An Empirical Study on the Occupancy Funds by Large Shareholder of Listed Companies Before and After the Split Share Structure Reform

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Abstract: Eric Friedman, Simon Johnson, Todd Mitton(2003)established a “Propping Model of Controlling Shareholders” in which, in equilibrium, controlling shareholders may choose either tunneling or propping depending on the magnitude of an adverse shock and the magnitude of the private benefit of control. Due to the split share structure reform, conflicts between large and small shareholders are easing, and therefore we put forward the hypothesis that controlling shareholders are changing their behaviors from tunneling to propping for listed companies in this paper. We selected sample companies which initiated their split share structure reform in the year 2005, 2006 and 2007, and made an empirical study on occupancy funds by controlling shareholders during 3 years before and after the year of the share structure reform. The above study shows that occupancy funds happened 3 years after the share split structure reform are lower than that happened 3 years before the share split structure reform, and because of the fact that corporate performance is negatively correlated with occupancy funds by controlling shareholders, decreased occupancy funds helps to improve corporate performances. Further study indicates a nonlinear relationship between controlling shareholders’ stake and occupancy funds; ownership percentages of the second to fifth largest shareholders have an inhibition effect on occupancy funds by the controlling shareholders, which is more obvious in years before the share split structure reform than that after the share split structure reform; also, occupancy funds by state-owned controlling shareholders are higher than that by non state-owned controlling shareholders. Generally speaking, this paper provides empirical evidence for controlling shareholders’ propping for the listed companies after the share split structure reform.

Key Words: occupancy funds; controlling shareholders; propping; split share structure reform

1 Introduction

We've made a study on controlling shareholders' propping behaviors for listed companies after China's share split structure reform. Eric Friedman, Simon Johnson, Todd Mitton(2003) put forward the concept of "propping" for the first time in their paper "Propping and Tunneling". Through their research on Asian market after Asian financial crisis, they found that a large number of listed companies in Asia fell into financial difficulties with weak investors' protection systems, while controlling shareholders were more inclined to support listed companies, rather than tunnel at such moments. Friedman etc. established a dynamic model of controlling shareholders' propping behaviors on the relationship between controlling shareholders' tunneling and their ownership percentage, law protection of investors (tunneling cost), corporate debt and investment return on equity(ROE), which showed that controlling shareholders were inclined to support listed companies when ROE fell in a certain range.

The share split structure reform provides good conditions for our research on controlling shareholders' propping behaviors. In China's security market , there are state-owned shares, legal-person shares and individual shares in listed companies according to the nature of owners, which is called "split share structure". As an important characteristic in China's stock market, "split share structure" is always a systematic obstacle to the development of Chinese stock market. Chinese Securities Regulatory Commission issued "Notices on some related issues about share split structure reform of some pilot listed companies" in April 2005, and selected 4 listed companies as the first pilot companies to implement the share split structure reform. The so-called "share split structure reform" means that non-tradable shareholders need to pay to tradable shareholders so that their shares can be changed to be tradable. Non-tradable shareholders can pay by cash, shares or in some other acceptable ways. As to non-tradable shareholders, their shares can come into circulation in a lock-in period (generally 3 years) and will be priced at the market value at that moment. Therefore non-tradable shareholders will benefit from the above circulation. As to tradable shareholders, they can get some compensation in the short term, while face the loss of money in the long run. The reason is because the market value of their shares (or price of their shares) may decrease when the above lock-in period ends with large amount of non-tradable shares coming into circulation and increasing share supply. Of course, since large shareholders owns more shares than other small shareholders, their wealth of shares shrinks more due to stock price reduction, and therefore large shareholders have great incentives to support listed companies so that stock price will decrease less. So, we argue that the split share structure reform stimulates interests convergence between large and small shareholders as well as non-tradable shareholders' incentives change, which causes their behaviors changing from tunneling to propping.

