entities besides the listed companies. In accordance with the definition of Xin et al. (2007), if the first major shareholder is the SASAC, the state-owned assets operating company, the Finance Bureau or other government agencies, or other companies or individuals who are not engaged in any industrial operation and are only engaged in the business investment, it is considered that the listed company is an independent enterprise with a value of 0 (group = 0), or 1.

3.3. Control Variables

We use the these control variables as follows: Change of monthly turnover rate ($Dturn_{i,t}$); Information transparency($Em_{i,t}$); company size ($Size_{i,t}$); return on total assets ($Roa_{i,t}$); asset-liability ratio ($lev_{i,t}$); the standard deviation of company's specific weekly return rate ($Sd_{i,t}$).It is shown in **Table 1**.

3.4. Model Designation

To test hypotheses 1 and 2, this paper builds the following model, We use the two Stock Crash Risk indices above to instead of the Crashrisk:

$$\text{Crashrisk}_{i,t+1} = \beta_0 + \beta_1 \text{Group}_{i,t} + \beta_2 \text{Control}_{i,t} + \text{i. year} + \text{i. industry} + \varepsilon \tag{5}$$

We regress the model by year and industry, inspect the coefficientβ_1. If the β_1 is significantly negative, the relationship of enterprises affect the risk of stock price collapse, when the suppose 1 is established.

To dig out how the property rights influence the correlation between the relationship of enterprises and stock price crash risk, this paper divides the enterprise groups into state-owned and Non-state-owned groups, and contrast coefficient difference.

Table 1. Definition of variables.

Variables Symbols		Variable Definition
Dependent Variable	$NCSKEW_{t+1}$	1% Shrinkage Index of the stock price in t + 1 period.
	$DUVOL_{t+1}$	1% Shrinkage Index of the stock price in t + 1 period.
Independent Variable	Igroup	Enterprise Group variable
	SOE	state-owned
Control Variables	$Dturn_{i,t}$	Change of monthly turnover rate; for the monthly average turnover rate difference of the T-year and the T-1year stock i.
	$Em_{i,t}$	Information transparency, the corrected Jones model (Dechow et al, 1995) returns the absolute value of residuals by annual regression.
	$Size_{i,t}$	The size of the listed company, with the natural logarithm of the total assets of the company;.
	$roa_{i,t}$	The total asset yield of the listed company, that is, the net profit /total assets.
	$lev_{i,t}$	The ratio of the assets and liabilities of listed companies is expressed by total liabilities compared with total assets;
	$Sd_{i,t}$	Fluctuations in the specific earnings. Stock i in the T-year of the standard deviation of the specific weekly yield.

Data sources: CSMAR Database.

4. Empirical Result Analysis

As Table 2 stated, the phenomenon of stock price collapse in China is significant, the mean of NCSKEW and DUVOL is −0.155 and −0.083, and the standard deviations is 0.665 and 0.473. The volatility of NCSKEW among sample firms is respectively bigger than DUVOL. The mean of igroup show that China's listed companies in the enterprise groups under the sample accounted for 29% of the total, which shows that the 29% listed companies is the Enterprise group in China's capital market.

Table 3 shows the regression results of model. The t-value of igroup is −4.46 and −3.90, besides the coefficient is −0.0524 and −0.0323, which are all less than 0.So enterprise group is significantly negative to stock price collapse. Suppose 1 is established. Group relations can significantly reduce the risk of corporate share price collapse.

Table 4 shows the two group regression results of model. We divides the enterprise groups into state-owned (soe = 1) and Non-state-owned (soe = 0) groups. The t-value of igroup in state-owned is between −2 to 2, which means the relationship between enterprise groups and risk of stock price collapse in state-owned group is not significant. In nonstate-owned group, the coefficient of igroup is −0.0617 and −0.0356, that means he relationship between enterprise

groups and risk of stock price collapse in nonstate-owned group is significant negative. Suppose 2 is established.

Table 2. Variable description.

