An Empirical Study of the Impact of "Three Types of Shareholders" on the Stock Price Crash of NEEQ——Based on Tunneling Effect

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Abstract. In 2018, the NEEQ broke out the risk of expiration of products of “three types of shareholders”, which led to a stalemate after the crash. Recently the state officially put the science and technology innovation board into actions to solve the financing problem of high-tech enterprises, which made it crucial to find the inflection point of qualitative change from quantitative change. This paper takes the active stocks of the NEEQ as a sample, and studies the impact of the “three types of shareholders” on the stock price crash of the NEEQ, and sets up a dual indicator to test the tunnel effect of “three types of shareholders” in the NEEQ. The study explo res that the NEEQ does have a controlling shareholder tunneling effect, but whether the controlling shareholder belongs to the three types of shareholders has no particular impact on the tunneling effect. Based on the conclusions, follow-up suggestions and research prospects are proposed.

Introduction

As a unique OTC equity trading market in China's multi-level capital market, the investment sentiment of the NEEQ market is booming under the impetus of policy-adjusting policies such as policy encouragement expansion, registration system reform, and new asset management regulations, and gradually develops into “shell resources”. The hotbed of the company and the "acquisition of listed companies", the number of listed companies with trust holdings, asset management plan holdings, contractual fund holdings and holdings, and their strong speculative nature and maturity redemption risks The investment incentives of the NEEQ market have deviated from the financing attributes, and the protection of investors' interests has been threatened. The full maturity risk of the NEEQ Fund products that broke out in early 2018 is the most obvious example. Despite the issuance of the "Notice on Issues Related to Listed Financing of Financial Enterprises" issued by the stock transfer system, the three types of shareholders have been vigorously rectified and retired, and the details of the science and technology board have been activated to activate the investment and financing market of the science and technology enterprises. The question of lattice has received wide attention. The proposition originally belonged to the issue of legal discussion. This paper demonstrates the actual impact of the three types of shareholders on the current stage of the NEEQ from the perspective of market transaction performance.

The tunneling effect mainly refers to the behavior of the controlling shareholder or actual controller of the company to transfer the company's assets and profits out of the company in order to obtain more private benefits. This concept is derived from the four people such as Simon [1] in 2000 on The American Economic Review. Published a paper called "Tunneling." They believe that tunnels come in two forms: First, controlling shareholders can simply transfer resources for their own interests through self-dealing transactions, including asset sales, transfer pricing favorable to controlling shareholders, and excessive executive compensation. Loan guarantees, requisition of company opportunities, etc. Second, controlling shareholders can increase their share by diluting share issues, freezing minority shareholders, conducting insider trading, stealing acquisitions or other financial transactions that discriminate against minorities by transferring any assets. The share in the company.

The academic community is paying increasing attention to tunneling and tunneling behavior, and related research has increased year by year. The main idea of the research is to discuss whether there

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is a tunnel effect of the controlling shareholder "short-cutting" company in the research market, verifying the existence of tunneling effect and tunneling effect from three aspects: equity balance level, internal and external governance level, and separation of two powers. degree. The research perspective of equity checks and balances mainly includes the shareholding ratio of controlling shareholders (H.Y. Shen, X.H. Wu, etc. (2017) [2], J.R. Tang and T.J. Zhu (2017) [3], Guohua Jiang, Pingui Rao et al. (2015) [4]); internal and external governance mainly includes controlling shareholdings. Starting from the perspective of executive power of directors (X.Y. Guo and Y.L. Meng (2017) [5], Winnie (2011) [6]); the separation of powers is mainly from the control rights and cash flow distribution rights (J.R. Tang and T.J. Zhu (2017) [3], X. Xia and C.H. Zhou (2018) [7]).