Occupancy funds are always the main way for large shareholders to tunneling from listed companies before the share split structure reform, which is also a difficult problem to restrict the healthy and steady development of Chinese securities market. To some extent,

occupancy funds will decrease liquidity of corporate funds, affect the corporate daily cash flow to aggregate corporate financial burden. What makes worse is that occupancy funds will also erode corporate assets and even hinder corporate normal development. It is reported that occupancy funds by controlling shareholders exist in 70% listed companies who have experienced two consecutive years of financial losses (Lin Xiaojie, 2008). The excessive occupancy funds by controlling shareholders have become an important reason for their failures in delisted companies. Since the initiation in 2005, theoretically, share split structure reform has eased interests conflicts between large and small shareholders and also stimulated their interests convergence. As a result, whether share split structure reform changes occupancy funds by controlling shareholders? Whether occupancy funds have decreased after share split structure reform? This paper aims to answer the above questions.

In the following parts, section 2 includes the hypotheses of this paper. Section 3 includes data source and some descriptive statements. Section 4 is about the empirical results and analysis about occupancy funds, and the last part is about the overall conclusions and indications of this paper.

2 Hypotheses

2.1 Definition of controlling shareholders' occupancy funds

According to the rules and regulations of Chinese Securities Regulatory Commission, controlling shareholders' occupancy funds include the following behaviors of controlling shareholders or the actual controller of listed companies: borrowing money from listed companies with or without any interest payment; attaining entrusted loans through the guarantee of listed companies; making investments for listed companies; asking listed companies to issue bank's acceptance without the actual transaction backgrounds; asking listed companies to pay wages, benefits, insurance, advertisements and some other period expenses for them; asking the listed companies to pay some costs and expenses in some other ways that Chinese Securities Regulatory Commission accepts. Besides, controlling shareholders also ask listed companies and its related companies to provide secured loans for each other, which is also a way of occupancy funds (Chen Xiaohong etc., 2007).

Controlling shareholders occupy funds from listed companies with different purposes, which also display in different natures, and not all fund-occupancies are illegal. There are generally four kinds of controlling shareholders' fund-occupancies: (1) direct occupancy, which is the most obvious way and also the easiest way to be discovered; (2) fund allocation, controlling shareholder may allocate funds to the group company or other related companies when controlling shareholder are large group companies with different investment subsidiaries for the sake of the whole group, which can't be judged legal or not

in conventional benchmark; (3) related-party transactions, which reduce transaction costs and occupancies in operating funds, and improve corporate operating efficiencies in an active point of view. However, related-party transactions can always facilitate controlling shareholders' interests-seeking through price-control, and therefore small shareholders' rights and interests can't be completely protected. (4) loan guarantees, the banking industry are more likely to trust guarantees from listed companies due to their high information transparency compared to non-public companies. As a result, loan guarantees help to solve financing problems for controlling shareholders to some extent, and also bring about some debt default risks. In some cases, financial problems in a company may lead to its operational crisis.

Viewing from the accounts, controlling shareholders' occupancy funds are demonstrated not only in "accounts receivable", but also in "other accounts receivable" and "prepaid accounts". There are many drawbacks of the ordinary purchase and sale records to discover controlling shareholders' occupancy funds. Firstly, it is illegal to record the "accounts receivable" without any actual transactions. Secondly, it's easy to be discovered fund-occupancy through "accounts receivables" since "accounts receivables" are always one of the most concerned accounts of the auditing organizations, who have grasped very mature ways to audit such accounts. Because we study controlling shareholders' occupancy in non-operating funds, we choose "other accounts receivable" as our research objective. Other accounts receivable are not the most concerned account of auditing organizations and listed companies. They are not often used in rating and therefore they are popular means to deal with occupancy funds by controlling shareholders. "Other accounts receivable" includes all kinds of fines, compensations and imprests for employees, etc. except notes receivable, accounts receivable, prepayments, etc. and a variety of accounts receivable and prepayments, "Other accounts receivable" shouldn't be too large in ordinary conditions. However, if these accounts are becoming larger and larger in some listed companies, then it's more likely to be controlled by controlling shareholders for occupancy funds. Based on the above analysis, we should pay close attention to "other accounts receivable" when studying controlling shareholders' occupancy funds. Certainly, this is not the absolute measure for the largest shareholder's occupancy funds. Since we can't get the exact data easily, it's still a good estimation of controlling shareholders' occupancy funds from listed companies.