Variable	Mean	p50	p75	min	max	sd	N
NCSKEW	−0.155	−0.130	0.250	−2.091	1.503	0.665	15,294
DUVOL	−0.083	−0.083	0.234	−1.207	1.093	0.473	15,294
igroup	0.290	0	1	0	1	0.454	15,294
Dturn	−0.070	−0.019	0.172	−1.614	0.963	0.431	15,294
em	0.078	0.046	0.094	0.001	0.571	0.0974	15,294
size	21.820	21.660	22.520	19.240	25.590	1.236	15,294
lev	0.466	0.475	0.628	0.046	0.902	0.209	15,294
roa	0.052	0.048	0.075	−0.154	0.235	0.0529	15,294
sd	0.051	0.048	0.060	0.000	1.452	0.0278	15,294

Sources: http://www.gtarsc.com/SingleTable/DataBaseInfo?nodeid=148&tbid=635

Table 3. Basic regression results.

VARIABLES	NCSKEW	DUVOL
igroup	−0.0524***	−0.0323***
	[−4.46]	[−3.90]
Dturn	−0.0363**	−0.0237**
	[−2.34]	[−2.19]
em	−0.0331	−0.0008
	[−0.54]	[−0.02]
size	−0.0353***	−0.0317***
	[−6.48]	[−8.37]
lev	−0.0654**	−0.0574**
	[−2.06]	[−2.55]
roa	0.5400***	0.2959***
	[5.12]	[3.88]
sd	0.6503**	0.3227**
	[2.38]	[2.05]
Constant	0.5559***	0.5327***
	[4.67]	[6.46]
Observations	15006	15006
Adjusted R-squared	0.07	0.10
F	36.89	52.97

Table 4. Grouping regression results.

VARIABLES	NCSKEW		DUVOL	
	Soe = 1	Soe = 0	Soe = 1	Soe = 0
igroup	−0.0241	−0.0617***	−0.0117	−0.0356**
	[−1.60]	[−2.86]	[−1.11]	[−2.32]
Dturn	0.0144	−0.0478**	−0.0046	−0.0243*
	[0.53]	[−2.48]	[−0.25]	[−1.80]
em	−0.0725	0.0166	0.0011	−0.0041
	[−0.85]	[0.19]	[0.02]	[−0.07]
size	−0.0408***	−0.0131	−0.0335***	−0.0194***
	[−5.79]	[−1.44]	[−6.90]	[−2.97]
lev	0.0341	−0.1061**	0.0180	−0.0908***
	[0.74]	[−2.29]	[0.56]	[−2.76]
roa	0.6149***	0.3954***	0.3303***	0.2284**
	[4.01]	[2.67]	[3.01]	[2.12]
sd	0.4831	0.6362*	0.1028	0.3818*
	[1.51]	[1.82]	[0.52]	[1.82]
Constant	0.6176***	0.1098	0.5082***	0.3209**
	[3.99]	[0.57]	[4.75]	[2.31]
Observations	7680	7290	7680	7290
Adjusted R-squared	0.08	0.05	0.10	0.08
F	22.73	14.38	30.24	21.90

5. Conclusion

This paper investigates the difference of the risk of stock price collapse between enterprise groups and independent companies, and in the future investigates the difference of relationship between state-owned enterprises and non-state-owned enterprises.

The results show that the risk of stock price collapse of conglomerates is smaller than that of independent listed companies. It is because under the control mode of enterprise group, which has internal talent market, the enterprise group has more power to supervise the management layer, has the ability to supervise the management, and the supervision cost of the management of the enterprise is lower. These findings also suggest that compared with non-state-owned conglomerates, groups relations have less impact on the risk of stock price collapse in state-owned group.

Overall, the study shows a negative correlation between group relationships and the risk of a stock crash. However, the state-controlled enterprise groups, due to the existence of multi-level agent relationship and different pay constraints, which increase the agency problem, reduce the impact of group rela-

tionship to the stock price collapse. This study did not explore under the different external circumstances, whether the group relationship and the risk of stock price collapse is different. This is a promising area for further exploration.

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