

The Twin Agency Problems in Corporate Finance

- On the basis of Stulz's theory -

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Contents

List of Figures	IV
List of Tables	V
List of Appendixes	VII
List of Abbreviations	VIII
List of Symbols	IX
1 Introduction	1
1.1 The state of financial globalization	1
1.2 Three puzzles in financial globalization.....	2
1.3 “Twin Agency Problems” proposed by Stulz to explain the puzzles	3
1.4 Objectives of the Study	7
1.4.1 Developing the model of Stulz’s theory and looking for theoretical solutions.....	7
1.4.2 Researching the Chinese financial market and looking for empirical solutions	8
1.5 The structure of the study	8
2 Expropriators’ Decision on Expropriating the Existing Company	10
2.1 Assumptions and description of the model	10
2.2 Firm value and expropriation by corporate insiders and state rulers.....	13
2.3 Expropriation by corporate insiders	14
2.3.1 Optimal fraction of expropriation by corporate insiders	14
2.3.2 Important factors determining the fraction expropriated by corporate insiders	17
2.3.2.1 <i>Impact of ownership concentration on expropriation by corporate insiders</i>	17
2.3.2.2 <i>Impact of expropriation by state rulers on expropriation by corporate insiders</i>	21
2.3.2.3 <i>Impact of investor protection on expropriation by corporate insiders</i>	22
2.3.2.4 <i>Impact of future profitability and capital cost on expropriation by corporate insiders</i>	24
2.4 Expropriation by state rulers	27
2.4.1 Optimal fraction of expropriation by state rulers	27
2.4.2 Impact of investor protection on expropriation by state rulers	29
2.5 Important factors determining firm value.....	30
2.6 Impact of investor protection on expropriators’ benefit.....	32
2.6.1 Impact of investor protection on corporate insiders’ benefit	32
2.6.2 Impact of investor protection on state rulers’ benefit.....	35
2.7 Impact of future profitability and capital cost on corporate insiders’ benefit	37
2.8 Summary	38
3 Expropriators’ and Outside Investors’ Decision on Establishing New Company	42
3.1 Corporate insiders’ decision.....	42
3.1.1 Corporate insiders’ financing decision.....	42
3.1.2 Corporate insiders’ investment decision	44

3.1.2.1 <i>Impact of investor protection on corporate insiders' investment decision</i>	44
3.1.2.2 <i>Impact of future profitability and capital cost on corporate insiders' investment decision</i>	49
3.2 Outside investors' investment decision	50
3.2.1 Impact of investor protection on outside investors' investment decision	50
3.2.2 Impact of future profitability and capital cost on outside investors' decision	52
3.3 State rulers' decision	53
3.4 Summary	54
4. Possible Solutions Proposed by the Model to the Twin Agency Problems	58
4.1 What should be done to solve the Twin Agency Problems?	58
4.2 What could be done to solve the Twin Agency Problems?	59
4.3 Strategies should be taken by the state	60
4.4 Summary	65
5 Practical Investigations in China	67
5.1 General description of financial market in China	67
5.1.1 Development of Chinese financial market	67
5.1.2 Comparison of Chinese stock markets to other main stock markets	74
5.2 Situation of ownership concentration in China	82
5.2.1 Construction of data	82
5.2.2 Proportion of ownership concentrated companies in China	85
5.2.3 Average degree of ownership concentration in China	94
5.2.4 Most ownership-concentrated companies in China	99
5.2.5 Most ownership-dispersed companies in China	101
5.3 Is listing abroad a good way for Chinese companies to become more ownership-dispersed?	103
5.3.1 Comparison of ownership concentration between Chinese corporations listed in mainland and those listed abroad	103
5.3.2 Influence of state holding companies on the ownership concentration of companies listed abroad	105
5.3.3 Effect of the listing-abroad-age on ownership concentration of companies listed abroad	107
5.3.4 Influence of great capital scale on ownership concentration of companies listed abroad	108
5.3.4.1 <i>Difference of ownership concentration between top 50 and bottom 50 companies</i>	108
5.3.4.2 <i>Comparison of ownership concentration between companies listed abroad and inland with the same capital scale</i>	115
5.3.5 Conclusion	118
5.4 Relationship between profitability and ownership concentration	118
5.4.1 Relationship between ROE and ownership concentration for companies in different industries	118
5.4.2 Relationship between profitability and ownership concentration for state holding companies and non-state holding companies	124
5.4.3 Relationship between profitability and ownership concentration for companies listed abroad and listed inland	127

5.5 Measures taken by the ownership-dispersed corporations to solve the agency problems	132
5.5.1 Effective ownership structure.....	132
5.5.1.1 <i>Ownership structures taken by the ownership-dispersed companies</i>	132
5.5.1.2 <i>The effect of different ownership structure on profitability</i>	138
5.5.2 Lower separation of voting rights from cash flow rights	142
5.5.3 Ownership encouragement to more top managers and employees	144
5.6 Suggestions indicated by the empirical data	147
5.7 Summary	150
6 Conclusion and Recommendations.....	154
6.1 Conclusion.....	154
6.2 Recommendations	157
Appendix.....	162
References	187

List of Figures

Figure 1: Relationship between determining factors and the fraction of profit expropriated by corporate insiders and state rulers	58
Figure 2: Number of companies listed in China Mainland (1990-2008).....	68
Figure 3: Number of securities listed in China Mainland (1990-2008).....	69
Figure 4: Total stock issued capital in China Mainland (1990-2008)	69
Figure 5: Stock market value in China Mainland (1990-2008).....	70
Figure 6: Average market value of companies listed in China Mainland (1990-2008)	70
Figure 7: Stock and non-stock securities listed in China Mainland (1999-2008)	71
Figure 8: Number of companies listed on main stock exchanges (2007).....	74
Figure 9: Market value of main stock exchanges (2007)	75
Figure 10: Average market value of companies listed on main stock exchanges (2007).....	76
Figure 11: Number of listed companies on main stock exchanges (2001-2007)	77
Figure 12: Market capitalization of main stock exchanges (2001-2007)	77
Figure 13: Average market value of listed companies on main stock exchanges (2001-2007)	78
Figure 14: China vs. USA, Market capitalization / GDP (2001-2008)	79
Figure 15: Ownership structure of Zhejiang Yankon Group Co. Ltd.....	84
Figure 16: Ownership structure of Shanghai Broadband Technology Co. Ltd.	133
Figure 17: Ownership structure of Jilin AoDong Medicine Industry Group Co. Ltd.	134
Figure 18: Ownership structure of Tianjin Tasly Pharmaceutical Co. Ltd.....	135
Figure 19: Ownership structure of Zhuhai Zhongfu Enterprise Co. Ltd.	137

List of Tables

Table 1: Relativity between determinant factors and benefit of expropriators.....	59
Table 2: Overview of Financial Market in China (1990-2008).....	72
Table 3: Number of listed companies on main stock exchanges (2001-2007).....	79
Table 4: Market capitalization of main stock exchanges (2001-2007) (US\$ Mil.).....	80
Table 5: Average market value of companies listed on main stock exchanges (2001-2007) (US\$ Mil.).....	81
Table 6: China vs. USA, Market capitalization / GDP (2001-2008).....	81
Table 7: Proportion of ownership concentrated companies in China (20% Cutoff)	86
Table 8: Proportion of ownership concentrated companies in China (10% Cutoff)	87
Table 9: Comparison of proportion of ownership concentrated companies between different stock exchanges	89
Table 10: Proportion of ownership concentrated companies on Shanghai Stock Exchange (20% Cutoff)	90
Table 11: Proportion of ownership concentrated companies on Shanghai Stock Exchange (10% Cutoff)	91
Table 12: Proportion of ownership concentrated companies on Shenzhen Stock Exchange (20% Cutoff).....	92
Table 13: Proportion of ownership concentrated companies on Shenzhen Stock Exchange (10% Cutoff).....	93
Table 14: Average ownership concentration in China	95
Table 15: Cash-flow concentration in East Asia	96
Table 16: Comparison of average ownership concentration between different stock exchanges	96
Table 17: Average ownership concentration on Shanghai Stock Exchange	97
Table 18: Average ownership concentration on Shenzhen Stock Exchange.....	98
Table 19: Top 20 most ownership concentrated companies in China	100
Table 20: 19 most ownership dispersed companies in China.....	102
Table 21: Comparison of ownership concentration between companies listed abroad and in China Mainland	103
Table 22: Difference of ownership concentration between companies controlled by state and by family.....	107
Table 23: Effect of listing-abroad- age on ownership concentration of companies listed on NYSE.....	108

Table 24: Comparison of ownership concentration between top 50 companies	111
Table 25: Comparison of ownership concentration between bottom 50 companies	111
Table 26: Comparison of ownership concentration between financial corporations.....	114
Table 27: Comparison of ownership concentration between top 50 non-financial companies	114
Table 28: Comparison of ownership concentration between financial companies listed in mainland and listed abroad	117
Table 29: Comparison of ownership concentration between non-financial companies listed in mainland and listed abroad	117
Table 30: Comparison of ROE between companies ownership-concentrated and -dispersed (20% cutoff).....	122
Table 31: Comparison of ROE between companies ownership-concentrated and -dispersed (10% Cutoff).....	123
Table 32: Comparison of CR between companies ownership-concentrated and -dispersed (20% Cutoff)	125
Table 33: Comparison of CR between companies ownership-concentrated and -dispersed (10% Cutoff)	125
Table 34: Comparison of CR between companies with different ownership concentration ...	125
Table 35: Comparison of CR between companies listed abroad and listed inland (20% Cutoff)	130
Table 36: Comparison of CR between companies listed abroad and listed inland (10% Cutoff)	131
Table 37: Comparison of CR between companies listed abroad and listed inland with different ownership concentration.....	131
Table 38: Comparison of profitability between different ownership structures of ownership- dispersed companies in China	138
Table 39: Comparison of ownership structure between effective and ineffective companies	141
Table 40: Separation of voting rights from cash flow rights for different ownership structures	143
Table 41: Comparison of separation of voting rights from cash flow rights between effective and ineffective companies	143
Table 42: Comparison of ownership encouragement on top managers between different ownership structures	145
Table 43: Comparison of ownership encouragement on top managers between effective and ineffective companies	146

List of Appendices

Appendix 1: Yearly Market Overview of Shanghai Stock Exchange (1990-2008)	162
Appendix 2: Yearly Market Overview of Shenzhen Stock Exchange (1991-2008).....	163
Appendix 3: Ownership concentration of public traded financial companies in China	164
Appendix 4: Ownership concentration of top 50 public traded non-financial companies in China.....	165
Appendix 5: Data of 152 ownership-dispersed public traded companies in China.....	168

List of Abbreviations

ASX	Australian Securities Exchange
CEO	Chief Executive Officer
CFO	Chief Finance Officer
GDP	Gross Domestic Product
HKEx	Hong Kong Exchanges
KRX	Korea Exchange
LSE	London Stock Exchange
NASDAQ	NASDAQ Stock Exchange
NSE India	National Stock Exchange of India
NYSE	New York Stock Exchange
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
ROE	Return of Equity
SBT	Shanghai Broadband Technology Co. Ltd
SET	Stock Exchange of Thailand
SGX	Singapore Exchange
SHSE	Shanghai Stock Exchange
SZSE	Shenzhen Stock Exchange
TSE	Tokyo Stock Exchange
TSEC	Taiwan Stock Exchange Corporation
TSX	Toronto Stock Exchange
WACC	Weighted Average Capital Cost

List of Symbols

CR	$CR = \text{ROE of the firm} / \text{ROE of the industry}$
$e(q, k, s)$	Cost-of-theft function burdened by controlling shareholders
f	Percent of the equity held by the controlling shareholders
$g(p, k, h)$	Cost-of-grabbing function burdened by state rulers
G	Payoff to the state rulers from a firm at the end of period t
$\sum G$	Payoff to the state rulers from all the firms at the end of period t
h	Fraction of the profits expropriated by state rulers, $0 \leq h \leq 1$
h^*	Optimal value of h , which is decided by state rulers
i	Capital cost of the firm
i'	Market rate of return of the portfolio
I	All the capital invested in the firm at period 0
I^D	Capital demanded to set up the firm at period 0
I^E	Capital invested by the entrepreneurs to set up the firm at period 0
I^M	Capital collected from the market to set up the firm at period 0
I^S	Capital supply on the market
k	Quality of basic legal environment, called legal sense
p	Quality of protection of all the investors, constraint on state rulers
q	Quality of protection of outside shareholders
R	Rate of return of the project
R_t	Rate of return of the project at period t
s	Fraction of the profits expropriated by controlling shareholders, $0 \leq s \leq 1$
s^*	Optimal value of s , which is decided by controlling shareholders
U_t	Wealth held by the entrepreneurs in the firm at the end of period t
W_0	Initial wealth owned by the entrepreneurs at period 0
W_t	Total wealth held by the entrepreneurs at the end of period t
ΔW_t	Net value of starting a firm at the end of period t

1 Introduction

1.1 The state of financial globalization

Since the end of World War II, the explicit barriers to international investment activity have been sharply knocked down and the financial markets of most countries are not closed to cross-border trade in financial assets. Over the past decades, financial markets have increasingly extended beyond national borders. The reduction of formal barriers to trade in financial assets is often called “financial globalization” (see Stulz 2005b).

“Friedman (2005) makes the case that globalization leads to a flat world. By that, he means that it removes obstacles that, in the past, would have prevented firms and individuals from competing with each other across the world. Such competition improves welfare not only by insuring that goods are produced at the lowest cost but also by making sure that consumers get access to new and better goods. ………the metaphor is helpful to understand the forces that shape our world. It is even more apt to describe the financial world than the world of trade in goods” (Stulz, 2005a, page 1).

“In neoclassical models, financial globalization generates major economic benefits. In particular, it enables investors worldwide to share risks better¹, it allows capital to flow where its productivity is the highest, and it provides countries with an opportunity to reap the benefits of their respective comparative advantages (see Stulz (1999a), for a review)” (Stulz, 2005b, pp.1595). It generates welfare gains by reducing the volatility of aggregate consumption and also by delinking national consumption and income (Kose et al, 2006). Welfare is maximized with complete financial globalization and perfect markets within countries. Kaminski and Schmuckler (2006) constructed a comprehensive chronology of financial liberalization in 28 mature and emerging market economies since 1973 to examine the short- and long-run effects of financial liberalization on capital markets. Their results revealed that financial liberalization is followed by more pronounced boom-bust cycles in the short run. However, financial liberalization leads to more stable markets in the long run.

Actually, international financial markets are an inherent feature of today’s economies: the transmission of savings across countries has been facilitated; the agents in different countries have been enabled to hedge macroeconomic and financial risks; and the agents have been allowed to diversify and optimize their international asset and liability portfolios. (see Stark 2006).

¹ See Sorensen et al. (2007), Artis and Hoffman (2006a, 2006b), Giannone and Reichlin (2006) and Kose et al. (2007) for a review.

The phenomenon of financial globalization cannot be captured with a single catchword, measure or index. It has various dimensions. It is visible in the increasing scale and volume of financial transactions, the growing amount of international financial transactions, the increasing speed with which transactions are decided, implemented and settled, and the widening geographical scope of financial markets to countries and regions that until some years ago were cut off from worldwide financial markets (see Stark 2006).

1.2 Three puzzles in financial globalization

Although the explicit barriers to international investment activity have been dramatically reduced over the last 60 years and the cross-border trade in financial assets has dramatically increased, the positive impact of financial globalization has been surprisingly limited. Recent studies reveal some evidence different from the predictions of the traditional theory:

a) Direction of capital flows

International capital flows have increased dramatically since the 1980s. During the 1990s gross capital flows between industrial countries rose by 300 percent, much of which is due to trade in equity and debt markets (Evans and Hnatkovska, 2006). According to the standard neoclassical theory, if production functions are the same across countries, the capital productivity must be very high in the developing countries, because the cost of labor is very low in these countries. Large capital flows from rich to poor countries might be expected until the return to investment is equal in all countries. Therefore, the savings of rich countries could finance much-needed investment in poor countries, which increases the rate of returns on savings of industrial countries and enhances the economic growth in developing countries (see Smaghi 2006).

However, such flows do not take place. Lucas (1990) made a comparison between the U.S. and India in 1988 and the results showed that a massive capital flow from the U.S. to India should have been generated by a large return differential because the marginal product of capital in India is about 58 times higher than that of the U.S. However, the expected massive capital flow did not occur. Obstfeld and Taylor (2003, p.175) hold that “international investment in poor countries is at an all time low today”. In 2000, developed countries’ investment per capital was US\$6,000, much greater than that of developing countries (only US\$400) (Wolf, 2004, pp. 114-115). Schularick (2005) took a comparative look at capital flows to less-developed countries in two eras of financial globalization. He found that investment in developing countries was a central element of 19th century financial globalization, but plays only a minor role today. “In the year of 1914, 7 out of 12 most important recipients of foreign capital were less-developed economies: Russia, Brazil, Mexico, India, South Africa,

China and Spain. …… In the year 2001, only one less-developed economy can be found among 12 most important destinations for international investment flows – China comes out slightly ahead of small Switzerland. The most obvious difference between now and then is that the western European economies do not appear at all on the historical list, but belong to the most important recipients of foreign investment today” (Schularick, 2005, pp. 10).

b) Home bias

In spite of the trend towards international portfolio diversification, international investors continue to have strong preference for domestic financial assets (Lewis 1999; Karolyi and Stulz, 2003). According to data from 1997, the U.S. investors have roughly 91% of their stock investment in the U.S. stocks, but the U.S. stocks represent only 49% of the world market portfolio (Dahlquist et al, 2002). “Home bias has been - steadily but slowly - declining over recent years, especially in Euro area economies as these tend to be relatively highly integrated with each other. However, most economies in the world invest only around 10 percent of their portfolio wealth in foreign securities although simple benchmarks would suggest a much higher share of foreign investment to be optimal” (Stark, 2006, pp. 4).

c) Concentration of corporate ownership

In their book “The Modern Corporation and Private Property”, attention was called by Berle and Means (1932) to the prevalence of widely held corporations in the United States, where ownership of the corporations was dispersed among small shareholders, but the control right was concentrated in the hands of managers. This image has been questioned. On the basis of data on ownership structures of large corporations in 27 wealthy economies, it is found out by La Porta, Lopez-de-Silanes and Shleifer (1999) that except in countries with very good protection of shareholders, few of these firms are widely held. These firms are typically controlled by rich families or the state. Equity control by financial institutions is found to be uncommon.

1.3 “Twin Agency Problems” proposed by Stulz to explain the puzzles

Why is the financial world still full of obstacles in spite of the collapse of explicit barriers and capital does not flow to the country with the highest capital productivity? Why are the investors hindered from buying foreign financial assets, and the corporate ownership is not dispersed to small shareholders? To explain these problems, Stulz (2005b) outlined an alternative to the neoclassical model, which is called the “Twin Agency Problems”.¹

¹ Referring to Stulz (2005b) for the review of Stulz’s theory and model introduced in section 1.3.

Firstly, the corporate insiders who control the firm can use their power for their own benefit and divert from the firm at the expense of outside investors, which creates “the agency problem of corporate insider discretion”. But their expropriation is costly and the cost depends on the fraction they take away from the company and the quality of the protection of minority shareholders.

Secondly, the state rulers who control the resources of the state can use their powers to expropriate the company and improve their welfare at the expense of all shareholders, which creates “the agency problem of state ruler discretion”. This expropriation is also costly and the cost depends on the fraction the state rulers divert from the company and the quality of protection of all investors, or constraints on the state rulers.

These two problems are twin problems rather than two separate ones and they can feed on each other. Expropriation by the state rulers leads to greater consumption of private benefits by corporate insiders, because any money the insiders leave in the firm will be partially taken away by the state rulers. The corporate insiders “can best reduce the risks of state expropriation by taking actions that both increase their discretion and also make it harder for the state rulers to monitor their action” (Stulz, 2005b, pp 1597~1598). They can also be connected with state rulers and use the state to expropriate other investors.

“These risks are country-specific because, subject to constraints and trade-offs that depend on country characteristics, such as history, laws, location, and economic development, those who control a country’s state can establish, enforce, and break rules that affect investor’s payoff within that country” (Stulz 2005b, page1597). Nenova (2000) measured corporate control benefits – the value that dominant vote-holders deprived from the company controlled by them to the detriment of minority shareholders, using data of 661 firms in 18 countries. He found that the benefits that controlling shareholders extract out of corporate control are significant in magnitude and vary widely across countries. Mexican controlling shareholders expropriate one half of the value of the company, sharing the remaining half with minority shareholders in proportion to share holdings. The private benefits in Scandinavian and English-speaking countries are dwarfed in comparison. They are below 4% for Canada, Denmark, Hong Kong, Sweden, and the US, and below 10% for Finland, Norway, South Africa, and UK. Germanic countries such as Switzerland and Germany exhibit vote values of around 10-15%.

Stulz (2005b) exploited a simple one-period model to explain the impact of the Twin Agency Problems on financial globalization¹. In his model the firm exists only one period, which is set up at the beginning of the period with the fixed amount of capital, I . The controlling shareholders’ cash flow ownership in the company is f . At the end of the period, the

¹ The symbols used here are different to the original in Stulz’s model but the essential meaning of the equations is the same. The symbols in Stulz’s models are changed to make the same symbols used in different chapters of this paper have the same meaning.

following sequence of events take place: the investment opportunity yields a cash flow of IR , insider expropriators appropriate private benefits equal to a fraction s of IR , the state rulers engages in expropriation equal to a fraction h of $(1-s) IR$, and finally the firm liquidates and pays out a liquidating dividend, $(1-h)(1-s) IR$.

He assumes that corporate insiders can consume private benefits without cost up to a fraction, c of the firm's cash flow. Any expropriation of cash flow in excess of the threshold level c is subject to a cost of $0.5q (\text{Max}[s-c, 0])^2 IR$, where $q>0$. Investor protection is an increasing function of q , which is a country-specific constant. With these assumptions, the payoff to the insiders at the end of the period is

$$U = IR(1-s)(1-h)f + IRs - 0.5q(\text{Max}[s-c, 0])^2 IR \quad (1.3-1)$$

The insiders choose s to maximize equation 1.3-1. It is always optimal for insiders to expropriate at least a fraction c of the cash flow, since they incur no penalty for doing so and cannot credibly commit not to that. So the solution is

$$s^* = c + \left[\frac{1-f(1-h)}{q} \right] \quad (1.3-2)$$

The cost burndened on the state rulers because of their expropriation is $0.5ph^2 (1-s) IR$. Here p is an exogenous index of constraints on the state. So the payoff to the state rulers at the end of the period is

$$G = IR(1-s)h - 0.5ph^2 IR(1-s) \quad (1.3-3)$$

The state rulers choose h to maximize equation 1.3-3 and the optimal h is given by

$$h^* = \frac{1}{p} \quad (1.3-4)$$

Minority shareholders value the firm by discounting the firm's cash flows net of expropriation by insiders and the state at their required expected return, i . From their perspective, firm value is

$$V_0 = \frac{\left\{ 1 - \left[c + \frac{1-f(1-h)}{q} \right] \right\} (1-h)IR}{1+i} \quad (1.3-5)$$

With these models Stulz examined the relationship between ownership concentration and the extent of expropriation and he analyzes the influence of these problems on financial globalization. As the cost of appropriating private benefits is low and these agency problems worsen, diffuse ownership is inefficient and dominated by concentrated ownership, since co-investment by corporate insiders aligns their incentives better with minority shareholders and, therefore, reduces the expropriation of these shareholders.

Because of the ownership concentration “the risk sharing benefit of financial globalization is inversely related to how much the controlling shareholders co-invest in the equilibrium because when corporate insiders co-invest, their portfolios are over weighted in the equity of their firm” (Stulz, 2005b, pp. 1598), which is one of the reasons of the home bias puzzle. It is shown by Dahlquist et al. (2003) that the phenomenon of home bias is intricately linked to corporate governance. When companies are controlled by large investors, portfolio investors are limited in the fraction of a firm they can hold. Portfolio investors cannot hold world market portfolio in a world with controlling shareholders. So the removal of barriers to international investment cannot make the home bias disappear. For the home bias to disappear, it is necessary that investor rights improve across countries where firms are mostly controlled by large shareholders so that it becomes optimal for firms to have atomistic shareholders in these countries.

Although developing countries are expected to absorb capital inflows because of their high physical productivity of capital, the expropriation by corporate insiders and state rulers decreases the cash flows, investors can expect to receive from the firms they invest into and hence the value of their claims on the firms. When these problems are sufficiently serious, the firms cannot promise a high enough return to investors to raise capital and cannot exploit their investment opportunities in those countries so capital will inversely outflow from developing to developed countries.

Ownership concentration caused by these Twin Agency Problems limits a country’s ability to benefit from financial globalization. “It leads to lower financial development, more consumption volatility, stronger correlation between savings and investment, less foreign investment, lower firm valuations, smaller firms, and lower economic growth” (Stulz 2005a, page 2).

On the basis of these Twin Agency Problems, Stulz also made predictions about aspects of corporate finance. “In particular, countries in which the Twin Agency Problems are severe should be expected to have higher leverage and a higher proportion of short-term debt than countries in which these problems are more benign. Further, investment in corporate governance is less profitable in countries in which the agency problem of state ruler discretion is significant because many activities that entrench corporate insiders help reduce the risk of expropriation by the state” (Stulz, 2005b, pp. 1634).

But Stulz’s models have some limitation: his models are one-period and focuses mostly on new firms but in reality firms may exist for more than one period; he considered only all-equity public firms without debt; the cost-of-theft function is given as quadratic, which is too concrete and the reasonableness may be doubted.

1.4 Objectives of the Study

1.4.1 Developing the model of Stulz's theory and looking for theoretical solutions

On the basis of Stulz's theory, remaining the central role of the Twin Agency Problems in fostering ownership concentration, this paper makes some changes on Stulz's model:

Firstly, one-period model is developed into multi-periods. Stulz assumes that the firm exists only in one period and focuses mostly on new firms. But in the reality the firms may survive more than one period so that this multi-periods model makes this research more practical.

Secondly, corporate value model is built under the multi-periods assumption. With the multi-periods assumption the participants do not only care about their cash gain at the moment, which is considered by Stulz's model, but also care about the value of their stocks in the firm which depends on the cash flow created in the future, which is ignored by Stulz. So a corporate value model with the consideration of Twin Agency Problems is built to analyze the impact of these problems on corporate value.

Thirdly, the quality of basic legal environment, under which the law will be well enforced, defined as factor k in this study, is added in the model. In Stulz's model, the cost of expropriation paid by corporate insiders depends only on the quality of protection of outside shareholders, which means that when the outside shareholders are better protected the insiders will most probably be severely punished for their theft. Here, the cost is assumed to also depend on k , because in some developing countries legal sense is so weak among the people that many rules and laws are ignored as if they did not exist. The factor k influences both corporate insiders and state rulers.

Fourthly, debt is considered in the model. Stulz considers only all-equity firms and analyses only portfolio equity flows. In this study i is defined as the average capital cost of the firm, which can be seen as WACC (Weighted Average Capital Cost) in the corporate value model, so the impact of debt on the expropriation can be considered in this model.

Fifthly, the cost-of-theft function is more common. Stulz has given a quadratic function to define the cost of expropriation burdened by the expropriators. This study does not give a concrete cost function, but assume that the function satisfies a series of conditions. The results deduced from this function might be more common and convincing.

On the basis of this improved model, theoretical solutions are supposed to be found to solve these Twin Agency Problems, concerning education, economic politic, laws and regulations, which should be considered by the government.

1.4.2 Researching the Chinese financial market and looking for empirical solutions

Since 1990, the Chinese financial market has experienced a fast expansion. But compared to other global financial markets, its development is lagged and disproportional to the economic prosperity of China. Recognizing the problem in the development of Chinese financial market and finding a good way to make it go further is an urgent task of the economists and politicians.

According to Stulz's theory, the Twin Agency Problems cause ownership concentration and lead to a lower financial development. So another objective of this study is to investigate the situation of ownership concentration caused by Twin Agency Problems in China, examine the impact of these problems on Chinese financial market and find some solutions indicated by the empirical data. An overview of the development of Chinese financial market in last decades and its actual situation will be displayed. Then, on the basis of more than thousand listed companies' financial data from annual report 2007, the actual situation of ownership concentration in China will be disclosed. The relationship between ownership concentration and other characters, such as capital scale, profitability, ownership structure and so on, will also be examined in the practical part. Furthermore, on the basis of empirical evidence, practical suggestions will be proposed to solve the Twin Agency Problems in China.

1.5 The structure of the study

The rest of this study is organized as follows. In Chapter 2 an improved model on the basis of Stulz's theory is built, and according to this developed model, the behavior of the expropriators after establishing the firm is investigated. Firstly, the assumptions and description of the model is introduced, such as the participants, the environment of the firm, and the definition of the factors. Then a corporate value model with the consideration of Twin Agency Problems is built. With this corporate value model the optimal fraction of expropriation and the determinant factors of this fraction are researched for both insider expropriators and state rulers. After that the important factors influencing corporate value are examined. Then the implication of investor protection on expropriators' benefit is studied. Lastly, the impact of future profitability and capital cost on corporate insiders' benefit are examined.

Chapter 3 concerns the decisions of expropriators and outside investors before the company is established. At first the corporate insiders' financing and investment decision is investigated, including how the firm will be financed, the impact of investor protection, capital cost and expected rate of return on the entrepreneurs' willingness to set up a firm. Then, the outside investors' investment decision is researched, concentrating on the factors which affect the sum

that can be collected from outside investors. Lastly, the state rulers' behavior before the establishment of the firm is studied. State rulers can decide to improve or not to improve the investor protection. This depends on whether this measure increases their own benefit.

In Chapter 4 the results in Chapter 2 and Chapter 3 are combined to find measures proposed by the theoretical model to solve the Twin Agency Problems. Firstly, what should be done to weaken the Twin Agency Problems is investigated, such as improving investor protection, increasing expected rate of return, reducing capital cost and adopting ownership-concentrated capital structure. But not all these means could be successfully performed because some may come up against embarrassment. So what could be done is examined to find out better ways, which can avoid strong resistance. On the basis of the analysis above, strategies for the government are suggested.

Chapter 5 is a practical investigation in China. At first it gives a review of the development of Chinese financial market in the last decades and a comparison of Chinese stock market to other main stock markets. Then, on the basis of data of more than thousand publicly traded Chinese firms, the situation of ownership concentration in China is disclosed. After that, a careful comparison of ownership concentration between companies listed abroad and those listed in the mainland is performed to see whether listing abroad is a good way to make companies more ownership dispersed. Next, the relationship between profitability and ownership concentration is examined to testify ownership concentrated companies are really more profitable than others. For there exist a few companies which are ownership-dispersed and also more profitable than other firms in the same industry, so next, this study focuses on the ownership-dispersed companies to research the measures taken by these firms to solve the Twin Agency Problems. Lastly, on the basis of the empirical evidence above, suggestions indicated by the empirical data are proposed to solve the Twin Agency Problems in China.

Chapter 6 is a summary of the whole study.

2 Expropriators' Decision on Expropriating the Existing Company

2.1 Assumptions and description of the model

On the basis of Stulz's theory, remaining the central role of the Twin Agency Problems, this study relaxes some limitation of Stulz's model and presents a more practical one to analyze the implications of these problems on corporate finance.

In this simplified model, firms also produce one good and pay a liquid dividend at the end of each period. The gain of the company is shared by three kinds of participants: state rulers, controlling shareholders (also called inside expropriators) and outside investors. State rulers are the officials in the government, who control the resources of the country, issue licenses, or have other rights to make companies obey their commands. They use their power to expropriate the company and their behavior affects the benefit of all investors – controlling shareholders and outside investors. Controlling shareholders are also called corporate insiders, since they are sometimes managers and at other times controlling shareholders or ultimate owners of the companies. Inside expropriators have many chances and rights to steal from the company when corporate governance is not so good and their theft affects the outside investors. After the gain is expropriated by inside expropriators and state rulers, the outside investors share the remaining gain of the company with the inside shareholders, proportional to their shares in the company¹.

Different to Stulz' one-period model, the firms in this model are assumed to survive for n periods. At period 0, entrepreneurs decide whether to set up a firm. If the entrepreneur has decided to start a firm, he has two sources to finance the company. First, from his own initial wealth (W_0), he can invest I^E in the firm, with a fraction (f) of the equity in the firm, and becomes controlling shareholder, on the condition that $I^E \leq W_0$. The rest of the initial wealth he can invest in the market, as a portfolio investor. Secondly, he can raise I^M from the capital market by selling a fraction ($1-f$) of the firms' cash flow right. It is assumed that entrepreneur retains control of his firm regardless of the fraction of the cash flow right he sells. The entrepreneur can also choose to invest all his initial wealth W_0 in the capital market if he thinks starting a firm is unprofitable. Portfolio investors can invest in any securities issued by all the firms but have no control over the firms.

The capital cost of the firm, i , and the market rate of return of the portfolio, i' , are both determined by the supply and demand for funds. The demand for funds is generated by the

¹ The assumption in this paragraph is the same with Stulz's theory, referring to Stulz (2005b).

individual firm's demand, and the supply of funds is generated by entrepreneurs and other portfolio investors. Here, it is assumed that i and i' are risk adjusted, that means i is the market demanding rate of return of all investment opportunities, which are as risky as the investment in the firm, while i' is the market rate of return of the portfolio of all the securities.

A firm has the amount of cash I , equal to the sum of I^E and I^M , which is invested in a project with a net rate of return (R_t) in period (t), so the net profit is $R_t I$. In this model it is assumed that the firm has no reinvestment, so all the cash flow realized at period (t) is to be distributed. But not all of the cash flow is distributed to shareholders on a pro rata basis. As a benefit of controlling the firm or the country, the entrepreneurs and the state rulers can divert part of the profit from the firm to themselves, before the rest is distributed as dividend, which is "the Twin Agency Problems", called by Stulz.

In this model the elements of Becker's (1968) classic "crime and punishment" framework are incorporated into a corporate finance environment of Jensen and Meckling (1976). The firms are operated in an environment with limited legal protection of outside shareholders, and so the controlling shareholders have opportunity to divert some of the profits of the firms once they materialize (Shleifer and Vishny, 1997; Lombardo and Pagano 2002; Shleifer and Wolfenzon 2002). These private benefits can take many different forms such as salary, transfer pricing, subsidized personal loans, non-arms-length asset transactions, excessive spending on corporate planes, and, in some cases, outright theft (Burkart et al., 1998; Johnson et al., 2000).

By committing such misdeeds the expropriators risk being sued and fined for breaking the law or agreement with shareholders. The most obvious costs of expropriation are fines, imprisonment, and the loss of reputation and position associated with illegal diversion. Another cost is bribery of employees, regulators, and politicians to facilitate and hide the illegal actions. These direct costs vary across countries because of different regulatory environment, with higher costs in countries with strong legal protection for the investors. Dyck and Zingales (2004) estimated private benefits of control in 39 countries and found that higher private benefits of control are associated with less developed capital markets, more concentrated ownership, and more privately negotiated privatization. They also found that media pressure and tax enforcement seem to be the dominant factors which restrain private benefits. In this study the costs are also assumed to vary across companies because better corporate governance can make the expropriation more difficult and expensive.

In this model the cost burdened on the corporate insiders because of their expropriation depends on:

- q , the quality of protection of outside shareholders;
- s , the fraction of profit diverted by the corporate insiders ($0 \leq s \leq 1$); and

- k , the quality of basic legal environment under which the law will be well enforced, also called legal sense in this study.

Factors q and s are also considered by other study (Shleifer and Wolfenzon, 2002), but k is a newly added factor in this model. The cost is also assumed to depend on k because in some developing countries legal sense is not strong among the people and many rules and laws are ignored as if they did not exist. This factor k not only has impact on the expropriation of corporate insiders but also influences the behavior of state rulers.

The expropriation by state rulers takes place after appropriation of private benefits by inside expropriators, so that these state rulers do not expropriate the private benefits of the insiders. Because most of these benefits are hidden, it is reasonable to believe that they are less subject to expropriation by state rulers than cash dividends. Similar to corporate insiders, expropriation is also costly to the state rulers. In a democracy, if rulers were to over reduce the payoffs of investors, they might not to be re-elected. In a dictatorship, consuming too many private benefits might lead rulers to be overthrown. Furthermore, excessive current consumption of private benefits by the rulers decreases the value of their future private benefits. Institutions and the distribution of political power determine the costs that rulers bear for consuming private benefits and these costs vary across countries.

In this model the cost of the state rulers because of their expropriation depends on:

- p , the constraint on state rulers or the quality of the protection of all investors;
- h , the ratio of profit diverted by state rulers to the remaining profit after the expropriation by inside expropriators ($0 \leq h \leq 1$); and
- k , the quality of basic legal environment under which the law will be well enforced, also called legal sense in this study.

Section 2.2 displays a firm value model under the assumption of these expropriations and makes a primary research on the implication of these two kinds of expropriations on firm value. Section 2.3 focuses on how much the entrepreneur will divert from the firm. These include; what is the optimal fraction of profit expropriated by the corporate insiders, defined as s^* , assuming the quality of investors protection q and k , fraction diverted by state rulers h , and the fraction of shares held by controlling shareholder f are given. Here s^* is assumed to be influenced by h , the fraction diverted by state rulers, because the entrepreneurs know empirically how much will be expropriated by state rulers and adjust their fraction s according to state rulers' behavior. And the impact of some important factors on s^* , such as ownership concentration f , the quality of investor protection q , k and p , expected future profitability R , and the capital cost i , will also be examined in this section. In section 2.4, the optimal decision of the state rulers will be examined to get the optimal fraction taken by the state rulers, h^* , and to see the impact of p and k on h^* . Here this study assumes, h^* cannot be influenced by s ,

because state rulers do not know how much has been taken away by the insiders, but only know how much has been left by them. With the optimal decisions of both corporate insiders and state rulers above, the impact of q , k and p on firm value is explored in section 2.5. In section 2.6, the impact of investor protection, q , k and p , on the payoff to corporate insiders and state rulers is discussed respectively. Section 2.7 investigates the impact of future profitability and capital cost on corporate insiders' interest. Section 2.8 is a summary of Chapter 2.