2.2 Analysis and hypotheses of factors for occupancy funds

Ownership structure is an important mechanism for corporate governance, which also has great influence on large shareholders' behaviors. No shareholders have enough incentives to monitor the management in companies with scattered ownership structures. And therefore management become the actual controllers of listed companies and behave in the interests of their own sake, even damaging the rights and interests of some shareholders (Berle and Means, 1932). As ownership concentration increases, incentives to supervise management increase too. In the meanwhile, it also increases large shareholders' incentives to expropriate small shareholders' rights and interests by the most used way of "related-party transactions". Due to the specific characteristic in China's stock

market, controlling shareholders always take large stakes in listed companies, which facilitate their fund-occupancies, and also expropriating rights and interests of other shareholders. Controlling shareholders' occupancy funds are not uncommon in Chinese security market, and there are the following factors to influence controlling shareholders' occupancy funds from listed companies based on the current researches and literatures:

2.2.1 Largest shareholder's stake

Fund-occupancy by large shareholders is always one way for the largest shareholder (controlling shareholder) to occupy resources from listed companies unreasonably or illegally. The largest shareholder seeks his own interests by damaging other small shareholders' rights and interests in the form of occupancy funds. Jensen and Meckling (1978) analyzed the role of ownership concentration in restraining controlling shareholders' tunneling. They firstly started from the extreme condition in which entrepreneurs own the company completely and are also the management of the company. They pointed out that lazy behaviors of entrepreneurs depend on the balance between non-monetary effects caused by lazy behaviors and corporate wealth reduction effects in marginal. If entrepreneurs hold only some shares of the company, without considerations about other inspection and incentive measures, entrepreneurs have greater incentives to be lazy compared to holding complete shares, for they take only part cost but enjoy the whole benefit of expropriation. However, since the expected entrepreneurs' lazy behaviors will increase, buyers will reduce their quoted prices, which mean entrepreneurs need to afford all the losses caused by their increased incentives of laziness after they have sold their part shares. As a result, the more stakes controlling shareholders take, the less tunneling incentives they have. Morck, Shleifer and Vishny (1988) held the view that controlling shareholders play positive roles in corporate governance. As controlling shareholders increased their stakes in listed companies, their tunneling incentives were weaker and weaker.

In summary, we put forward the first hypothesis: there is a non-linear relationship between controlling shareholders' occupancy funds and their stakes in the company. That is to say, occupancy funds are positively related with controlling shareholders' stake when they hold less percentage of shares, and occupancy funds are negatively related with controlling shareholders' stake when they hold more percentage of shares.

2.2.2 Other shareholders' stake in the company

Due to large shareholders' tunneling behaviors, other shareholders may choose irrational ways to vote to protect themselves and also some other activities to curb controlling shareholders' tunneling. Bloch and Hege(2001) established a model showing that large shareholders would make some commitments beneficial to corporate governance when there were several large shareholders because controlling shareholders made such commitments to win supports from other shareholders and therefore consolidated their controlling positions. Such commitments do no harm to other shareholders' rights and interests, and also curb controlling shareholders' incentives to

seek their own interests. Maury and Pajuste(2004) proved a positive relationship between numbers of large shareholders and corporate value(Li Zengquan etc.,2004).

In summary, we put forward the second hypothesis: there is a negative relationship between occupancy funds and share stakes owned by the second largest to the fifth largest shareholders.

2.2.3 State-owned characteristic of controlling shareholders

China's security market was established by the reform of state-owned corporations. The State took 50% stakes in state-owned companies in the special historical period so that state-owned companies would avoid being controlled by the social majority. Such ownership structure ensured controlling shareholders' interests not damaged by the management, but also increased controlling shareholders' possibility to occupy funds from listed companies, together with the opportunity to seek their personal interests. Though the State hold shares in listed companies through different organizations since reforms of state-owned companies, there is always some subtle connections between listed companies and their controlling shareholders when state-owned companies hold the controlling positions. So it is common for controlling shareholders to tunneling from listed companies by assigning staff in the board and also in ways of related-party transactions. Besides, in the listing process of state-owned companies, non-core assets were often left in the parent company, which needed supports from listed companies more compared to non-state enterprises. As a result, it can be inferred that state-controlled listed companies are more likely to be tunneled compared to other kind of listed companies (Li Zengquan etc.,2004).