After reviewing the literature on tunneling at home and abroad, it is concluded that the predecessors mainly followed the two definitions of "self-dealing transaction" and "dilutive share issues" proposed by Simon Johnson [1] in 2000. Study tunneling effects. From the perspective of research, the existence of tunneling effect and the degree of tunneling effect are verified mainly from three aspects: the level of equity checks and balances, the level of internal and external governance, and the separation of the two powers. From the perspective of the level of equity checks and balances, the research mainly focuses on the shareholding ratio of controlling shareholders; the internal and external governance level starts from the perspective of controlling rights and executive power of directors; and the separation of powers refers to the tunneling effect of control rights and cash flow distribution rights. Impact. A large number of domestic studies have shown that tunneling effects are common in China's capital markets (H.Y. Shen et al. (2017) [2], J.R. Tang, and T.J. Zhu (2017) [3]), and foreign studies have shown that tunneling has nothing to do with market development (Simon et al. (2000) [1]), and the company. Scale (Wenting Chen et al. (2017) [8]), director independence (Yunsen Chen et al (2014) [9]), company financial status (Winnie Qian Peng et al (2011) [6]) and other factors have a greater correlation.

Quantitative Analysis of Three Types of Shareholders

Model Building. In this paper, two coefficients are set to measure the tunneling effect: the negative return skew coefficient and the upper and lower fluctuation ratio. [10]

①Negative return skew coefficient （NCRS）

$$\mathrm{NCRS}_{i,t} = -\left[n \times (n-1)^{\frac{3}{2}} \times \sum w_{i,t}^3\right] / \left[(\mathrm{n}-1) \times (\mathrm{n}-2) \times \left(\sum w_{i,t}^2\right)^{\frac{3}{2}}\right] \quad (1)$$

②Income fluctuation ratio（DUN）

$$\mathrm{DUN}_{i,t} = \ln \frac{(n_u - 1) \times \sum_{down} w_{i,t}^2}{(n_d - 1) \times \sum_{up} w_{i,t}^2} \quad (2)$$

We use the following table to show each variable and its interpretation:

Table 1 Variables and its interpretation

variable name	Explanation
Real_{t-1}	Proportion of controlling shareholders holding the first phase
$\mathrm{Eturnover}_{t-1}$	Market indicator control variable
Rfluct_{t-1}	Weekly rate of return volatility
$\mathrm{Mreturn}_{t-1}$	Mean weekly stock return rate
$\mathrm{LNasset}_{t-1}$	The total assets of the company that lags the first period (unit: 100 million yuan)
ROA_{t-1}	The performance of the company that lags the first period is expressed by the net profit of total assets (using net profit after interest and tax)
PB_{t-1}	The book value of the lag period, that is, the market value book ratio at the end of the year
LEV_{t-1}	Latency of the asset-liability ratio
$\mathrm{NCRS}_{i,t}$	Responding to one of the new three-plate stock tunneling indicators, the calculation method is as described above
$\mathrm{DUN}_{i,t}$	Responding to one of the new three-plate stock tunneling indicators, the calculation method is as described above

In order to test the three hypotheses proposed in the qualitative analysis conclusions, we design the following models:

$$CrashRisk_{i,t} = \alpha + \beta_1 \times Real_{t-1} + \sum_{i=2}^{m} \beta_i \times Control + \varepsilon \quad (3)$$

Quantitative Test. In this study, a total of 10,490 NEEQ companies listed on February 18, 2019 were selected, and 3,862 zombie stocks (ie, NEEQ stocks that had never had a transaction record) were deleted, leaving 6,628 listed companies. Since the NEEQ officially implemented the expansion at the end of 2013, the three types of shareholders' problems were revealed at the beginning of the year. Therefore, we took the above-mentioned 6628 listed companies' data from 2014 to 2018 for an empirical study of the first phase.