2.2 Firm value and expropriation by corporate insiders and state rulers

Stulz assumes that the firm exists only for one period and builds a simple one-period model to research these Twin Agency Problems. But in reality, the firms may survive much longer, so that the participants not only think about their cash gain at the moment, but also care about the value of their stocks in the firms which depends on the future cash flow created by the firms. To make this research more practical, in this study, the one-period model of Stulz is developed into a multi-period one to examine whether the same or some new conclusions can be made.

In this section, the model of corporate value is built under the assumption of these expropriations to see the impact of Twin Agency Problems on corporate value. It is supposed that a firm has been set up at period 0 by the entrepreneur and outside investors with total initial investment (I). The firm survives n periods and the cash flow created by the firm at the end of period (t) is IR_t , fraction s of which is taken away by inside expropriators and the rest is $IR_t(1-s)$, h of which is expropriated by state rulers, so the net cash flow that can be distributed as dividend is only $IR_t(1-s)(1-h)$. Minority investors evaluate the firm by discounting the firm's net cash flow after expropriation with the rate of return (i), which is their required rate of return for all investment opportunities with the same risk. From their perspective, the corporate value at the end of period (t) after the distribution of dividend is

$$V_t = \sum_{m=1}^{n-t} \frac{IR_{t+m}(1-s)(1-h)}{(1+i)^m} \quad (2.2-1)$$

Here IR_{t+m} ($m=1, 2, \dots, n-t$) are the cash flows created by the firm in periods from period ($t+1$) to period (n), respectively.

The equation above indicates that the firm value is related to the fraction taken away by the insider expropriators (s) and state rulers (h). To investigate the influence of these two factors on firm value, derivation has to be made of V_t with respect to s and h . This mathematic method is used throughout this study to examine the relationship between the variables.

Differentiating the firm value with respect to s and h , respectively, the following is obtained:

$$\frac{\partial V_t}{\partial s} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}(1-h)}{(1+i)^m} < 0 \quad (2.2-2)$$

$$\frac{\partial V_t}{\partial h} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}(1-s)}{(1+i)^m} - \sum_{m=1}^{n-t} \frac{IR_{t+m}(1-h)}{(1+i)^m} \frac{\partial s}{\partial h} < 0^1 \quad (2.2-3)$$

These expressions can be obtained because: I , R and i are independent of the fraction expropriated by the insiders (s) and state rulers (h); the state rulers do not know how much has been taken away by the insiders so that the fraction taken away by them (h), is not impacted by the fraction expropriated by the insiders (s); and empirically the insiders know how much will be taken away by the state rulers so their behavior is influenced by the state rulers, namely s is variable to h . So the first result of this study is as the following:

Result 2.2-1: The more the corporate insiders and the state rulers expropriate, the less the firm value is.

Doidge et al. (2004) compared the value of foreign firms listed in the U.S. to the value of foreign firms that are not listed in the U.S. They found that firms listed in the U.S. have a Tobin's Q ratio that exceeds the Q ratio of firms from the same country that are not listed in the U.S. by 16.5% average. They explain this valuation difference with the expropriation by corporate insiders. They believe that controlling shareholders of firms listed in the U.S. cannot extract as many private benefits from control compared to controlling shareholders of firms not listed in the U.S., but that their firms are better able to take advantage of growth opportunities. The growth opportunities of cross-listed firms will be more highly valued than those of firms not listed in the U.S., both because cross-listed firms are more able to take advantage of these opportunities and because a smaller fraction of the cash flow of these firms is expropriated by controlling shareholders. And they find that this effect is greater for firms from countries with poorer investor rights.

Here an additional explanation of this value difference is proposed by equation 2.2-3: difference of expropriations by state rulers between the U.S. and other countries. If the corporate insiders can consume large private benefits in one country, it is not believable that the state rulers in this country are probity and blameless. Indeed, the corporate insiders always bribe the officials to let them expropriate minority shareholders. So the minority shareholders suffer double expropriations by both controlling shareholders and state rulers and calculate the negative impact of both expropriations on the corporate value.

2.3 Expropriation by corporate insiders

2.3.1 Optimal fraction of expropriation by corporate insiders

It is supposed that the firm has been set up at period 0 by the entrepreneur and outside investors with total initial investment of I . Here it is assumed that the entrepreneur has invested

¹ Referring to equation 2.3.2.2-2, we get $\partial s/\partial h > 0$.

I^E , part of his initial wealth W_0 , in the firm and has share (f) of the equity ownership in it. His remaining wealth, $W_0 - I^E$, he has invested in the market with the return rate i . Outside shareholders have invested $I^M = I - I^E$ in the firm and hold share $(1-f)$ equity ownership of the firm. This study does not consider the sales of equity by the entrepreneur and assumes that the entrepreneur is the manager. In the data, controlling shareholders typically serve as managers (La Porta, Lopez-de-Silanes and Shleifer, 1999).

The cash flow realized by the firm at the end of period (t) is IR_t . The entrepreneur diverts share s ($0 \leq s \leq 1$) of the cash flow, but he only receives $sIR_t - e(q, k, s)IR_t$, where $e(q, k, s)$ is the cost-of-theft function. Here q denotes the quality of outside shareholder protection; k denotes the quality of basic legal environment. The function $e(q, k, s)$ is assumed to satisfy:

- (a) $e(0, k, s) = 0$;
- (b) $e_q(q, k, s) > 0$, when $k, s > 0$;
- (c) $e(q, 0, s) = 0$;
- (d) $e_k(q, k, s) > 0$, when $q, s > 0$;
- (e) $e(q, k, 0) = 0$;
- (f) $e_s(q, k, s) > 0$, when $q, k > 0$;
- (g) $e_{ss}(q, k, s) > 0$, when $q, k > 0$;
- (h) $e_{sq}(q, k, s) > 0$, when $k > 0$;
- (i) $e_{sk}(q, k, s) > 0$, when $q > 0$.

Assumption (a) means that no fine is incurred when there is no protection of outside shareholders; (b) means, the more outside shareholders are protected, the higher the cost to expropriate a given fraction of profit; (c) means that no fine is incurred when there is no legal sense in one country and the existing laws are not enforced; (d) means that the more intense the legal sense in one country is, the more the expropriators must pay for their misdeed because the possibility of being caught is higher; (e) implies that no fine is incurred when diversion is zero; (f) implies that the more the expropriators steal, the more they have to pay for their misdeed; (g) implies that the marginal cost of stealing rises as more is stolen; (h) means that the marginal cost of stealing is higher when the quality of minority shareholder protection is higher; and finally (i) implies that the marginal cost of stealing is higher when the legal sense in one country is better. It is assumed that the cost (e) is borne by the entrepreneur himself rather than all the shareholders.

The remaining cash flow after expropriation by insiders is $IR_t(1-s)$, of which the state rulers divert share h ($0 \leq h \leq 1$). The cash flow that can be distributed as dividend is $IR_t(1-s)(1-h)$, of which the controlling shareholders get $IR_t(1-s)(1-h)f$, proportional to their share in the firm. At the end of each period, the entrepreneur also gets profit from his investment on the capital market, $(W_0 - I^E)i$. Except for these new created cash flows he owns share (f) of the firm value

and the initial capital ($W_0 - I^E$) on the capital market. For the purpose of simplification all the new acquired cash is supposed to be consumed by the entrepreneur in the next period after he gets it and there is no reinvestment. So, with the corporate value model built in the last section, at the end of each period, just after the dividend is distributed, the wealth held by the entrepreneur is

$$W_t = IR_t(1-s)(1-h)f + IR_t s - e(q, k, s)IR_t + V_t f + (W_0 - I^E)(1+i') \quad (2.3.1-1)$$

The first term is his share of cash dividend; the following two terms are his net gain from expropriation; the fourth term is the market value of the stock held by the entrepreneur in the firm. This means that the firm is publicly listed and the entrepreneur can conveniently exchange his shares into cash. So, the insiders' profit from the firm is not only the private benefit and the dividend, but also depends on the value of the firm; and the last term is his principal and profit of the portfolio investment on the capital market.

Since the solution for optimal s is independent of the cash flow from the capital market, at the end of period t , the entrepreneur will try to maximize

$$U_t = IR_t(1-s)(1-h)f + IR_t s - e(q, k, s)IR_t + V_t f \quad (2.3.1-2)$$

The first order condition for this problem is given by

$$\frac{\partial U_t}{\partial s} = -IR_t(1-h)f + IR_t - e_s(q, k, s)IR_t + \frac{\partial V_t}{\partial s} f = 0 \quad (2.3.1-3)$$

This can be written as

$$e_s(q, k, s^*) = 1 - (1-h)f + \frac{\partial V_t}{\partial s} \frac{f}{IR_t} \quad (2.3.1-4)$$

The second order condition is

$$\frac{\partial^2 U_t}{\partial^2 s} = -IR_t e_{ss}(q, k, s) + f \frac{\partial^2 V_t}{\partial^2 s} < 0 \quad (2.3.1-5)$$

Remembering equation 2.2-2

$$\frac{\partial V_t}{\partial s} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}(1-h)}{(1+i)^m} < 0,$$

$\partial^2 V_t / \partial^2 s = 0$ is obtained, and with the assumption (g) $e_{ss}(q, k, s) > 0$, this second order condition is satisfied, so that the optimal fraction of profits expropriated by inside expropriators (s^*) exists, and s^* can be written as $s^*(q, k, h, f, V_t)$, a function of q, k, h, f , and V_t . Because the fraction of profits expropriated by state rulers (h) is influenced by p , constraint on state rulers and the firm value (V_t) is influenced by i and R_t , capital cost and rate of return of the firm. So, the optimal fraction (s^*) is also impacted by p, i and R_t . The impact of all these factors on the optimal fraction (s^*) will be investigated in the next section.

2.3.2 Important factors determining the fraction expropriated by corporate insiders

2.3.2.1 Impact of ownership concentration on expropriation by corporate insiders

In the last section, the condition has been deduced, under which the corporate insiders can maximize their gain from the firm they control. This section goes on to examine this first-order condition to get several testable implications of the model. This subsection researches the relationship between ownership concentration and corporate insiders' expropriation. Differentiating the first-order condition (equation 2.3.1-4) with respect to f , the following is obtained.

$$e_{ss}(q, k, s^*) \frac{\partial s^*}{\partial f} = -(1-h) + \frac{\partial V_t}{\partial s} \frac{1}{IR_t} \quad (2.3.2.1-1)$$

Rearranging the terms and recalling assumption (g), $e_{ss}(q, k, s) > 0$, and equation 2.2-2, $\partial V_t / \partial s < 0$, the equation

$$\frac{\partial s^*}{\partial f} = \frac{-IR_t(1-h) + \frac{\partial V_t}{\partial s}}{IR_t e_{ss}(q, k, s^*)} < 0 \quad (2.3.2.1-2)$$

Result 2.3.2.1-1: The more shares of ownership the corporate insider holds in the company, the less fraction of profit he diverts from the company.

When the controlling shareholders have higher ownership in the company, they have more shares of the cash dividend and the firm value. Hence, they have more incentive to distribute dividend in a non-distorting way rather than expropriate minority shareholders in a distorting way, and consequently the lower the equilibrium level of expropriation, under a given level of q and k . Higher cash-flow ownership reduces minority expropriation, which is also the well-known Jensen and Meckling (1976) result that higher ownership concentration leads to more efficient actions. Other papers (Burkart et al., 1997; Claessens et al., 1999; La porta, Lopez-de-Silanes, Shleifer and Vishny, 2002; Shleifer and Wolfenzon, 2002) derive similar results.

If $\partial s^* / \partial f$ is differentiated further with respect to q ,

$$\frac{\partial^2 s^*}{\partial f \partial q} = \frac{\left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] \left[e_{ssq}(q, k, s) + e_{sss}(q, k, s) \frac{\partial s^*}{\partial q} \right]}{IR_t [e_{ss}(q, k, s)]^2} \quad (2.3.2.1-3)$$

In general, it is not certain that the numerator of this expression is positive. However, the cost-of-theft function is assumed to be a power function of q , k and s , such that

$$e(q, k, s) = aq^l k^m s^n \quad (2.3.2.1-4)$$

Here, a is a positive constant. According to assumption (b) and (d), it must be satisfied, l and $m \geq 1$; and according to assumption (g), $n \geq 2$ is obtained. In this case, all the assumptions on the function $e(q, k, s)$ hold and differentiations yield

$$e_{ssq}(q, k, s) = alq^{l-1}k^m n(n-1)s^{n-2} \geq 0; \text{ And} \quad (2.3.2.1-5)$$

$$e_{sss}(q, k, s) = 0 \text{ (When } n=2) \text{ or}$$

$$e_{sss}(q, k, s) = aq^l k^m n(n-1)(n-2)s^{n-3} \geq 0 \text{ (When } n>2) \quad (2.3.2.1-6)$$

With this power function it can be also deduced that,

$$\frac{\partial s^*}{\partial q} = -\frac{ls}{q(n-1)} < 0^1 \quad (2.3.2.1-7)$$

$$e_{ss}(q, k, s) = aq^l k^m n(n-1)s^{n-2} \geq 0 \quad (2.3.2.1-8)$$

So from equation 2.3.2.1-3 it is deduced that,

$$\frac{\partial^2 s^*}{\partial f \partial q} = \frac{\left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] l}{2IR_t a q^{l+1} k^m} \geq 0 \text{ (When } n=2); \quad (2.3.2.1-9)$$

$$\text{And } \frac{\partial^2 s^*}{\partial f \partial q} = \frac{\left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] l}{2IR_t a q^{l+1} k^m n(n-1)^2 s^{n-2}} \geq 0 \text{ (When } n>2) \quad (2.3.2.1-10)$$

But the value of $\partial s^*/\partial f$ is negative, so the absolute value of $\partial s^*/\partial f$ is negative related to q , which means

Result 2.3.2.1-2: The more the minority shareholders are protected, the lower the effect of a higher ownership concentration on reducing the fraction of profit diverted by corporate insiders.

To better understand this result, an ideal perfect situation can be imagined, where the corporate insiders have no any chance to steal from the company. This means the minority shareholders are perfectly protected. In this case, no matter how much shares the insiders have in the company they will not divert from the company, so that the effect of a change in ownership concentration on the level of diversion is zero in this imagined situation.

This conclusion predicts that, in countries with poor minority investor protection, firm value, dividends and private benefit is more sensitive to ownership concentration. The ownership concentration will be higher than those countries with better minority investor protection, because higher ownership concentration in these countries brings more reduction of expropriation by corporate insiders. This greatly increases the cash flow available to the

¹ Referring to equation 2.3.2.3-2 we can get this result.

minority shareholders. This is consistent to Shleifer and Wolfenzon (2002), but in their study they define q as investor protection and do not consider the expropriation by state rulers.

If $\partial s^*/\partial f$ is further differentiated with respect to p , the following equation is obtained.

$$\frac{\partial^2 s^*}{\partial f \partial p} = \frac{e_{ss}(q, k, s) \left(IR_t \frac{\partial h^*}{\partial p} + \frac{\partial^2 V_t}{\partial s \partial p} \right) + \left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] e_{sss}(q, k, s) \frac{\partial s^*}{\partial p}}{IR_t [e_{ss}(q, k, s)]^2} \quad (2.3.2.1-11)$$

As done above, assuming the cost-of-theft function to be a power function and recalling equation 2.2-2 in this situation, the expression can be written as

$$\frac{\partial^2 s^*}{\partial f \partial p} = \frac{\left(IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right) \frac{\partial h^*}{\partial p} + \left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] \frac{e_{sss}(q, k, s)}{IR_t e_{ss}^2(q, k, s)} \frac{\partial s^*}{\partial p}}{IR_t e_{ss}(q, k, s)} < 0^{1, 2} \quad (2.3.2.1-12)$$

Because the value of $\partial s^*/\partial f$ is negative, the absolute value of $\partial s^*/\partial f$ is positively related to p , which means

Result 2.3.2.1-3: The lower the constraint on state rulers, the smaller the effect of a higher ownership concentration on reducing the fraction of profit diverted by corporate insiders.

Here, an extremely awful situation can be imagined to explain this result. The firm exists in a country where the officials are very greedy and not constrained by laws or regulations, so that they take away every cent left by the insiders in the company. In this case, the insiders will divert all the profit from the company no matter how many shares they hold, so that the effect of change in ownership concentration on the level of diversion is also zero in this situation.

This conclusion predicts that, in countries with poor constraint on state rulers, firm value, dividends and private benefits are less sensitive to ownership concentration. This is because higher ownership concentration in these countries does not lead to great reduction of expropriation by corporate insiders and hence the cash flow available to the minority shareholders will not increase a lot. This is consistent to La Porta et al., (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2002), who found support for the lower sensitivity of Tobin's Q to ownership concentration in countries with poor investor protection.

Finally, if $\partial s^*/\partial f$ is differentiated with respect to k , it is written

$$\frac{\partial^2 s^*}{\partial f \partial k} = \frac{e_{ss}(q, k, s) \left(IR_t \frac{\partial h^*}{\partial k} + \frac{\partial^2 V_t}{\partial s \partial k} \right) + \left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] \left[e_{ssk}(q, k, s) + e_{sss}(q, k, s) \frac{\partial s^*}{\partial k} \right]}{IR_t [e_{ss}(q, k, s)]^2} \quad (2.3.2.1-13)$$

¹ Because the cost of expropriation by the state ruler increases with p , we can assume that the state ruler diverts less when p is greater which means $\partial h^*/\partial p < 0$. Referring to equation 2.4.2-2, this conclusion will be deduced.

² Referring to equation 2.3.2.3-6 we have $\partial s^*/\partial p < 0$.

Similarly, to the power function and recalling equations 2.2-2 and 2.3.2.1-6, it can be written as

$$\frac{\partial^2 s^*}{\partial f \partial k} = \frac{\left(IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right) \frac{\partial h^*}{\partial k}}{IR_t e_{ss}(q, k, s)} + \left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] \frac{e_{ssk}(q, k, s)}{IR_t e_{ss}^2(q, k, s)} \quad (\text{When } n=2) \quad (2.3.2.1-14)$$

$$\begin{aligned} \frac{\partial^2 s^*}{\partial f \partial k} = & \frac{\left(IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right)}{IR_t e_{ss}(q, k, s)} \left\{ 1 + \left[IR_t(1-h) - \frac{\partial V_t}{\partial s} \right] \frac{(n-2)f}{IR_t e_{ss}(q, k, s)s} \right\} \frac{\partial h^*}{\partial k} \quad (\text{When } n>2) \\ & + \left[IR_t(1-h) - \frac{\partial V_t}{\partial k} \right] \frac{m}{IR_t e_{ss}(q, k, s)k(n-1)} \end{aligned} \quad (2.3.2.1-15)$$

The first term is negative² and implies that the effect of k on expropriation by state rulers. This is similar to the effect of p : the less the state rulers are constrained by legal sense, the smaller the effect of a higher ownership concentration on reducing the fraction of profit diverted by corporate insiders. The second term is positive and implies the effect of k on expropriation by insiders. This is similar to the effect of q : the more the corporate insiders are constrained by legal sense, the less the effect of a higher ownership concentration on reducing the fraction of profit diverted by corporate insiders. So, the influence of legal sense (k) on the effect of higher ownership concentration on reducing expropriation by corporate insiders is two-edged and the ultimate influence depends on which effect dominates.

Actually, the improvement of k will decrease expropriation by all the expropriators, insider controllers and state rulers. If these Twin Agency Problems are lightened, the ownership concentration will also be lightened. In an ideal society (without any misdeed) both the corporate insiders and state rulers will not expropriate the company and the dispersed ownership can be achieved.

Now it can be explained why La Porta et al., (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2002) have a conclusion different from Shleifer and Wolfenzon (2002). The reason may be that they do not separate investor protection into minority shareholder protection, constraint on state rulers and legal sense. In this model, it is seen that q , p and k have different implications on the effects of higher ownership concentration on reducing expropriation by corporate insiders. Ownership concentration may be most useful to solve the agency problem in countries with better constraints on state rulers but poor minority shareholder protection.

¹ Referring to equation 2.3.2.3-4, the expression of $\partial s^*/\partial k$ is obtained.

² Because the cost of expropriation by the state ruler increases with k , it can be assumed that the state ruler diverts less when k is greater, which means $\partial h^*/\partial k < 0$. Referring to equation 2.4.2-4, this conclusion will be deduced.

2.3.2.2 Impact of expropriation by state rulers on expropriation by corporate insiders

In the introduction, it is mentioned that these two problems are twin problems rather than two separate ones, because the fraction of profit expropriated by corporate insiders will be influenced by the fraction expropriated by state rulers. The corporate insiders can best reduce the risks of state expropriation by taking actions that both increase their discretion and also make it harder to monitor their action. So in this section, the impact of the fraction expropriated by state rulers (h) on the fraction expropriated by corporate insiders (s) is examined.

If differentiating the first order condition with respect to h , it is obtained that

$$IR_t e_{ss}(q, k, s^*) \frac{\partial s^*}{\partial h} = IR_t f + f \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m}. \quad (2.3.2.2-1)$$

According to assumption (g),

$$\frac{\partial s^*}{\partial h} = \frac{IR_t f + f \sum_{m=1}^{n-t} IR_{t+m}}{IR_t e_{ss}(q, k, s^*)} \geq 0. \quad (2.3.2.2-2)$$

Result 2.3.2.2-1: The more the state ruler expropriates, the more the controlling shareholder diverts if they have ownership in the company.

More expropriation by the state ruler leads to greater consumption of private benefits by insiders because any money the insider leaves in the firm will be partially expropriated by the state. The entrepreneur can take actions to reduce the state's expropriation, one of which is consuming more private benefits, but they have many other tools at their disposal to reduce expropriation by the state.

If differentiating $\partial s^* / \partial h$ further with respect to f , the following equation is obtained.

$$\frac{\partial^2 s^*}{\partial h \partial f} = \frac{IR_t + \sum_{m=1}^{n-t} IR_{t+m}}{IR_t e_{ss}(q, k, s^*)} > 0 \quad (2.3.2.2-3)$$

Result 2.3.2.2-2: The more the ownership held by corporate insiders in the firm, the greater the effect of higher fraction expropriated by state rulers on increasing the fraction expropriated by corporate insiders.

From equation 2.3.2.2-2 it can be seen that when the entrepreneur has no share in the firm, the value of $\partial s^* / \partial h$ is zero, which means the fraction expropriated by corporate insider is independent of the fraction expropriated by state rulers, because all the money the corporate insider leaves in the firm belongs to others, so that he has less or no willingness to reduce the expropriation by state rulers. But if he has higher ownership in the firm he will try his best to

reduce the expropriation by the state rulers because the more the state rulers take away, the less he can get as cash dividend.

2.3.2.3 Impact of investor protection on expropriation by corporate insiders

In this section, the impact of q , k and p on the expropriation by inside expropriators is examined. At first, differentiating the first order condition (equation 2.3.1-4) with respect to q ,

$$e_{sq}(q, k, s^*) + e_{ss}(q, k, s^*) \frac{\partial s^*}{\partial q} = 0. \quad (2.3.2.3-1)$$

With our assumption (g) and (h) on the cost-of-theft function e ,

$$\frac{\partial s^*}{\partial q} = - \frac{e_{sq}(q, k, s^*)}{e_{ss}(q, k, s^*)} < 0. \quad (2.3.2.3-2)$$

Result 2.3.2.3-1: The better the minority shareholder protection, the less the fraction of expropriation by corporate insiders.

This prediction flows because better protection (higher q) implies that diversion is more costly because the law is designed more carefully and has fewer leaks. The inside expropriators are more likely to be caught and severely punished. This result is consistent with Nenova (2000).

Now, taking the differentiation of the first order condition with respect to k , it is given

$$IR_t e_{sk}(q, k, s^*) + IR_t e_{ss}(q, k, s^*) \frac{\partial s^*}{\partial k} = IR_t f \frac{\partial h^*}{\partial k} + f \frac{\partial h^*}{\partial k} \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \quad (2.3.2.3-3)$$

Remembering assumption (i), this implies that

$$\frac{\partial s^*}{\partial k} = \frac{IR_t f \frac{\partial h^*}{\partial k} + f \frac{\partial h^*}{\partial k} \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} - IR_t e_{sk}(q, k, s^*)}{IR_t e_{ss}(q, k, s^*)} < 0^1 \quad (2.3.2.3-4)$$

Result 2.3.2.3-2: The better the legal sense, the less the fraction of expropriation by corporate insiders.

From equation 2.3.2.3-4, it is seen that legal sense influences the fraction expropriated by corporate insiders in two ways. On the one hand, it increases the cost of theft burdened on the corporate insiders, which forces the insiders to steal less. On the other hand, it reduces the fraction taken away by state rulers, which also decreases the expropriation by the corporate insiders (see result 2.3.2.2-1). This result also implies that the improvement of legal sense can lighten the two kinds of expropriations at the same time (both the expropriation by insiders and state rulers), so measures on improving legal sense may get twice the result with half the effort.

¹ Because $\partial h^*/\partial k < 0$. Referring to equation 2.4.2-4 this conclusion will be deduced.

Finally, differentiating the first order condition with respect to p , the equation below is obtained

$$IR_t e_{ss}(q, k, s^*) \frac{\partial s^*}{\partial p} = IR_t f \frac{\partial h^*}{\partial p} + f \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \frac{\partial h^*}{\partial p} \quad (2.3.2.3-5)$$

With the assumption (g) of the cost function e , equation 2.3.2.3-6 is obtained.

$$\frac{\partial s^*}{\partial p} = \frac{IR_t f \frac{\partial h^*}{\partial p} + f \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \frac{\partial h^*}{\partial p}}{IR_t e_{ss}(q, k, s^*)} < 0.^1 \quad (2.3.2.3-6)$$

Result 2.3.2.3-3: The more the state rulers are constrained, the less the corporate insiders expropriate if they have ownership in the company.

The improvement of constraint on state rulers (p) reduces the fraction expropriated by corporate insiders because this improvement forces the state rulers to take less from the firm, and leads to lower fraction expropriated by corporate insiders (see result 2.3.2.2-1). On the one hand, the money the insider leaves in the firm will be less expropriated by state rulers and insider gets more cash dividends. On the other hand, the firm value rises when the state rulers expropriate less and this makes the insiders to care more about their share value they hold than the private benefit, thus they consume less private benefit.

If differentiating $\partial s^*/\partial p$ further with respect to f , equation 2.3.2.3-7 is obtained.

$$\frac{\partial^2 s^*}{\partial p \partial f} = \frac{IR_t \frac{\partial h^*}{\partial p} + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \frac{\partial h^*}{\partial p}}{IR_t e_{ss}(q, k, s^*)} < 0 \quad (2.3.2.3-7)$$

But the value of $\partial s^*/\partial p$ is negative, so the absolute value of $\partial s^*/\partial f$ is positively related to p , which means

Result 2.3.2.3-4: The more ownership the corporate insiders hold in the firm, the more the effect of better constraint on state rulers on reducing the fraction of profit diverted by corporate insiders.

From equation 2.3.2.3-6 it can be seen that when the entrepreneur has no share in the firm, the value of $\partial s^*/\partial p$ is zero. This means that the fraction expropriated by corporate insider is independent of the constraint on state rulers. He will not reduce their private benefit when the constraint on state rulers is improved because all the money the corporate insider leaves in the firm belongs to others, so that he does not care how corrupt the state rulers are and how much the state rulers will take away from the firm. But if he has higher ownership in the firm he will greatly reduce his private benefit expropriated from the firm when the constraint on state rulers is improved.

¹ Because $\partial h^*/\partial p < 0$. Referring to equation 2.4.2-2 this conclusion will be deduced.

2.3.2.4 Impact of future profitability and capital cost on expropriation by corporate insiders

In this model, the firms survive several periods. So the insiders must think about the expected profits in the future when they make their decisions.

Supposing the rate of return in the future is constant, R , the firm value can be written as

$$V_t = \sum_{m=1}^{n-t} \frac{IR(1-s)(1-h)}{(1+i)^m} \quad (2.3.2.4-1)$$

Differentiating equation 2.3.1-4 with respect to R , it becomes

$$IR_t e_{ss}(q, k, s) \frac{\partial s^*}{\partial R} = f \frac{\partial \left(\frac{\partial V_t}{\partial s} \right)}{\partial R} \quad (2.3.2.4-2)$$

With the constant R , equation 2.2-2 changed to

$$\frac{\partial V_t}{\partial s} = - \sum_{m=1}^{n-t} \frac{IR(1-h)}{(1+i)^m} < 0 \quad (2.3.2.4-3)$$

So it is obtained that

$$\frac{\partial \left(\frac{\partial V_t}{\partial s} \right)}{\partial R} = - \sum_{m=1}^{n-t} \frac{I(1-h)}{(1+i)^m} < 0 \quad (2.3.2.4-4)$$

Substituting equation 2.3.2.4-4 into equation 2.3.2.4-2, remembering assumption (g) and rearranging it, it becomes

$$\frac{\partial s^*}{\partial R} = - \frac{f \sum_{m=1}^{n-t} \frac{I(1-h)}{(1+i)^m}}{IR_t e_{ss}(q, k, s)} < 0 \quad (2.3.2.4-5)$$

Result 2.3.2.4-1: The higher the expected rate of return in the future, the less the fraction expropriated by corporate insiders.

From result 2.2-1 it is known that the expropriation by corporate insiders decreases the firm value which means that the value of $\partial V_t / \partial s$ is negative. Equation 2.3.2.4-4 indicates that the value of $\partial V_t / \partial s$ is negatively related to R and the absolute value of $\partial V_t / \partial s$ is positively related to R . This means that the higher the rate of return in the future, the greater the effect of expropriation by corporate insiders on decreasing the firm value so that the loss burdened by the insiders will also increase. Therefore, when the rate of return is expected to rise, the insiders care more about the value of stock he holds and will divert less from the company. The private benefit the insider loses, when he expropriates less, will be more compensated by the increase of share value he holds in the firm.

If differentiating the equation 2.3.1-4 with respect to i , it is

$$IR_t e_{ss}(q, k, s) \frac{\partial s^*}{\partial i} = f \frac{\partial \left(\frac{\partial V_t}{\partial s} \right)}{\partial i} \quad (2.3.2.4-6)$$

With equation 2.2-2 it becomes

$$\frac{\partial \left(\frac{\partial V_t}{\partial s} \right)}{\partial i} = \sum_{m=1}^{n-t} \frac{IR_{t+m} m(1-h)}{(1+i)^{m+1}} > 0 \quad (2.3.2.4-7)$$

Substituting equation 2.3.2.4-7 into 2.3.2.4-6, it becomes

$$\frac{\partial s^*}{\partial i} = \frac{f \sum_{m=1}^{n-t} \frac{IR_{t+m} m(1-h)}{(1+i)^{m+1}}}{IR_t e_{ss}(q, k, s)} > 0 \quad (2.3.2.4-8)$$

Result 2.3.2.4-2: The corporate insider expropriates more when the capital cost increases.

As mentioned before, the expropriation by corporate insiders decreases the firm value. Equation 2.3.2.4-7 indicates that the value of $\partial V_t / \partial s$ is positively related to i but its absolute value is negatively related to i . This means that the higher the capital cost, the less the effect of expropriation by corporate insiders on decreasing the firm value so that the loss burdened on the insiders will also decrease. Contrary to his reaction to the change of R , when the capital cost rises, the insider cares less about the value of stock he holds and will divert more from the company. The stock value the insider loses (when he expropriates more), will be more compensated by his private benefit from the company.

Capital cost is decided by the market and adjusted with the risk of the firm or project. When the future becomes more risky, the investors including the entrepreneur ask for more risk premium. This increases the capital cost and the entrepreneur will think more of the cash flow he gets at the moment and take more away from the company. Other factors, like inflation and the change of risk free interest rate (which also lead to a rise in i), have similar effects on the fraction expropriated by corporate insiders.

Using firm-level data from 38 countries, Himmelberg et al. (2002) estimated the relationship among investor protection, inside ownership, and the marginal cost of capital. They found that the weaker the investor protection, the higher the concentration of inside equity ownership; and the higher the concentration of inside ownership, the higher the implied cost of capital. They interpret this relationship with idiosyncratic risk. The marginal cost of capital is a weighted average of terms reflecting both idiosyncratic and systematic risk. Weak investor protection increases the weight on idiosyncratic risk. By retaining a higher fraction of equity, insiders can credibly commit to low rate of expropriation, but are forced to bear higher levels of diversifiable risk (idiosyncratic risk), which increases the capital cost.

For the companies with debt, i can be understood as weighted average capital cost (WACC). Under certain conditions, appropriate debt will decrease WACC, which decreases the interest of insiders to expropriate. Analysis by Friedman et al. (2003) suggested that in a weaker legal environment, the entrepreneur finances projects with more debt relative to equity, even though this increases the probability of bankruptcy. Their interpretation is, for a given level of desired funding, increased use of debt reduces reliance on outside equity, thus allowing the entrepreneur to retain more ownership. This reduces the moral hazard problem of the entrepreneur, potentially increasing the value of the firm. According to the model in this study, creditors together with the minority shareholders are seen as outside investors and both at the risk of expropriation. These creditors are better protected because the entrepreneurs must think about the possibility of bankruptcy if they expropriate too much and cannot pay back the debt. The state rulers are also not glad to see the bankrupt of many firms in their area. So the use of debt increases the cost-of-theft and is helpful to lighten these agency problems.

Stulz (1999) examines the impact of globalization on the cost of equity capital and argues that the cost of equity capital decreases because of the globalization for two important reasons. Firstly, globalization reduces the expected return that investors require to invest in equity to compensate them for the risk they bear. This is because globalization can decrease risk for the world equity markets as a whole and hence reduce each country's cost of capital by making risks diversified that would not otherwise be the case. Secondly, globalization improves firm governance, which decreases the cost of capital. Globalization affects firm governance in several ways: new shareholders in the firm have skills and information that enables them to monitor management in ways local investors could not. Globalization creates competition among suppliers of capital, which reduces the cost of capital for firms in that it reduces the rents that accrue to the capital providers and reduces transaction costs. Globalization makes a firm that is safe from takeovers in a closed market not safe in an open market, so that globalization increases the monitoring of managers both from existing shareholders and from potential bidders. Globalization gives firms access to financial technology that enables them to raise funds using new securities and to manage their risks more effectively. But empirical evidence shows that the effect of globalization on the cost of capital is significant but small and one important reason is the existence of home bias. For globalization to reduce the cost of capital, the shareholder basis has to become truly global, but this does not occur. So investor protection and financial globalization interact and drive together the process of the development of financial market.

Both R and i have impact on the expropriation by insiders because they influence the corporate value. If a firm suffers a substantial drop in profitable investment opportunities or higher capital cost the controlling shareholders divert more corporate resources. In extreme

cases, when the market value of firm falls to zero, the entrepreneur will take away as much as he can from the firm. Many studies show evidence consistent to this conclusion. Some paper (Johnson et al., 2000; Johnson and Shleifer 2000) documented such behavior by Asian firms in the Asian financial crises. The downturns in these countries have been associated significantly with more expropriation of cash and tangible assets by managers. In the United States, the media alleges that similar actions were taken by the top management of Enron, Tyco, WorldCom, and other firms prior to their filing bankruptcy. Similar finding is shown in the study of Durnev and Kim (2005).

Both results 2.3.2.4-1 and 2.3.2.4-2 also imply that economic policies play an important role in guiding firms toward good governance practices. “Policy makers often debate the merits of pro-growth versus distribution oriented policies. One important consequence they must consider in this debate is that pro-growth policies generate more profitable investment opportunities and stimulate the external financing needs of corporations. Both of these conditions provide controlling shareholders with incentives to improve governance practice. In contrast, distribution-oriented policies tend to weaken property rights, reducing the incentives to increase cash flow rights for controlling shareholders. Any tax increase for redistribution purposes also decrease the cash flow rights of controlling shareholders. Reduction in cash flow rights increases agency conflicts and may weaken investor protection” (Durnev and Kim, 2005, page 1488). It is shown by Desai et al. (2005) that the design of the corporate tax system affects the amount of private benefits extracted by company insiders. A higher tax rate increases the amount of income insiders divert and thus worsens governance outcomes.

2.4 Expropriation by state rulers

2.4.1 Optimal fraction of expropriation by state rulers

In economics, much of the biggest defect is the assumption about government. Most economists advocate the helping-hand model of government, but some prefer the invisible hand. Shleifer and Vishny (1999) argue that both the invisible and helping-hand views of government are not useful frameworks for delivering practical policy advice, because both views ignore the role of politicians. The invisible hand view argues that government should play a minimal role in society. But in practice, the government sector in many economies has grown rapidly over the last century. The invisible view can offer no explanation. On the other hand, although the helping view offers an explanation for why government should interfere in the market place, the conceit that governments are run by altruistic official seems to be incredible.

Shleifer and Vishny (1999) view the government as the grabbing hand because individuals working in the public sector act in their own self-interest, just like anyone else. This “grabbing hand” view recognizes that both despotic and democratic governments are likely to pursue goals that are very different from ‘social welfare’. Dictators use their powers to keep themselves in office, to direct resources to political supporters, to destroy political challengers, and to enrich themselves, often at the expense of public welfare. Democracies often generate incentives that make politicians more sensitive to public welfare, in part because they need to be re-elected, but democratically elected politicians typically do not maximize social welfare either. In particular, the winning majorities in democracies pursue highly wasted policies of redistribution from their losing minorities.

This section examines how this grabbing hand expropriates resources from the firms for the officials’ own benefits. By state expropriation, state rulers can decrease the returns of all firms, but they can also discriminate across firms so that they decrease the returns of some firms and improve the returns of others. The state can tax cash flows, confiscate assets, forbid particular activities, or require bribes to enrich themselves. Therefore, the term “expropriation” covers a wide range of activities. Some capital expropriated by the state is used for welfare and also benefits the companies, but others are illegal and benefit only state rulers. This study considers only the illegal grab, which benefits only the state rulers themselves.