In summary, we put forward the third hypothesis: fund-occupancies are more likely to happen in state-controlled listed companies.

2.2.4 Corporate-level factors

Due to some corporate-level factors, controlling shareholders' occupancy funds are also related with asset scale, debt ratio and return on equity (ROE) of listed companies. We make the above variables as controlling variables.

So, there are the following factors that may influence controlling shareholders' occupancy funds: the largest shareholder's stake in the company, the share stakes of the second to fifth largest shareholders, ownership nature, and some corporate-level factors. Through the above analysis, we can judge that controlling shareholders always have tunneling incentives from listed companies, based on which we initiated the share split structure reform in 2005. Through such reforms, stock liquidity improves in the whole securities market. And we can infer controlling shareholders' fund-occupancy incentives will reduce with the reform of share split structure.

3 Data description and descriptive statements

3.1 Data description

We select listed companies which initiated their share structure reform in 2005, 2006 and 2007 in China's A-share market as our research samples, including 234 listed companies in 2005, 908 listed companies in 2006 and 118 listed companies in 2007. We make the reform year as the zero time point, studying corporate data 3 years before and after the reform year respectively (the reform year excluded). Total assets, total debts, operating sales and ROE are from the sub-database of CSMAR---corporate research, and "other accounts receivable" are from financial statement disclosures, shareholders' equity is calculated by averaging the four quarterly equities in the quarterly financial statements. Then, we choose the individual company in the following steps: (1) exclude financial listed companies due to different accounting standards; (2) exclude the annual data when the sample company doesn't disclose complete financial data; (3) exclude the annual data in which the listed company's ROE is negative; (4) exclude the annual data when listed companies initiated important events like restructurings or suspensions. In summary, we get a big sample for 3 annual corporate data before the reform year, totally 3370 groups of regression data, and another sample for 3 annual corporate data after the reform year, totally 3597 groups of regression data.

3.2 Descriptive statistics for ownership structure data

We make two supplements for the definition of ownership structure in this paper: firstly, each shareholder's stake equals to their direct share percentage if there was no associations between the 10 largest shareholders disclosed in the annual report; and each shareholder's stake equals to the total combined stakes in the company when there were controlling relationships between the 10 largest shareholders (including parent-subsidiary relationships and peer-subsidiary relationships). Secondly, sample companies are divided to state-owned companies and non-state companies according to the nature of controlling shareholders.

Table 1 Data descriptions of ownership structures

Year	-3	-2	-1	0	+1	+2	+3
Sample Size	1029	1163	1178	1188	1207	1198	1192
The largest shareholder							
Average	43.70	43.03	42.50	35.81	35.58	35.73	35.44
Median	43.01	41.76	40.92	33.58	33.92	33.84	33.34
Maximum	85	85	84.85	83.75	83.83	85.23	85.23
Minimum	6.14	6.14	6.14	1.05	5.18	4.49	4.49

Variance	279.73	275.07	266.30	219.72	224.77	231.75	239.20
The second to fifth largest shareholders							
Average	15.73	16.49	17.03	15.34	13.99	13.22	12.60
Median	13.10	13.99	14.42	12.95	11.41	10.67	9.61
Maximum	58.82	58.82	58.82	55.73	55.73	55.73	55.74
Minimum	0.22	0.23	0.24	0.38	0.01	0.30	0.61
Variance	168.63	175.66	175.54	125.17	109.72	103.73	99.16
Difference of share stakes between the largest and other shareholders	27.97	26.54	25.47	20.47	21.59	22.51	22.84

Notes: all data are in % except variances. 1 year before the share reform year refers to year 2004 if the listed company A initiated the share structure reform in 2005, or refers to year 2005 if company B initiated the share structure reform in 2006 and so on. Due to different annual data disclosures, there are different numbers of sample companies each year.