Table 2 Spearman correlation test

		Eturnover	Rfluc	Mreturn	LNasset	ROA	PB	LEV	REAL	NCRS	DUN
Eturnover	Pearson correlation	1	-.011	-.008	-.018*	-.007	-.025**	-.004	.057**	-.031**	-.017*
	Sig.		.108	.188	.016	.218	.002	.321	.000	.000	.021
Rfluc	Pearson correlation	-.011	1	.943**	.010	.012	.034**	-.015*	.021**	-.039**	-.031**
	Sig.	.108		.000	.123	.078	.000	.039	.007	.000	.000
Mreturn	Pearson correlation	-.008	.943**	1	.009	.012	.036**	-.016*	.018*	-.040**	-.032**
	Sig.	.188	.000		.141	.089	.000	.028	.020	.000	.000
LNasset	Pearson correlation	-.018*	.010	.009	1	-.009	.012	.023**	.023**	-.055**	-.050**
	Sig.	.016	.123	.141		.149	.076	.004	.004	.000	.000
ROA	Pearson correlation	-.007	.012	.012	-.009	1	.014	-.298**	.074**	-.024**	-.011
	Sig.	.218	.078	.089	.149		.057	.000	.000	.003	.095
PB	Pearson correlation	-.025**	.034**	.036**	.012	.014	1	-.044**	.096**	-.083**	-.072**
	Sig.	.002	.000	.000	.076	.057		.000	.000	.000	.000
LEV	Pearson correlation	-.004	-.015*	-.016*	.023**	-.298**	-.044**	1	-.128**	.063**	.029**
	Sig.	.321	.039	.028	.004	.000	.000		.000	.000	.000
REAL	Pearson correlation	.057**	.021**	.018*	.023**	.074**	.096**	-.128**	1	-.335**	-.239**
	Sig.	.000	.007	.020	.004	.000	.000	.000		.000	.000
NCRS	Pearson correlation	-.031**	-.039**	-.040**	-.055**	-.024**	-.083**	.063**	-.335**	1	.928**
	Sig.	.000	.000	.000	.000	.003	.000	.000	.000		.000
DUN	Pearson correlation	-.017*	-.031**	-.032**	-.050**	-.011**	-.072**	.029**	-.239**	.928**	1
	Sig.	.021	.000	.000	.000	.095	.000	.000	.000	.000	

Note: *. At the 0.05 level, the correlation is significant

**. At the 0.01 level, the correlation is significant

According to the control of the controlling shareholder, the group test is carried out to verify the existence of the NEEQ tunneling effect. The table below shows the results of testing the samples in groups of controlling shareholders. The results show that the independent variables and control variables of enterprises with high holding ratio have obvious statistical relationship with the two dependent variables at the statistical level of 0.001, while the dominant variable DUN is weaker in enterprises with low holding ratio. It is only significant at the statistical level of 0.1, and the results obtained by the two indicators are not uniform, and the latter is weak.

Table 3 Grouped according to the shareholding ratio of controlling shareholders

	Low holding		High holding	
	NCRS	DUN	NCRS	DUN
Eturnover	(-.021) .518	(-.020) .540	(-.015) .163	(-.002) .884
Rfluc	(.176) .497	(.232) .374	(-.011) .668	(-.017) .515
Mreturn	(-.219) .397	(-.255) .327	(-.016) .519	(-.005) .836
LNasset	(-.033) .308	(-.040) .222	(-.005) .615	(.006) .592
ROA	(.053) .132	(.074) .037	(.008) .506	(.000) .972
PB	(-.092) .005**	(-.029) .373	(-.113) .000****	(-.092) .000****
LEV	(.090) .011**	(.097) .006***	(-.007) .530	(-.028) .019**
REAL(t-1)	(-.097) .003***	(-.063) .054	(-.326) .000****	(-.227) .000****
Overall significance	.000****	.057*	.000****	.000****

Note: ****, ***, **, * respectively represent 0. 001, 0. 01, 0. 05 and 0. 1 statistically significant

Next, according to whether it is a sample mark for the three types of shareholder holdings, and divided into two groups to test whether the enterprise tunneling effect of the three types of shareholder holdings is stronger. The table below shows the results of testing the samples in groups of three types of shareholder marks. The results show whether the three types of shareholder holdings have no significant impact on the strength of the tunnel effect.