According to the assumption in section 2.3, the remaining cash flow after expropriation by insider is $IR_t(1-s)$, from which the state ruler diverts share h . Similar to the corporate insider, state ruler only receives $hIR_t(1-s)-g(p, k, h)IR_t(1-s)$, where $g(p, k, h)$ is the cost-of-grabbing function. Here p denotes the quality of protection of all shareholders or an exogenous index of constraints on state rulers. It can be the punishment when they break the law, or the risk of being overthrown or not being re-elected. K denotes the quality of basic legal environment; and h is the fraction expropriated by state rulers. The function $g(p, k, h)$ is assumed to satisfy:

- (j) $g(0, k, h)=0$;
- (k) $g_p(p, k, h)>0$, when $k, h>0$;
- (l) $g(p, 0, h)=0$;
- (m) $g_k(p, k, h)>0$, when $p, h>0$;
- (n) $g(p, k, 0)=0$;
- (o) $g_h(p, k, h)>0$, when $p, k>0$;
- (p) $g_{hh}(p, k, h)>0$, when $p, k>0$;
- (q) $g_{hp}(p, k, h)>0$, when $k>0$;
- (r) $g_{hk}(p, k, h)>0$, when $p>0$.

Assumption (j) means no fine is incurred when there is no constraint on state rulers; (k) means, the more the state rulers are constrained, the more the state rulers pay when they grab

the company; (l) means that no fine is incurred when the legal sense in one country is poor and the existing laws are not enforced; (m) means that the stronger legal sense the people in one country, the more fines the expropriators must pay because the possibility of been caught is higher; (n) implies that no fine is incurred when diversion is zero; (o) implies that the state rulers must pay more when they grab more from the company; (p) implies that the marginal cost of grabbing rises as more is taken away; (q) means that the marginal cost of expropriation is higher when the constraint on state rulers is more; and finally, (r) implies that the marginal cost of stealing is higher when the legal sense is better in a country. It is assumed that the cost-of-grabbing is borne by the state rulers themselves rather than by the investors.

Under these assumptions, the net payoffs to the state rulers from one firm at the end of period t is

$$G = IR_t(1-s)h - g(p, k, h)IR_t(1-s) = IR_t(1-s)[h - g(p, k, h)] \quad (2.4.1-1)$$

To maximizing the payoffs above the first order condition

$$\frac{\partial G}{\partial h} = IR_t(1-s)[1 - g_h(p, k, h)] = 0^1 \quad (2.4.1-2)$$

This can be written as

$$g_h(p, k, h^*) = 1. \quad (2.4.1-3)$$

The second order condition is

$$\frac{\partial^2 G}{\partial^2 s} = -IR_t(1-s)g_{hh}(p, k, h) < 0 \quad (2.4.1-4)$$

With the assumption (p) this condition is satisfied, so that the optimal fraction of grabbing h^* exists, and h^* can be written as a function of p and k , $h^*(p, k)$.

2.4.2 Impact of investor protection on expropriation by state rulers

The condition under which the state rulers can maximize their gain from the firm in their area has been deduced. This section goes on to examine this first-order condition to get several testable implications of the model. As it is assumed before, the fraction expropriated by state rulers does not depend on the action of the corporate insiders and not depend on the corporate value. Their action is only influenced by investor protection, p and k .

Firstly, differentiating the first-order condition 2.4.1-3 with respect to p , it is

$$g_{hp}(p, k, h^*) + g_{hh}(p, k, h^*) \frac{\partial h^*}{\partial p} = 0. \quad (2.4.2-1)$$

With assumptions (p) and (q) on the cost-of-grabbing function, it becomes

¹ Here the state rulers do not know how much has been taken away by the inside expropriators so $IR_t(1-s)$ is seen as a variable unrelated to h and $\partial s/\partial h$ is not considered here.

$$\frac{\partial h^*}{\partial p} = -\frac{g_{hp}(p, k, h^*)}{g_{hh}(p, k, h^*)} < 0. \quad (2.4.2-2)$$

Result 2.4.2-1: The better the state rulers are constrained, the less the fraction expropriated by them is.

Here, p is an index of constraint on the state. When p is extremely high, no expropriation by state rulers takes place. On the contrary, when p is 0, it costs nothing to grab the firm so that the state rulers take away all of the profit left by the entrepreneur. But this cannot happen, because the controlling shareholder is able to know it empirically and takes away all the profit as private benefit and leave nothing for the state rulers and minority shareholders so that no portfolio investor will invest in that country.

Then taking the differentiation of the first-order condition 2.4.1-3 with respect to k , equation 2.4.2-3 is obtained

$$g_{hk}(p, k, h^*) + g_{hh}(p, k, h^*) \frac{\partial h^*}{\partial k} = 0 \quad (2.4.2-3)$$

With assumptions (p) and (r) on the cost-of-grabbing function, this becomes

$$\frac{\partial h^*}{\partial k} = -\frac{g_{hk}(p, k, h^*)}{g_{hh}(p, k, h^*)} < 0 \quad (2.4.2-4)$$

Result 2.4.2-2: The better the legal sense, the less the fraction expropriated by state rulers.

This prediction follows because better legal sense implies that the laws can be better enforced and the probability of being caught and fined is higher when the state rulers break the law. Higher cost-of-grabbing forces the state rulers to reduce their grabbing from the firm.

2.5 Important factors determining firm value

In section 2.2 the firm value model under the assumption of Twin Agency Problems is built and it is deduced that the more the corporate insiders and the state rulers expropriate, the less the firm value (see result 2.2-1). In this section, other important factors influencing firm value is going to be examined.

As deduced in section 2.2 (equation 2.2-1), the corporate value at the end of period t after dividend distribution is

$$V_t = \sum_{m=1}^{n-t} \frac{IR_{t+m} (1-s^*) (1-h^*)}{(1+i)^m}$$

So it can be seen that firm value increases with the firm's required investment I and the rate of return of firm's investment opportunity R_t , so that the stock of the firm can be sold at higher prices when the expected cash flow in the future is greater.

Differentiating the corporate value with respect to i and recalling the equation 2.3.2.4-8, it is

$$\frac{\partial V_t}{\partial i} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}(1-h^*)}{(1+i)^m} \frac{\partial s^*}{\partial i} - \sum_{m=1}^{n-t} \frac{mIR_{t+m}(1-s^*)(1-h^*)}{(1+i)^{m+1}} < 0 \quad (2.5-1)$$

Result 2.5-1: The firm value decreases with the capital cost.

Firm value decrease with i , the rate of return demanded by the investors, so the stock value falls with the increase of inflation, risk free interest and the instability of profit generated by the firm.

Remembering the firm value model under the supposition of a constant R , equation 2.3.2.4-1, if differentiated with respect to R , is

$$\frac{\partial V_t}{\partial R} = -\sum_{m=1}^{n-t} \frac{IR(1-h^*)}{(1+i)^m} \frac{\partial s^*}{\partial R} + \sum_{m=1}^{n-t} \frac{I(1-s^*)(1-h^*)}{(1+i)^m} \quad (2.5-2)$$

With the equation 2.3.2.4-5 it is known that

$$\frac{\partial V_t}{\partial R} > 0 \quad (2.5-3)$$

Result 2.5-2: The firm value increases with the expected rate of return in the future.

Now, differentiating the firm value with respect to f , the ownership held by the controlling shareholder in the firm, the following result is obtained

$$\frac{\partial V_t}{\partial f} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}(1-h^*)}{(1+i)^m} \frac{\partial s^*}{\partial f} > 0 \quad (2.5-4)$$

Result 2.5-3: Firm value increases with the ownership concentration f .

The more shares the controlling shareholder has in the firm, the less he diverts as private benefit from the firm and thus more profit is left which can be distributed as cash dividend to all shareholders, including minority shareholders. This predicts that firms with higher ownership concentration will be higher valued, so that ownership concentration will be popular as long as these agency problems are not solved.

La Porta et al. (La Porta, Lopez-de-Silanes and Shleifer, 1999) used data on ownership structures of large corporations in 27 wealthy economies to identify the ultimate controlling shareholders of these firms. They found that, except in economies with very good shareholder protection, relatively few of these firms are widely held, in contrast to Berle and Means's (1932) image of ownership of the modern corporate. Rather, these firms are typically controlled by families or the state. Equity control by financial institution is far less common.

Claessens et al. (2000) investigated the separation of ownership and control in 2,980 publicly traded companies in nine East Asian countries. They found that more than two-thirds of the firms are controlled by a single shareholder. Separation of management from ownership control is rare, and the top management of about 60% of the firms that are not widely held is related to the family of the controlling shareholder.

Next, taking differentiation of the firm value with respect to q , k and p , respectively, it is

$$\frac{\partial V_t}{\partial q} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}(1-h^*)\frac{\partial s^*}{\partial q}}{(1+i)^m} > 0^1 \quad (2.5-5)$$

$$\frac{\partial V_t}{\partial k} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}\left[(1-s^*)\frac{\partial h^*}{\partial k} + (1-h^*)\frac{\partial s^*}{\partial k}\right]}{(1+i)^m} > 0^2 \quad (2.5-6)$$

$$\frac{\partial V_t}{\partial p} = -\sum_{m=1}^{n-t} \frac{IR_{t+m}\left[(1-s^*)\frac{\partial h^*}{\partial p} + (1-h^*)\frac{\partial s^*}{\partial p}\right]}{(1+i)^m} > 0^3 \quad (2.5-7)$$

Result 2.5-4: Firm value increases when the protection of minority shareholders (q), legal sense (k) and constraint on state rulers (p) are improved.

The firms in countries with better law and regulation are higher valued than those in countries with poor protection of investors. Specially, the effect of advancement of k and p is greater because not only the expropriation by the corporate insiders but also the expropriation by state rulers decrease with k and p . And with the improvement of q , k and p in one country, the market value of the firms rises, even if the investment-opportunities of the firms are not more profitable than before.

The firm's value can also be reflected with Tobin's Q , $(1+R_t)(1-s)(1-h)$ in this model, and we can get similar conclusion that Tobin's Q and dividends are higher in countries with better investor protection. These results are consistent with the findings in other studies (Claessens et al., 2002; La Porta et al., 2000a; 2000b; 2002).

2.6 Impact of investor protection on expropriators' benefit

2.6.1 Impact of investor protection on corporate insiders' benefit

With results 2.3.2.3-1, 2.3.2.3-2 and 2.3.2.3-3 we know that the fraction (s^*) diverted by insiders is negatively related to q , k and p . Many economists argue that the government should improve the investor protection, but what can the governors benefit from doing so? Will the entrepreneurs canvass the politicians to do that or not to do that? Next the effect of the improvement of q , k , and p on these expropriators' own interest from the existing firms at the end of period t is discussed.

It is known that the wealth of the entrepreneur from the firm at period t is

¹ Referring to equation 2.3.2.3-2, $\partial s/\partial q < 0$.

² Referring to equation 2.4.2-4, $\partial h/\partial k < 0$; referring to equation 2.3.2.3-4, $\partial s/\partial k < 0$.

³ Referring to equation 2.4.2-2, $\partial h/\partial p < 0$; referring to equation 2.3.2.3-6, $\partial s/\partial p < 0$.

$$U_t = IR_t(1-s)(1-h)f + IR_t s - e(q, k, s)IR_t + V_t f$$

Differentiating this wealth of entrepreneur with respect to q , it becomes

$$\frac{\partial U_t}{\partial q} = -IR_t(1-h^*)f \frac{\partial s^*}{\partial q} + IR_t \frac{\partial s^*}{\partial q} - IR_t \left[e_q(q, k, s^*) + e_s(q, k, s^*) \frac{\partial s^*}{\partial q} \right] + f \frac{\partial V_t}{\partial q} \quad (2.6.1-1)$$

Substituting the expressions of $e_s(q, k, s^*)$ (equation 2.3.1-4), $\partial V_t/\partial s$ (equation 2.2-2) and $\partial V_t/\partial q$ (equation 2.5-5) in the formula above, rearranging it and remembering assumption (b), $e_q(q, k, s) > 0$, the following equation is obtained.

$$\frac{\partial U_t}{\partial q} = -IR_t e_q(q, k, s^*) < 0 \quad (2.6.1-2)$$

Result 2.6.1-1: The improvement of protection of minority shareholders will reduce the controlling shareholders' benefit from the existing firm.

This implies that the controlling shareholder has no incentive to improve the corporate governance to make the minority shareholders better protected because it increases his cost of expropriation and forces him to decrease his private benefit from the firm, which hurts his interest. So we cannot believe that the insiders will do anything better after they have received the money from the outside investors. The controlling shareholders generally do not appear to support legal reform that would enhance minority shareholders' rights. In fact, they typically lobby against it. This may seem puzzling because the value of dividend rights that controlling shareholders retain would increase significantly if minority protection is improved. The puzzle disappears if it is recognized that, as the potential to expropriate the minority shareholders diminishes, so would the value of control, which may be a significantly larger part of the controlling shareholders' total wealth. Improvement of minority protection is thus, in the first instance, a transfer from the controlling to the minority shareholders. Another potential agent of lobbying for corporate governance reform is the entrepreneur who is interested in issuing equity in the future¹, but does not usually have a political voice nearly as persuasive as the established corporate families.

Now, differentiating U_t with respect to k , it is

$$\begin{aligned} \frac{\partial U_t}{\partial k} = & -IR_t f \left[(1-s^*) \frac{\partial h^*}{\partial k} + (1-h^*) \frac{\partial s^*}{\partial k} \right] + IR_t \frac{\partial s^*}{\partial k} \\ & - IR_t \left[e_k(q, k, s^*) + e_s(q, k, s^*) \frac{\partial s^*}{\partial k} \right] + f \frac{\partial V_t}{\partial k} \end{aligned} \quad (2.6.1-3)$$

Substituting expressions of $e_s(q, k, s^*)$ (equation 2.3.1-4), $\partial V_t/\partial s$ (equation 2.2-2) and $\partial V_t/\partial k$ (equation 2.5-6) in the equation above and rearranging it, makes it,

¹ This conclusion is deduced later in section 3.1.2.1.

$$\frac{\partial U_t}{\partial k} = -f(1-s^*) \frac{\partial h^*}{\partial k} \left[IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right] - IR_t e_k(q, k, s^*) \quad (2.6.1-4)$$

Result 2.6.1-2: The improvement of legal sense increases the controlling shareholders' benefit from the existing firm, when

$$-f(1-s^*) \frac{\partial h^*}{\partial k} \left[IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right] \succ IR_t e_k(q, k, s^*) \quad (2.6.1-5)$$

Result 2.6.1-3: The improvement of legal sense has no influence on the controlling shareholders' benefit from the existing firm, when

$$-f(1-s^*) \frac{\partial h^*}{\partial k} \left[IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right] = IR_t e_k(q, k, s^*) \quad (2.6.1-6)$$

Result 2.6.1-4: The improvement of legal sense decreases the controlling shareholders' benefit from the existing firm, when

$$-f(1-s^*) \frac{\partial h^*}{\partial k} \left[IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right] \prec IR_t e_k(q, k, s^*) \quad (2.6.1-7)$$

On the one hand, the improvement of legal sense decreases expropriation by state rulers, which increases the cash dividend and the corporate value, so that the controlling shareholders benefit from this advancement. On the other hand, it also increases the cost-of-theft burdened on the controlling shareholders, so that they are forced to consume less private benefit from the firm. The net gain or loss depends on which effect dominates.

Finally, taking the differentiation of U_t with respect to p , it is deduced that

$$\frac{\partial U_t}{\partial p} = -IR_t f \left[(1-s^*) \frac{\partial h^*}{\partial p} + (1-h^*) \frac{\partial s^*}{\partial p} \right] + IR_t \frac{\partial s^*}{\partial p} - IR_t e_s(q, k, s^*) \frac{\partial s^*}{\partial p} + f \frac{\partial V_t}{\partial p} \quad (2.6.1-8)$$

Substituting the expressions of $e_s(q, k, s^*)$ (equation 2.3.1-4), $\partial V_t / \partial s$ (equation 2.2-2) and $\partial V_t / \partial p$ (2.5-7) in the equation above and rearranging it, gives

$$\frac{\partial U_t}{\partial p} = -f(1-s^*) \frac{\partial h^*}{\partial p} \left[IR_t + \sum_{m=1}^{n-t} \frac{IR_{t+m}}{(1+i)^m} \right] \succ 0. \quad (2.6.1-9)$$

Result 2.6.1-5: The improvement of constraint on state rulers increases the controlling shareholders' benefit from the existing firm.

This improvement decreases the expropriation of state rulers and hence enhances the cash dividend and the corporate value, so that the expected profit controlling shareholders derive from the firm increases with p , and they will encourage the government to improve the law and regulation, which reduces the grabbing by state rulers and benefits all the investors.

2.6.2 Impact of investor protection on state rulers' benefit

In section 2.4, it is deduced that the fraction expropriated by state rulers is negatively related with k and p , but the gain of state rulers also depends on q , because q has effect on how much has been left by inside expropriators. In this section, the impact of q , k and p on state rulers' benefit will be examined.

As shown by equation 2.4.1-1, the payoff to state rulers from the firm is

$$G = IR_t(1-s)[h - g(p, k, h)]$$

At first, differentiating the payoff of state ruler with respect to q to examine the effect of improvement of q on the benefit of state ruler,

$$G_q = IR_t \frac{\partial s^*}{\partial q} [g(p, k, h^*) - h^*] \quad (2.6.2-1)$$

Because the payoff (G) to the state rulers must be positive, so that $h - g(p, k, h) > 0$ must be satisfied under the condition $h > 0$, otherwise they would not expropriate. And recalling result 2.3.2.3-1, the following is obtained.

$$G_q > 0, \text{ When } h^* > 0 \quad (2.6.2-2)$$

Result 2.6.2-1: The improvement of protection of minority shareholders increases the state rulers' benefit from the existing firm.

The state ruler has incentive to protect the minority shareholders better because it forces the controlling shareholders to leave more in the firm, so that together with the outside investors, the state rulers can also benefit from this improvement.

Differentiating G with respect to k , it becomes

$$G_k = -IR_t h \frac{\partial s^*}{\partial k} + IR_t(1-s^*) \frac{\partial h^*}{\partial k} - IR_t(1-s^*) \left[g_k(p, k, h^*) + g_h(p, k, h^*) \frac{\partial h^*}{\partial k} \right] + IR_t g(p, k, h^*) \frac{\partial s^*}{\partial k} \quad (2.6.2-3)$$

Substituting equation 2.4.1-3 in the above equation and rearranging it, gives

$$G_k = IR_t \frac{\partial s^*}{\partial k} [g(p, k, h^*) - h^*] - IR_t(1-s^*) g_k(p, k, h^*) \quad (2.6.2-4)$$

Because $g(p, k, h) - h < 0$ and $\partial s / \partial k < 0$, so that the first term is positive, and the second is negative because $g_k(p, k, h) > 0$. So, whether the value of G_k is positive or negative is uncertain, and the results are as the follows;

Result 2.6.2-2: The improvement of legal sense increases the state rulers' benefit from the existing firm, when

$$IR_t \frac{\partial s^*}{\partial k} [g(p, k, h^*) - h^*] > IR_t(1-s^*) g_k(p, k, h^*) \quad (2.6.2-5)$$

Result 2.6.2-3: The improvement of legal sense has no influence on the state rulers' benefit from the existing firm, when

$$IR_t \frac{\partial s^*}{\partial k} [g(p, k, h^*) - h^*] = IR_t (1 - s^*) g_k(p, k, h^*) \quad (2.6.2-6)$$

Result 2.6.2-4: The improvement of legal sense decreases the state rulers' benefit from the existing firm, when

$$IR_t \frac{\partial s^*}{\partial k} [g(p, k, h^*) - h^*] < IR_t (1 - s^*) g_k(p, k, h^*) \quad (2.6.2-7)$$

On the one hand, the improvement of legal sense decreases the expropriation by inside expropriators, which enhances the gain of state rulers. On the other hand, the cost-of-grabbing burdened on state rulers is also increased by this advancement. Whether the state rulers will benefit or lose from this progress depends on which effect dominates.

Finally, differentiating G with respect to p ,

$$G_p = -IR_t h \frac{\partial s^*}{\partial p} + IR_t (1 - s^*) \frac{\partial h^*}{\partial p} - IR_t (1 - s^*) \left[g_p(p, k, h^*) + g_h(p, k, h^*) \frac{\partial h^*}{\partial p} \right] + IR_t g(p, k, h^*) \frac{\partial s^*}{\partial p} \quad (2.6.2-8)$$

Substituting equation 2.4.1-3 in the equation above, it is written as

$$G_p = IR_t \frac{\partial s^*}{\partial p} [g(p, k, h^*) - h^*] - IR_t (1 - s^*) g_p(p, k, h^*) \quad (2.6.2-9)$$

Because $g(p, k, h) - h < 0$ and $\partial s / \partial p < 0$, so that the first term is positive, and the second is negative because $g_p(p, k, h) > 0$. Similar to the effect of k , whether the value of G_p is positive or negative is uncertain. The results are as the following

Result 2.6.2-5: The improvement of constraint on state rulers increases the state rulers' benefit from the existing firm, when

$$IR_t \frac{\partial s^*}{\partial p} [g(p, k, h^*) - h^*] > IR_t (1 - s^*) g_p(p, k, h^*) \quad (2.6.2-10)$$

Result 2.6.2-6: The improvement of constraint on state rulers has no influence on the state rulers' benefit from the existing firm, when

$$IR_t \frac{\partial s^*}{\partial p} [g(p, k, h^*) - h^*] = IR_t (1 - s^*) g_p(p, k, h^*) \quad (2.6.2-11)$$

Result 2.6.2-7: The improvement of constraint on state rulers decreases the state rulers' benefit from the existing firm, when

$$IR_t \frac{\partial s^*}{\partial p} [g(p, k, h^*) - h^*] < IR_t (1 - s^*) g_p(p, k, h^*) \quad (2.6.2-12)$$

On the one hand, the improvement forces the state rulers to reduce the fraction of expropriation, which decreases the payoff to them. On the other hand, the improvement of constraint on state rulers will make the controlling shareholders divert less and leave more in the firm, which increases the payoff to the state ruler. Therefore, whether the state ruler has incentive to constraint themselves more and to improve the common investment environment depends on which effect dominates. If the effect on the corporate insider dominates, the state rulers will be encouraged to do so.

2.7 Impact of future profitability and capital cost on corporate insiders' benefit

In section 2.3.2.4 it was discussed about the impact of future profitability and capital cost on the fraction diverted by corporate insiders. This section illustrates the influence of future profitability and capital cost on their benefit from the existing firm.

Differentiating U_t with respect to R , the equation below is obtained.

$$\frac{\partial U_t}{\partial R} = -IR_t(1-h^*)f \frac{\partial s^*}{\partial R} + IR_t \frac{\partial s^*}{\partial R} - IR_t e_s(q, k, s) \frac{\partial s^*}{\partial R} + f \frac{\partial V_t}{\partial R} \quad (2.7-1)$$

Substituting equations 2.3.1-4, 2.5-2 and 2.2-2 in the equation above, gives

$$\frac{\partial U_t}{\partial R} = f \sum_{m=1}^{n-t} \frac{I(1-s^*)(1-h^*)}{(1+i)^m} > 0 \quad (2.7-2)$$

Result 2.7-1: The controlling shareholders' benefit from the existing firm increases when the expected rate of return in the future increases.

Result 2.3.2.4-1 has shown that the higher the expected rate of return in the future, the less the fraction expropriated by corporate insiders. Because the insiders care more about the value of the stocks he holds in the firm, he will divert less from the company, if the rate of return increases. The private benefit the controlling shareholder loses when he expropriates less will be more compensated by the increase of share value he holds in the firm. Now result 2.7-1 also proves that the total benefit of the controlling shareholder's from the existing firm increases when the expected rate of return of the firm rises.

Differentiating U_t with respect to i , it becomes

$$\frac{\partial U_t}{\partial i} = -IR_t(1-h^*)f \frac{\partial s^*}{\partial i} + IR_t \frac{\partial s^*}{\partial i} - IR_t e_s(q, k, s) \frac{\partial s^*}{\partial i} + f \frac{\partial V_t}{\partial i} \quad (2.7-3)$$

Substituting equations 2.3.1-4, 2.5-1 and 2.2-2 in the above equation, it is expressed as

$$\frac{\partial U_t}{\partial i} = -f \sum_{m=1}^{n-t} \frac{mIR_{t+m}(1-s)(1-h)}{(1+i)^{m+1}} < 0 \quad (2.7-4)$$

Result 2.7-2: The controlling shareholders' benefit from the existing firm increases when the capital cost of the firm decreases.

As was shown on result 2.3.2.4-2, the corporate insider expropriates less when the capital cost decreases. Because the controlling shareholders care more about the value of the stocks he holds in the firm, he will divert less private benefit from the company when the capital cost falls. The private benefit the controlling shareholder loses when he expropriates less will be more compensated by the increase of share value he holds in the firm. Now result 2.7-2 again proves that the total benefit of the controlling shareholders from the existing firm increases when the expected rate of return of the firm rises.

2.8 Summary

This Chapter presents an improved multi-period model on the basis of Stulz's theory of "Twin Agency Problems" and researches the expropriators' decisions on expropriating the existing firm.

Firstly, the assumption and description of the model is introduced. The firm exists in an imperfect environment, so that both controlling shareholders and state rulers, called expropriators, have the opportunity to use their power to improve their own benefit at the expense of the outside investors, also called minority shareholders. These expropriations are not free and by doing so they risk being sued and fined. The cost of expropriation depends on the quality of protection of minority shareholders (q), the level of legal sense (k), the severity of the constraint on state rulers (p) and the fraction of the profit they expropriate from the firm (s).

A corporate value model with the consideration of Twin Agency Problems is built and it is deduced from this model that the more the corporate insiders and state rulers expropriate, the lower the firm value.

Next, the optimal fraction of expropriation by corporate insiders and the important factors determining this fraction are investigated. The corporate insiders will trade off their gain and loss in the process of expropriation and decide their optimal expropriation fraction. This optimal fraction chosen by corporate insiders is negatively related to the extent of ownership concentration, the quality of protection of minority shareholders, the severity of the constraint on state rulers, the level of legal sense and the expected rate of return, but positively related to the fraction diverted by state rulers and the capital cost of the firm

After that the optimal fraction of expropriation by state rulers and the important factors determining this fraction are studied. Expropriation by state rulers takes place after the expropriation by controlling shareholders and the optimal expropriation fraction chosen by

state rulers is negatively related to the quality of constraint on state rulers and the level of legal sense.

Analyzing the important factors affecting corporate value, it is obtained that the corporate market value increases with higher expected rate of return, the higher degree of ownership concentration, better protection of minority shareholders, better legal sense and more constraint on state rulers, but decreases with higher capital cost.

The improvement of protection of minority shareholder, legal sense and constraint on state rulers can reduce the expropriation by controlling shareholders and state rulers. This improvement also reduces corporate insiders' or state rulers' benefit from the existing firms so that they are reluctant to do so.

On the contrary, higher expected rate of return and lower capital cost not only decreases the expropriation by the corporate insiders but also increases their benefit from the firm, so that active economic policies will be welcome.

The followings are conclusions deduced in this Chapter:

Result 2.2-1: The more the corporate insiders and the state rulers expropriate, the less the firm value.

Result 2.3.2.1-1: The more share of ownership the corporate insider holds in the company, the less fraction of profit he diverts from the company.

Result 2.3.2.1-2: The more the minority shareholders are protected, the less the effect of a higher ownership concentration on reducing the fraction of profit diverted by corporate insiders.

Result 2.3.2.1-3: The less the state rulers are constrained, the smaller the effect of a higher ownership concentration on reducing the fraction of profit diverted by corporate insiders.

Result 2.3.2.2-1: The more the state ruler expropriates, the more the controlling shareholder diverts, if they have ownership in the company.

Result 2.3.2.2-2: The more the ownership held by corporate insiders in the firm, the greater the effect of higher fraction expropriated by state rulers on increasing the fraction expropriated by corporate insiders.

Result 2.3.2.3-1: The more the minority shareholder protection, the less the fraction of expropriation by corporate insiders.

Result 2.3.2.3-2: The more intense the legal sense, the less the fraction of expropriation by corporate insiders.

Result 2.3.2.3-3: The more the state rulers are constrained, the less the corporate insiders expropriate if they have ownership in the company.

Result 2.3.2.3-4: The more ownership the corporate insiders hold in the firm, the greater the effect of better constraints on state rulers on reducing the fraction of profit diverted by corporate insiders.

Result 2.3.2.4-1: The higher the expected rate of return in the future, the less the fraction expropriated by corporate insiders.

Result 2.3.2.4-2: The corporate insider expropriates more when the capital cost increases.

Result 2.4.2-1: The more the state rulers are constrained, the less the fraction expropriated by them.

Result 2.4.2-2: The more intense the legal sense, the less the fraction expropriated by state rulers.

Result 2.5-1: The firm value decreases with the capital cost.

Result 2.5-2: The firm value increases with the expected rate of return in the future.

Result 2.5-3: Firm value increases with the ownership concentration, f .

Result 2.5-4: Firm value increases when the protection of minority shareholders (q), legal sense (k) and constraint on state rulers (p) are improved.

Result 2.6.1-1: The improvement of protection of minority shareholders will reduce the controlling shareholders' benefit from the existing firm.

Result 2.6.1-2: The improvement of legal sense increases the controlling shareholders' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by state rulers is more than the effect on increasing the cost-of-theft burdened on the controlling shareholders

Result 2.6.1-3: The improvement of legal sense has no influence on the controlling shareholders' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by state rulers is as much as increasing the cost-of-theft burdened by the controlling shareholders

Result 2.6.1-4: The improvement of legal sense decreases the controlling shareholders' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by state rulers is less than increasing the cost-of-theft burdened on the controlling shareholders

Result 2.6.1-5: The improvement of constraint on state rulers increases the controlling shareholders' benefit from the existing firm.

Result 2.6.2-1: The improvement of protection of minority shareholders increases the state rulers' benefit from the existing firm.

Result 2.6.2-2: The improvement of legal sense increases the state rulers' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by

controlling shareholders is more than the effect on increasing the cost-of-grabbing burdened on state rulers.

Result 2.6.2-3: The improvement of legal sense has no influence on the state rulers' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by controlling shareholders is as much as the effect on increasing the cost-of-grabbing burdened on state rulers.

Result 2.6.2-4: The improvement of legal sense decreases the state rulers' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by controlling shareholders is less than increasing the cost-of-grabbing burdened on state rulers.

Result 2.6.2-5: The improvement of constraints on state rulers increases the state rulers' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by controlling shareholders is more than increasing the cost-of-grabbing burdened on state rulers.

Result 2.6.2-6: The improvement of constraints on state rulers has no influence on the state rulers' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by controlling shareholders is as much as increasing the cost-of-grabbing burdened on state rulers.

Result 2.6.2-7: The improvement of constraints on state rulers decreases the state rulers' benefit from the existing firm, when the effect of this improvement on decreasing the expropriation by controlling shareholders is less than increasing the cost-of-grabbing burdened on state rulers.

Result 2.7-1: The controlling shareholders' benefit from the existing firm increases when the expected rate of return in the future increases.

Result 2.7-2: The controlling shareholders' benefit from the existing firm increases when the capital cost of the firm decreases.

3 Expropriators' and Outside Investors' Decision on Establishing New Company

3.1 Corporate insiders' decision

3.1.1 Corporate insiders' financing decision

In Chapter 2 all the discussions are based on the assumption that the firm is already set up at period 0. In this Chapter 3 we explore the conditions on which the firm can be set up and the implication of the Twin Agency Problems on the entrepreneurs' financing and investment decision and the impact on the outside investors' decision.

At period 0 the entrepreneur must decide, whether he should start a firm and how much he should invest in it. If he starts a firm and invests I^E in it, his wealth at the end of period t is W_t , as equation 2.3.1-1

$$W_t = IR_t(1-s)(1-h)f + IR_t s - e(q, k, s)IR_t + V_t f + (W_0 - I^E)(1+i^t)$$

Here the first term is his share of cash dividend from the firm he built. The following two terms are his net gain from expropriation. The fourth term is the market value of the stock held by the entrepreneur in the firm he built; and the last term is his principal and profit of the portfolio investment on the capital market.

But if he doesn't start a firm and chooses to invest all his capital on the market as portfolio investor, his wealth is

$$W_t = W_0(1+i^t). \quad (3.1.1-1)$$

So the net value of starting a firm is

$$\begin{aligned} \Delta W_t &= IR_t(1-s^*)(1-h^*)f + IR_t s^* - e(q, k, s^*)IR_t + V_t f - I^E(1+i^t) \\ I^E &= I - I^M \end{aligned} \quad (3.1.1-2)$$

I^M is collected from the capital market through the sale of share $(1-f)$ of the cash flow. Because the demanded rate of return, namely the capital cost, is i , the cash flow to be sold can be priced as

$$I_{t-1}^M = \frac{IR_t(1-s^*)(1-h^*)(1-f) + V_t(1-f)}{1+i} \quad (3.1.1-3)$$

Only when $\Delta W_t > 0$, the firm will be set up and the entrepreneur will choose the optimal fraction of ownership in the firm (f) to maximize this ΔW_t . The first order condition of this problem is

$$\frac{\partial \Delta W_t}{\partial f} = IR_t \left\{ (1-s^*)(1-h^*) - (1-h^*)f \frac{\partial s^*}{\partial f} + \frac{\partial s^*}{\partial f} - e_s(q, k, s^*) \frac{\partial s^*}{\partial f} \right\} + V_t + f \frac{\partial V_t}{\partial f} + (1+i^t) \frac{\partial I^M}{\partial f}$$

$$\frac{\partial I^M}{\partial f} = -\frac{IR_t}{1+i} \left[(1-s)(1-h) + (1-h)(1-f) \frac{\partial s}{\partial f} \right] + \frac{1}{1+i} \left[(1-f) \frac{\partial V_t}{\partial f} - V_t \right] \quad (3.1.1-4)$$

Substituting equations 2.2-2, 2.3.1-4, 2.3.2.1-1, 2.3.2.1-2, and 2.5-4 in the equation above, it is rearranged as

$$\frac{\partial \Delta W_t}{\partial f} = \left(1 - \frac{1+i'}{1+i} \right) \left[IR_t(1-s^*)(1-h^*) + V_t \right] - \frac{(1+i')}{1+i} \frac{\partial s}{\partial f} IR_t(1-h^*)(1-f) + \frac{1+i'}{1+i} \frac{\partial V_t}{\partial f} (1-f) \quad (3.1.1-5)$$

Referring to equation 2.3.1.1-2 and equation 2.5-4, we know the last two terms are positive. The value of the first term depends on i and i' : when $i < i'$, it is negative; when $i \geq i'$, it is positive. When the capital market is in equilibrium and the risk is not considered, i can then be assumed to be equal to i' . If i is higher than i' , the enterprisers will finance the company only with their own capital because the external capital is too expensive. If i is lower than i' , outside investors won't buy the stock of this company, because the yield is too low.

If $\Delta W > 0$ is satisfied, the capital market is in equilibrium and the entrepreneur has enough capital, he will finance the firm with all his own wealth to maximize his ownership in the company, and ΔW_t can be written as

$$\Delta W_t = IR_t(1-s^*)(1-h^*) + IR_t s^* - e(q, k, s^*) IR_t + V_t - I(1+i') \quad (3.1.1-6)$$

Result 3.1.1-1: The firm will be financed only by the entrepreneur himself, when

$$IR_t(1-s^*)(1-h^*) + IR_t s^* - e(q, k, s^*) IR_t + V_t - I(1+i') > 0;$$

$$I \leq W_0 \quad (3.1.1-7)$$

This means that the entrepreneur will finance the firm only with his own wealth as the single shareholder if he has enough money and starting a firm is more valuable than being a portfolio investor. In this equilibrium situation the legitimate profit they get from their own company (cash dividend and stock value) is the same as those they would get if they had invested capital I^E on the capital market. If they have higher ownership in the company they will expropriate less private benefit and the cost wasted in this misdeed is also lowered, so that the firm value is enhanced and their total benefit is increased.

Sometimes the entrepreneurs do not have enough money and can only invest all their initial wealth in the firm and collect the rest capital needed from outside investors, so ΔW_t is

$$\Delta W_t = IR_t(1-s^*)(1-h^*)f + IR_t s^* - e(q, k, s^*) IR_t + V_t f - W_0(1+i') \quad (3.1.1-8)$$

The rest of the capital needed from the outside investors is

$$I^D = I - W_0 \quad (3.1.1-9)$$

Just like I^M , I^D must be collected from the capital market through the sales of share $(1-f)$ of the cash flow. The price of the cash flow to be sold is the same as shown by equation 3.1.1-3:

$$I^s = \frac{IR_t(1-s^*)(1-h^*)(1-f) + V_t(1-f)}{1+i}$$

This is the capital supplied by the investors at the end of the period ($t-1$), or at the initial stage of the period t . Only when $I^s \geq I^D$ is satisfied, can the firm be set up. Here it is assumed that the entrepreneur will regulate the fraction f to get just the amount of capital he needs. And this situation can be written as

$$I_{t-1}^s = \frac{IR_t(1-s^*)(1-h^*)(1-f) + V_t(1-f)}{1+i} = I^D = I - W_0 \quad (3.1.1-10)$$

Substituting equation 3.1.1-10 into equation 3.1.1-8, equation 3.1.1-11 can be obtained.

$$\begin{aligned} \Delta W_t = & [IR_t(1-s^*)(1-h^*) + V_t] * \left[f + \frac{1+i'}{1+i}(1-f) \right] \\ & + IR_t s^* - e(q, k, s^*) IR_t - I(1+i') \end{aligned} \quad (3.1.1-11)$$

Result 3.1.1-2: The entrepreneur will invest all his initial wealth W_0 to set up a firm and collect the remaining capital ($I - W_0$) he needs from the capital market, when

$$\left[IR_t(1-s^*)(1-h^*) + V_t \right] \left[f + \frac{1+i'}{1+i}(1-f) \right] + IR_t s^* - e(q, k, s^*) IR_t - I(1+i') > 0 \quad (3.1.1-12)$$

$$\text{And } I > W_0$$

This implies that the entrepreneur will invest as much as he has in the firm to attain maximum ownership in the firm, if starting a firm is more valuable than being a portfolio investor. As is mentioned before, higher ownership held by the controlling shareholders increases the firm value. In this situation, i might be higher than i' , because the enterprisers do not have enough capital and must collect the rest from the market even though it is too expensive, as long as the net value of starting a firm is positive.