The above table contains statistical results of corporate ownership data in our samples. We can conclude that median and average values are basically similar. The largest shareholder's stake each year before the share structure reform is far higher than that in years after the share structure reform, and the value keeps stable both in 3 years before and after the share structure reform. Also, the largest shareholder's stake is much higher than the sum of the second to fifth largest shareholders' ownership percentages. Besides, the largest shareholder's percentage of shares differs in a large range (a big difference between the Maximum and Minimum value with a big variance) due to some corporate differences and industrial differences. The difference between the largest shareholder's stake and the sum of the second to fifth largest shareholders' stake is narrowing, which comes down to the minimum value of 20.47 in the very year of share structure reform, and then the difference has increased a little.

3.3 Statistical description of occupancy funds before and after the share structure reform

We can find out the fund-occupancies between controlling shareholders and listed companies from the disclosures in the annual reports. Controlling shareholders' occupancy funds can be calculated by the net value of "other accounts receivable" and "other accounts payable", and we estimate occupancy funds mainly by non-operating funds. Besides, occupancy funds by subsidiaries of controlling shareholders are considered controlling shareholders' occupancy funds for convenience. In the meanwhile, all the funds data is divided by the total assets to exclude the scale effect. Fund occupancies exist in 79% of the sample companies, which took 6% of total assets before

the share split structure reform on average, and the scale show an obvious decrease year by year after the share split structure reform.

Table 2 Statistics for occupancy funds

Year / Controlling shareholders' occupancy funds	-3	-2	-1	0	+1	+2	+3
Sample size	1029	1163	1178	1188	1207	1198	1192
State-owned							
average	0.0667	0.0721	0.0606	0.0406	0.0501	0.0395	0.0278
median	0.0303	0.0274	0.0261	0.0176	0.0246	0.0393	0.0125
Non-state							
average	0.0531	0.0540	0.0431	0.0344	0.0281	0.0235	0.0172
median	0.0273	0.0255	0.0248	0.0181	0.0129	0.0113	0.0094
Overall average	0.0620	0.0661	0.0545	0.0382	0.0356	0.0289	0.0244
Overall median	0.0297	0.0264	0.0252	0.0178	0.0154	0.0132	0.0117

Notes: the year and sample size difference explanations are the same as the above table, and the above table data is calculated by dividing the annual "other accounts receivable" by "total assets" with four decimals.

From the above two tables, we can conclude that controlling shareholders' occupancy funds keep stable between 6% to 7% in 3 each year before the share split structure reform，and controlling shareholders' inclinations to occupy funds are more obvious when they are state-owned enterprises. Fund-occupancies show a declining trend in years after the share split structure reform with one year lagging period, which means occupancies in the second year after the share reform have decreased whether controlling shareholders are state-owned or not. However, the median value is lower than average value obviously, which can be inferred that fund-occupancies are more in a low percentile.

3.4 Relationship between controlling stake and tunneling

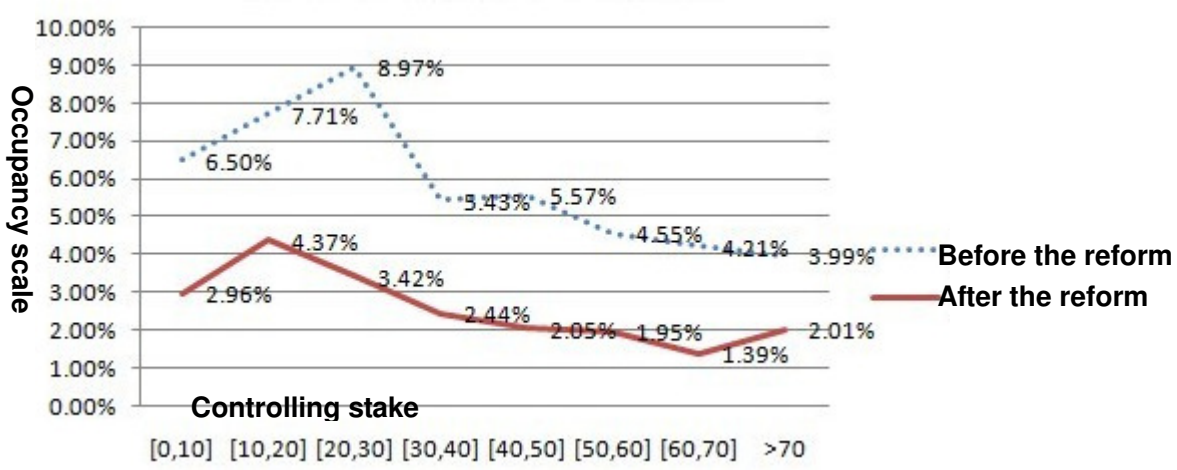
Due to the co-existence of entrenchment and alignment effect, it is found out a non-linear relationship exists between controlling stake and occupancy funds by controlling shareholders. Our data analysis is as follows:

Table 3 Comparison of occupancy funds before and after the share split structure reform

Largest shareholder's stake	Before the reform		After the reform	
	Sample size	Occupancy scale	Sample size	Occupancy scale
[0,10]	4	6.5%	52	2.96%
[10,20]	198	7.71%	498	4.37
[20,30]	862	8.97%	945	3.42%

[30,40]	526	5.43%	741	2.44%
[40,50]	497	5.57%	622	2.05%
[50,60]	634	4.55%	479	1.95%
[60,70]	475	4.21%	207	1.39%
>70	174	3.99%	53	2.01%

Notes: Occupancy scale equals to the average value of annual "other accounts receivable" divided by "total assets".



Graph 1 Comparison of occupancy funds before and after the share reform

From the above graph, there is an obvious relationship between the largest shareholder's stake and their occupancy funds from listed companies: occupancy funds increase as controlling stakes increase by when controlling shareholders take a low percentage of corporate shares; and they decrease as controlling stakes increase by when controlling shareholders take a relatively high percentage of corporate shares, and the threshold value is between 20% and 30%. Besides, occupancy funds after the share reform are obviously lower than that before share reform, but they also reach the maximum value when controlling shareholder takes 20% to 30% of the corporate shares.

4 Empirical results and analysis

4.1 Relationship between occupancy funds and corporate ROE

Fund-occupancies reduce the corporate asset turnover and also damage the rights and interests of other small shareholders, causing stock value decline in the securities market with direct or indirect impacts on corporate operations and asset returns. As a result, we assume a negative relationship between occupancy scale and ROE. Because listed companies have better liquidity after the share split structure reform, fund-occupancies may play a bigger role in market value of listed companies. We make ROE as dependent variable(ROE is calculated by net profit divided by the average annual value of shareholders' equity), occupancy funds as independent variable to measure the impacts

on ROE.

Regression model: ROE=a+ßTUN+μ

Regression results are as follows:

Table 4 Impacts of occupancy scale on corporate ROE

	Before the reform		After the reform	
TUN	Coefficient	T-value	Coefficient	T-value
	-0.1403	-5.4115***	-0.7433	-1.7095*
R^2	0.172		0.145	
Adj- R^2	0.144		0.117	

Notes: Fund occupancy scale equals to annual "other accounts receivable" divided by "total assets" at the end of the year, * , ** , *** refers to significant level at 0.1, 0.05 and 0.01.

From the above table, we conclude a negative relationship between ROE and occupancy funds at significance level of 10%. In years before the share split structure reform, ROE decreases 0.0014 for every 1% increase in occupancy scale, while it decreases 0.0074 for every 1% increase in occupancy scale in years after the share split structure reform. So ROE is more sensitive to controlling shareholders' occupancy scale after the share split structure reform.