Table 4 Group test by three types of shareholder marks

	Non-three shareholder holdings		Three types of shareholder holding	
	NCRS	DUN	NCRS	DUN
Eturnover	(-.014) .083	(-.007) .422	(-.028) .519	(.021) .636
Rfluc	(.003) .913	(-.001) .972	(.923) .440	(-.011) .993
Mreturn	(-.035) .156	(-.025) .320	(-.927) .437	(-.007) .995
LNasset	(-.050) .000****	(-.040) .000****	(.007) .872	(-.085) .053*
ROA	(.007) .434	(.005) .574	(.056) .208	(.069) .126
PB	(-.049) .000****	(-.048) .000****	(-.087) .054*	(-.060) .188
LEV	(.019) .030	(-.004) .680	(.154) .001****	(.153) .001****
REAL(t-1)	(-.325) .000****	(-.232) .000****	(-.197) .000****	(-.140) .002***
Overall significance	.000****	.000****	.000****	.000****

Note: ****, ***, **, * respectively represent 0. 001, 0. 01, 0. 05 and 0. 1 statistically significant

The sample will be grouped according to the level of the three types of shareholder holdings to verify whether the higher the degree of ownership of the three types of shareholders, the stronger the tunnel effect. The following table shows the results of testing the samples according to the level of the three types of shareholder holdings. It is consistent with the results of the first-level hypothesis test. Among the three types of shareholding companies, the higher the degree of control, the stronger the tunnel effect.

Table 5 Group test according to the level of ownership of the three types of shareholders

	Three types of shareholders holding low holdings		Three types of shareholders holding high holdings	
	NCRS	DUN	NCRS	DUN
Eturnover	(-.122) .063*	(-.096) .142	(.020) .740	(.090) .147
Rfluc	(-.572) .287	(-.953) .076*	(3.482) .127	(3.760) .107
Mreturn	(.514) .329	(.936) .076*	(-3.490) .126	(-3.799) .104
LNasset	(.054) .390	(-.079) .210	(-.043) .477	(-.045) .471
ROA	(.022) .733	(.036) .576	(.054) .374	(.073) .245
PB	(.030) .693	(.070) .346	(-.109) .081*	(-.122) .056*
LEV	(.155) .018**	(.208) .002***	(.097) .134	(.022) .738
REAL(t-1)	(-.123) .051*	(-.084) .181	(-.314) .000****	(-.265) .000****
Overall significance	.052*	.033**	.000****	.000****

Note: ****, ***, **, * respectively represent 0. 001, 0. 01, 0. 05 and 0. 1 statistically significant

Results of Quantitative Analysis. There is a tunnel effect of the controlling shareholder in the NEEQ market, that is, the higher the proportion of the controlling shareholder, the more obvious the tunnel effect; Whether the controlling shareholder in the NEEQ market is a third-class shareholder has no significant impact on the tunneling effect; If the controlling shareholder is a third-class shareholder, the higher the degree of control, the more obvious the tunnel effect is, consistent with the conclusion 1; Considering the overall market of the NEEQ, the factors affecting the tunneling effect include the shareholding ratio of the controlling shareholder, the total asset-liability ratio and the price-to-book ratio; and when the controlling shareholder is the three types of shareholders, the total asset-liability ratio and the price-to-book ratio are for the tunnel. The effect has no significant effect.

Conclusion

The results show that the NEEQ market does have a controlling shareholder tunnel effect. However, whether the controlling shareholder belongs to the three types of shareholders has no significant special impact on the tunneling effect, indicating that the negative impact of the three types of shareholders is not the performance of the NEEQ stocks at the current stage, but other factors.

From the perspective of clear ownership and promotion of stock price stability after the listing of the transfer board, due to the strict access mechanism of the main board market, the opportunity cost of listing is relatively high, and few companies can reach the market in the most prosperous stage of capital demand. Qualification, the cost of directly purchasing the main board shell resources is also considerable, so it is normal for the fund, trust, and asset management plan to purchase the shell resources in order to obtain the exit earnings after the company is listed. However, behind the three types of shareholders holding shares is a pool of funds built by many small investors. After the listing of the main board, there are clear restrictions on sales. This is in contradiction with the fund, type and asset management plan of the contract nature, so it will eventually To some extent, restricting the listing of NEEQ high-quality enterprises, it also invisibly increases the cost of clearing back the three types of shareholders, hindering the benign development path of the NEEQ market.

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