3.1.2 Corporate insiders' investment decision

3.1.2.1 Impact of investor protection on corporate insiders' investment decision

In the last section it has been discussed how the entrepreneurs should finance their firms in case they will start a firm. This section examines the impact of investor protection on entrepreneurs' willingness to set up a firm. Whether the firm can be set up, depends on if the value of ΔW_t is negative or positive.

At first, taking the differentiation of ΔW_t with respect to q , from equations 3.1.1-6 and 3.1.1-11, the following equation is obtained.

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial q} &= -IR_t(1-h^*)\frac{\partial s^*}{\partial q} + IR_t\frac{\partial s^*}{\partial q} \\ &\quad - IR_t \left[e_q(q, k, s^*) + e_s(q, k, s^*)\frac{\partial s^*}{\partial q} \right] + \frac{\partial V_t}{\partial q} \end{aligned} \quad \text{(Without external capital) (3.1.2.1-1)}$$

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial q} &= \left[f + \frac{1+i'}{1+i}(1-f) \right] \left[\frac{\partial V_t}{\partial q} - IR_t(1-h^*)\frac{\partial s^*}{\partial q} \right] \\ &\quad + IR_t\frac{\partial s^*}{\partial q} - IR_t \left[e_q(q, k, s^*) + e_s(q, k, s^*)\frac{\partial s^*}{\partial q} \right] \end{aligned} \quad \text{(With external capital) (3.1.2.1-2)}$$

Substituting equations 2.3.1-4, 2.5-5 and 2.2-2 in the equations above, these equations can then be written as

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial q} &= IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q} \\ &\quad - IR_t e_q(q, k, s^*) + \frac{\partial V_t}{\partial q}(1-f) \end{aligned} \quad \text{(Without external capital) (3.1.2.1-3)}$$

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial q} &= IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q} \frac{1+i'}{1+i} \\ &\quad - IR_t e_q(q, k, s^*) + \frac{\partial V_t}{\partial q}(1-f)\frac{1+i'}{1+i} \end{aligned} \quad \text{(With external capital) (3.1.2.1-4)}$$

Result 3.1.2.1-1: The improvement of protection of outside shareholders increases the willingness of entrepreneurs to set up a firm, when

$$\begin{aligned} IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q} - IR_t e_q(q, k, s^*) + \frac{\partial V_t}{\partial q}(1-f) &> 0 \end{aligned} \quad \text{(Without external capital) (3.1.2.1-5)}$$

$$\begin{aligned} IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q} \frac{1+i'}{1+i} - IR_t e_q(q, k, s^*) \\ + \frac{\partial V_t}{\partial q}(1-f)\frac{1+i'}{1+i} &> 0 \end{aligned} \quad \text{(With external capital) (3.1.2.1-6)}$$

Result 3.1.2.1-2: The improvement of protection of outside shareholders has no impact on the willingness of entrepreneurs to set up a firm, when

$$\begin{aligned} IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q} - IR_t e_q(q, k, s^*) + \frac{\partial V_t}{\partial q}(1-f) &= 0 \end{aligned} \quad \text{(Without external capital) (3.1.2.1-7)}$$

$$\begin{aligned} IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q} \frac{1+i'}{1+i} - IR_t e_q(q, k, s^*) \\ + \frac{\partial V_t}{\partial q}(1-f)\frac{1+i'}{1+i} &= 0 \end{aligned} \quad \text{(With external capital) (3.1.2.1-8)}$$

Result 3.1.2.1-3: The improvement of protection of outside shareholders decreases the willingness of entrepreneurs to set up a firm, when

$$IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q} - IR_t e_q(q, k, s^*) + \frac{\partial V_t}{\partial q}(1-f) < 0$$

(Without external capital) (3.1.2.1-9)

$$IR_t(1-h^*)(f-1)\frac{\partial s^*}{\partial q}\frac{1+i'}{1+i} - IR_t e_q(q, k, s^*) + \frac{\partial V_t}{\partial q}(1-f)\frac{1+i'}{1+i} < 0$$

(With external capital) (3.1.2.1-10)

On the one hand, the improvement of outside shareholder protection increases the cost of expropriation, which forces the corporate insider to consume less private benefit and decrease the entrepreneur's gain from setting up a firm. On the other hand, this improvement increases the price of the equity to be sold, which means the entrepreneur can keep more fraction of the ownership (f) in the company, which increases both his cash dividend and stock value. Therefore, unlike the controlling shareholder, who has set up firms, the entrepreneur, who wants to start a firm, may canvass the government to improve the protection of minority shareholders, or they will make individual promise of better corporate governance to the potential outside investors. But as it has been mentioned before, these intending entrepreneurs do not usually have a political say as persuasive as the established corporate families. Their requests might be refused by officials who have been bribed by the existing entrepreneurs. The credibility of the individual promise is doubted in a country where the people have no trust in each other and the law system to support this trust is lacking.

Next, differentiating equation 3.1.1-6 and 3.1.1-11 with respect to k , is written as

$$\frac{\partial \Delta W_t}{\partial k} = IR_t \frac{\partial s^*}{\partial k} [h - e_s(q, k, s^*)] - IR_t(1-s^*)\frac{\partial h^*}{\partial k} - IR_t e_k(q, k, s^*) + \frac{\partial V_t}{\partial k}$$

(Without external capital) (3.1.2.1-11)

$$\frac{\partial \Delta W_t}{\partial k} = \left[f + \frac{1+i'}{1+i}(1+f) \right] \left[\frac{\partial V_t}{\partial k} - IR_t(1-s)\frac{\partial h}{\partial k} - IR_t(1-h)\frac{\partial s^*}{\partial k} \right] + IR_t \frac{\partial s^*}{\partial k} [1 - e_s(q, k, s^*)] - IR_t e_k(q, k, s^*)$$

(With external capital) (3.1.2.1-12)

Substituting equation 2.3.1-4 into the equations above will give the following equation,

$$\frac{\partial \Delta W_t}{\partial k} = -IR_t \frac{\partial s^*}{\partial k} (1-h^*)(1-f) - IR_t(1-s^*)\frac{\partial h^*}{\partial k} - IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} + \frac{\partial V_t}{\partial k}$$

(Without external capital) (3.1.2.1-13)

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial k} &= \left[f + \frac{1+i'}{1+i} (1-f) \right] \left[\frac{\partial V_t}{\partial k} - IR_t (1-s) \frac{\partial h}{\partial k} \right] \\ &- IR_t \frac{\partial s^*}{\partial k} (1-h^*) (1-f) \frac{1+i'}{1+i} - IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} \end{aligned}$$

(With external capital) (3.1.2.1-14)

Result 3.1.2.1-4: The improvement of legal sense increases the willingness of entrepreneurs to set up a firm, when

$$\begin{aligned} &- IR_t \frac{\partial s^*}{\partial k} (1-h^*) (1-f) - IR_t (1-s^*) \frac{\partial h^*}{\partial k} \\ &- IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} + \frac{\partial V_t}{\partial k} > 0 \end{aligned} \quad \text{(Without external capital) (3.1.2.1-15)}$$

$$\begin{aligned} &\left[f + \frac{1+i'}{1+i} (1-f) \right] \left[\frac{\partial V_t}{\partial k} - IR_t (1-s) \frac{\partial h}{\partial k} \right] \\ &- IR_t \frac{\partial s^*}{\partial k} (1-h^*) (1-f) \frac{1+i'}{1+i} - IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} > 0 \end{aligned}$$

(With external capital) (3.1.2.1-16)

Result 3.1.2.1-5: The improvement of legal sense has no influence on the willingness of entrepreneurs to set up a firm, when

$$\begin{aligned} &- IR_t \frac{\partial s^*}{\partial k} (1-h^*) (1-f) - IR_t (1-s^*) \frac{\partial h^*}{\partial k} \\ &- IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} + \frac{\partial V_t}{\partial k} = 0 \end{aligned} \quad \text{(Without external capital) (3.1.2.1-17)}$$

$$\begin{aligned} &\left[f + \frac{1+i'}{1+i} (1-f) \right] \left[\frac{\partial V_t}{\partial k} - IR_t (1-s) \frac{\partial h}{\partial k} \right] \\ &- IR_t \frac{\partial s^*}{\partial k} (1-h^*) (1-f) \frac{1+i'}{1+i} - IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} = 0 \end{aligned}$$

(With external capital) (3.1.2.1-18)

Result 3.1.2.1-6: The improvement of legal sense decreases the willingness of entrepreneurs to set up a firm, when

$$\begin{aligned} &- IR_t \frac{\partial s^*}{\partial k} (1-h^*) (1-f) - IR_t (1-s^*) \frac{\partial h^*}{\partial k} \\ &- IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} + \frac{\partial V_t}{\partial k} < 0 \end{aligned} \quad \text{(Without external capital) (3.1.2-19)}$$

$$\begin{aligned} &\left[f + \frac{1+i'}{1+i} (1-f) \right] \left[\frac{\partial V_t}{\partial k} - IR_t (1-s) \frac{\partial h}{\partial k} \right] \\ &- IR_t \frac{\partial s^*}{\partial k} (1-h^*) (1-f) \frac{1+i'}{1+i} - IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} < 0 \end{aligned}$$

(With external capital) (3.1.2.1-20)

On the one hand, Similar to the effect of q , the improvement of legal sense (k) increases the cost of expropriation by insiders, which forces the corporate insider to consume less private benefit and decreases the entrepreneur's gain from setting up a firm. On the other hand, this improvement reduces the expropriation by state rulers and increases the price of the equity to be sold, which means the entrepreneur can get more fractions (f) of the cash flow distributed as dividends and keep more shares of the firm equity. Therefore, same as the entrepreneur, who has set up a firm, the entrepreneur, who wants to start firms, may also canvass the government to improve the legal sense.

Now, differentiating equation 3.1.1-6 and 3.1.1-11 with respect to p , it is deduced that

$$\frac{\partial \Delta W_t}{\partial p} = IR_t \frac{\partial s^*}{\partial p} [h - e_s(q, k, s^*)] - IR_t (1 - s^*) \frac{\partial h^*}{\partial p} + \frac{\partial V_t}{\partial p}$$

(Without external capital) (3.1.2.1-21)

$$\frac{\partial \Delta W_t}{\partial p} = \left[f + \frac{1+i'}{1+i} (1-f) \right] \left[\frac{\partial V_t}{\partial p} - IR_t (1-s) \frac{\partial h}{\partial p} - IR_t (1-h) \frac{\partial s^*}{\partial p} \right] + IR_t \frac{\partial s^*}{\partial p} [1 - e_s(q, k, s^*)]$$

(With external capital) (3.1.2.1-22)

Substituting equations 2.3.1-4, 2.5-7 and 2.2-2 in the equations above and rearranging gives

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial p} &= IR_t \frac{\partial s^*}{\partial p} (1 - h^*) (f - 1) - IR_t (1 - s^*) \frac{\partial h^*}{\partial p} \\ &+ (f - 1) \sum_{m=1}^{n-t} \frac{IR_{t+m} (1 - h^*) \frac{\partial s^*}{\partial p}}{(1+i)^m} - \sum_{m=1}^{n-t} \frac{IR_{t+m} (1 - s^*) \frac{\partial h^*}{\partial p}}{(1+i)^m} > 0 \end{aligned}$$

(Without external capital) (3.1.2.1-23)

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial p} &= IR_t \frac{\partial s^*}{\partial p} (1 - h^*) (f - 1) \frac{1+i'}{1+i} - \left[f + \frac{1+i'}{1+i} (1-f) \right] IR_t (1 - s^*) \frac{\partial h^*}{\partial p} \\ &+ \frac{1+i'}{1+i} (1-f) \frac{\partial V_t}{\partial p} - f \sum_{m=1}^{n-t} \frac{IR_{t+m} (1 - s^*) \frac{\partial h^*}{\partial p}}{(1+i)^m} > 0 \end{aligned}$$

(With external capital) (3.1.2.1-24)

Result 3.1.2.1-7: The improvement of constraint on the state increases the willingness of entrepreneurs to set up a firm.

Here, p is an exogenous index of constraints on the state. When p is extremely high, no expropriation by state rulers takes place. If p is zero, the state rulers expropriate every thing and there is no product because no firm will be started. The willingness of entrepreneurs to take advantage of investment opportunities is inversely related to the level of constraints on the state rulers. For a given level of constraint on the state, entrepreneurs will start a firm only if

their expected profit from the firm exceeds their opportunity cost, which is their profit from the portfolio investment. Consequently, under the assumptions in this study, there is a threshold for p , P , so that if $p < P$, the entrepreneurs do not take advantage of their investment opportunities because their participation constraint is not satisfied. The entrepreneur, who wants to start a firm, will encourage the government to improve the constraint on state rulers, which benefits all investors.

3.1.2.2 Impact of future profitability and capital cost on corporate insiders' investment decision

In section 2.5 it is proved that the firm value is influenced by future profitability and capital cost, so that when the entrepreneur is considering setting up a firm he must think about the expected profitability and capital cost of the firm, which is going to be built. In this section, the impact of future profitability and capital cost on corporate insiders' investment decision is discussed.

Differentiating ΔW_t with respect to i , it is obtained

$$\frac{\partial \Delta W_t}{\partial i} = IR_t \frac{\partial s^*}{\partial i} [h - e_s(q, k, s^*)] + \frac{\partial V_t}{\partial i} \quad (\text{Without external capital}) \quad (3.1.2.2-1)$$

$$\begin{aligned} \frac{\partial \Delta W_t}{\partial i} = & \left[f + \frac{1+i'}{1+i} (1+f) \right] \left[\frac{\partial V_t}{\partial i} - IR_t (1-h^*) \frac{\partial s}{\partial i} \right] \\ & - \left[IR_t (1-s^*) (1-h^*) + V_t \right] \frac{(1-f)(1+i')}{(1+i)^2} + IR_t \frac{\partial s^*}{\partial i} [1 - e_s(q, k, s^*)] \end{aligned}$$

(With external capital) (3.1.2.2-2)

With equations 2.3.1-4, 2.5-1 and 2.2-2 these expressions can be written as

$$\frac{\partial \Delta W_t}{\partial i} = (1-f) \frac{\partial s^*}{\partial i} \left[\frac{\partial V_t}{\partial s} - IR_t (1-h^*) \right] - \sum_{m=1}^{n-t} \frac{m IR_{t+m} (1-s^*) (1-h^*)}{(1+i)^{m+1}} < 0$$

(Without external capital) (3.1.2.2-3)

$$\frac{\partial \Delta W_t}{\partial i} = \frac{1+i'}{1+i} (1-f) \frac{\partial s^*}{\partial i} \left[\frac{\partial V_t}{\partial s} - IR_t (1-h^*) \right] - \left[f + \frac{1+i'}{1+i} (1-f) \right] \sum_{m=1}^{n-t} \frac{m IR_{t+m} (1-s^*) (1-h^*)}{(1+i)^{m+1}} < 0$$

(With external capital) (3.1.2.2-4)

Result 3.1.2.2-1: The rise of capital cost decreases the entrepreneurs' willingness to set up a firm.

It is obvious that higher capital cost reduces the expected market value of the company, which decreases the interest of the enterprisers to set up a new company. For the companies with external capital, higher capital cost compels the potential enterprisers to sell more fractions of the future cash flow right to get the capital needed. This reduces their share of the

cash flow and their wealth in the company so that they would rather invest the capital on the market as portfolio investors when the capital cost is too high.

Finally, differentiating ΔW_t with respect to R ,

$$\frac{\partial \Delta W_t}{\partial R} = IR_t \frac{\partial s^*}{\partial R} [h - e_s(q, k, s^*)] + \frac{\partial V_t}{\partial R} \quad (\text{Without external capital}) \quad (3.1.2.2-5)$$

$$\frac{\partial \Delta W_t}{\partial R} = \left[f + \frac{1+i'}{1+i}(1-f) \right] \left[\frac{\partial V_t}{\partial R} - IR_t(1-h) \frac{\partial s^*}{\partial R} \right] + IR_t \frac{\partial s^*}{\partial R} [1 - e_s(q, k, s^*)]$$

(With external capital) (3.1.2.2-6)

With equations 2.3.1-4, 2.5-3 and 2.2-2 these expressions can be written as

$$\frac{\partial \Delta W_t}{\partial R} = (1-f) \frac{\partial s^*}{\partial R} \left[\frac{\partial V_t}{\partial s} - IR_t(1-h) \right] + \sum_{m=1}^{n-t} \frac{I(1-s^*)(1-h^*)}{(1+i)^m} > 0$$

(Without external capital) (3.1.2.2-7)

$$\frac{\partial \Delta W_t}{\partial R} = \frac{1+i'}{1+i}(1-f) \frac{\partial s^*}{\partial R} \left[\frac{\partial V_t}{\partial s} - IR_t(1-h^*) \right] + \left[f + \frac{1+i'}{1+i}(1-f) \right] \sum_{m=1}^{n-t} \frac{I(1-s^*)(1-h^*)}{(1+i)^m} > 0$$

(With external capital) (3.1.2.2-8)

Result 3.1.2.2-2: The rise of the expected rate of return in the future increases the entrepreneurs' willingness to set up a firm.

Contrary to the capital cost i , higher rate of return increases the company value and the enterprisers can keep more shares of the cash flow right of the companies when they collect capital from the market so that they are more encouraged to set up new companies than act as portfolio investors.

3.2 Outside investors' investment decision

3.2.1 Impact of investor protection on outside investors' investment decision

If the entrepreneurs do not have enough money they must collect capital from the market. Whether the firm can be started also depends on the outside investors' decision.

At first, the impact of investor protection on the capital market is examined. Differentiating the capital supply with respect to q , k , and p ,

$$\frac{\partial I_{t-1}^s}{\partial q} = -\frac{IR_t(1-f)(1-h)}{1+i} \frac{\partial s^*}{\partial q} + \frac{1-f}{1+i} \frac{\partial V_t}{\partial q} > 0 \quad (3.2.1-1)$$

$$\frac{\partial I_{t-1}^s}{\partial k} = -\frac{IR_t(1-f)}{1+i} \left[(1-s^*) \frac{\partial h^*}{\partial k} + (1-h^*) \frac{\partial s^*}{\partial k} \right] + \frac{1-f}{1+i} \frac{\partial V_t}{\partial k} > 0 \quad (3.2.1-2)$$

$$\frac{\partial I_{t-1}^s}{\partial p} = -\frac{IR_t(1-f)}{1+i} \left[(1-s^*) \frac{\partial h^*}{\partial p} + (1-h^*) \frac{\partial s^*}{\partial p} \right] + \frac{1-f}{1+i} \frac{\partial V_t}{\partial p} > 0 \quad (3.2.1-3)$$

Result 3.2.1-1: Intensifying the protection of minority shareholders, legal sense and the constraint on state rulers, increases the sum of capital collected from the financial market.

The minority shareholders have no voice on the board of directors or in the meeting of politicians, and they even have no rights of vote in despotic countries. But they can vote with feet. When the expropriation is severe, they will hold the money in hand rather than contribute it to the firm. With the advancement of laws and regulations the minority investors have more trust in the government and the entrepreneurs, and then the capital market becomes more active and flourishes. This is because, the entrepreneurs have less difficulty in financing their projects and more firms can be started. Consequently, the whole economy in the country becomes more prosperous.

Glaeser et al. (2001) compared the regulation of financial markets in Poland and the Czech Republic in the 1990s. They realized that the stringent – and stringently enforced – regulations in Poland, expressed in both company and securities laws, have stimulated rapid development of securities markets, and enabled a number of firms to raise external funds. The expropriation of investors has been relatively modest, and the qualitative evaluations of the Polish market have been very positive. In contrast, the lax – and laxly enforced – regulations in the Czech Republic were associated with low liquidity and a notable absence of equity finance by either new or existing firms. The expropriation of investors was rampant, and acquired a new Czech-specific name: tunneling. Consistent with these concerns, the qualitative assessments of the Czech market have been poor (Coffee, 1996 and 1998; Weiss and Nikitin, 1999; Pistor, 1999). The Czech government has sharply tightened its regulations since 1996.

From result 3.2.1-1 we know that I^S is positively related to q , k and p . The condition that the firm can be set up is $I^S \geq I^D$. So, assuming that q , k and p are variable, it can be deduced that q , k and p are positively related to I^D .

Result 3.2.1-2: The more capital the entrepreneur needs to set up firm, the more incentive he has to improve the quality of outside investor protection on firm level (q) and to canvass the government to improve the protection of investors on state level (k and p).

If investors are poorly protected, the entrepreneurs must give up more cash flow rights of the company to the minority shareholders. Collecting capital from the minority shareholders becomes too expensive, so it is optimal for firms to be held closely. So the entrepreneurs, who are in great need of capital, are very willing to improve the protection of investors to sell the shares at a higher price and get capital with lower cost. It can be predicted that firms in countries with poor investor protection are held closely and investors cannot hold the market portfolio. This can explain part of the home bias puzzle. Durnev and Kim (2005) also found

that needs for external financing have greater impact on governance choices of firms in countries with weaker legal frameworks because those firms are more subject to the deleterious effects of poor legal protection when they attempt to raise external capital.

Giannetti and Simonov (2006) argue that the choices of market participants are driven, among other reasons, by fear of expropriation. All categories of investors (domestic and foreign, institutional and small individual investors) who generally enjoy only security benefits, expect lower returns from companies with weak corporate governance relative to the risk they involve. They are reluctant to hold shares in companies where extraction of private benefits is expected to be large. In contrast, large domestic individual investors and individuals, who are board members, do not appear concerned about weak corporate governance. Hence, they are more likely to invest in companies where the controlling shareholders have strong incentives to extract private benefits. Their results point a clear relation between quality of corporate governance and shareholder base and indicate that firms should use corporate governance to attract shareholders if they wish to expand their shareholder base and raise new capital. Kumar et al. (2001) examined data on firm size from Europe. They found that countries with better institutional development, as measured by the efficiency of their judicial system, have larger firms.

3.2.2 Impact of future profitability and capital cost on outside investors' decision

The expected rate of return and capital cost will also sway the outside investors' decision.

Differentiating the capital supply with respect to i , recalling equations 2.2.2.4-2 and 2.5-1, the following equation is obtained

$$\frac{\partial I_{t-1}^s}{\partial i} = \frac{(1-f)}{1+i} \left[\frac{\partial V_t}{\partial i} - IR_t(1-h^*) \frac{\partial s^*}{\partial i} \right] - \frac{[IR_t(1-s)(1-h)(1-f) + V_t(1-f)]}{(1+i)^2} < 0 \quad (3.2.2-1)$$

Result 3.2.2-1: The lower the capital cost; the more the capital that can be collected from the outside investors.

Here, the outside investors can be minority shareholders and creditors, and i is the Weighted Average Capital Cost (WACC) of the external capital. The controlling shareholders can choose the optimal capital structure to minimize the capital cost (i) in order to minimize the fraction of future cash flow they should sell to the outside investors to get the external capital they need.

Differentiating the capital supply with respect to R , and recalling equations 2.3.2.4-1 and 2.5-3, it is deduced

$$\frac{\partial I_{t-1}^s}{\partial R} = \frac{(1-f)}{1+i} \left[\frac{\partial V_t}{\partial R} + I(1-s^*)(1-h^*) - IR_t(1-h^*) \frac{\partial s^*}{\partial R} \right] > 0 \quad (3.2.2-2)$$

Result 3.2.2-2: The higher the expected rate of return; the more the capital that can be collected from the outside investors.

Result 3.2.2-1 and 3.2.2-2 indicate that the supply of the external capital depends on the rate of return demanded by outside investors and the expected profitability in the future. These are both connected to the level of economic and financial development in a country. When economic and financial development is poor, external capital is expensive and new investment opportunities may not be worthy to catch. Hence, the controlling shareholders have lower incentives to improve the firm-level governance and the protection of minority shareholders. Doidge et al. (2006) showed a similar conclusion that the interest to adopt better governance mechanisms at the firm level increases with a country's financial and economic development.

3.3 State rulers' decision

In section 2.6.2 we have discussed the impact of investor protection on state rulers' interest, but the analysis in that section considers only the payoff from the existing companies. In reality, to enlarge their income resource the state rulers have incentive to make progress in investor protection when this progress will encourage more firms to be set up.

Result 2.6.2-1 indicates that the improvement of protection of minority shareholder can increase the state rulers' benefit from the existing firms. Result 3.1.2.1-1 indicates that this improvement will also encourage the intending entrepreneurs to build more firms if the inequality 3.1.2.1-5 or 3.1.2.1-6 is satisfied, which enables the state rulers to divert from more firms. So the following conclusion can be made:

Result 3.3-1: The state rulers have incentive to improve the protection of minority shareholders (q) to encourage the intending entrepreneurs to start new firms when

$$(1-h^*)(f-1) \frac{\partial s^*}{\partial q} - e_q(q, k, s^*) > 0 \quad (3.3-1)$$

This implies that the state rulers will improve the protection of minority shareholder to let more firms set up if this change can increase the entrepreneurs' willingness to set up firms, because this improvement increases the state rulers' total benefit from all the companies (existing and potential companies) in their region ($\sum G$).

Result 2.6.2-2 implies that the improvement of legal sense increases the state rulers' payoff from existing firms under the condition that

$$IR_t \frac{\partial s^*}{\partial k} [g(p, k, h^*) - h^*] > IR_t(1-s^*)g_k(p, k, h^*) \quad (3.3-2)$$

And as is shown by result 3.1.2.1-4 the improvement of legal sense will also increase the willingness of entrepreneurs to set up a firm, when

$$-IR_t \frac{\partial s^*}{\partial k} (1-h^*)(1-f) - IR_t (1-s^*) \frac{\partial h^*}{\partial k} - IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} + \frac{\partial V_t}{\partial k} > 0 \quad (3.3-3)$$

So it comes to the conclusion that;

Result 3.3-2: The state rulers have incentive to improve legal sense (k) to encourage the entrepreneurs to start firms when

$$IR_t \frac{\partial s^*}{\partial k} [g(p, k, h^*) - h^*] \geq IR_t (1-s^*) g_k(p, k, h^*) \text{ And}$$

$$-IR_t \frac{\partial s^*}{\partial k} (1-h^*)(1-f) - IR_t (1-s^*) \frac{\partial h^*}{\partial k} - IR_t e_k(q, k, s^*) - f \frac{\partial V_t}{\partial s} \frac{\partial s^*}{\partial k} + \frac{\partial V_t}{\partial k} > 0 \quad (3.3-4)$$

This means that the state rulers will improve the legal sense to let more firms set up if this change can enhance the entrepreneurs' willingness to set up firms and if this change will not decrease their income from the existing firms. If this change decreases their gains from the existing firms they will probably also make this change when the gain from the new firms is greater than the loss from the existing firms.

Result 2.6.2-5 implies that the improvement of constraint on state rulers increases the payoff to the state rulers under the condition that

$$IR_t \frac{\partial s^*}{\partial p} [g(p, k, h^*) - h^*] > IR_t (1-s^*) g_p(p, k, h^*) \quad (3.3-5)$$

And result 3.1.2-7 shows that the improvement of constraint on the state also increases the entrepreneurs' willingness to set up new firm. So it is obtained,

Result 3.3-3: The state rulers have incentive to improve the constraint on state rulers (p) to encourage the entrepreneurs to start firms when

$$IR_t \frac{\partial s^*}{\partial p} [g(p, k, h^*) - h^*] \geq IR_t (1-s^*) g_p(p, k, h^*) \quad (3.3-6)$$

This indicates that the state rulers will increase the constraint on themselves to let more firms set up when this change will not decrease their income from the existing firms. Similar to the result 3.3-2 above, when this change decreases their gain from the existing firms they will probably also make this change if the gain from new firms are greater than the loss from the existing firms.

3.4 Summary

With the model built in Chapter 2, this Chapter examines the decisions of expropriators' and outsiders before the company is established.

Firstly, the corporate insiders financing and investment decision is investigated. The controlling shareholders will invest all his initial wealth in the firm if he decides to start a firm. If the corporate insiders do not have enough money to start the firm they must collect capital from the outside investors by selling part of the future cash flow of the firm in the capital market. The willingness of the controlling shareholders to start a firm will be increased by higher expected rate of return, lower capital cost and the improvement of constraint on state rulers. This willingness is also affected by the quality of minority shareholder protection and the legal sense, but whether the improvement of minority shareholder protection and legal sense will increase or decrease this willingness is uncertain.

Secondly, outside investors' investment decision is researched, depending on the factors which affect the sum that can be collected from capital market. Because the capital supply of the market will be increased by the improvement of protection of minority shareholder, legal sense and constraint on state rulers, the corporate insider has more incentive to improve the quality of outside investor protection on firm level (q) and to canvass the state rulers to improve the protection of investor at state level (k and p).

Lastly, the state rulers' behavior before the establishing of the firm is studied. The state rulers will improve the protection of minority shareholder, legal sense and the constraint on themselves when this change can encourage the entrepreneurs to start more firms and increase their total benefit from the existing firms and the firms to be set up.

The followings are conclusions deduced from this Chapter:

Result 3.1.1-1: The firm will be financed only by the entrepreneur himself, if starting a firm is more profitable than being portfolio investor and if he has enough money.

Result 3.1.1-2: The entrepreneur will invest all his initial wealth W_0 to set up a firm and collect the rest capital ($I-W_0$) he needs from the capital market, if starting a firm is more profitable than being portfolio investor and if he hasn't enough money.

Result 3.1.2.1-1: The improvement of the protection of outside shareholders increases the willingness of entrepreneurs to set up a firm, if the effect of this improvement on increasing the price of the equity to be sold is higher than increasing the cost of expropriation by the corporate insiders.

Result 3.1.2.1-2: The improvement of protection of outsider shareholders has no impact on the willingness of entrepreneurs to set up a firm, if the effect of this improvement on increasing the price of the equity to be sold is as much as increasing the cost of expropriation by the corporate insiders.

Result 3.1.2.1-3: The improvement of protection of outsider shareholders decreases the willingness of entrepreneurs to set up a firm, if the effect of this improvement on increasing the

price of the equity to be sold is lower than increasing the cost of expropriation by the corporate insiders.

Result 3.1.2.1-4: The improvement of legal sense increases the willingness of entrepreneurs to set up a firm, if the total effect of this improvement on increasing the price of the equity to be sold and decreasing the expropriation by state rulers is higher than increasing the cost of expropriation by the corporate insiders.

Result 3.1.2.1-5: The improvement of legal sense has no influence on the willingness of entrepreneurs to set up a firm, if the total effect of this improvement on increasing the price of the equity to be sold and decreasing the expropriation by state rulers is as much as increasing the cost of expropriation by the corporate insiders.

Result 3.1.2.1-6: The improvement of legal sense decreases the willingness of entrepreneurs to set up a firm, if the total effect of this improvement on increasing the price of the equity to be sold and decreasing the expropriation by state rulers is lower than increasing the cost of expropriation by the corporate insiders.

Result 3.1.2.1-7: The improvement of constraint on the state increases the willingness of entrepreneurs to set up a firm.

Result 3.1.2.2-1: The rise of capital cost decreases the entrepreneurs' willingness to set up a firm.

Result 3.1.2.2-2: The rise of the expected rate of return in the future increases the entrepreneurs' willingness to set up a firm.

Result 3.2.2-1: The improvement the protection of minority shareholders, legal sense and the constraint on state rulers increases the sum of capital which can be collected from the market.

Result 3.2.1-2: The more capital the entrepreneur needs to set up the firm, the more willingness he has to improve the quality of outside investor protection on firm level (q) and to canvass the government to improve the protection of investor on state level (k and p).

Result 3.2.2-1: The lower the capital cost; the more the capital that can be collected from the outside investors.

Result 3.2.2-2: The higher the expected rate of return; the more the capital that can be collected from the outside investors.

Result 3.3-1: The state rulers have the willingness to improve the protection of minority shareholders (q) if this improvement can encourage the entrepreneurs to start new firms.

Result 3.3-2: The state rulers are willing to improve legal sense (k) if this improvement can encourage the entrepreneurs to start new firms and will not decrease the state rulers' total income from the existing firms and the firms to be set up.

Result 3.3-3: The state rulers are willing to improve the constraint on state rulers (p) to encourage the entrepreneurs to start firms if this improvement will not decrease the state rulers' total income from the existing firms and the firms to be set up.

4. Possible Solutions Proposed by the Model to the Twin Agency Problems

4.1 What should be done to solve the Twin Agency Problems?

On the basis of the theoretical analysis in Chapters 2 and 3 we have obtained some results, which provide what we should do to weaken the expropriation by corporate insiders and state rulers. The figure below shows the relationship between some determinant factors and the fraction of profit expropriated by corporate insiders and state rulers.

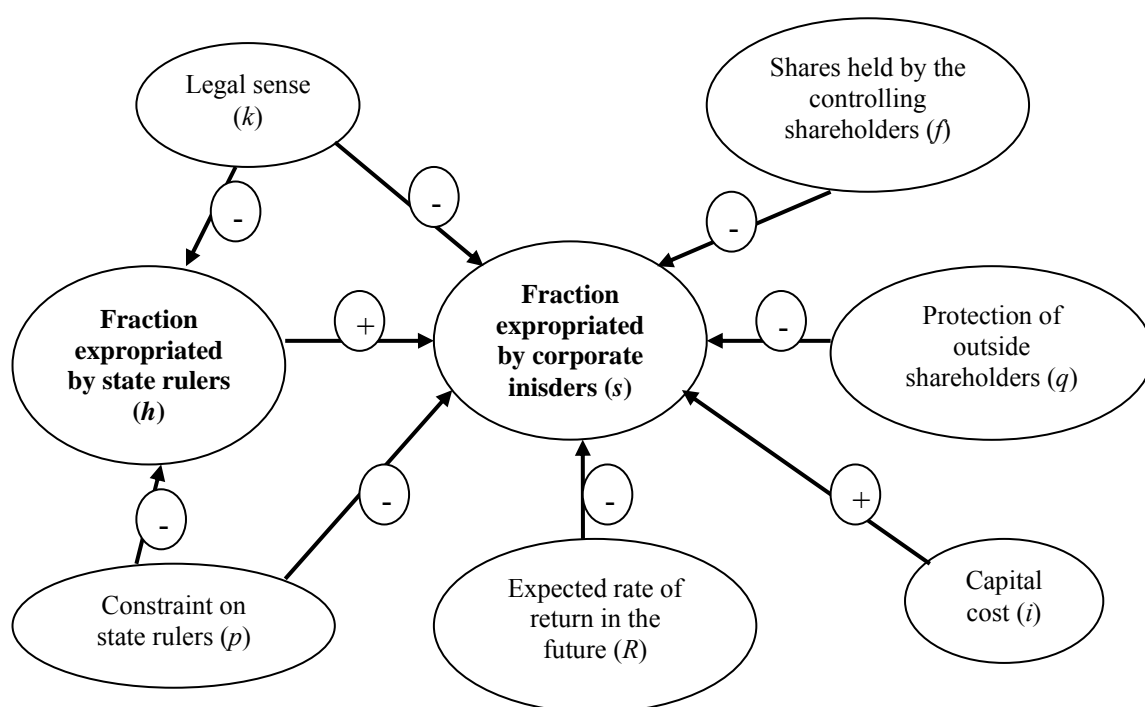


Figure 1: Relationship between determining factors and the fraction of profit expropriated by corporate insiders and state rulers¹

It is seen, to let the corporate insiders divert less, the fraction expropriated by state rulers (h)² and the capital cost (i)³ should be decreased, and the level of ownership concentration (f)⁴, the quality of outside investor protection (q)⁵, the strength of legal sense among the people (k)⁶, the severity of constraint on state rulers (p)⁷ and expected rate of return in the future (R)⁸

¹ Here minus means negative relationship and plus means positive relationship.

² Refer to result 2.3.2.2-1.

³ Refer to result 2.3.2.4-2.

⁴ Refer to result 2.3.2.1-1.

⁵ Refer to result 2.3.2.3-1.

⁶ Refer to result 2.3.2.3-2.

⁷ Refer to result 2.3.2.3-3.

⁸ Refer to result 2.3.2.4-1.

should be increased. To let state insiders divert less, the severity of constraint on the state rulers (p)¹ and the strength of legal sense among the people (k)² should be improved. And it indicates that the severity of constraint on the state rulers (p) and the strength of legal sense among the people (k) have impact on both the expropriation by corporate insiders and by state rulers. It means that the improvement of legal sense and the constraint on state rulers is more effective on weakening the Twin Agency Problems than other factors.

But the question is whether all these measures could be done successfully?

4.2 What could be done to solve the Twin Agency Problems?

The investor protection should be improved, which is well known to politicians and economists, but doing this is not easy because it hurts some interest groups, who can exert an influence on the enactment of laws and policies. Table 1 shows the effect of the change of some factors on the benefit of entrepreneurs and state rulers.

Table 1: Relativity between determinant factors and benefit of expropriators

	q	k	p	i	R
U_t	- ³	-/+ ⁴	+ ⁵	- ⁶	+ ⁷
ΔW_t	-/+ ⁸	-/+ ⁹	+ ¹⁰	- ¹¹	+ ¹²
G	+ ¹³	-/+ ¹⁴	-/+ ¹⁵		
ΣG	-/+ ¹⁶	-/+ ¹⁷	-/+ ¹⁸		

Firstly, looking at R and i , the expected rate of return in the future and capital cost, which can be adjusted by economic policies. As for R , the expected rate of return in the future should be increased by economic policies and these policies will be encouraged by all the entrepreneurs no matter they have built the firms or are going to set up a firm. But this action can be taken only in some periods to reduce the expropriation by controlling shareholders, and can not be relied on for long-term, because the economic cycle has both boom and decline. As

¹ Refer to result 2.4.2-1.