4.2 Multi-factor analysis

4.2.1 Model and variables

To avoid impacts of other factors on occupancy funds and to check the roles of controlling variables, we establish the following regression model to further find out the factors for occupancy scale:

Model 1: $Tun=a+\beta 1LSHR1+\beta 2LSHR2+\beta 3SHR2\text{-}5+\beta 4GOV+\mu$

Model 2: $Tun=a+\beta 1LSHR1+\beta 2LSHR2+\beta 3SHR2\text{-}5+\beta 4GOV+\beta 5LEV+\beta 6SIZE+\beta 7ROE+\mu$

Detailed explanations to the above variables are as follows:

表 5 研究指标定义表

Variable Name	Formulation and definitions	Notes
TUN	Other occupancy funds ÷ total assets	occupancy scale measure
LSHR1	Take the value of the largest shareholder's stake if it's no more than 25%, or 25%	the largest shareholder's stake
LSHR2		

SHR_{2-5}	Take the value of difference between the largest shareholder's stake and 25% if it's more than 25%, or 0	the largest shareholder's stake
GOV	Sum of ownerships of the second to fifth largest shareholders	
LEV	Equals to 1 for state-owned controlling shareholder, or 0 for non-state shareholders.	dummy variable
SIZE	Debt ratio =total debts ÷ total assets	controlling variables
ROE	Take the natural logarithm of operating sales	controlling variables
	Net profits ÷ average shareholders' equity	controlling variables

It should be noted that all the data used in our calculations are all year-end data except shareholders' equity takes the average value of opening balance and ending balance, and ownership calculations take the value of the average value of the four quarterly data.

4.2.2 Empirical results and analysis

We make further checks on the data correlations based on the previous descriptive statistics, to see if collinearity exists between each variable.

Table 6 Correlation checks before the share reform

	LSHR1	LSHR2	SHR2-5	GOV	SIZE	ROE	LEV
0LSHR1	1	0.3825***	-0.2531	0.3562***	-0.3722	0.0819	-0.1023
LSHR2		1	-0.0349	0.1925*	-0.2123	0.288	-0.0477
SHR2-5			1	0.1967	-0.1881	0.2176	-0.0640
GOV				1	-0.2849	0.0601*	-0.1011
SIZE					1	-0.0450	0.0517
ROE						1	-0.1072**
LEV							1

Table 7 Correlation checks after the share reform

	LSHR1	LSHR2	SHR2-5	GOV	SIZE	ROE	LEV
LSHR1	1	0.4706***	-0.1957***	0.1619***	0.1494	0.0267	-0.0532
LSHR2		1	-0.4404**	-0.3928	0.3629	0.0267	-0.0532
SHR2-5			1	0.3026	-0.1688	0.0813	-0.1324
GOV				1	-0.3235	-0.0381	-0.0675
SIZE					1	0.1461**	0.3877
ROE						1	-0.1248**
LEV							1

Notes: occupancy scale=net "other accounts receivable" ÷ total assets, * , ** , *** refers to significant level at 0.1, 0.05 and 0.01.

Correlation analysis is one way to study the obvious correlations between two

variables with some specific statistical indicators, which can be stated as positively correlated or negatively correlated as general. The above table shows the nature of the largest shareholder and his ownership percentage is positively correlated at 1% significance level. We adopt the simple method called “Correlation Coefficient Matrix” in this paper to explain the collinearity relationship between all the independent variables. The Pearson coefficients between the above variables are all below 0.5 in table6 and table 7, which can be inferred as no serious collinearity exists. So we can make multivariate regression analysis, and the detailed results are as follows:

Table 8 Factor analysis for occupancy scale—before the share reform

Intercept and independent variables	Model 1			Model 2		
	Expected sign	coefficient		Expected sign	coefficient	
		Before reform	After reform		Before reform	After reform
intercept	unknown	1.007103*** (2.209)	0.028868** (2.295)	unknown	0.660030*** (11.888)	0.223919*** (16.618)
LSHR1	+	0.000382** (1.155)	0.000151* (1.278)	+	0.000517** (1.873)	0.000253*** (3.039)
LSHR2	—	-0.000875* (-0.964)	-0.000452** -2.769	—	-0.000329** (-1.266)	-0.000790** (-3.147)
SHR2-5	—	-0.099267*** (-11.882)	-0.000430** (-2.230)	—	-0.0910*** (-17.654)	-0.000372** (-4.095)
GOV	+	0.028518* (-2.810)	0.004956 (1.362)	+	0.0010* (1.152)	0.002555 (1.445)
SIZE					0.000105** (1.354)	-0.019716* (-14.588)
LEV					0.425415*** (33.255)	0.018874*** (1.880)
ROE					0.019213*** (2.789)	0.0000546 (1.093)
R^2		0.159524	0.131097		0.497038	0.222474
Adj- R^2		0.158452	0.122635		0.596233	0.220804

Notes: * , ** , *** refers to significant level at 0.1, 0.05 and 0.01. Values in parentheses are t values adjusted by variance.