² Refer to result 2.4.2-2.

³ Here minus means negative relationship and it is the same to others. Refer to result 2.6.1-1.

⁴ Here minus/plus means the relationship between these two factors is not certain and this it is the same to others. Refer to result 2.6.1-2 ~ 2.6.1-4.

⁵ Here plus means positive relationship and it is the same to others. Refer to result 2.6.1-5.

⁶ Refer to result 2.7-2.

⁷ Refer to result 2.7-1.

⁸ Refer to result 3.1.2.1-1 ~ 3.1.2.1-3.

⁹ Refer to result 3.1.2.1-4 ~ 3.1.2.1-6.

¹⁰ Refer to result 3.1.2.1-7.

¹¹ Refer to result 3.1.2.2-1.

¹² Refer to result 3.1.2.2-2.

¹³ Refer to result 2.6.2-1.

¹⁴ Refer to result 2.6.2-2 ~ 2.6.2-4.

¹⁵ Refer to result 2.6.2-5 ~ 2.6.2-7.

¹⁶ Refer to result 3.3-1.

¹⁷ Refer to result 3.3-2.

¹⁸ Refer to result 3.3-3.

for i , the capital cost, should not be enhanced, for this policy will be opposed by all the entrepreneurs and will stimulate controlling shareholders to steal more from the firms. Therefore, the policy of reducing the capital cost will be approved of by all the entrepreneurs and will let them expropriate less from the firms.

It is shown that, among the three factors concerning investor protection (q , k and p), the improvement of constraint on state rulers (p) will be welcomed by all the entrepreneurs no matter they have set up firms or are going to set up firms, and may be also welcomed by the state rulers. Therefore, this action should be taken at first, so that when measures to improve p , which benefits all the investors, are taken, embarrassment will be minimized.

Another factor concerning investor protection should be thought about preferentially is k , quality of basic legal environment or legal sense. This may also be welcomed by both the entrepreneurs and the state rulers. And when the legal sense of all the people is improved through education nobody will resist it.

Section 4.1 shows that p and k have impact on both the fractions expropriated by corporate insiders and by state rulers. The effect of improvement of legal sense and the constraint on state rulers on weakening the Twin Agency Problems is greater than other factors. So improving p and k should be an important problem researched by economists and politicians.

The improvement of q , that is the protection of minority shareholders, is more difficult than the three steps we discussed above because it will be opposed by the enterprisers, who have founded the firms. If q , k and p are improved at the same time together with active economic policies, which means increases in R and decreases in i , less resistance may be encountered.

4.3 Strategies should be taken by the state

It is known from the above section that to improve the investor protection, the following must be done. Firstly, the constraint on state rulers (p) should be strengthened and the legal sense (k) should be improved. Secondly, active economic policies should be taken. Finally, the constraint on the insider expropriators (q) should be strengthened. Therefore, the following strategies could be a better choice for the government.

A. Improving the legal sense through education

Figure 1 shows that the improvement of legal sense reduces the expropriation by both the controlling shareholders and the state rulers, and table 1 shows that this improvement might be welcomed by all the expropriators. Practically, nobody will resist the improvement of legal sense. Legal sense of the people comes from culture, tradition, and belief, which has been formed from the childhood and can only be improved through education.

Faria et al. (2006) analyzed the determinants of international investors' willingness to hold the external liabilities issued by emerging countries and find that institutional quality and educational attainment are significantly related to the holding of emerging countries liabilities. They also find institutional quality and educational attainment to be jointly significant and their individual roles cannot be disentangled. So they interpret the results to suggest that a combination of human capital (including informal human capital) and institutional quality has been a key determinant of emerging countries' ability to attract international investors. On the basis of OLS results, as well as a variety of additional evidence, Glaeser et al. (2004) suggests that human capital is a more basic source of growth than are the institutions, and poor countries (South Korea, Taiwan, and China) subsequently improve their political institutions after they have eliminated poverty through good policies, often pursued by dictators and not through good institution.

During the Chinese Cultural Revolution in the 1960s, education in China was broken off and all the children who grew up in this period have no normal school education. And since this revolution almost all the beliefs and traditional culture has been given up by the Chinese people and the president Mao was enthroned as a god by the Chinese in Mao's age. Formal educated only re-started after the death of Mao, but former beliefs and culture were not restored. So, Chinese people have no gods and traditional beliefs to hold to, hence they have lost their moral principles.

With the economic revolution and open policies, money has been the only pursuit of life and people can do anything to earn money as much as they can. They believe that only money can bring them security. In school children must spend more time learning English than Chinese, Chinese culture and history. Professional knowledge is more important than moral character. Honesty and righteousness are considered stupid and foolish. In such a society it is difficult to find officials and managers who are incorruptible and innocent. Laws and regulations have no constraint on them, because all laws and regulations are prescribed and implemented by these people and these laws and regulations have leaks.

Hence, the most important and long term strategy is to rebuild the moral of the society, which requires time and education. The Christians are taught to obey the words of God when they go to the church during childhood with their parents, from which comes their original legal sense. Since belief is not encouraged in China, so kindergartens and schools are the important places where legal sense can be infused to the brain of future managers and officials.

B. Improving the expected profitability with active economic policies

Here active economic policies include creating more profitable investment opportunities, lowering rate of interest regulated by the central bank, lowering the rate of taxes, taking

preferential tax policies and so on. Active economic policies bring higher expected rate of return for the future and lower capital cost, which decreases the expropriation by the controlling shareholders and increases the benefit of the enterprisers, as is shown in both figure 1 and table 1.

On the one hand, these measures can encourage more intending entrepreneurs to set up firms and according to our results these new entrepreneurs have more incentive to improve investor protection, especially the protection of minority investors (q). On the other hand, these policies encourage the existing entrepreneurs to invest more in the company and enhance their expected rate of return in the future, which make the controlling shareholders concentrated more on the firm value and divert less from the company.

As for the state rulers, if more firms are expected to be set up they will decrease their benefit from a single firm, because they know this reduction of expropriation can encourage more companies to be built and their total benefit from the firms will increase.

Furthermore, active economic policies will be accepted by all expropriators and these policies won't come up with resistance. But this kind of policies can only be seen as temporal measures and the balance of the treasury in one country must be considered.

C. Strengthening the constraint on expropriators through laws and regulations

The improvement of q and p will reduce expropriation (see figure 1) because the expropriators are more likely to be caught when they steal or grab from the firm and the punishment is more severe when they are caught. So, it increases the cost of expropriation and makes their expropriation more difficult. This strategy must be seen as long term policy. The laws and regulations must be improved and modified continuously, for situations and society change continuously.

Laws and regulations can also be called institution. According to North (1990) "Institutions are the rulers of the game in a society ... that shape human interaction." As an implication, institutions "... structure incentives in human exchange, whether political, social or economic." Alfaro et al. (2005) empirically investigated the reasons for the lack of capital flows from rich to poor countries and found that institutional quality is a key variable explaining the "Lucas Paradox of international capital flows." Stulz (2005b) and Kho et al. (2006) both refer to the role of institutions in reducing the risk of expropriation for investors. If the quality of institutions is weak, investors risk expropriation by the state or those who control firms. State should ultimately grant and protect the rights of investors. Reducing expropriation risks leads to less concentrated ownership, which in turn may generate more investment, domestic as well as foreign, and higher economic growth (Smaghi 2006).

“A central requirement in the design of a legal system is the protection of law enforcers from coercion by litigants through either violence or bribes. The higher the risk of coercion is, the greater the need for protection and control of law enforcers by the state is. Such control, however, also makes law enforcers beholden to the state, and politicizes justice” (Glaeser and Shleifer, 2002; page 1193). The difference in choice of legal system (civil law or common law) depends on the situation in one country. But some researches reveal that at the same level of development, civil law countries exhibit heavier regulation, less secure property rights, more corrupt and less efficient government, and even less political freedom than the common law countries (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999; La Porta, Lopez-de-Silanes, and Shleifer 2002; Djankov et al., 2002). “One area where the greater insecurity of property rights in the civil law countries shows up clearly is the development of financial markets” (Glaeser and Shleifer 2002, page 1194). La Porta et al. (1997, 1998) discovered that common law countries are more financially developed than civil law countries. So, how to develop the financial market in a civil law country is an intractable problem for the jurists and economists.

D. Implementing the above three strategies together

In spite of the law system, strengthening the laws and regulations may come up with strong resistance, because it hurts the benefit of certain persons or existing interest groups (see table 1), who will canvass the government not to do so.

Leuz and Oberholzer-Gee (2003) examined the role of political connections for firms' financing strategies and their long-run financial performance. They realized that firms with close political ties are less likely to have publicly traded foreign securities, this suggests that connections and global financing are substitutes. First, well-connected firms have access to preferential financing at home and therefore do not need to access foreign capital markets. Second, firms with political ties dislike the transparency and scrutiny that come with publicly traded securities. Third, foreign securities make it more difficult for insiders to extract private control benefits. Their results shed light on the difficulties of institutional reform and capital market liberalization in emerging market economies. Well-connected firms find global financing not very attractive. As a result, the opening up of capital markets is likely to remain limited in economies where political connections remain important (Stulz, 2005b). To the extent that foreign financing strengthens the competitive position of less-connected firms, firms with strong political connections can even be expected to resist changes in domestic institutions that facilitate global financing, such as increases in corporate transparency (Rajan and Zingales, 2003). Institutional reforms in such environment promise to be particularly difficult because it is the firms with political clout that prefer less financial liberalization (Chui et al., 2000).

If the strategy of strengthening laws and regulation is taken up together with other two strategies above, the resistance may be cut down. When the legal sense is being improved nationwide, the resistance to the modification and perfection of concrete laws and regulations is easy to be broken down. If the economic cycle is booming, the expropriators will also agree with the change of the law system. This improvement could be seen as a proclamation to the investors that the behavior of the state rulers and inside controllers must be more strictly constraint than before. The investors will be better protected, so that some unprofitable projects will become attractive. Hence, outside investors will put more money in the financial market. The capital needed by the entrepreneurs is easier to be collected and more companies could be set up. Consequently, outside investors, entrepreneurs and state rulers all benefit from this strategy.

E. Improving investor protection during the development of the financial market

Result 3.2.1-1 indicates that the intensifying of investor protection increases the sum of capital which can be collected from the market, I^S , which means the improvement of investor protection helps to expand the financial market. The condition that the firm can be set up is $I^S \geq I^D$, hence capital supplied is more than demanded. So the improvement of investor protection enhances the possibility that new companies can be set up and new projects can be adopted. This in turn encourages the state rulers and controlling shareholders to improve the investor protection because they all can benefit from the new firms and projects. Therefore, there is a feedback relationship between investor protection and stock market development.

Pagano and Volpin (2005) presented a political economic model where there is a two-way causal relation between investor protection and stock market development. When better investor protection is expected, companies can issue more equity, leading to a broad stock market. In truth, more equity issuance expands the shareholder base and increases the political support for shareholder protection. This feedback loop can generate multiple equilibria, with investor protection, stock market size and investor participation being positively correlated across equilibria. Using panel data for 47 countries in the period of 1993-2002, they take some of the model's prediction to the data. The positive correlation between investor protection and stock market development predicted by the model is broadly consistent with the evidence.

According to result 2.3.2.4-2, the corporate insider expropriates less when the capital cost decreases, and financial globalization is helpful to improve the investor protection also because it decreases the capital cost. Stulz (1999) examines the impact of globalization on the cost of equity capital and argues that the cost of equity capital decreases because of the globalization for two important reasons. Firstly, globalization reduces the discount rate investors charge because globalization can decrease risk for the world equity markets as a whole. Secondly,

globalization increases the monitoring of management and controlling shareholders because it improves firm governance. But empirical evidence in Stulz (1999) shows that the effect of globalization on the cost of capital is significant but small and one important reason is the existence of home bias. For globalization to reduce the cost of capital, the shareholder base has to become truly global. This does not yet take place. As a result, investor protection and financial globalization interact themselves and drive the process of development of financial market together.

Improving the investor protection may hurt the benefit of the governors so that they always have no interest to make reforms. But when they see the development of the financial market they will have more interest to do that for they can benefit from this development. Kaminski and Schmuckler (2006) constructed a comprehensive chronology of financial liberalization in 28 mature and emerging market economies since 1973. They found out that financial liberalization is followed by more pronounced boom-bust cycles in the short run, but financial liberalization leads to more stable markets in the long run. To explain the contrasting short- and long-run effects of financial liberalization they collected information on the quality of institutions as well as data on the laws governing the functioning of the financial system. The results suggest that institutional reforms do not predate liberalization. Most of the time, government reform is implemented within a few years after the partial opening of financial markets. As the quality of institutions improves, financial cycles become less pronounced.

4.4 Summary

In this section the results in Chapters 2 and 3 are combined to find measures proposed by theoretical model to solve the Twin Agency Problems.

Firstly, what should be done to weaken the Twin Agency Problems is investigated: the improvement of legal sense (k) and constraint on state rulers (p) can decrease the expropriation by both insider expropriators and state rulers; the strengthening of constraint on insider expropriators (q), higher ownership concentration (f), the increase of expected rate of return (R), and the lower capital cost (i) can decrease the expropriation by insider expropriators.

But not all these measures above could be done because the benefit of some existing interest groups will be hurt and they will prevent some policies from execution. The following measures are much better in the prevention of embarrassment: the improvement of legal sense (k), the strengthening of constraint on state rulers (p), the increase of expected rate of return (R) and the reduction of capital cost (i).

According to the above results the following strategies are suggested for the government:

- a) Improving the legal sense through education;
- b) Improving the expected profitability with active economic policies;

- c) Strengthening the constraint on expropriators through laws and regulations;
- d) Implementing the above three strategies together;
- e) Improving investor protection during the development of financial market.

5 Practical Investigations in China

5.1 General description of financial market in China

5.1.1 Development of Chinese financial market

The birthplace of stock market in China is Shanghai and the origin of stock trading can be traced back to the 1880s. In 1891, the establishment of Shanghai Share Brokers Association was seen as the embryonic form of China's stock exchange. Later in 1920 and 1921, Shanghai Security Goods Exchange and Shanghai Chinese Security Exchange started operation respectively. By the 1930s, Shanghai had emerged as the financial center of the Far East, where both Chinese and foreign investors could trade stocks, debentures, government bonds and futures. In 1946, on the basis of Shanghai Chinese Security Exchange, Shanghai Securities Exchange Ltd. came into existence, but ceased operation three years later in 1949, when the People's Republic of China was founded by Mao Zedong.

Since 1980, under the guidance of Deng Xiaoping Theory, China's securities market has evolved in tandem with the country's reform and opened up development of socialist market economy. In 1981, treasure bonds were resumed. In 1984, company stocks and corporate bonds emerged in Shanghai and a few other cities. On Nov. 26th 1990, Shanghai Stock Exchange (SHSE) made its debut, which began operation on Dec. 19th 1990.¹ Since then on, Shanghai Stock Exchange has experienced a fast expansion. The number of listed corporations has increased from the initial 8 companies to 864 companies at the end of 2008. The number of listed securities has increased from 30 in 1990 to 1,184 at the end of 2008. The number of stock issued capital has increased from 261 million shares in 1990 to 1,514,000 million shares at the end of 2008 and the stock market value has mounted up from 1,234 million RMB in 1990 to 9,725,200 million RMB at the end of 2008. Appendix 1 shows the overview of development of Shanghai Stock Exchange from 1990 to 2008.²

A few days later after Shanghai Stock Exchange was built, another Chinese Stock Exchange was created in Shenzhen (a special economic zone in southern China) on Dec. 1st 1990. At the end of 1991 there were only 6 listed corporations and 7 listed securities on this exchange, but to the end of 2008 there were 740 listed companies and 964 listed securities; from the initial 357 millions shares, the stock issued capital reached 344,186 millions shares at the end of 2008; and the stock market value has been increased from 7,976 million RMB in 1991 to 2,411,453 million RMB at the end of 2008. And since May 2004 the Small and Medium Enterprises

¹ See Shanghai Stock Exchange Fact Book 2006.

² All the data about Shanghai Stock Exchange from 1990 to 2007 come from Shanghai Stock Exchange Fact Book 2001-2007, the data of 2008 come from Shanghai Stock Exchange Monthly Report of Dec. 2008.

Board has been added to Shenzhen Stock Exchange (SZSE). Appendix 2 shows the yearly market overview of Shenzhen Stock Exchange from 1991 to 2008.¹

The development of these two stock exchanges has brought the advancement of Chinese financial market, which has grown continuously². Figures 2 and 3 show us the trend of the increase of number of listed companies and number of listed securities. Especially in 1996 and 1997 more than 200 new companies came into the market each year. But since 2000, the development of SZSE has slowed down, and from then on SHSE has grown much faster than SZSE. Although from 2005 to 2008 the new listed companies on SZSE are more than on SHSE, the total number of listed companies on SHSE is however much more than on SZSE. Figure 4 shows that the stock issued capital on SHSE has been much more than that on SZSE since 2001 and this difference was as a result of the drastic increase on SHSE from 2006 to 2008, while the stock issued capital on SZSE grew very slightly in the same years.

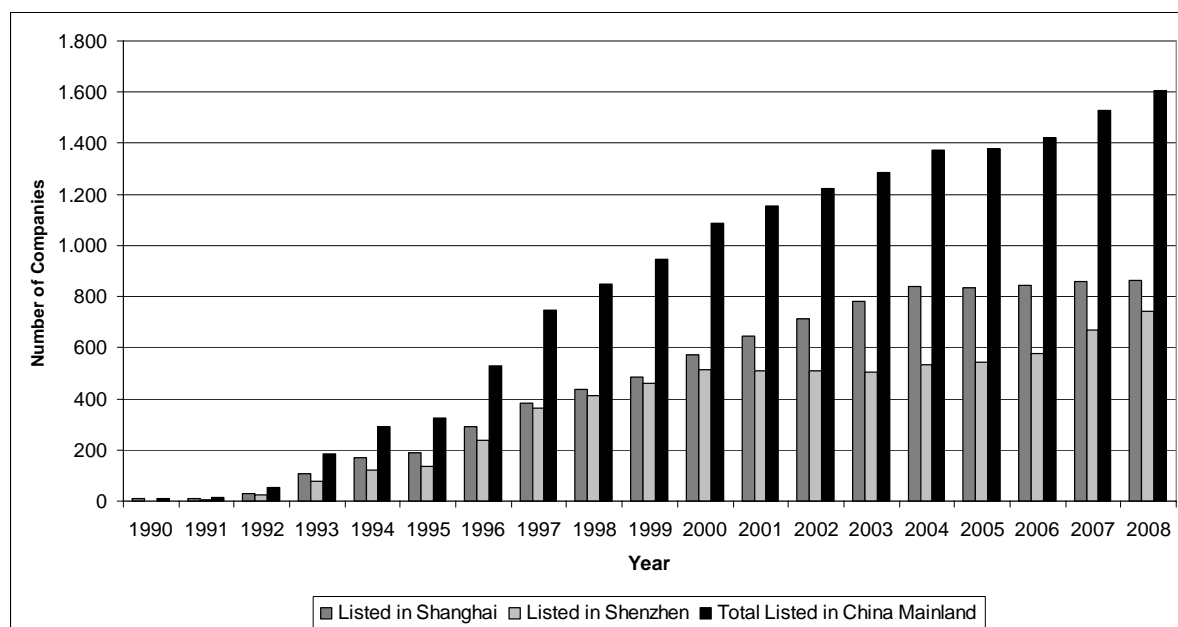


Figure 2: Number of companies listed in China Mainland (1990-2008)

¹ All the data about Shenzhen Stock Exchange from 1991 to 2007 come from Shenzhen Stock Exchange Fact Book 1998-2007, and the data of 2008 come from Shenzhen Stock Exchange Monthly Report of Dec. 2008.

² The data of total China is the sum of Shanghai and Shenzhen.

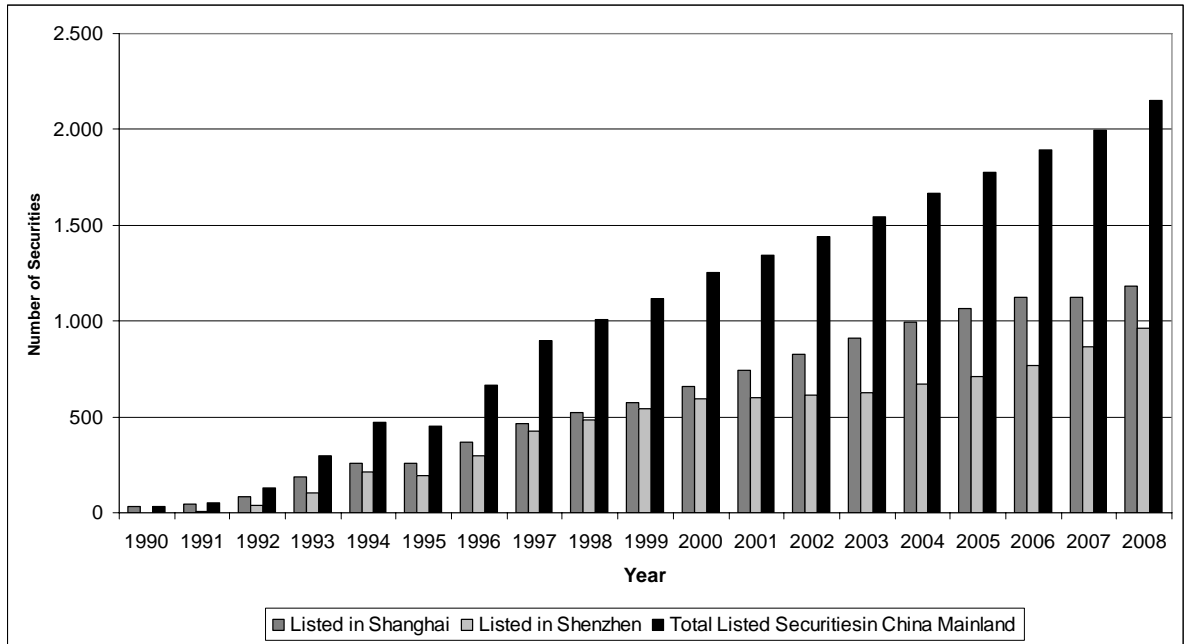


Figure 3: Number of securities listed in China Mainland (1990-2008)

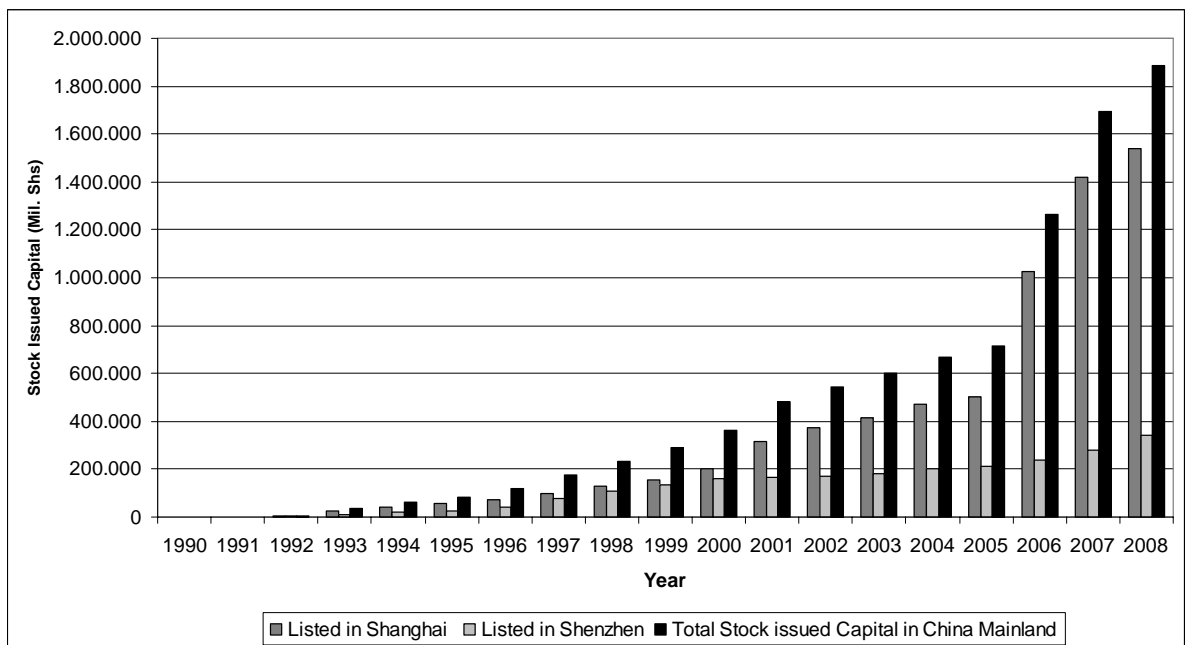


Figure 4: Total stock issued capital in China Mainland (1990-2008)

Contrary to the stable increasing trend of these indices mentioned above, figure 5 shows a more fluctuant movement of stock market value on both of these stock exchanges. We see the first boom of financial market in China in 2000, but followed by a five years' decline. Another much bigger spring began in 2006 and was much strengthened in 2007, which was partly caused by the great deal of issues but was driven much more by a bubble, because the market value at the end of 2008 fell to 37% of the market value at the end of 2007.

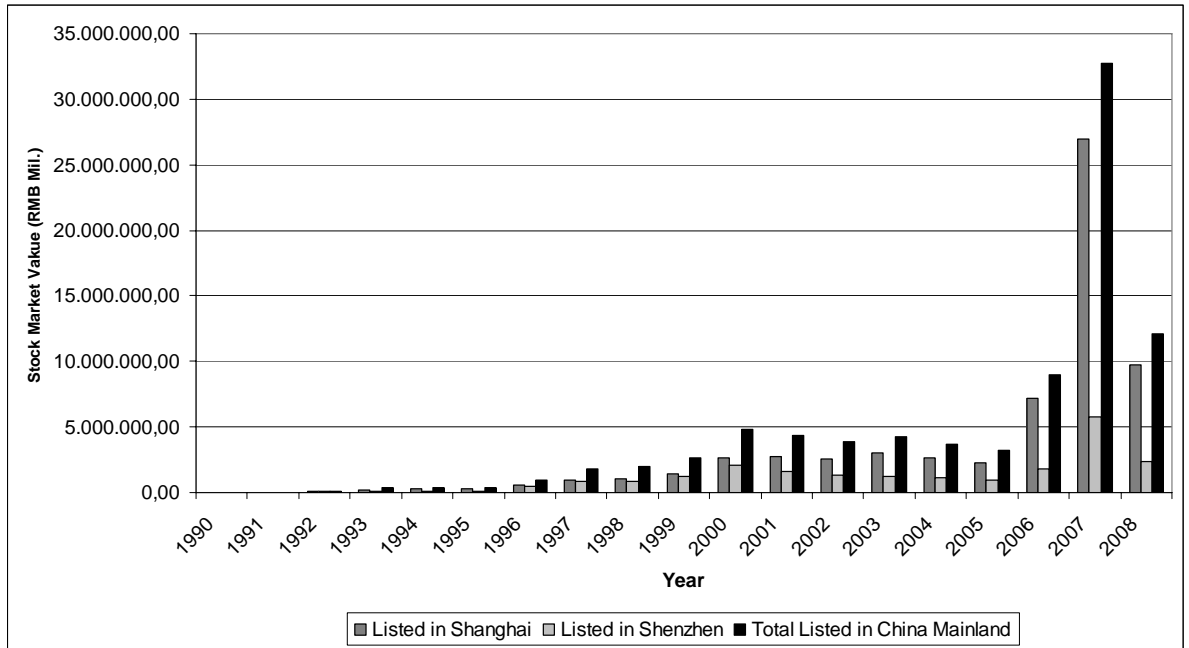


Figure 5: Stock market value in China Mainland (1990-2008)

Dividing the market value by the number of listed companies the average market value of these firms listed on stock exchanges is obtained (shown in figure 6). Although the lines wave acutely we can say that the average market value of these companies has been growing. In 2007, the average value experienced a sharp rise because of the bubble but dropped sharply in 2008. And since 2001, the average market value of the firms listed on SHSE has been greater than those on SZSE, which might be one of the reasons why Small and Medium Enterprises Board was created in SZSE in 2004.

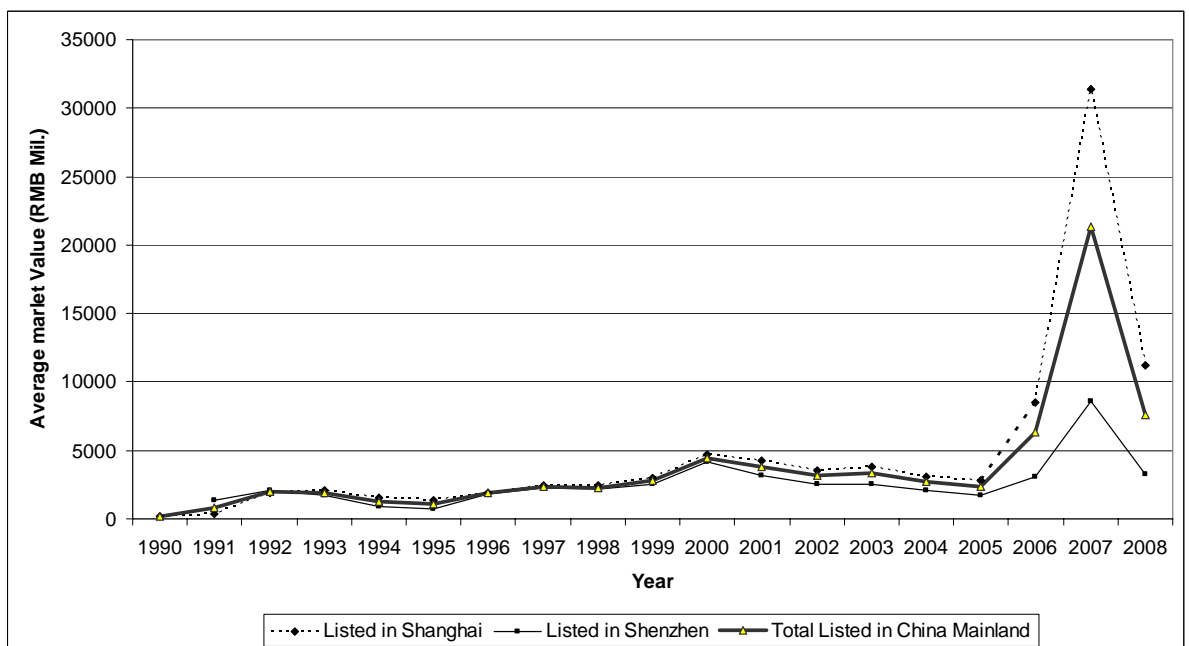


Figure 6: Average market value of companies listed in China Mainland (1990-2008)

Although the stock market has expanded greatly in the last years, the development of non-stock securities is not so optimistic. Figure 7 shows the lag of the development of non-stock securities. In 2005 the growth of non-stock securities experienced the fastest period, but in the last three years it slowed down again.

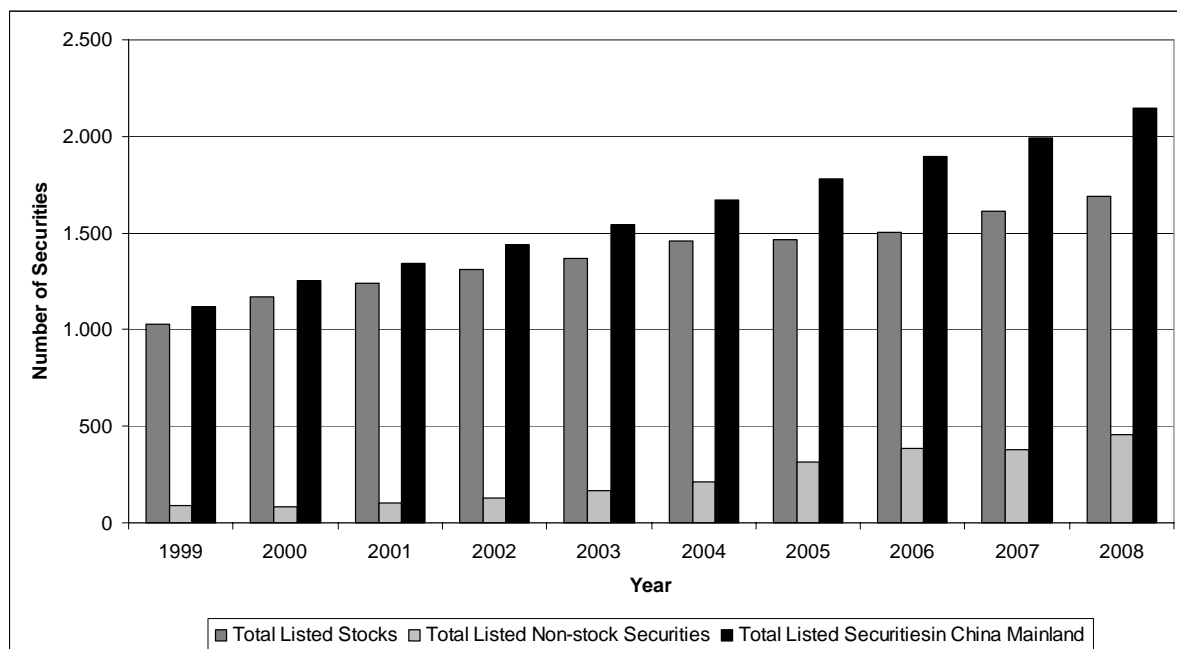


Figure 7: Stock and non-stock securities listed in China Mainland (1999-2008)

All of the detailed data of these figures (figure 2 to 7) are shown in table 2.

Table 2: Overview of Financial Market in China (1990-2008)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of Listed Companies										
Listed in Shanghai	8	8	29	106	171	188	293	383	438	484
Listed in Shenzhen	0	6	24	77	120	135	237	362	413	463
Total Listed in China Mainland	8	14	53	183	291	323	530	745	851	947
Number of Listed Securities										
Listed in Shanghai	30	46	87	190	259	258	368	467	526	576
Listed in Shenzhen		7	39	105	212	192	299	429	483	540
Total Listed China Mainland	30	53	126	295	471	450	667	896	1,009	1,116
Number of Listed Stocks										
Listed in Shanghai										525
Listed in Shenzhen		6	33	95	142	161	270	399	454	504
Total Listed in China Mainland										1,029
Number of Listed Non-stock Securities										
Listed in Shanghai										51
Listed in Shenzhen		1	6	10	70	31	29	30	29	36
Total Listed in China Mainland										87
Total Stock Issued Capital (RMB Mil.)										
Listed in Shanghai	261	272	4,694	23,554	41,888	56,066	74,986	97,537	128,035	158,015
Listed in Shenzhen	0	357	2,657	12,206	22,059	26,739	43,954	79,586	106,501	132,870
Total Listed in China Mainland	261	629	7,351	35,760	63,947	82,805	118,940	177,123	234,536	290,885
Stock Market Value (RMB Mil.)										
Listed in Shanghai	1,234	2,943	55,840	220,620	260,013	252,566	547,781	921,806	1,062,590	1,458,047
Listed in Shenzhen	0	7,976	48,975	133,532	109,049	94,862	436,457	831,117	887,973	1,189,070
Total Listed in China Mainland	1,234	10,919	104,815	354,152	369,062	347,428	984,238	1,752,923	1,950,563	2,647,117
Average market value of Companies (RMB Mil.)										
Listed in Shanghai	154	368	1,926	2,081	1,521	1,343	1,870	2,407	2,426	3,012
Listed in Shenzhen		1,329	2,041	1,734	909	703	1,842	2,296	2,150	2,568
Total Listed in China Mainland	154	780	1,978	1,935	1,268	1,076	1,857	2,353	2,292	2,795

Table 2: Overview of Financial Market in China (1990-2008)-continued

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of Listed Companies									
Listed in Shanghai	572	646	715	780	837	834	842	860	864
Listed in Shenzhen	514	508	508	505	536	544	579	670	740
Total Listed in China Mainland	1,086	1,154	1,223	1,285	1,373	1,378	1,421	1,530	1,604
Number of Listed Securities									
Listed in Shanghai	657	744	826	914	996	1,069	1,126	1,125	1,184
Listed in Shenzhen	596	598	615	627	673	708	768	868	964
Total Listed China Mainland	1,253	1,342	1,441	1,541	1,669	1,777	1,894	1,993	2,148
Number of Listed Stocks									
Listed in Shanghai	614	690	759	824	881	878	886	904	908
Listed in Shenzhen	557	550	551	548	578	586	621	712	782
Total Listed in China Mainland	1,171	1,240	1,310	1,372	1,459	1,464	1,507	1,616	1,690
Number of Listed Non-stock Securities									
Listed in Shanghai	43	54	67	90	115	191	240	221	276
Listed in Shenzhen	39	48	64	79	95	122	147	156	182
Total Listed in China Mainland	82	102	131	169	210	313	387	377	458
Total Stock Issued Capital (RMB Mil.)									
Listed in Shanghai	203,242	316,444	372,784	417,039	470,055	502,305	1,027,954	1,417,310	1,541,000
Listed in Shenzhen	158,097	167,391	173,515	182,754	200,447	213,365	237,583	278,172	344,186
Total Listed in China Mainland	361,339	483,835	546,299	599,793	670,502	715,670	1,265,537	1,695,482	1,885,186
Stock Market Value (RMB Mil.)									
Listed in Shanghai	2,693,086	2,759,056	2,536,372	2,980,492	2,601,434	2,309,613	7,161,238	26,983,887	9,725,200
Listed in Shenzhen	2,116,008	1,593,164	1,296,541	1,265,279	1,104,123	933,415	1,779,152	5,730,202	2,411,453
Total Listed in China Mainland	4,809,094	4,352,220	3,832,913	4,245,771	3,705,557	3,243,028	8,940,390	32,714,089	12,136,653
Average market value of Companies (RMB Mil.)									
Listed in Shanghai	4,708	4,271	3,547	3,821	3,108	2,769	8,505	31,377	11,256
Listed in Shenzhen	4,117	3,136	2,552	2,506	2,060	1,716	3,073	8,553	3,259
Total Listed in China Mainland	4,428	3,771	3,134	3,304	2,699	2,353	6,292	21,382	7,566

5.1.2 Comparison of Chinese stock markets to other main stock markets

In section 5.1 the development of financial market in China since the creation of the Chinese stock exchanges are described and in this subsection a competition of the Chinese stock exchanges to main stock exchanges in other countries is done to see the position of Chinese financial market in the world financial markets. All the data about foreign financial markets have been collected by Shanghai Stock Exchange and they are cited from Shanghai Stock Exchange Fact Book (2001 to 2007).

Figure 8 shows the number of listed companies on 17 main stock exchanges of the world in 2007. There were 3,951 listed companies on Toronto Stock Exchange (TSX), which stood at the first place of these 17 stock exchanges and Shanghai was on the 13th position with only 860 listed companies, a little better than Shenzhen, which was on the 16th position with 670 listed firms.

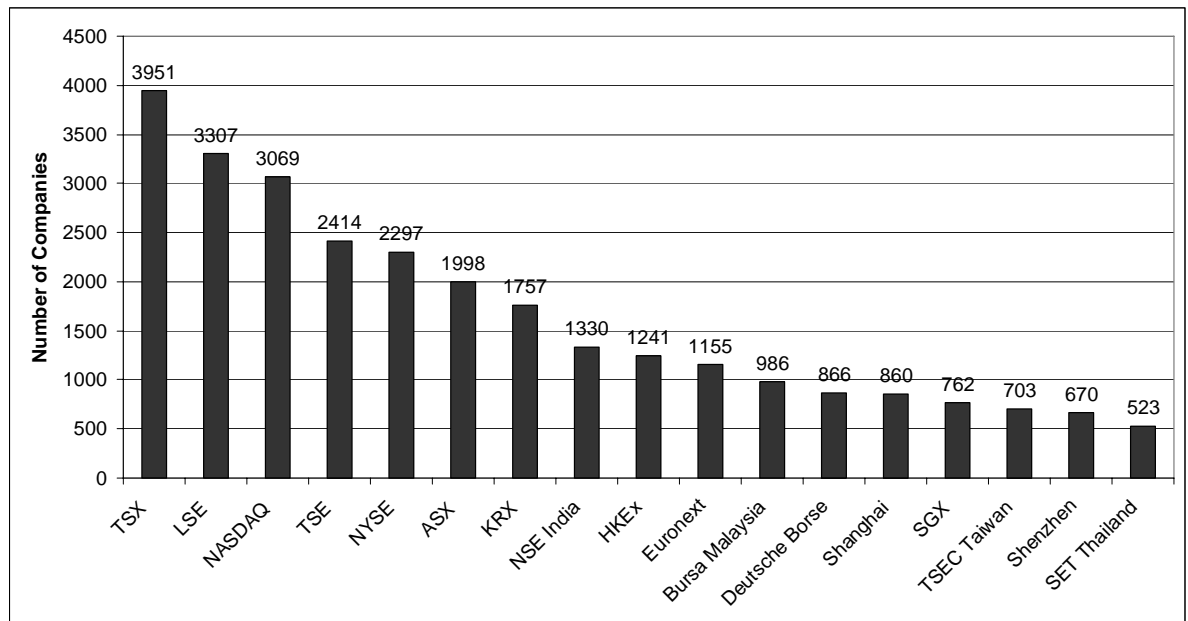


Figure 8: Number of companies listed on main stock exchanges (2007)

Although TSX had the most listed companies, New York Stock Exchange (NYSE) reached the first position according to market value in 2007, which is shown in figure 9. And the market value on NYSE was more than 4 times that of Shanghai, which was on the 6th, and nearly as much as 20 times that of Shenzhen, which was on the 13th place.¹

¹ The market value of Chinese market has been exchanged into US\$ with the exchange rate published by the People's Bank of China at the end of each year, namely 8.2766, 8.2769, 8.2766, 8.2765, 8.0702, 7.8087 and 7.3046 for 2001 to 2007.

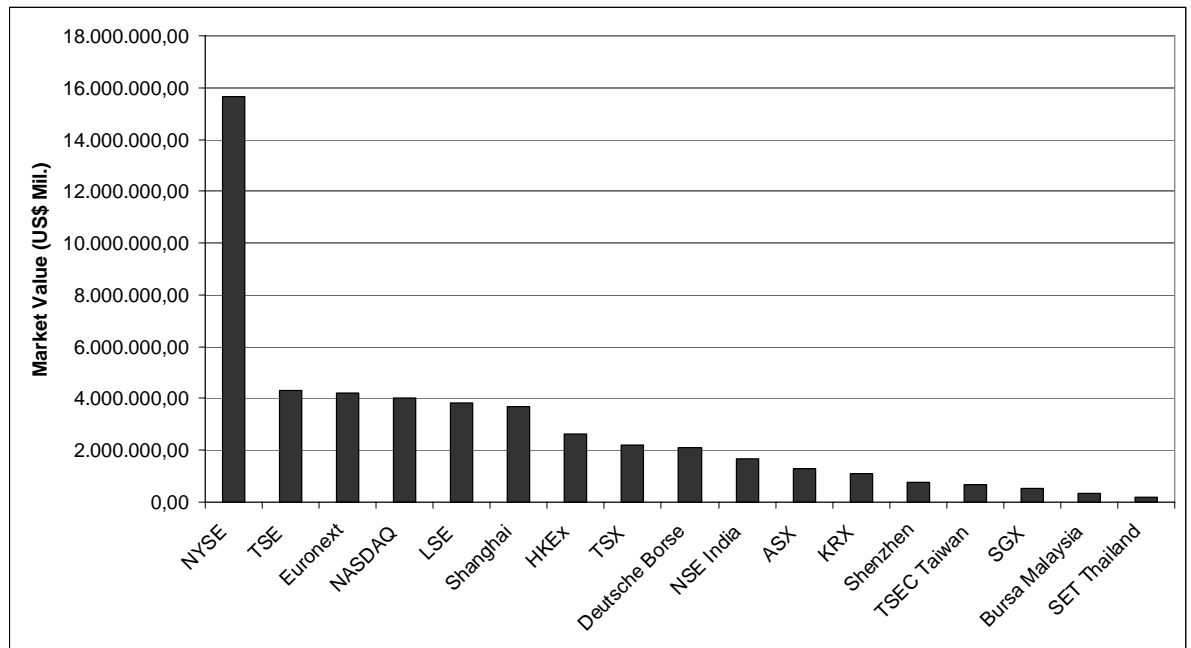


Figure 9: Market value of main stock exchanges (2007)

As done in last subsection, dividing the market value by the number of listed companies, gives the average market value of the companies listed on these stock exchanges. Shown by figure 10 shows that NYSE also held the first place with an average market value of 6,813.6 million US\$, which was more than 1.5 times that of Shanghai (4,295.5 million US\$) and more than 5.8 times that of Shenzhen (1,170.8 million US\$). It seems that the companies listed on SHSE are relative bigger than those listed on other exchanges except NYSE. This phenomenon is caused by the boom in 2006 and 2007, which is argued as bubble on the Chinese stock market, because the companies could not have grown up so suddenly. And the data of 2008 in table 2 shows that the average value of the companies listed on SHSE has greatly shrunk to 11,256 Mil RMB (1646.9 Mil US\$¹) at the end of 2008.

¹ The average market value of 2008 in table 4 is changed from RMB to US\$ with the exchange rate of 6.8346 on 31. Dec. 2008.

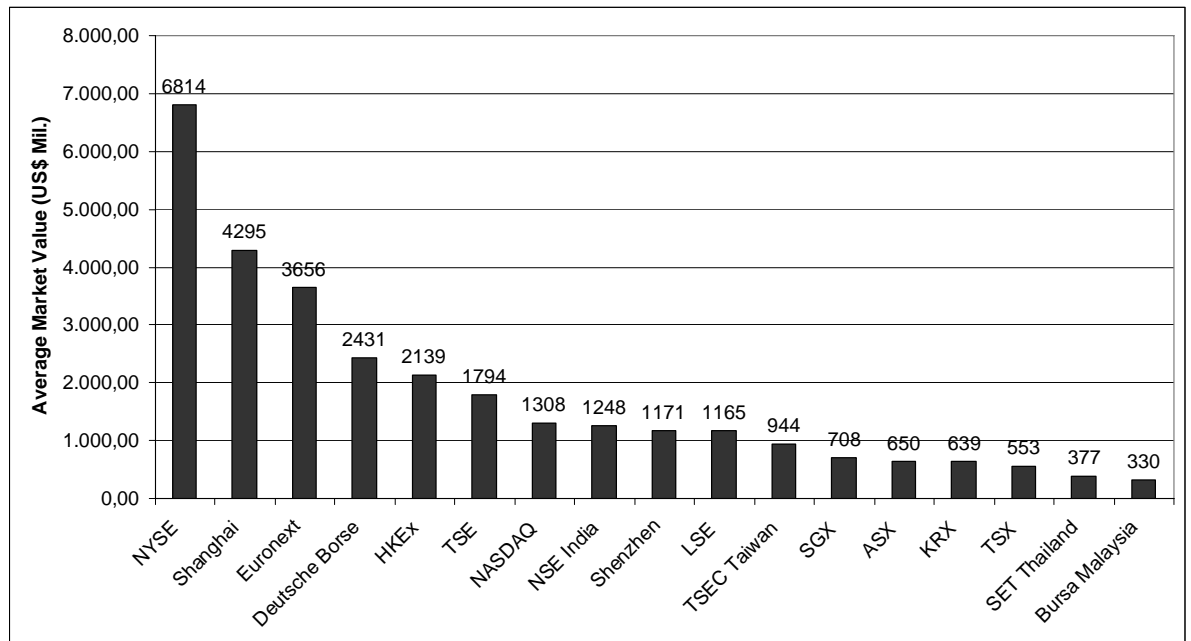


Figure 10: Average market value of companies listed on main stock exchanges (2007)

All the detailed data of these figures (figures 8 to 10) are found in tables 3 to 5 at the end of this subsection.

These figures show that the financial market in China is still undeveloped although it has experienced 17 years of development. Not only more companies should be attracted to come into the market, but also the listed companies should be encouraged or helped to expand through the financial market.

The history of SHSE might be not so long as that of other stock exchanges and in the future it will catch up with the other exchanges. But it is not the truth. Figures 11 to 13 display the yearly overview since 2001 of the five important global stock exchanges and both of the Chinese mainland stock exchanges, SHSE and SZSE. The five global exchanges are New York Stock Exchange (NYSE), NASDAQ Stock Market (NASDAQ), London Stock Exchange (LSE), Euronext, and Tokyo Stock Exchange (TSE). These have held the first five places since 2001, according to market capitalization. These figures indicate that the distance between Chinese stock markets and other main stock markets has not shrunk obviously in the last years except the bubble in 2007, but widened in some aspects, especially compared to NYSE.

Figure 11 reveals the number of listed companies on these stock exchanges. London has attracted more newly listed companies than other exchanges since 2004 and had the highest number of listed companies by the end of 2007. Both the Chinese stock exchanges SHSE and SZSE perform mediocre.

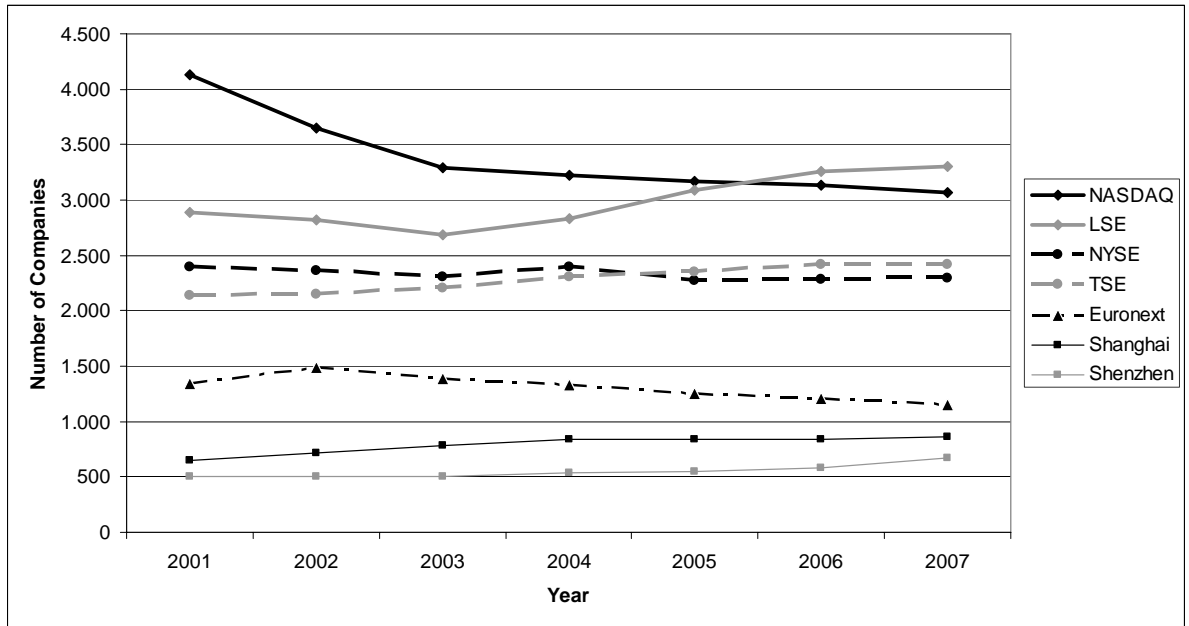


Figure 11: Number of listed companies on main stock exchanges (2001-2007)

Figure 12 indicates that the market value of Chinese stock market almost did not increase from 2001 to 2005, while other markets increased since 2003. NYSE particularly ran to the top of all these markets. But China can be delighted because Shanghai market began to run since 2006 and Shenzhen expanded a bit in 2007. But whether this growth is healthy and continuous is questioned by some economists (Lang, 2007). Actually, at the end of 2008 the stock market value on SHSE has shrunken to 36% of the value at the end of 2007 (see table 2).

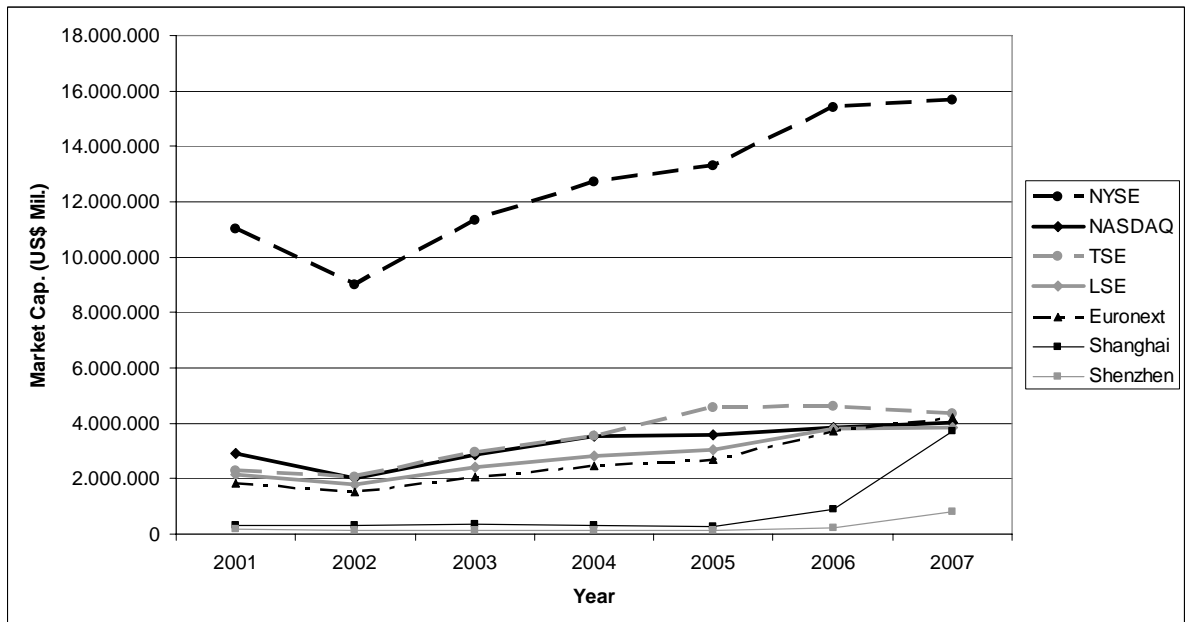


Figure 12: Market capitalization of main stock exchanges (2001-2007)

Figure 13 displays the trend of the average market value of listed companies. It can be seen that the average value of listed companies on all of these five important exchanges has increased since the end of 2002 and NYSE also exploded and has increased a lot. On the contrary, the average market value of companies listed in China experienced a decrease from 2001 to 2005, and has increased only since the end of 2005. The sharp rise in 2007 is the result of bubble in stock market and is followed by a drop in 2008 (see table 2).

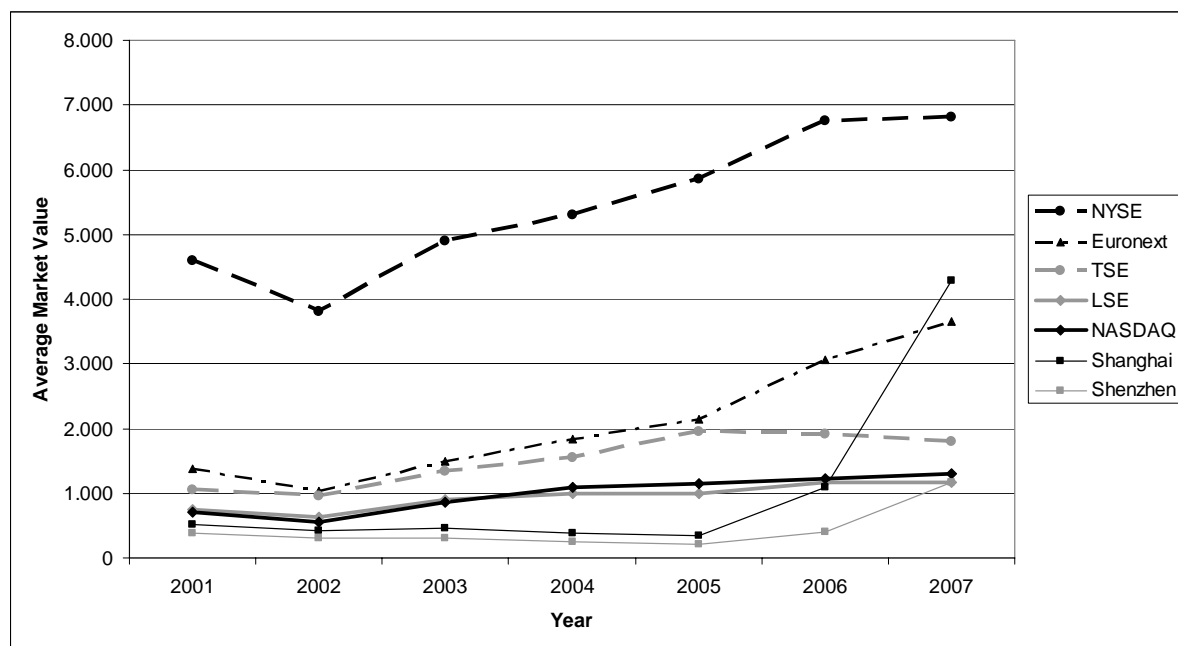


Figure 13: Average market value of listed companies on main stock exchanges (2001-2007)

All the detailed data of these figures (figures 11 to 13) are displayed in tables 3 to 5 at the end of this subsection.

Market Capitalization/GDP is another index used to describe the level of development of financial market in one country and figure 14 reveals this index in USA and China. Market Capitalization of USA is the sum of market value on NYSE and NASDAQ, and the sum of market value on Shanghai and Shenzhen is used for the Market Capitalization of China.¹ GDP of Hong Kong is not included in the GDP of China. This figure proves again that the financial market in USA is much more developed than China. Except for the year of 2007, when there was a bubble in Chinese financial market, the value of Market Capitalization/GDP of China is much lower than that of USA. The detailed data of this figure is shown in table 6 at the end of this subsection.

¹ The GDP of China from 2001 to 2007 used here is cited from China Statistic Yearbook 2007. The GDP of China in 2008 is cited from the homepage of National Bureau of Statistics of China, http://www.stats.gov.cn/tjfx/jdfx/t20090122_402534140.htm. The GDP of USA is cited from the homepage of Bureau of Economic Analysis of U.S. Department of Commercial. The data of USA in 2008 was not available by the end of this study.

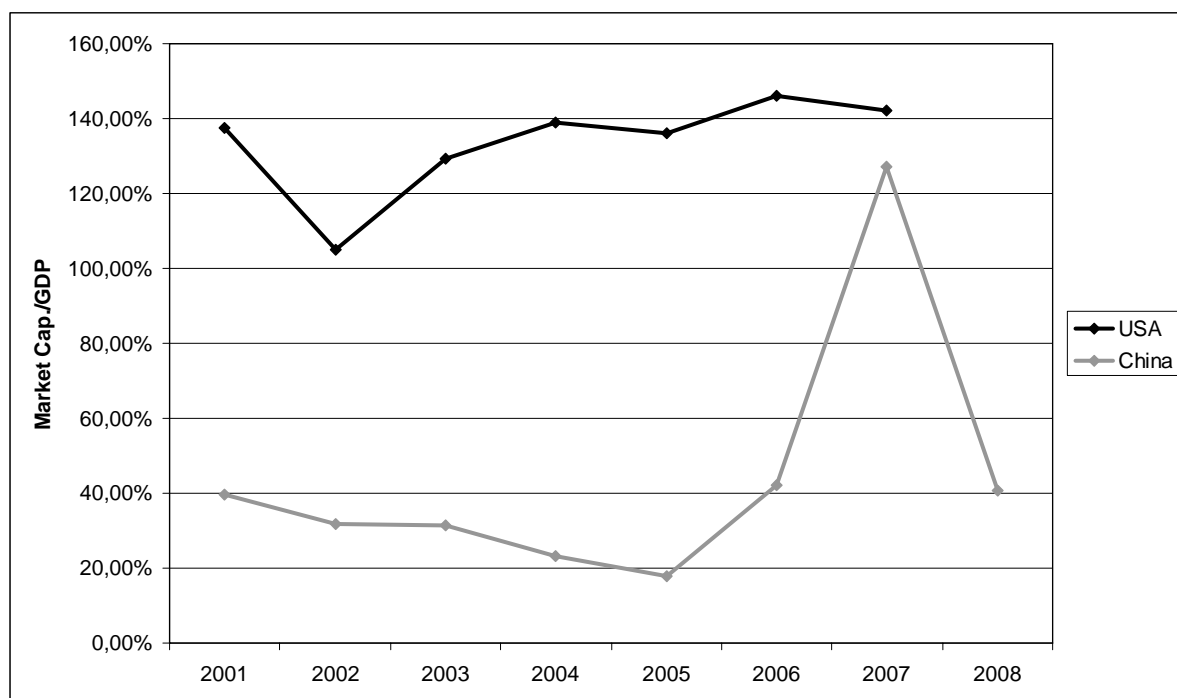


Figure 14: China vs. USA, Market capitalization / GDP (2001-2008)

Table 3: Number of listed companies on main stock exchanges (2001-2007)

Stock Exchange	2001	2002	2003	2004	2005	2006	2007
NYSE	2,400	2,366	2,308	2,393	2,270	2,281	2,297
NASDAQ	4,128	3,649	3,294	3,229	3,164	3,133	3,069
TSX	1,316	1,304	3,616	3,630	3,758	3,842	3,951
LSE	2,891	2,824	2,692	2,837	3,091	3,256	3,307
Euronext	1,345	1,492	1,392	1,333	1,259	1,210	1,155
Deutsche Borse	984	934	866	819	764	760	866
ASX	1,410	1,421	1,471	1,582	1,714	1,829	1,998
TSE	2,141	2,153	2,206	2,306	2,351	2,416	2,414
SGX	386	385	551	632	686	708	762
KRX	688	682	684	683	1,619	1,689	1,757
Bursa Malaysia	807	857	901	959	1,019	1,025	986
NSE of India					1,034	1,156	1,330
SET Thailand	382	398	418	463	691	518	523
HKEx	867	978	1,037	1,096	1,135	1,173	1,241
TSEC Taiwan	586	640	674	702	696	518	703
Shanghai	646	715	780	837	834	842	860
Shenzhen	508	508	505	536	544	579	670

Table 4: Market capitalization of main stock exchanges (2001-2007) (US\$ Mil.)

Stock Exchange	2001	2002	2003	2004	2005	2006	2007
NYSE	11,026,518	9,015,167	11,328,953	12,707,578	13,310,592	15,421,168	15,650,833
NASDAQ	2,896,856	1,994,494	2,844,193	3,532,912	3,603,985	3,865,004	4,013,650
TSX	615,266	573,403	910,231	1,177,518	1,482,185	1,700,708	2,186,550
LSE	2,149,501	1,785,199	2,425,822	2,815,928	3,058,182	3,794,310	3,851,706
Euronext	1,843,529	1,538,654	2,076,410	2,441,261	2,706,804	3,708,150	4,222,680
Deutsche Borse	1,071,749	686,014	1,079,026	1,194,517	1,221,106	1,637,610	2,105,198
ASX	375,131	380,087	585,530	776,403	804,015	1,095,858	1,298,315
TSE	2,264,528	2,069,299	2,953,098	3,557,674	4,572,901	4,614,069	4,330,922
SGX	115,689	99,807	148,503	217,495	257,340	384,286	539,177
KRX	194,470	215,894	298,248	398,559	718,011	834,404	1,122,606
Bursa Malaysia	118,981	125,778	168,376	181,624	180,518	235,581	325,290
NSE of India					515,973	774,116	1,660,097
SET Thailand	35,943	45,504	119,017	115,390	123,885	140,161	197,129
HKEx	506,073	463,055	714,597	861,463	1,054,999	1,714,953	2,654,416
TSEC Taiwan	292,621	261,211	379,023	443,059	476,018	594,659	663,716
Shanghai	333,356	306,440	360,111	314,316	286,190	917,085	3,694,095
Shenzhen	192,490	156,646	152,874	133,405	115,662	227,842	784,465

Table 5: Average market value of companies listed on main stock exchanges (2001-2007) (US\$ Mil.)

Stock Exchange	2001	2002	2003	2004	2005	2006	2007
NYSE	4,594	3,810	4,909	5,310	5,864	6,761	6,814
NASDAQ	702	547	863	1,094	1,139	1,234	1,308
TSX	468	440	252	324	394	443	553
LSE	744	632	901	993	989	1,165	1,165
Euronext	1,371	1,031	1,492	1,831	2,150	3,065	3,656
Deutsche Borse	1,089	734	1,246	1,459	1,598	2,155	2,431
ASX	266	267	398	491	469	599	650
TSE	1,058	961	1,339	1,543	1,945	1,910	1,794
SGX	300	259	270	344	375	543	708
Korea Exchange	283	317	436	584	443	494	639
Bursa Malaysia	147	147	187	189	177	230	330
NSE of India					499	670	1,248
Thailand	94	114	285	249	179	271	377
HKEx	584	473	689	786	930	1,462	2,139
Taiwan	499	408	562	631	684	1,148	944
Shanghai	516	429	462	376	343	1,089	4,295
Shenzhen	379	308	303	249	213	394	1,171

Table 6: China vs. USA, Market capitalization/GDP (2001-2008)

	2001	2002	2003	2004	2005	2006	2007	2008
USA								
GDP (US\$ Bil.)	10,128	10,470	10,961	11,686	12,434	13,195	13,841	
Market Cap. (US\$ Bil.)	13,923	11,010	14,173	16,240	16,915	19,286	19,664	
Market Cap. /GDP (%)	137.47%	105.16%	129.31%	138.98%	136.04%	146.17%	142.07%	
China								
GDP (RMB Bil.)	10,966	12,033	13,582	15,988	18,322	21,192	25,731	30,067
Market Cap. (RMB Bil)	4,352	3,833	4,246	3,706	3,243	8,940	32,714	12,137
Market Cap./GDP	39.69%	31.85%	31.26%	23.18%	17.70%	42.19%	127.14%	40.37%

5.2 Situation of ownership concentration in China

5.2.1 Construction of data

Much of literature on the role and function of the modern firm is based on the assumption of widely dispersed ownership. This notion originally derived from Berle and Means (1932) and has been propagated by Baumol (1959), Jensen and Meckling (1976), and Grossman and Hart (1980).

In recent years, several studies have begun to question the empirical validity of this image. Some studies (Demsetz, 1983; Demsetz and Lehn, 1985; Shleifer and Vishny, 1986; Morck et al., 1988) show that even among the largest American firms, there is a modest concentration of ownership. Holderness and Sheehan (1988) have found in the United States several hundred public traded firms with majority (greater than 51 percent) shareholders. Holderness et al. (1999) have found, moreover, that management ownership in the United States today is higher than it was when Berle and Means wrote their study.

Studies on other rich countries reveal more significant concentration of ownership in Germany (Edwards and Fischer, 1994; Franks and Mayer, 1994; Gorton and Schmidt, 1996), Japan (Prowse, 1992; Berglof and Perotti, 1994), Italy (Barca, 1995), and seven OECD countries (European Corporate Governance Network, 1997).

In developing countries economies, ownership is also heavily concentrated (La Porta et al., 1998 and 1999; Claessens et al., 2000). La Porta et al. (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999) is the first study that investigates the issue of ultimate control, i.e., they trace the chain of ownership to find who has the most voting rights. The findings suggest that ownership and control can be separated to the benefit of the large shareholders. Claessens et al. (2000) improve on their methodology and apply it to East Asia. They examine the separation of ownership and control in 2,980 publicly traded companies in nine East Asian countries (Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand).

In all these literature there is a lack of China Mainland, so the purpose of this section is to investigate the situation of ownership concentration in China Mainland to fill up this gap.

The analysis in the following section is based on newly reported data from annual reports 2007 of all the listed companies on Shanghai Stock Exchange, Shenzhen Stock Exchange and all Chinese companies listed on NYSE. The annual report 2007 of all firms are downloaded from the homepages of SHSE, SZSE and NYSE, because all publicly traded companies must submit their audited annual reports to SEC and disclose them on the homepage of the exchanges.

All of the annual reports provide the names and share percentage of all immediate owners who hold more than 5% of the listed company's stock. In many cases, the principle shareholders of the firms are themselves corporate entities. Most of the listed companies report the major shareholders in these entities, then the major shareholders in the major shareholders, and so on, until the ultimate owner of the listed companies. A few of the listed companies do not have reported their ultimate controllers and owners, but only the immediate ownership structure and these firms are kicked out of the samples.

Net capital at the end of 2007 is reported by all the listed companies and some of the companies' net capitals at the end of 2007 are minus and we also eliminate such companies from the samples because the correlation between the ownership concentration and ROE will be examined later and ROE of these corporations makes no sense.

In the study samples there are 820 companies listed on Shanghai Stock Exchange, 631 companies listed on Shenzhen Stock Exchange and 40 firms listed on NYSE. Most of these firms are listed only on one stock exchange (SHSE, SZSE or NYSE), but some of them are double listed, that means listed on both SHSE and NYSE or SZSE and NYSE, therefore, there are all together 1,481 corporations in the sample.

The cash-flow rights and control rights of the companies are analyzed by studying all shares controlled or owned by the ultimate controller, who controls the most voting right or owned the most cash-flow right in the firm. In most cases, the principal shareholders are themselves corporate entities. This study goes on to identify their owners, the owners of their owners, till the ultimate controller of the firm, who may be the state, a person or members of a family.

The definition of ownership relies on cash-flow rights, not on voting rights. The definition of control relies on voting rights and the controllers generally use pyramiding schemes or/and cross-holdings as a means to separate cash-flow rights and voting rights. This distinction can contribute to enormous differences. This is explained with the example of Zhejiang Yankon Group Co. Ltd (Yankon), a company listed on Shanghai Stock Exchange and controlled by a family, the ownership structure of which is displayed in the following figure 15.

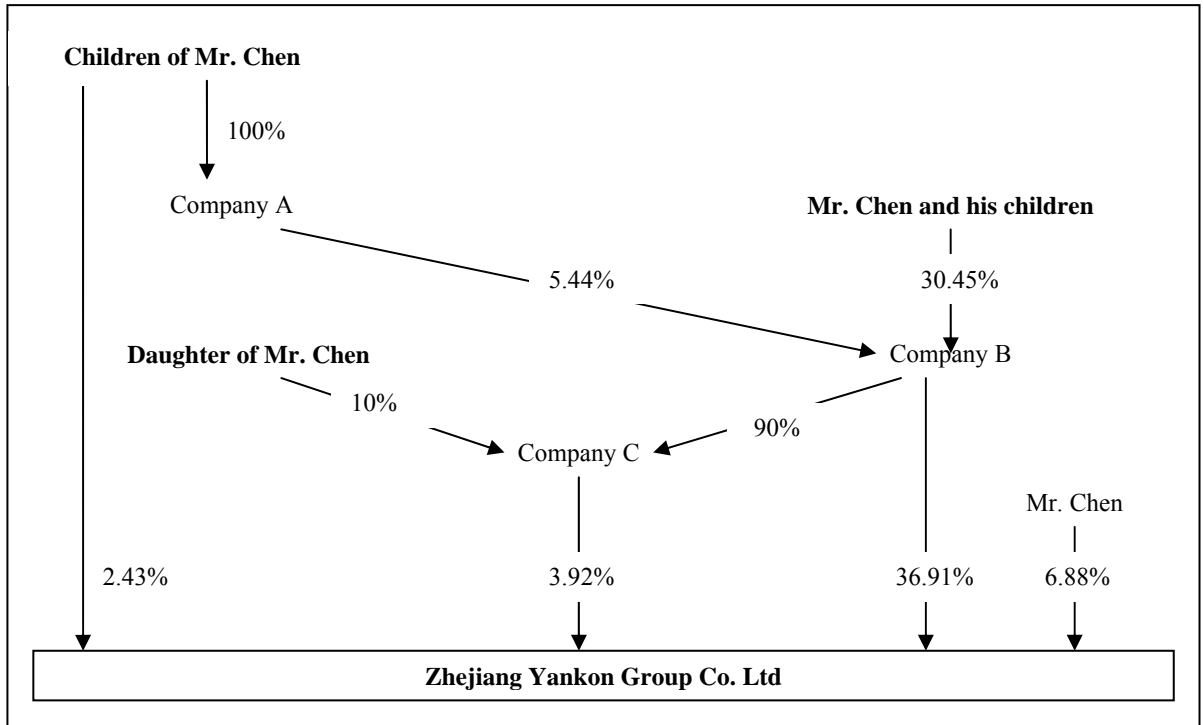


Figure 15: Ownership structure of Zhejiang Yankon Group Co. Ltd

This figure shows that the biggest immediate shareholder of Yankon is company B, which is controlled by Mr. Chen and his children, so family Chen is the ultimate owner and controller of Yankon. The voting right controlled by family Chen is not only the share owned by company B, but also the entire share directly or indirectly controlled by all the members of Family Chen, namely $(2.43\%+3.92\%+(5.44\%+30.45\%)+6.88\%)=49.12\%$. Because all Chinese companies are one-share-one-vote, family Chen controlled nearly half of the voting rights of Yankon. But the ownership of family Chen in Yankon is not so much, only:

$$(2.43\%+((100\%*5.44\%+30.45\%)*90\%+10\%)*3.92\%+(100\%*5.44\%+30.45\%)*36.91\%+6.88\%)=22.21\%.$$

So family Chen owns 22.21% of the cash flow right in Yankon but controls 49.12% of the voting right of Yankon. The difference between cash flow right and control right is nearly 27%.

Voting right and ownership of all companies in study sample are calculated in the same way.

Theory suggests that both cash-flow and voting rights are important. Crucially, the incentives to expropriate vary with cash-flow rights (Jensen and Meckling, 1976). And according to the results in Chapter 2, the insiders expropriate less when they invest more in the firm, which means they have more cash-flow benefit. Hence, the following sections investigate the concentration of cash-flow rights.

5.2.2 Proportion of ownership concentrated companies in China

In this section, how many companies are ownership concentrated in China are examined. Similar to La Porta et al. (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999) and Claessens et al. (2000) this study defines concentration with both 20% and 10% cutoff. This means that a firm is defined as widely held if the ultimate owner of this firm has less than 20% (or 10%) cash-flow right. A company is owned by the state means that the ultimate owner is a department of the state, which directly or/and indirectly holds at least 20% (or 10%) cash-flow rights in this company. And companies held by family are companies with ultimate owner, who is a person or a family and directly or/and indirectly holds at least 20% (10%) cash-flow rights in this company.

The cutoff 10% is used because it provides a significant threshold of votes; and most countries mandate disclosure of 10%. In China, the detailed information of all owners who hold more than 10% stock in the listed company must be disclosed in the annual report, which means the owners with more than 10% ownership play an important role in the company. For the use of 20% cutoff, it is documented by La Porta et al. that the control right of East Asian corporations can be achieved with much less than an absolute majority ownership, because the probability of being a single controlling shareholder through holding only 20% of the stock is very high (above 80% across the four east Asian countries, namely Hong Kong, Japan, Singapore and South Korea). According to the result of Claessens et al., the concentration of cash flow rights in East Asia is 15.7%; the concentration of voting rights in East Asia is 19.77% (Claessens et al., 2000, pp.100). So when the ownership concentration of a company is over 20%, it can be called ownership concentrated. Therefore, this study follows the 10% cutoff and 20% cutoff used by other authors to classify the companies.