The above regression results meet our previous expectations basically. By comparing

the above two models, we can find the second model demonstrates better regression significance and explaining degrees with controlling variables in.

Both intercepts are positive and the intercept before the share reform is larger than that after the share reform, which indicates controlling shareholders occupancy scale was higher than that after the share reform. The share split structure reform increases tunneling cost for controlling shareholders and therefore decreases their incentives to tunneling from listed companies.

LSHR1 is positively related with TUN, while LSHR2 and SHR2-5 are negatively correlated with TUN, which also meet our previous expectations of entrenchment effect and alignment effect of fund-occupancies. That is to say controlling shareholders' stake is positively correlated with their tunneling scale from listed companies when they own low percentages of shares, and negative relationship exists when they own high percentages of shares.

Impacts of controlling shareholder's stake on their tunneling scale is larger before the share split structure reform than that after the reform when they own a low percentage of shares in listed companies. However, when controlling shareholders own a high percentage of corporate shares, the constraining effect of their stake increase on tunneling scale is larger after the share split structure reform than that before the reform. The constraining effect of SHR2-5 on controlling shareholders' occupancy scale is far larger before the share split structure reform than that after the reform. Corporate ownership nature GOV also has influences on TUN at low significance level, which also meets our expectations. When adding controlling variables in Model 2, the significance level improves for coefficients of LSHR2 on TUN.

Controlling variables ROE is positively correlated with TUN due to positive coefficients, which indicates occupancy scale is positively related with corporate earnings before the share split structure reform. While the significance declines after the reform. Size has little influence on TUN before the share split structure reform, but the significance increases after the share reform. The positive relationship between LEV and TUN is relatively high, and LEV changes faster as TUN changes and the coefficient is significant at 1% level. So we can conclude that the share split structure reform facilitate share liquidity in the securities market and also plays an important role in constraining occupancy funds by controlling shareholders.

5 Conclusions and implications

We get the following conclusions according to the above studies and data analysis: there is a nonlinear relationship between controlling shareholders' stake and their occupancy funds, and occupancy scale and the impacts of controlling shareholders' stake on it are bigger before the share split structure reform before than those after the reform. Sum of the second to fifth largest shareholders' percentages of shares plays a role in constraining fund-occupancies by controlling shareholders, whose constraining effect is more obvious before the share split structure reform. State-owned controlling shareholders occupy higher funds than non-state controlling shareholders. Controlling shareholders'

occupancy funds are negatively related with corporate ROE and positively related with sales size of the company. There is a significant positive relationship between corporate asset-liability ratio (LEV) and occupancy scale, which is more related before the share split structure reform, due to higher occupancy scale by controlling shareholders before the share reform to a large extent.

In summary, there are some important implications: firstly, as an important institutional reform, the share split structure reform helps to ease interests conflicts between large and small shareholders, and also play a positive role in reducing tunneling by large shareholders. Under the external share reform circumstances, controlling shareholders are more likely to support the development of listed companies, which also proves the effectiveness of the share split structure reform. Secondly, improving the share structure and establishing the balance mechanism between shareholders are still important tasks during the reform of corporate governance and the construction of capital market. Though occupancy scale by controlling shareholders has declined since the share reform, and the differences between the controlling shareholders' stake and other shareholders' stakes are narrowing, it is still unrealistic to change the higher ownership concentration of Chinese securities market in a short time. We can learn from the successful experiences from western countries in corporate governance, encourage the development of institutional investors in corporate governance. The share split structure reform stimulates the fast development of institutional investors in China, however, it's still not enough. The regulatory organizations execute strict regulations on institutional investors at present; in the meanwhile, we should also speed up steps in bringing in foreign institutional investors.

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