All the companies in the study samples have provided their ownership structure and the name of ultimate owner in their annual report so that the proportion of ownership concentrated companies for each industry can be calculated as:

Percentage of companies held by state in certain industry = the number of state holding companies in certain industry/the number of all companies in certain industry

Percentage of companies held by family in certain industry = the number of family holding companies in certain industry/the number of all companies in certain industry

Percentage of companies widely held in certain industry = the number of widely held companies in certain industry/the number of all companies in certain industry

Percentage of companies held by state in total sample = the number of state holding companies in total samples/the number of all companies in total samples

Percentage of companies held by family in total samples = the number of family holding companies in total samples/the number of all companies in total samples

Percentage of companies widely held in total samples = the number of widely held companies in total samples/the number of all companies in total samples

The results are shown in tables 7 and 8.

Table 7: Proportion of ownership concentrated companies in China (20% Cutoff)

Industry	Number of Firms	Held by State	Held by Family	Widely Held
Agriculture	34	52.94%	26.47%	20.59%
Mining	32	81.25%	0.00%	18.75%
Manufactures	857	50.29%	21.59%	28.12%
Food and drink	61	52.46%	22.95%	24.59%
Textile, Clothes and Leather	68	38.24%	23.53%	38.24%
Wood and Furniture	3	0.00%	66.67%	33.33%
Paper Making and Print	29	37.93%	27.59%	34.48%
Petroleum, Chemistry and Plastic	156	55.13%	19.87%	25.00%
Electron	69	42.03%	27.54%	30.43%
Metal and Nonmetal Material	137	59.12%	14.60%	26.28%
Machine, Equipment and Instrument	228	56.58%	19.74%	23.68%
Medicine and Biology	94	37.23%	24.47%	38.30%
Other manufactures	12	16.67%	58.33%	25.00%
Electric power, gas and water	63	77.78%	1.59%	20.63%
Construction	34	55.88%	20.59%	23.53%
Communication, transport and storage	63	80.95%	4.76%	14.29%
Information technology	94	37.23%	30.85%	31.91%
Wholesale and retail	88	44.32%	11.36%	44.32%
Finance and insurance	25	64.00%	0.00%	36.00%
Real estate	64	46.88%	34.38%	18.75%
Social service	48	66.67%	12.50%	20.83%
Media and culture	9	88.89%	11.11%	0.00%
Miscellaneous	70	28.57%	15.71%	55.71%
Maximum of all industries		88.89%	34.38%	55.71%
Minimum of all industries		28.57%	0.00%	0.00%
Total / Weighted Average	1,481	52.26%	19.18%	28.56%

Table 8: Proportion of ownership concentrated companies in China (10% Cutoff)

Industry	Number of Firms	Held by State	Held by Family	Widely Held
Agriculture	34	58.82%	32.35%	8.82%
Mining	32	84.38%	6.25%	9.38%
Manufactures	857	58.81%	31.97%	9.22%
Food and drink	61	57.38%	29.51%	13.11%
Textile, Clothes and Leather	68	45.59%	39.71%	14.71%
Wood and Furniture	3	0.00%	100.00%	0.00%
Paper Making and Print	29	48.28%	44.83%	6.90%
Petroleum, Chemistry and Plastic	156	65.38%	28.85%	5.77%
Electron	69	50.72%	40.58%	8.70%
Metal and Nonmetal Material	137	70.80%	21.17%	8.03%
Machine, Equipment and Instrument	228	61.84%	30.26%	7.89%
Medicine and Biology	94	48.94%	37.23%	13.83%
Other manufactures	12	25.00%	58.33%	16.67%
Electric power, gas and water	63	90.48%	1.59%	7.94%
Construction	34	61.76%	26.47%	11.76%
Communication, transport and storage	63	88.89%	4.76%	6.35%
Information technology	94	47.87%	39.36%	12.77%
Wholesale and retail	88	63.64%	21.59%	14.77%
Finance and insurance	25	80.00%	8.00%	12.00%
Real estate	64	53.13%	39.06%	7.81%
Social service	48	77.08%	16.67%	6.25%
Media and culture	9	88.89%	11.11%	0.00%
Miscellaneous	70	41.43%	32.86%	25.71%
Maximum of all industries		90.48%	39.36%	25.71%
Minimum of all industries		41.43%	1.59%	0.00%
Total / Weighted Average	1,481	61.72%	28.02%	10.26%

The tables above show us that more than half of the publicly traded companies in China are state companies, especially the industries of *mining, electric power, gas and water, communication, transport and storage, and media and culture* are mostly owned by the state. More than 75% of the companies in these industries are primarily invested by the government (20% cutoff), because these industries are more important and controlled by the state. But the industry of *miscellaneous* is less owned by the state, only 28.57% (20% cutoff).

About 20% of listed companies are primarily invested by families (20% cutoff). *Information technology* and *real estate* are the industries mostly favored by families. More than 30% of companies in both of these industries are concentrated owned by families (20% cutoff). Agriculture, manufactures and Construction are also industries favored by wealthy families and more than 20% of companies in these industries are owned by families (20% cutoff). But in the industries of *mining* and *finance and insurance*, there is no company owned by family (20% cutoff).

So all together 71.44% of the companies are ownership concentrated (20% cutoff), primarily owned either by state or by families. This ratio is much higher when the 10% cutoff standard is used, namely 89.74%.

The proportion of widely held firms is much less than the ownership concentrated, only 28.56% (20% cutoff) and this ratio decreases to 10.26%, if the 10% cutoff standard is taken. The industry of *Miscellaneous* has the highest widely held ratio and 25.71% of companies in this group have no concentrated owner (10% cutoff), and this ratio increases to 55.71% with 20% cutoff. But in the industry of *media and culture* there is no company widely held (both 10% and 20% cutoff).

According to the results in La Porta et al. (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1999), at the 20% threshold, for the samples of large firms, 30% of the firms in the world are family-controlled, 18% are state-controlled, and 52% are widely held. At the 10% threshold, for the samples of large firms, 35% of the firms in the world are family-controlled, 20% are state-controlled, and 45% are widely held. At the 20% threshold, for the samples of medium-sized firms, 45% of the firms in the world are family-controlled, 15% are state-controlled, and 40% are widely held. At the 10% threshold, for the samples of medium-sized firms, 53% of the firms in the world are family-controlled, 16% are state-controlled, and 31% are widely held.

Faccio and Lang (2002) analyze the ultimate ownership and control of 5,232 corporations in 13 Western European countries. At the 20% threshold, 36.93% of the samples are widely held and 44.29% are family controlled. Widely held firms are more important in the UK (63.08%) and Ireland (62.325%), family controlled firms in continental Europe. Financial and large firms are more likely widely held, while non-financial and small firms are more likely family controlled. In continental Europe, the state controls more than 10% of the listed firms in

Austria, Finland, Italy and Norway, which is more important than other countries in Western European. At the 10% threshold, the proportion of widely held firms falls to 13.72% and family control increases to 55.87%.

So compared to other countries, more firms in China are controlled by the state and the ownership-dispersed companies are much less than in other countries. This indicates that ownership concentration in China is really serious. Remembering the theory of Twin Agency Problems in former chapters, these empirical results also denote the severe Twin Agency Problems in China.

To examine the difference of ownership concentration on different stock exchanges the proportion of ownership concentrated firms on SHSE, SZSE and NYSE can respectively be calculated, which are shown in table 9:

Table 9: Comparison of proportion of ownership concentrated companies between different stock exchanges

	Stock exchange	Number of firms	Held by state	Held by family	Widely held
20% cutoff	SHSE	820	58.66%	12.68%	28.66%
	SZSE	631	45.64%	25.36%	29.00%
	NYSE	40	35.00%	47.50%	17.50%
10% cutoff	SHSE	820	67.68%	20.00%	12.32%
	SZSE	631	55.15%	33.91%	10.94%
	NYSE	40	37.50%	55.00%	7.50%

This table shows that companies on SHSE are more state-owned but less family-owned, compared to the other two stock exchanges. Companies on NYSE are more family-owned but less state-owned and widely held companies on NYSE are at the least, compared to the other stock exchanges. The detailed information of SHSE and SZSE are shown in tables 10 to 13.

Table 10: Proportion of ownership concentrated companies on Shanghai Stock Exchange (20% Cutoff)

Industry	Number of firms	Held by state	Held by family	Widely held
Agriculture	21	57.14%	23.81%	19.05%
Mining	21	85.71%	0.00%	14.29%
Manufactures	434	57.83%	12.90%	29.26%
Food and drink	36	61.11%	11.11%	27.78%
Textile, Clothes and Leather	36	36.11%	19.44%	44.44%
Wood and Furniture	2	0.00%	100.00%	0.00%
Paper Making and Print	17	64.71%	11.76%	23.53%
Petroleum, Chemistry and Plastic	74	56.76%	14.86%	28.38%
Electron	26	42.31%	11.54%	46.15%
Metal and Nonmetal Material	72	65.28%	8.33%	26.39%
Machine, Equipment and Instrument	119	68.91%	10.08%	21.01%
Medicine and Biology	52	44.23%	17.31%	38.46%
Electric power, gas and water	42	85.71%	0.00%	14.29%
Construction	23	60.87%	13.04%	26.09%
Communication, transport and storage	45	86.67%	2.22%	11.11%
Information technology	51	43.14%	17.65%	39.22%
Wholesale and retail	58	48.28%	13.79%	37.93%
Finance and insurance	19	63.16%	0.00%	36.84%
Real estate	38	50.00%	39.47%	10.53%
Social service	19	68.42%	0.00%	31.58%
Media and culture	6	83.33%	16.67%	0.00%
Miscellaneous	43	27.91%	13.95%	58.14%
Maximum		86.67%	39.47%	58.14%
Minimum		27.91%	0.00%	0.00%
Total / Weighted Average	820	58.66%	12.68%	28.66%

Table 11: Proportion of ownership concentrated companies on Shanghai Stock Exchange (10% Cutoff)

Industry	Number of firms	Held by state	Held by family	Widely held
Agriculture	21	66.67%	28.57%	4.76%
Mining	21	85.71%	0.00%	14.29%
Manufactures	434	65.44%	21.66%	12.90%
Food and drink	36	69.44%	16.67%	13.89%
Textile, Clothes and Leather	36	44.44%	41.67%	13.89%
Wood and Furniture	2	0.00%	100.00%	0.00%
Paper Making and Print	17	76.47%	23.53%	0.00%
Petroleum, Chemistry and Plastic	74	70.27%	25.68%	4.05%
Electron	26	57.69%	34.62%	7.69%
Metal and Nonmetal Material	72	76.39%	13.89%	9.72%
Machine, Equipment and Instrument	119	68.91%	10.08%	21.01%
Medicine and Biology	52	50.00%	32.69%	17.31%
Electric power, gas and water	42	95.24%	0.00%	4.76%
Construction	23	69.57%	17.39%	13.04%
Communication, transport and storage	45	91.11%	2.22%	6.67%
Information technology	51	54.90%	25.49%	19.61%
Wholesale and retail	58	65.52%	22.41%	12.07%
Finance and insurance	19	78.95%	10.53%	10.53%
Real estate	38	57.89%	39.47%	2.63%
Social service	19	84.21%	5.26%	10.53%
Media and culture	6	83.33%	16.67%	0.00%
Miscellaneous	43	41.86%	32.56%	25.58%
Maximum		95.24%	39.47%	25.58%
Minimum		41.86%	0.00%	0.00%
Total / Weighted Average	820	67.68%	20.00%	12.32%

Table 12: Proportion of ownership concentrated companies on Shenzhen Stock Exchange (20% Cutoff)

Industry	Number of firms	Held by state	Held by family	Widely held
Agriculture	12	50.00%	16.67%	33.33%
Mining	11	72.73%	0.00%	27.27%
Manufactures	405	43.95%	28.89%	27.16%
Food and drink	25	40.00%	36.00%	24.00%
Textile, Clothes and Leather	32	37.50%	28.13%	34.38%
Wood and Furniture	1	0.00%	0.00%	100.00%
Paper Making and Print	12	0.00%	50.00%	50.00%
Petroleum, Chemistry and Plastic	79	53.16%	24.05%	22.78%
Electron	40	45.00%	35.00%	20.00%
Metal and Nonmetal Material	64	53.13%	20.31%	26.56%
Machine, Equipment and Instrument	102	46.08%	27.45%	26.47%
Medicine and Biology	38	34.21%	31.58%	34.21%
Other manufactures	12	16.67%	58.33%	25.00%
Electric power, gas and water	21	61.90%	4.76%	33.33%
Construction	11	45.45%	36.36%	18.18%
Communication, transport and storage	18	66.67%	11.11%	22.22%
Information technology	36	27.78%	50.00%	22.22%
Wholesale and retail	29	37.93%	3.45%	58.62%
Finance and insurance	6	66.67%	0.00%	33.33%
Real estate	24	45.83%	20.83%	33.33%
Social service	28	67.86%	17.86%	14.29%
Media and culture	3	100.00%	0.00%	0.00%
Miscellaneous	27	29.63%	18.52%	51.85%
Maximum		100.00%	50.00%	58.62%
Minimum		27.78%	0.00%	0.00%
Total / Weighted Average	631	45.64%	25.36%	29.00%

Table 13: Proportion of ownership concentrated companies on Shenzhen Stock Exchange (10% Cutoff)

Industry	Number of firms	Held by state	Held by family	Widely held
Agriculture	12	33.33%	16.67%	50.00%
Mining	11	81.82%	18.18%	0.00%
Manufactures	405	52.84%	38.02%	9.14%
Food and drink	25	44.00%	44.00%	12.00%
Textile, Clothes and Leather	32	43.75%	37.50%	18.75%
Wood and Furniture	1	0.00%	100.00%	0.00%
Paper Making and Print	12	8.33%	75.00%	16.67%
Petroleum, Chemistry and Plastic	79	62.03%	30.38%	7.59%
Electron	40	50.00%	42.50%	7.50%
Metal and Nonmetal Material	64	65.63%	28.13%	6.25%
Machine, Equipment and Instrument	102	52.94%	39.22%	7.84%
Medicine and Biology	38	52.63%	39.47%	7.89%
Other manufactures	12	25.00%	58.33%	16.67%
Electric power, gas and water	21	80.95%	4.76%	14.29%
Construction	11	45.45%	45.45%	9.09%
Communication, transport and storage	18	83.33%	11.11%	5.56%
Information technology	36	38.89%	55.56%	5.56%
Wholesale and retail	29	62.07%	17.24%	20.69%
Finance and insurance	6	83.33%	0.00%	16.67%
Real estate	24	50.00%	33.33%	16.67%
Social service	28	75.00%	21.43%	3.57%
Media and culture	3	100.00%	0.00%	0.00%
Miscellaneous	27	40.74%	33.33%	25.93%
Maximum		100.00%	55.56%	50.00%
Minimum		33.33%	0.00%	0.00%
Total / Weighted Average	631	55.15%	33.91%	10.94%

5.2.3 Average degree of ownership concentration in China

In this section, it goes on to calculate the mean, median, 1st quartile and 3rd quartile of the ownership held by the ultimate owners for all the firms in the samples in order to see the average degree of ownership concentration in China.

All the annual reports in the samples provide ownership structure of the listed companies and the percentage of the ownership held by the ultimate owner is calculated for each company, as it has been done to Zhenjiang Yankon Group Co. Ltd shown in figure 15. The percentage of ownership owned by the ultimate owner is defined as the degree of ownership concentration for each company.

The indices of ownership concentration in table 14 are calculated as:

Mean of ownership concentration for certain industry = mean of degrees of ownership concentration of all the companies in certain industry

Mean of ownership concentration for total sample = mean of degrees of ownership concentration of all the companies in our samples

Standard deviation of ownership concentration for certain industry = standard deviation of degrees of ownership concentration of all the companies in certain industry

Standard deviation of ownership concentration for total sample = standard deviation of degrees of ownership concentration of all the companies in our samples

Median of ownership concentration for certain industry = median of degrees of ownership concentration of all the companies in certain industry

Median of ownership concentration for total sample = median of degrees of ownership concentration of all the companies in our samples

1st quartile of ownership concentration for certain industry = 1st quartile of degrees of ownership concentration of all the companies in certain industry

1st quartile of ownership concentration for total sample = 1st quartile of degrees of ownership concentration of all the companies in our samples

3rd quartile of ownership concentration for certain industry = 3rd quartile of degrees of ownership concentration of all the companies in certain industry

3rd quartile of ownership concentration for total sample = 3rd quartile of degrees of ownership concentration of all the companies in our samples

Table 14: Average ownership concentration in China

Industry	Number of firms	Mean	Standard deviation	Median	1 st Quartile	3 rd Quartile
Agriculture	34	33.52	15.63	32.15	25.46	46.56
Mining	32	43.79	21.40	49.69	28.25	58.84
Manufactures	857	31.55	16.98	28.98	18.90	43.38
Food and drink	61	32.50	18.33	32.25	20.74	43.00
Textile, Clothes and Leather	68	27.46	15.21	24.73	17.39	38.49
Wood and Furniture	3	23.18	3.95	23.34	20.80	25.64
Paper Making and Print	29	28.90	17.13	24.02	15.70	35.41
Petroleum, Chemistry and Plastic	156	33.06	16.69	31.93	19.97	44.52
Electron	69	30.88	15.95	30.24	17.72	44.41
Metal and Nonmetal Material	137	34.20	19.18	30.01	19.49	48.76
Machine, Equipment and Instrument	228	32.08	16.06	30.17	20.72	43.18
Medicine and Biology	94	27.23	15.39	23.72	14.90	39.50
Other manufactures	12	36.42	20.16	37.06	20.99	49.87
Electric power, gas and water	63	36.46	16.45	34.32	25.59	47.52
Construction	34	33.82	16.18	35.57	22.43	43.78
Communication, transport and storage	63	39.19	16.39	41.00	27.77	50.98
Information technology	94	31.21	18.78	28.42	17.93	44.17
Wholesale and retail	88	26.37	16.13	23.59	15.19	34.07
Finance and insurance	25	32.94	23.16	25.47	12.99	45.46
Real estate	64	36.48	17.89	34.72	21.90	47.47
Social service	48	34.97	17.23	34.82	22.49	49.14
Media and culture	9	40.61	16.13	36.80	25.58	48.42
Miscellaneous	70	21.39	15.99	17.84	10.03	27.77
Maximum		43.79	23.16	49.69	28.25	58.84
Minimum		21.39	15.63	17.84	10.03	27.77
Total / Weighted Average	1,481	32.04	17.62	29.97	18.64	44.78

Table 14 above indicates that the average ownership concentration of all these firms is 32.04 (mean value). The industry of *mining* has the highest ownership concentration with a mean value of 43.79 and a median value of 49.69. Miscellaneous is the most ownership-dispersed industry with the lowest mean value of 21.39 and median value of 17.84, although it will still be seen as concentrated.

Claessens et al. (2000) investigated the cash-flow concentration for 9 countries in East Asia except China and the result is cited in table 15:

Table 15: Cash-flow concentration in East Asia¹

Country	Number of firms	Mean	Standard deviation	Median	1 st Quartile	3 rd Quartile
Hongkong	330	24.30	11.43	18.67	17.43	29.68
Indonesia	178	25.61	12.54	24.00	16.00	34.00
Japan	1,117	6.90	8.51	4.00	2.00	10.00
Korea	211	13.96	9.36	10.10	8.29	18.57
Malaysia	238	23.89	11.68	19.68	14.00	30.00
Philippines	99	21.34	11.52	19.22	10.00	28.64
Singapore	211	20.19	10.82	20.00	13.27	29.66
Taiwan	92	15.98	8.76	14.42	10.00	19.27
Thailand	135	32.84	13.51	30.00	20.00	40.00
East Aisa	2,611	15.70	13.44	12.00	5.06	22.00

So compared to these East Asian countries, the average cash-flow concentration in China, shown in table 14 as 32.04%, is much higher than the average level of these 9 countries. And this result indicates again that the Twin Agency Problems in China are very serious.

The comparison of different stock exchanges is shown in table 16:

Table 16: Comparison of average ownership concentration between different stock exchanges

Stock exchange	Number of firms	Mean	Standard deviation	Median	1 st Quartile	3 rd Quartile
SHSE	820	32.16	17.39	30.49	18.88	44.86
SZSE	631	31.55	17.68	28.98	18.12	44.38
NYSE	40	41.91	21.37	40.79	26.33	56.59

It is seen that the situation on SHSE is almost the same as SZSE, but companies on NYSE are more concentrated, with a mean value of 41.91, while this ratio on SHSE and SZSE is about 32. In section 5.3, this difference is discussed in detail.

The following table 17 and table 18 show the detailed information about SHSE and SZSE.

¹ This table is cited from Claessens, S., S. Djankov, and L. Lang, 2000, the separation of ownership and control in East Asian corporations, *Journal of Financial Economics* 58, pp. 100.

Table 17: Average ownership concentration on Shanghai Stock Exchange

Industry	Number of firms	Mean	Standard deviation	Median	1 st Quartile	3 rd Quartile
Agriculture	21	34.50	14.68	32.30	26.15	43.27
Mining	21	49.13	21.31	52.86	39.73	60.48
Manufactures	434	31.13	16.46	28.65	18.98	42.21
Food and drink	36	30.91	17.10	31.03	17.87	40.75
Textile, Clothes and Leather	36	24.97	12.85	22.13	17.46	31.32
Wood and Furniture	2	25.64	2.30	25.64	26.79	26.22
Paper Making and Print	17	31.83	18.20	25.76	20.03	41.90
Petroleum, Chemistry and Plastic	74	31.53	14.62	31.04	19.58	41.98
Electron	26	25.22	12.27	21.75	16.75	31.76
Metal and Nonmetal Material	72	34.30	18.94	32.47	19.60	45.19
Machine, Equipment and Instrument	119	34.09	16.48	34.39	22.54	46.56
Medicine and Biology	52	26.61	15.39	23.58	15.57	38.17
Electric power, gas and water	42	36.82	15.01	33.64	28.57	47.17
Construction	23	32.57	15.76	35.35	19.69	43.18
Communication, transport and storage	45	41.20	16.04	45.03	31.27	51.98
Information technology	51	27.02	16.43	23.70	12.53	40.10
Wholesale and retail	58	28.52	16.49	26.29	16.50	34.86
Finance and insurance	19	32.39	23.80	22.65	15.14	56.48
Real estate	38	38.05	15.21	36.59	23.83	46.54
Social service	19	34.52	18.62	34.98	17.89	50.44
Media and culture	6	47.47	15.33	46.71	38.85	54.98
Miscellaneous	43	21.33	16.21	17.85	9.58	25.10
Maximum		49.13	23.80	52.86	39.73	60.48
Minimum		21.33	14.68	17.85	9.58	25.10
Sample average	820	32.16	17.39	30.49	18.88	44.86

Table 18: Average ownership concentration on Shenzhen Stock Exchange

Industry	Number of firms	Mean	Standard deviation	Median	1 st Quartile	3 rd Quartile
Agriculture	12	31.39	17.52	31.53	17.70	47.71
Mining	11	33.58	17.51	29.43	20.63	49.54
Manufactures	405	31.66	17.31	28.58	18.71	44.27
Food and drink	25	33.55	20.16	33.20	20.74	43.38
Textile, Clothes and Leather	32	29.28	16.56	28.28	17.02	42.01
Wood and Furniture	1	18.27	0.00	18.27	18.27	18.27
Paper Making and Print	12	24.74	14.50	20.44	13.84	34.48
Petroleum, Chemistry and Plastic	79	33.71	18.10	33.18	20.30	45.71
Electron	40	35.57	16.59	37.97	23.48	48.44
Metal and Nonmetal Material	64	33.54	19.12	26.18	19.30	50.36
Machine, Equipment and Instrument	102	29.46	14.85	27.45	19.56	38.94
Medicine and Biology	38	27.88	15.17	24.29	14.74	39.58
Other manufactures	12	36.42	20.16	37.06	20.99	49.87
Electric power, gas and water	21	35.74	18.98	36.24	19.43	47.81
Construction	11	36.44	16.73	36.35	29.20	50.90
Communication, transport and storage	18	34.18	16.18	32.83	24.56	41.54
Information technology	36	34.39	18.30	29.53	21.15	44.80
Wholesale and retail	29	22.18	14.80	17.41	13.67	33.75
Finance and insurance	6	34.71	20.88	40.33	17.77	43.74
Real estate	24	34.01	21.80	31.60	14.32	50.39
Social service	28	35.84	16.08	35.93	23.09	48.85
Media and culture	3	26.90	5.31	25.58	23.37	29.77
Miscellaneous	27	21.56	15.56	17.83	10.34	40.73
Maximum		36.44	21.80	40.33	29.20	50.90
Minimum		21.56	5.31	17.41	10.34	29.77
Sample average	631	31.55	17.68	28.98	18.12	44.38

5.2.4 Most ownership-concentrated companies in China

Table 19 displays the 20 most ownership concentrated companies in the sample, 15 companies of which are owned by state and the other 5 companies are owned by families, which might indicate that the companies owned by state are more ownership concentrated than those owned by families. This conclusion will be further testified in section 5.3.2.

Among these 20 firms, there is only one company, which is listed only abroad, and the other 19 companies are listed in China Mainland or listed both in China Mainland and abroad. The samples listed on NYSE are much less than on Shanghai and Shenzhen. According to this table it could not be concluded that the ownership concentration of companies listed on NYSE is higher or lower than those listed in Mainland, but table 16 has indicated that the average ownership concentration on NYSE is more than on SHSE and SZSE. In section 5.3 this topic will be discussed in detail.

The industry of *metal and nonmetal material* sits on the first place in this table with the most companies, 5 of all the 20 companies belonging to this industry, although the mean value of ownership concentration of this industry is 34.2%, only a little more than the mean value of total sample, 32.04% (see table 14). But it is shown that all the 5 companies from this industry are steel companies and invested by the government. If steel companies are separated from the industry of *metal and nonmetal material*, a much higher degree of ownership concentration might be calculated for this steel group and the average degree of ownership concentration of metal and nonmetal group will be much lower.

It can also be noticed that the assets of these state holding companies are more than those held by families. The relationship between capital scale and ownership concentration will be discussed in section 5.3.4.

Table 19: Top 20 most ownership concentrated companies in China

Industry	Corporate name	Listed on	Listed code	Cash-flow concentration (%)	Ultimate Owner	Gross asset (th. RMB)	Net asset (th. RMB)
Mining	PetroChina Company Limited	Shanghai, New York, Hong Kong	601857	86.29	Government	994,092,000	677,367,000
Mining	China Petroleum & Chemical Corporation	Shanghai, New York, Hong Kong, London	600028	75.84	Government	718,572,000	300,949,000
Information technology	China Mobile Limited	New York	CHL	74.29	Government	563,493,000	373,751,000
Mining	China Shenhua Energy Company Limited	Shanghai, Hong Kong	601088	73.86	Government	238,821,000	128,250,000
Metal and nonmetal material	Baoshan Iron & Steel Co. Ltd.	Shanghai	600019	73.97	Government	188,336,000	88,504,000
Machine, equipment and instrument	SAIC Motor Corporation Limited	Shanghai	600104	83.83	Government	101,815,488	37,384,768
Comunication, transport and storage	Daqin Railway Co. Ltd	Shanghai	601006	72.94	Government	51,107,589	37,533,997
Metal and nonmetal material	Bengang Steel Plates Co. Ltd	Shenzhen	000761	82.12	Government	29,356,299	16,740,763
Metal and nonmetal material	Laiwu Steel Corporation	Shanghai	600102	74.65	Government	17,398,335	6,234,583
Metal and nonmetal material	Liuzhou Iron & Steel Co. Ltd	Shanghai	601003	84.00	Government	13,765,168	5,021,882
Metal and nonmetal material	Fujian Sansteel MinGuang Co. Ltd	Shenzhen	002110	73.87	Government	6,442,611	2,691,871
Real estate	Chongqing Yukaiifa Co. Ltd	Shenzhen	000514	82.45	Government	2,662,903	1,853,099
Real estate	Jiangxi Zhongjiang Real Estate Co. Ltd	Shanghai	600053	72.37	Government	2,099,791	566,988
Media and culture	Liaoning Publishing & Media Company Limited	Shanghai	601999	73.14	Government	1,866,208	1,258,272
Miscellaneous	Hainan Overseas Chinese Investment Co. Ltd	Shanghai	600759	77.89	Mr. Chen	1,475,012	1,406,415
Electric power, gas and water	Henan Yuneng Holdings Co. Ltd	Shenzhen	001896	78.14	Government	1,236,128	801,647
Food and drink	Zhengzhou Sanquan Foods Co. Ltd	Shenzhen	002216	86.95	Family Chen	1,065,008	294,389
Electron	Shenzhen Sea Star Technology Co. Ltd	Shenzhen	002137	73.22	Family Qiao	900,562	514,286
Petroleum, chemistry and plastic	Jiangsu Hongda New Material Co. Ltd.	Shenzhen	002211	81.60	Family Zhu	851,716	300,005
Petroleum, chemistry and plastic	Shenzhen Noposion Agrochemicals Co. Ltd	Shenzhen	002215	77.34	Family Lu	357,723	181,940

5.2.5 Most ownership-dispersed companies in China

In all the 1,481 samples there are 19 companies without the ultimate owner, who is a department of the state or a family and holds more than 2% cash-flow right in the company. These firms are referred to as the most ownership dispersed companies in the samples. Detailed information of these companies is shown in table 20.

All these firms are relatively smaller than the most concentrated ones shown in table 19, except Ping An Insurance (Group) Company of China, Ltd., which indicates that smaller companies are more dispersed.

It is also shown that 8 of these 19 most dispersed companies are related to people's daily life, for example, four companies from the industry of *food and drink*, three companies from Social Service, and one from Wholesale and Retail, which might indicate that these industries are less controlled by the government and the agency problems in these industries are not so serious as the other industries.

Another point is that none of these 19 companies is listed on NYSE, and only one is listed both in China mainland (SHSE) and abroad (Hong Kong), the other 18 companies are all listed only in China mainland (11 on SHSE and 7 on SZSE). As mentioned in the last section, the difference of ownership concentration between companies listed abroad and those listed only in China mainland will be discussed later in section 5.3.

Table 20: 19 most ownership dispersed companies in China

Industry	Corporate name	Listed on	Listed code	Gross asset (th. RMB)	Net asset (th. RMB)
Finance and insurance	Ping An Insurance (Group) Company of China, Ltd	Shanghai and Hong Kong	601318	651,104,000	107,234,000
Social service	Dazhong Transportation (Group) Co. Ltd	Shanghai	600611	9,972,172	4,044,984
Miscellaneous	Shanghai DaZhong Public Utilities (Group) Co. Ltd	Shanghai	600635	8,184,489	2,350,233
Miscellaneous	Guangdong Meiyuan Hydropower Co. Ltd.	Shanghai	600868	8,095,800	2,215,821
Petroleum, chemistry and plastic	Zhuhai Zhongfu Enterprise Co. Ltd	Shenzhen	000659	5,111,758	1,856,159
Metal and nonmetal material	Inner Mongloia Xishui Strong year Co. Ltd	Shanghai	600291	4,894,561	3,830,491
Information technology	Insigam Technology Co. Ltd	Shanghai	600797	4,213,712	1,411,257
Food and drink	Henan Shuanghui Investment & Development Co. Ltd	Shenzhen	000895	4,024,117	2,177,648
Food and drink	Yantai Changyu Pioneer Wine Co. Ltd	Shenzhen	000869	3,251,224	2,229,020
Social service	Shanghai QiangSheng Holding Co. Ltd	Shanghai	600662	3,046,048	1,408,395
Food and drink	V V Food & Beverage Co. Ltd	Shanghai	600300	2,978,478	1,497,882
Petroleum, chemistry and plastic	Baotou Tomorrow Technology Co. Ltd	Shanghai	600091	2,531,217	1,851,019
Food and drink	Sichuan Swellfun Co. Ltd	Shanghai	600779	2,263,962	1,302,831
Machine, equipment and instrument	Sundiro Holdings Co. Ltd	Shenzhen	000571	1,565,759	1,001,380
Metal and nonmetal material	Xinjiang jionworid Co. Ltd	Shanghai	600888	1,469,723	617,691
Electron	Tianshui Huatian Technology Co. Ltd.	Shenzhen	002185	1,186,020	788,999
Wholesale and retail	Sanlian Commercial Co. Ltd	Shanghai	600898	952,973	339,048
Miscellaneous	Hainan Haide Industry Co. Ltd	Shenzhen	000567	287,845	129,413
Social service	Hainan Dadonghai Tourism Centre (Holdings) Co. Ltd	Shenzhen	000613	135,406	73,693

* All these firms have no ultimate owner, who is a department of the state or a family and holds more than 2% cash flow right in the firm.

5.3 Is listing abroad a good way for Chinese companies to become more ownership-dispersed?

5.3.1 Comparison of ownership concentration between Chinese corporations listed in mainland and those listed abroad

In this section it is examined whether there is any difference of ownership concentration between the companies listed in mainland and those listed abroad. According to the results obtained from the model in Chapters 2 and 3, listing abroad is a solution to the Twin Agency Problems. The firms listed abroad must observe stricter laws and regulations demanded by the foreign countries so that the minority investors burden less moral risk, the enterpriser can co-invest less in the firm, and the ownership concentration might be lower in these abroad listed companies.

But the empirical evidence in this study is contrary to the expectation. Table 9 shows that the ratio of widely held companies on NYSE is lower than that on SHSE and SZSE. Table 16 shows that the average ownership concentration on NYSE is higher than that on SHSE and SZSE. This evidence indicates that listing abroad is not useful for Chinese firms to become more ownership-dispersed.

To make this empirical conclusion more convincible, this section makes a more detailed analysis. All the firms in the sample are classified into two groups, namely listed abroad and listed only in China Mainland. Most of the firms in the sample are listed only in China Mainland (SHSE or SZSE, no company is found to be listed on both of SHSE and SZSE), and these firms are classified into the group of listed only in Mainland. Some of the companies are listed only on NYSE, and others are listed both in Mainland and abroad (New York, Hong Kong, London and so on), all of which are ranged into the group of listed abroad. Then the average ownership concentrations of these two groups are calculated respectively, which is shown in panel A of table 21 and Panel B displays the proportion of ownership concentrated companies of each group.

It is shown that the average ownership concentration of the firms listed abroad is 42.95, which is much more than those listed only in China Mainland, 31.37. The proportion of widely held companies of listed abroad group is 15.12% (20% cutoff) and this proportion decreases to 4.65% if it is calculated with 10% cutoff standard. Both of these two ratios are much less than the group of listed only in Mainland, which is 29.46% (20% cutoff) and 10.61% (10% cutoff) respectively.

Table 21: Comparison of ownership concentration between companies listed abroad and in China Mainland

Panel A: Average degree of cash-flow concentration						
	Number of firms	Mean	Standard deviation	Median	1 st Quartile	3 rd Quartile
All firms listed abroad	86	42.95	19.7	42.71	28.13	55.45
All firms listed only inland	1,395	31.37	17.26	29.13	18.31	43.86
Total	1,481	32.04	17.62	29.97	18.64	44.78

Panel B: Proportion of ownership concentrated companies					
		Number of firms	Held by state	Held by family	Widely held
20% cutoff	All firms listed abroad	86	62.79%	22.09%	15.12%
	All firms listed only inland	1,395	51.54%	19.00%	29.46%
	Total	1,481	52.26%	19.18%	28.56%
10% cutoff	All firms listed abroad	86	68.60%	26.74%	4.65%
	All firms listed only inland	1,395	61.29%	28.10%	10.61%
	Total	1,481	61.72%	28.02%	10.26%

It seems that Chinese companies listed abroad are more concentrated than those listed only in China Mainland, which is contrary to the expectation. This study tries to explain this phenomenon with the following reasons:

- (a) Higher proportion of state holding companies;
- (b) Short ages of listed abroad;
- (c) Greater capital scale.

At first, it is considered that the ownership concentration of companies listed abroad is higher because the proportion of state owning company in the group listed abroad is higher than the group listed only in mainland. Table 21 shows that 62.79% of the companies listed abroad are owned by the state (20% cutoff) and this ratio is increased to 68.6% with the 10% cutoff standard. For the group of listed only in mainland this ratio is much lower, 51.54% and 61.29% respectively. If the ownership concentration of state holding companies is higher than family holding ones, the average ownership concentration of companies listed abroad could be increased by these state holding companies.

Then the second consideration is that it might take a long time for the Chinese companies to use the function of foreign financial market to become ownership-dispersed, because it has been noticed that most of the companies listed on NYSE have been listed on it only for a short time. 18 of these 40 companies listed on NYSE were first listed on NYSE in 2007 and only 12 companies have been listed on NYSE for more than 5 years. These newly listed abroad companies have not had enough time to become dispersed and the companies listed abroad longer might have lower ration of ownership concentration.

It is also noticed that companies listed on NYSE are relative more than those listed only in mainland, since the demand of NYSE for capital scale is greater than that of SHSE and SZSE. If the ownership concentration is positively related to capital scale, the higher concentration degree of companies listed abroad could be explained by their greater capital scale.

The following sections are going to examine the difference of ownership concentration between companies owned by state and by family, the relationship between ownership concentration and the age of listed abroad, and the relationship between ownership concentration and capital scale, in order to testify these three hypotheses above.

5.3.2 Influence of state holding companies on the ownership concentration of companies listed abroad

In last section it has been noticed that the proportion of state-owned companies in the group listed abroad is higher than the group listed only in mainland. And this section is to examine the difference of ownership concentration between companies owned by the state and those owned by family to testify whether the higher ownership concentration of companies listed abroad is caused by this higher proportion of the state-owned companies.

The ownership concentrated companies in the sample are further classified into four groups: owned by the state and listed abroad, owned by the state and listed only in mainland, owned by family and listed abroad, and owned by family and listed in mainland. The ownership concentration of all these four groups is calculated respectively, which is shown in table 22.

The result indicates that the ownership concentration of companies owned by state is surely higher than those owned by family. With the 20% cutoff standard, the mean value of total state holding companies is 41.08, while this value of the total family holding companies is 37.22. With the 10% cutoff standard the difference is even greater, 37.19 vs. 30.29. And this distinction of ownership concentration between state holding and family holding companies is much more obvious for companies listed abroad. The mean value of state holding and listed abroad companies is 51.29, while that of family holding and listed abroad ones is only 39.94 (20% cutoff), and under the 10% cutoff standard this value is 48.3 vs. 35.63.

It is known from the result 2.3.2.1-1 and 2.3.2.1-2 that the more the enterprisers must co-invest and the companies are more concentrated, the less the expropriators take away from the companies. The poorer the minority shareholders are protected, the more the effect of a higher ownership concentration on reducing the fraction of profit diverted by corporate insiders. So the higher concentration of state owned companies might be caused by the more serious expropriation of minority shareholders committed by state rulers and corporate insiders. And minority investors on foreign financial market have less trust in the state holding companies

than inland investors. The difference between state holding companies and family holding companies is higher for the companies listed abroad.

In future, state holding companies must be transformed and the investment from the government into the company will decrease continuously. However, to whom should these companies belong, a few rich families or more minority investors? This is a key to the development of the Chinese financial market, and an important factor in the development of the economic and the social.

The result also indicates that the companies listed abroad are authentically more concentrated than those listed only in mainland, even if state owning companies and family owning ones are investigated. Under 20% cutoff standard, the mean value for the state holding and listed abroad companies is 51.29, much higher than those state holding and listed mainland, which is 40.31. This value of family holding and listed abroad companies is 39.94, a little more than those family holding and listed in mainland, which is 37.22. With 10% cutoff standard, the mean value for state holding and listed abroad companies is 48.3, while the value of state holding and listed only in mainland companies is 36.42. The value of family holding and listed abroad companies is 35.63 and 29.98 for those family holding and listed only in mainland; the difference is higher than that under 20% cutoff standard.

Therefore, it can be concluded assuredly that the higher ownership concentration of companies listed abroad than those listed only in mainland is not caused by the higher proportion of state holding companies in the group of listed abroad.

Table 22: Difference of ownership concentration between companies controlled by state and by family

			Number of firms	Mean	Standard deviation	Median	1st Quartile	3rd Quartile
20% cutoff	State holding	All Firms listed abroad	54	51.29	15.89	52.21	38.87	66.00
		All Firms listed only in China Mainland	719	40.31	13.58	38.67	28.67	50.12
		Total	773	41.08	14.03	39.22	29.36	50.67
	Family holding	All Firms listed abroad	19	39.94	39.94	39.94	39.94	39.94
		All Firms listed only in China Mainland	265	37.02	14.00	34.20	25.08	44.84
		Total	284	37.22	13.99	34.30	25.22	45.01
10% cutoff	State holding	All Firms listed abroad	59	48.30	18.13	50.02	34.10	64.71
		All Firms listed only in China Mainland	855	36.42	15.37	34.99	23.98	47.83
		Total	914	37.19	15.83	35.79	24.39	48.85
	Family holding	All Firms listed abroad	23	35.63	15.56	34.20	23.30	44.35
		All Firms listed only in China Mainland	392	29.98	15.45	25.28	18.05	39.89
		Total	415	30.29	15.51	26.04	18.13	40.38

5.3.3 Effect of the listing-abroad-age on ownership concentration of companies listed abroad

It has been noticed that most of the companies listed on NYSE have been listed on it only for a short time and it is considered that it might take a long time for those companies to use the function of foreign financial market to become ownership-dispersed. So this section is to investigate whether the companies newly listed on NYSE are more concentrated than those listed for longer time.

Table 23 shows the ownership concentration of the companies listed on NYSE in different year. It is seen that the average ownership concentration of firms listed for longer time is not lower than those newly listed and the correlation between mean value and listed age of the companies listed during 1993 to 2007 is 0.3083¹, which means the companies listed later is less concentrated than those listed earlier.

It is also noticed that from 1993 to 2004 all the firms listed on NYSE are state holding companies and most of these companies are highly ownership concentrated. From 2005 to 2007 all the firms listed on NYSE are family held or widely held and the concentration of these firms is relative less. So the time is divided into two phases: 1993 to 2004 and 2005 to 2007 and a result different to that above is obtained. The correlation between the mean value of ownership

¹ These data are collected at the beginning of 2008 so the two companies listed in 2008 cannot represent the character of all the firms listed in 2008 on NYSE and is eliminated here.

concentration and listed age during 1993 to 2004 is -0.0450, which means that companies listed later is more concentrated but not obviously. It is shown that the company listed in 2004 is much more dispersed than all the companies listed before. The correlation during 2005 to 2007 is 0.0580, which means the companies listed earlier is more concentrated than those listed later but not obviously.

These results have testified that the companies listed on NYSE have not become less concentrated since they have been listed on NYSE, but those listed later are less concentrated.

Table 23: Effect of listing-abroad- age on ownership concentration of companies listed on NYSE

Listed in	Number of firms	Held by state	Held by family	Widely held	Mean	Standard deviation	Median	1 st Quartile	3 rd Quartile
1993	1	1	0	0	55.56				
1994	1	1	0	0	32.70				
1996	1	1	0	0	41.00				
1997	3	3	0	0	61.42	9.87	59.67	54.99	66.98
1998	1	1	0	0	52.86				
2000	3	3	0	0	77.77	6.32	75.84	73.51	81.07
2001	2	2	0	0	51.49	12.93	51.49	45.02	57.95
2002	1	1	0	0	70.89				
2003	1	1	0	0	68.37				
2004	1	1	0	0	10.94				
2005	1	0	1	0	34.20				
2006	4	0	3	1	22.83	12.56	19.40	14.31	27.92
2007	18	0	16	2	33.46	16.80	35.65	21.62	44.67
Total	38	15	20	3	41.60	21.35	40.79	24.68	54.89

*The correlation between mean and listed age (from 1993 to 2004) is -0.0450; the correlation between mean and listed age (from 2005 to 2007) is 0.0580; the correlation between mean and listed age (from 1993 to 2007) is 0.3083.

5.3.4 Influence of great capital scale on ownership concentration of companies listed abroad

5.3.4.1 Difference of ownership concentration between top 50 and bottom 50 companies

This section is to check whether the bigger firms are more concentrated and whether this factor has caused the higher ownership concentration of companies listed abroad.

The market price of the companies on stock exchanges changes frequently and violently, so the scale of the companies is judged with their gross asset, which is audited by the independent auditor and reported in the annual report.

At first, this study analyzes the ownership concentration of the top 50 companies and the bottom 50 companies. It is found that the average ownership concentration of the top 50 companies is 47.4, which is much higher than that of the bottom 50, which is only 23.15. But

the correlation between ownership concentration and gross asset of all the 1,481 companies is 0.1075, and the correlation between ownership concentration and net asset is 0.1991, which indicates that the ownership concentration is very weakly positively related to company's scale.

Then the correlation for the top 50 and bottom 50 is calculated respectively, and each of them is further divided into 5 groups, namely top 1-10, bottom 1-10, top 11-20, bottom 11-20 and so on. It is found that in the top 50 corporations there is no specific relationship between ownership concentration and gross asset, for the correlation between gross asset and ownership concentration is 0.1708. The ownership concentration seems more related to net asset with a correlation value of 0.4555. This difference might be caused by the financial companies, because financial companies always have higher debt ratio and there are 18 financial companies in the top 50. In the next section, the difference between financial and non-financial companies is discussed. In the bottom 50 companies there is also no clear relationship between ownership concentration and capital scale. The correlation between ownership concentration and gross asset is 0.1814 and the correlation between ownership concentration and net asset is 0.2355. The comparison of ownership concentration of top 50 and bottom 50 companies is shown in tables 24 and 25 respectively. These data indicates again that ownership concentration is weakly related to capital scale.

The difference of ownership concentration between top 50 and bottom 50 companies can be explained with the agency problem. When the agency problem is serious in one country, that means the expropriators can rob more from the firm, then the concentration of the firm must be higher and the controlling shareholder himself must co-invest more in the company. But the families or private persons do not have so much money as the state so that the largest companies in China are mostly held by the government. As is shown in table 24, 46 of the top 50 companies are state held companies and no company is held by family. In section 5.3.2, it obtains that companies held by the state are more concentrated because the agency problem is worse in these companies, so these giant companies are more concentrated than smaller ones. For the bottom 50 companies, it is seen that 27 companies are owned by families because they have enough money to set up these firms and the agency problem is better solved in these firms, so that the average concentration of these firms are much lower.

This relationship between ownership concentration and capital scale could be explained in another way: in a country without developed financial market the capital sum that can be collected from the public is limited. Hence, the more money the project needs the higher proportion the entrepreneur himself has to invest in the firm, which leads to higher ownership concentration of the bigger companies. But the data shows that the relationship between ownership concentration and capital scale is only weakly.

So the top 50 companies are much more concentrated than bottom 50 partly because of their capital scale, but the more important reason is the character of the owner, for these firms are mostly held by the state and state held companies are more ownership concentrated.

Table 24: Comparison of ownership concentration between top 50 companies

	State holding	Family holding	Widely held	Listed abroad	Mean	Standard deviation	Median	1st Quartile	3rd Quartile	Average gross asset (th RMB)	Average net asset (th RMB)
Top 1-10	9	0	1	8	50.33	27.37	67.73	22.37	70.04	2,942,690,476	266,099,604
Top 11-20	8	0	2	5	40.23	29.72	35.47	12.90	73.12	503,943,985	128,553,871
Top 21-30	10	0	0	6	54.99	17.81	55.94	37.33	69.49	152,606,099	65,119,151
Top 31-40	9	0	1	6	36.94	22.11	44.43	13.42	55.43	83,711,187	26,615,247
Top 41-50	10	0	0	3	54.49	16.19	58.87	50.24	64.71	57,810,902	23,317,935
Total top 50	46	0	4	28	47.40	24.40	53.50	26.20	24.40	748,152,530	101,941,162
Total 1,481	914	415	152	86	32.04	17.62	29.97	18.64	44.78	28,889,505	4,983,027

*These companies are ranked descending according to gross asset.

*The correlation between ownership concentration and gross asset for all top 50 companies is 0.1708; the correlation between ownership concentration and net asset for all top 50 companies is 0.4555; The correlation between ownership concentration and gross asset for all these 1,481 companies is 0.1075; the correlation between ownership concentration and net asset for all these 1,481 companies is 0.1991.

Table 25: Comparison of ownership concentration between bottom 50 companies

	State held	Family held	Widely Held	Listed abroad	Mean	Standard deviation	Median	1st Quartile	3rd Quartile	Average gross asset (th RMB)	Average net asset (th RMB)
Bottom 1-10	3	3	4	0	17.41	12.09	16.19	7.20	25.96	102,956	25,775
Bottom 11-20	3	7	0	0	23.60	13.00	18.74	15.91	22.77	179,282	95,480
Bottom 21-30	2	4	4	0	18.69	18.39	13.36	7.84	17.96	220,250	116,977
Bottom 31-40	3	5	2	0	22.70	14.62	20.16	13.29	37.42	269,682	160,643
Bottom 41-50	1	8	1	0	33.36	17.74	40.95	17.11	47.81	302,068	156,329
Total bottom 50	12	27	11	0	23.15	16.36	18.36	12.45	34.24	214,847	111,041
Total 1,481	914	415	152	86	32.04	17.62	29.97	18.64	44.78	28,889,505	4,983,027

*These companies are ranked descending according to gross asset.

* The correlation between ownership concentration and gross asset for all these 50 companies is 0.1814; the correlation between ownership concentration and net asset for all these 50 companies is 0.2355; the correlation between ownership concentration and gross asset for all these 1,481 companies is 0.1075; the correlation between ownership concentration and net asset for all these 1,481 companies is 0.1991.

In the total sample, there are 25 financial companies and 18 of them are ranked in top 50 companies. The biggest 6 companies are all financial companies and 9 financial companies are ranked in top 10. Financial companies always have higher debt ratio and this factor might cause the correlation between ownership concentration and gross asset to be high different to the correlation between ownership concentration and net asset. So next, financial companies are separated from non-financial companies and they are analyzed, respectively.

Table 26 displays the ownership concentration of all 25 financial companies. The top 10 companies are more concentrated than other 15 companies and the ownership concentration of these corporations seems to be moderately related to capital scale. The correlation between concentration and gross asset is 0.5441 and the correlation between concentration and net asset is 0.5963. 20 of these 25 companies are held by the state and 9 of the top 10 companies are owned by the government. There are only two financial companies held by family and both of them are relatively smaller than those held by the state. They are ranked at the 22nd and 25th positions. Detailed information of all these 25 public traded financial companies is shown in appendix 3.

In the total sample there are 1456 non-financial companies and table 27 shows the ownership concentrations of the top 50 non-financial companies. Similar to the financial companies, all the top 10 companies are held by the state and more concentrated than others. The ownership concentration of these corporations also seems to be moderately related to capital scale. The correlation between ownership concentration and gross asset is 0.4301 and the correlation between concentration and net asset is 0.4322, a little less than the financial firms. The table also shows that 48 of the top 50 companies are held by the state and none is held by family. Detailed information of these top 50 non-financial companies is shown in appendix 4.

This phenomenon can also be explained with the same reason mentioned above. The capital supply from public is limited in a country without advanced financial market and most of the capital demanded by these giant companies can only be supplied by the state, which leads to the extremely high ownership concentration of the top 10 financial institutions and top 50 non-financial companies. The higher the capital scale, the more the state must invest in the company, which causes the moderately positive relationship between capital scale and ownership concentration. The capital demand of the two family holding financial companies is relatively smaller and most of their capital can be collected from the minority shareholders so that the controlling shareholders own relative smaller share in the companies, as is shown by appendix 3 the ownership concentration of these two companies is 12.3 and 18.4 respectively, much lower than the state held ones. In the top 50 non-financial companies there is no company held by the family, because all these corporations are too big to be controlled by single family or person.

Comparing table 26 to 27, it is seen that the ownership of financial institutions are less concentrated than non-financial companies. It is well known that the financial institutions are always controlled by much stricter laws and regulations than other industries and this makes the financial institutions more transparent and less expropriated so that the minority shareholders will invest more in these institutions and the controlling shareholders do not need to hold higher ownership.

Table 26: Comparison of ownership concentration between financial corporations

	State held	Family held	Widely held	Listed abroad	Mean	Standard deviation	Median	1st Quartile	3rd Quartile	Average gross asset (th RMB)	Average net asset (th RMB)
1-10	9	0	1	7	43.74	25.81	47.95	20.37	68.27	2,928,414,803	202,252,612
11-20	8	0	2	1	24.98	20.10	19.23	10.50	38.99	264,218,688	29,818,114
21-25	3	2	0	0	27.28	12.21	22.65	18.43	38.69	4,588,460	1,202,678
Total 25	20	2	3	8	32.94	23.16	25.47	12.99	45.46	1,277,971,088	93,068,826

*These companies are ranked descending according to gross asset.

* The correlation between ownership concentration and gross asset for all these 25 companies is 0.5441; the correlation between ownership concentration and net asset for all these 25 companies is 0.5963.

Table 27: Comparison of ownership concentration between top 50 non-financial companies

	State held	Family held	Widely held	Listed abroad	Mean	Standard deviation	Median	1st Quartile	3rd Quartile	Average gross asset (th RMB)	Average net asset (th RMB)
Top 1-10	10	0	0	8	69.71	9.99	72.52	66.03	74.21	380,025,519	213,462,730
Top 11-20	9	0	1	7	43.31	21.96	44.43	32.96	53.09	100,644,645	39,313,366
Top 21-30	10	0	0	5	55.43	13.72	58.18	53.85	63.52	61,680,385	20,731,126
Top 31-40	9	0	1	3	39.02	21.45	40.91	19.29	50.58	41,554,766	16,337,310
Top 41-50	10	0	0	5	44.77	20.25	42.27	32.61	59.69	31,159,629	14,913,478
Total top 50	48	0	2	28	50.45	21.21	53.50	35.08	66.71	123,012,989	60,951,602
Total 1,456	894	413	149	78	32.03	17.51	30.00	18.70	44.74	7,442,363	3,470,565

*These companies are ranked descending according to gross asset.

* The correlation between ownership concentration and gross asset for all top 50 non-financial companies is 0.4301; the correlation between ownership concentration and net asset for all top 50 non-financial companies is 0.4322; the correlation between ownership concentration and gross asset for all 1,456 non-financial companies is 0.2053; the correlation between ownership concentration and net asset for all 1,456 non-financial companies is 0.1991.

5.3.4.2 Comparison of ownership concentration between companies listed abroad and inland with the same capital scale

In the last section it is shown that the ownership concentration is moderately related to the capital scale, both for the financial and non-financial companies. This section is to examine whether the higher ownership concentration of companies listed abroad is caused by their capital scale, for the companies listed abroad are relative more than those listed only in mainland. Because financial and non-financial companies have different degree of ownership concentration, all of the companies are separated into four groups: financial companies listed abroad, financial companies listed only inland, non-financial companies listed abroad and non-financial companies listed only inland. And then the financial and non-financial groups are compared respectively.

Table 28 shows the comparison of ownership concentration between financial institutions listed abroad and those listed mainland. The capital scale is divided into three levels: over 1,000,000,000 thousand RMB, 1,000,000,000 to 600,000,000 thousand RMB and under 600,000,000 thousand RMB. All the companies in the first level are listed abroad and none of the financial companies listed only in mainland has a gross capital over 1,000,000,000. All the companies in the third level are listed only in mainland because the gross asset of all companies listed abroad is more than 600,000,000. So, only the second level can be used to compare. In this level, there are only 2 companies listed abroad and 3 companies listed only in mainland. Although the average concentration of these two companies listed abroad is higher than the average value of the ones listed inland, it is not convincible to conclude that financial corporations listed abroad is more concentrated than those listed inland because the sample in this level is too small.

Table 29 is the comparison of ownership concentration between non-financial companies listed abroad and those listed in mainland. As what was done for the financial companies, the non-financial companies are also divided into 6 levels according to their gross asset: over 200,000,000 thousand RMB, 200,000,000 to 35,000,000 thousand RMB, 35,000,000 to 10,000,000 thousand RMB, 10,000,000 to 3,000,000 thousand RMB, 3,000,000 to 900,000 thousand RMB, and under 900,000 thousand RMB. In the first level there are only firms listed abroad and in the last level only firms listed inland, so the other four levels are used to compare. In the second level (200,000,000 to 35,000,000) and the fourth level (10,000,000 to 3,000,000) companies listed abroad are much more concentrated than those listed inland; and in the other low levels (35,000,000 to 10,000,000 and 3,000,000 to 900,000), companies listed abroad are a little less concentrated than those listed inland. So the result indicates that non-financial

companies listed abroad are not obviously less concentrated than those listed inland even if the capital scale is considered.

After this carefully comparison of ownership concentration between companies listed abroad and inland for each capital scale level it can be concluded assuredly that the higher ownership concentration of companies listed abroad is not caused by their greater capital scale.

Table 28: Comparison of ownership concentration between financial companies listed in mainland and listed abroad

Level of gross asset (th RMB)	Listed abroad / inland	Number of firms	Held by state	Held by family	Widely Held	Mean	Standard deviation	Median	1st Quartile	3rd Quartile	Average gross asset (th RMB)	Average net asset (th RMB)
Over 1,000,000,000	Abroad	6	6	0	0	52.39	23.78	67.73	32.14	32.14	4,283,905,333	289,155,333
1,000,000,000 to 600,000,000	Abroad	2	1	0	1	34.27	34.10	34.27	17.22	51.32	772,854,000	138,723,500
	Inland	3	2	0	1	18.24	9.31	20.40	13.15	24.40	895,370,675	39,127,040
Under 600,000,000	Inland	14	11	2	1	27.57	17.12	24.06	12.48	41.14	143,858,942	14,068,609
Total		25	20	2	3	32.94	23.16	25.47	12.99	45.46	1,277,971,088	93,068,826

Table 29: Comparison of ownership concentration between non-financial companies listed in mainland and listed abroad

Level of gross asset (th RMB)	Listed abroad / inland	Number of Firms	Held by State	Held by Family	Widely Held	Mean	Standard deviation	Median	1st Quartile	3rd Quartile	Average gross asset (th RMB)	Average net asset (th RMB)
Over 200,000,000	Abroad	6	6	0	0	73.25	8.24	74.08	71.63	75.45	523,032,453	293,361,245
200,000,000 to 35,000,000	Abroad	17	17	0	0	52.04	14.17	53.57	47.89	64.41	87,048,225	39,788,014
	Inland	17	15	0	2	44.15	24.76	48.97	18.71	63.82	71,825,800	27,169,506
35,000,000 to 10,000,000	Abroad	18	17	1	0	39.47	13.12	41.57	34.26	49.71	22,618,473	13,185,432
	Inland	91	79	6	6	42.02	18.24	43.54	30.28	54.97	16,150,485	5,973,754
10,000,000 to 3,000,000	Abroad	18	7	10	1	41.77	17.67	46.73	30.04	50.50	5,857,273	3,211,475
	Inland	331	238	57	36	31.78	16.76	30.91	19.57	44.88	5,271,137	2,113,036
3,000,000 to 900,000	Abroad	19	5	12	2	27.59	12.12	25.08	20.44	37.05	2,100,544	1,515,842
	Inland	596	370	164	62	30.52	16.82	27.46	18.12	41.76	1,734,473	807,173
Under 900,000	Inland	343	140	163	40	29.26	16.49	27.22	16.75	40.52	572,497	310,936
Total	Abroad	517	384	86	47	42.44	18.59	42.27	29.86	54.41	66,288,312	35,391,141
	Inland	1,378	842	390	146	31.44	17.26	29.31	18.42	43.97	4,111,460	1,663,740

* The correlation between ownership concentration and gross asset for all 78 non-financial companies listed abroad is 0.5356; the correlation between ownership concentration and net asset for all 78 non-financial companies listed abroad is 0.5120.

* The correlation between ownership concentration and gross asset for all 1,378 non-financial companies listed in mainland is 0.1600; the correlation between ownership concentration and net asset for all 1,378 non-financial companies listed in mainland is 0.1839.

5.3.5 Conclusion

In the sections above, this study compares the ownership concentration between companies listed abroad and listed only inland and analyzes the difference carefully, from aspects of the character of ultimate owner (state or family), listed abroad age and capital scale. All these results do not sustain the opinion that listing abroad is a good way to solve the Twin Agency Problems and makes the companies more ownership dispersed. After all these examinations, it should be concluded that listing abroad is not a good way for Chinese company to get more ownership-dispersed, although the companies in USA are much more dispersed than in China.

In Chapter 4, this study has suggested to solve the Twin Agency Problems through education, active economic policies and stricter laws and regulations. The purpose of listing abroad is to use the laws and regulations in foreign countries, but the effect has not been seen according to the evidence in China. It should be considered whether the laws and regulations on foreign financial market have any impact on the companies operated in China mainland and how much impact they can have. Because the companies, the controlling shareholders and state rulers all live in inland and are more regulated and controlled by the laws and regulations of the country they stay in, but not the country they only report to. So what is more important is where the company is operated, not where it is listed.

In this section the following conclusions have been made:

- (a) The state holding companies are more concentrated than family holding ones;
- (b) The companies listed longer on NYSE are not less concentrated than those newly listed;
- (c) Ownership concentration is moderately positively related to capital scale.
- (d) The companies listed abroad are not less concentrated than those listed only inland.

5.4 Relationship between profitability and ownership concentration

5.4.1 Relationship between ROE and ownership concentration for companies in different industries

From section 5.2, it is known that most of the Chinese companies are ownership concentrated, which is the best choice in the situation with serious Twin Agency Problems. It is also shown that some companies are ownership-dispersed although they live in the same circumstance. How are the dispersed companies operated? Are they more or less effective than those concentrated? In Chapter 2.3 it is indicated that the company is less expropriated if the entrepreneur has higher cash flow ownership in the company, and the company is better operated. But is this true in reality? In this section, the relationship between profitability and

ownership concentration is investigated to testify whether the companies with higher ownership concentration have higher profitability than those ownership-dispersed.

The return of equity (ROE) is used here as an index of profitability. All the listed companies must disclose their ROE of the last three years in the annual report and all the financial data in the report have been audited by independent and professional accountant. Although the auditors cannot guarantee that these data are totally true and correct, the annual report is the most reliable source where these financial data can be obtained.

Cash flow is also an index of performance of the company and is more difficult to be adjusted than ROE, but cash flow does not equal the fortune owned by the shareholders in the company. The use of cash flow is controlled by the top managers, but the distribution of profit benefits all the owners so the owners care more about the profit on the condition that the cash flow will not break off. Generally, the managers will try to keep the cash flow at a reasonable level. How much is reasonable depends on the company's financial policy which is different among the companies. Contrarily, no company dislikes too much profit and all companies will pursue as much profit as they can. So, ROE is used here as the index of performance of the companies.

Because the profitability is very different between industries, the ROE of all the industries are calculated respectively. All the original data come from annual reports of 2007 of all the companies in the sample. Net profit is the profit or loss of financial year 2007 (1st Jan. to 31st Dec. 2007) and net asset is the balance on 31st Dec. 2007. The average ROE is calculated as:

ROE of whole industry = Sum of net profit of all companies in certain industry/Sum of net asset of all companies in certain industry

ROE of companies held by the state in certain industry = Sum of net profit of all companies held by the state in certain industry/Sum of net asset of all companies held by the state in certain industry

ROE of companies held by family in certain industry = Sum of net profit of all companies held by family in certain industry/Sum of net asset of all companies held by family in certain industry

ROE of companies widely held in certain industry = Sum of net profit of all companies widely held in certain industry/Sum of net asset of all companies widely held in certain industry

ROE of all companies in the sample = Sum of net profit of all companies in the sample/Sum of net asset of all companies in the sample

ROE of all companies held by the state in the sample = Sum of net profit of all companies held by the state in the sample/Sum of net asset of all companies held by the state in the sample

ROE of all companies held by family in the sample = Sum of net profit of all companies held by family in the sample/Sum of net asset of all companies held by family in the sample

ROE of all companies held widely held in the sample = Sum of net profit of all companies widely held in the sample/Sum of net asset of all companies widely held in the sample

As is shown in tables 30 and 31, the average ROE of all the companies in the sample is 14.94%, but it is very different among the industries. The industry of *mining* is the most profitable industry with an average ROE of 18.73%, the other more profitable industries are *petroleum, chemistry and plastic, communication, transport and storage, information technology, finance and insurance, and other manufactures*, the ROE of which are all over 15%. The industry of *electron* has the worst performance, with the ROE of 4.9%. The other less profitable industries are construction, and media and culture, both of which have a ROE under 8%.

Tables 30 and 31 also show the comparison of ROE between state holding companies, family holding companies and widely held companies for each industry. Both tables indicate that in most industries the ROE of companies ownership concentrated (state holding or family holding) is higher than those dispersed (widely held), which is consistent to the theoretical result that ownership concentrated companies are better operated than dispersed because the agency problems in ownership concentrated companies are not so serious as in the dispersed ones. It is also found that in some industries it is the contrary. Both tables reveal that the ROE of widely held companies exceeds the average ROE of the industry in the following five industries: *agriculture, mining, textile, clothes and leather, wholesale and retail, and social service*. Particularly the industries of *textile, clothes and leather, and wholesale and retail* are more convictive, because all these industries have relatively more widely held companies and each of the other three industries has only three dispersed companies (10% cutoff). For the industry of *textile, clothes and leather*, the ROE of widely held companies are higher than both state held and family held. This means that these dispersed companies are really well managed by the professional managers who do not hold high cash flow right in the company and the agency problems are better solved by the corporate governance. For the industry of *wholesale and retail*, although the ROE of widely held companies are higher than those state holding ones but lower than family holding ones. This means that companies held by family are most effective because ownership in these firms is more concentrated by the controlling shareholder, who is generally the top manager of the company, and thus their incentive to steal from the firm is reduced. For the state holding companies, although the ownership is also concentrated, the top manager himself has no cash flow right in the company so the higher ownership concentration does not reduce his incentive to expropriate the company.

The tables also show the correlation between ROE and ownership concentration for each industry and this correlation is very different among these industries. For most industries the ROE is almost not related or very weakly related to ownership concentration (the absolute value of correlation is less than 0.2). For the industries of *food and drink* and *communication, transport and storage*, the ROE is weakly positively related to ownership concentration (the value of correlation is between 0.2 and 0.4). For the industries of *wood and furniture* and *paper making and print*, they are moderate positive related (the value is between 0.4 and 0.6). For the industries of *other manufacture* and *social service* it is even weakly negatively related (the value is between -0.2 and -0.4).

So the comparison of ROE between concentrated and dispersed companies indicates that there is some relativity between profitability and ownership concentration but the correlation value does not display this relativity obviously. The reason might be that the relativity between these two factors among the state holding companies is different from the family holding companies; this relativity of companies listed abroad is different from those listed inland. Both of these two hypotheses are discussed in the following two sections.

Table 30: Comparison of ROE between companies ownership-concentrated and -dispersed (20% cutoff)

Industry	Number of firm	Held by state	Held by family	Widely held	ROE of Industry	ROE of companies held by state	ROE of companies held by family	ROE of companies widely held
Agriculture	34	18	9	7	8.43%	8.58%	7.11%	9.62%
Mining	32	26	0	6	18.73%	18.69%	No	21.54%
Manufacture	857	431	185	241				
Food and drink	61	32	14	15	12.49%	13.64%	9.88%	9.88%
Textile, clothes and leather	68	26	16	26	8.38%	5.42%	6.29%	10.14%
wood and furniture-	3	0	2	1	10.42%	No	10.49%	9.69%
paper making and print	29	11	8	10	11.77%	12.77%	14.30%	9.98%
Petroleum, chemistry and plastic	156	86	31	39	15.11%	15.60%	12.88%	12.86%
Electron	69	29	19	21	4.90%	5.36%	12.12%	3.13%
Metal and nonmetal	137	81	20	36	14.81%	15.07%	15.89%	12.14%
Machine, equipment and instrument	228	129	45	54	13.53%	13.00%	17.05%	12.08%
Medicine and biology	94	35	23	36	11.08%	8.85%	14.40%	10.85%
Other manufactures	12	2	7	3	15.91%	7.84%	11.76%	45.30%
Electric power, gas and water	63	49	1	13	9.98%	10.10%	12.01%	7.02%
Construction	34	19	7	8	7.05%	6.90%	11.16%	4.93%
Comunication, transport and storage	63	51	3	9	15.67%	15.89%	5.25%	7.77%
Information technology	94	35	29	30	15.90%	16.43%	12.28%	6.68%
Wholesale and retail	88	39	10	39	13.83%	10.71%	20.14%	15.38%
Finance and insurance	25	16	0	9	15.32%	15.25%	No	15.83%
Real estate	64	30	22	12	11.57%	9.26%	13.99%	14.27%
Social service	48	32	6	10	10.07%	10.13%	7.23%	11.09%
Media and culture	9	8	1	0	7.70%	7.70%	7.45%	No
Miscellaneous	70	20	11	39	9.15%	8.59%	13.12%	8.57%
Total / Weighted Average	1,481	774	284	423	14.94%	15.29%	13.77%	12.69%

Table 31: Comparison of ROE between companies ownership-concentrated and -dispersed (10% Cutoff)

Industry	Number of firm	Held by state	Held by family	Widely held	ROE of industry	ROE of companies held by state	ROE of companies held by family	ROE of companies widely held	Corr. Between ownership concentration and ROE
Agriculture	34	20	11	3	8.43%	7.84%	7.20%	15.82%	-0.0054
Mining	32	27	2	3	18.73%	18.68%	4.66%	23.09%	-0.0310
Manufacture	857	504	274	79					
Food and drink	61	35	18	8	12.49%	13.40%	9.46%	11.02%	0.2031
Textile, clothes and leather	68	31	27	10	8.38%	7.31%	8.33%	9.34%	0.0375
Wood and furniture	3	0	3	0	10.42%	No	10.42%	No	0.5542
Paper making and print	29	14	13	2	11.77%	10.48%	13.23%	13.69%	0.4381
Petroleum, chemistry and plastic	156	102	45	9	15.11%	15.68%	12.60%	5.80%	0.0437
Electron	69	35	28	6	4.90%	3.37%	10.56%	8.09%	-0.0549
Metal and nonmetal	137	97	29	11	14.81%	14.89%	15.89%	5.78%	-0.0962
Machine, equipment and instrument	228	141	69	18	13.53%	13.27%	15.33%	9.02%	0.0455
Medicine and biology	94	46	35	13	11.08%	8.87%	12.71%	15.00%	0.1342
Other manufactures	12	3	7	2	15.91%	23.90%	11.76%	6.86%	-0.3287
Electric power, gas and water	63	57	1	5	9.98%	9.96%	12.01%	9.65%	-0.1234
Construction	34	21	9	4	7.05%	6.89%	9.71%	6.50%	0.0476
Communication, transport and storage	63	56	3	4	15.67%	15.77%	5.25%	8.17%	0.3360
Information technology	94	45	37	12	15.90%	16.22%	12.62%	-1.78%	-0.0931
Wholesale and retail	88	56	19	13	13.83%	12.70%	16.32%	14.96%	0.0507
Finance and insurance	25	20	2	3	15.32%	15.41%	28.40%	14.12%	0.0721
Real estate	64	34	25	5	11.57%	11.06%	13.80%	10.93%	0.1604
Social service	48	37	8	3	10.07%	9.85%	7.73%	14.80%	-0.2303
Media and culture	9	8	1	0	7.70%	7.70%	7.45%	No	0.0843
Miscellaneous	70	29	23	18	9.15%	9.82%	12.44%	6.06%	-0.0798
Total / Average Weighted	1,481	914	415	152	14.94%	15.20%	13.03%	12.40%	

5.4.2 Relationship between profitability and ownership concentration for state holding companies and non-state holding companies

In section 5.3, it is known that the ownership concentration of state holding companies is not the same as the family holding companies and the profitability of these two kinds of firms is also different. Hence, the relativity between profitability and ownership concentration could be very different between companies held by government and held by family. In this section, the samples are divided into state holding, family holding and widely held, and the relativity between ownership concentration and profitability is investigated for these three groups respectively.

Tables 30 and 31 display that the ROE of all the industries are very different from each other, therefore to make the corporations from different industries comparable this study defines a relative profitability, named CR, which is obtained through dividing the ROE of a firm by the ROE of the industry. The higher the CR of a firm, the more profitable the firm. Instead of ROE, CR is another index of profitability of the firm. The CR of the state holding companies, the family holding ones and the widely held ones is compared, and the correlation between ownership concentration and CR is calculated for each group.

The indices in tables 32 to 34 are calculated as:

Mean of CR of state holding companies = Mean of CR of all the state holding companies in the sample

Mean of CR of family holding companies = Mean of CR of all the family holding companies in the sample

Mean of CR of widely held companies = Mean of CR of all the widely held companies in the sample

Mean of CR of non-state holding companies = Mean of CR of all the non-state holding companies in the sample

Mean of CR of total companies = Mean of CR of all companies in the sample

Other indices are calculated in the same way.

Table 32: Comparison of CR between companies ownership-concentrated and -dispersed (20% Cutoff)

	Number of firms	Mean of CR	Standard deviation of CR	Median of CR	1 st Quartile of CR	3 rd Quartile of CR	Corr. Between ownership concentration and CR
State holding	773	0.96	6.56	0.69	0.34	1.11	0.0079
Family holding	284	2.44	21.45	0.91	0.56	1.49	0.0404
Widely held	425	0.92	9.32	0.66	0.22	1.20	0.0098
Non-state holding	709	1.53	15.40	0.79	0.34	1.35	0.0590
Total	1,481	1.23	11.66	0.73	0.34	1.19	0.0220

*CR=ROE of the firm / ROE of the industry

Table 33: Comparison of CR between companies ownership-concentrated and -dispersed (10% Cutoff)

	Number of firms	Mean of CR	Standard deviation of CR	Median of CR	1 st Quartile of CR	3 rd Quartile of CR	Corr. Between ownership concentration and CR
State holding	914	0.99	6.21	0.67	0.33	1.10	-0.0017
Family holding	415	2.03	17.87	0.87	0.45	1.43	0.0506
Widely held	152	0.48	14.77	0.71	0.20	1.33	-0.0416
Non-state holding	567	1.61	17.11	0.84	0.39	1.40	0.0586
Total	1,481	1.23	11.66	0.73	0.34	1.19	0.0220

*CR=ROE of the firm / ROE of the industry

Table 34: Comparison of CR between companies with different ownership concentration

Concentration of cash flow right	Ultimate owner	Number of firms	Mean of CR	Standard deviation of CR	Median of CR	1 st Quartile of CR	3 rd Quartile of CR	Corr. Between ownership concentration and CR
Over 20%	State holding	773	0.96	6.56	0.69	0.34	1.11	0.0079
	Family holding	284	2.44	21.45	0.91	0.56	1.49	0.0404
20% to 10%	State holding	142	1.18	3.79	0.61	0.20	0.98	-0.0099
	Family holding	130	1.16	3.52	0.71	0.25	1.19	-0.1047
Under 10%	Widely held	152	0.48	14.77	0.71	0.20	1.33	-0.0416

*CR=ROE of the firm / ROE of the industry

Both tables 32 and 33 indicate that the family holding companies are the most effective, and the widely held companies have the lowest CR, which is consistent to the result of Twin Agency Problems. The more the firm is ownership concentrated, the less the corporate insiders expropriate from the firm and the higher the firms value. The insiders of family holding

companies have higher proportion in the firms, so they have less incentive to expropriate the firm but more incentive to protest against the expropriation by the state rulers. Although the state holding companies have higher ownership concentration, the managers always have no direct cash flow right in the companies and are appointed by the government. When they have more chances to be lifted in the government, they are more encouraged to expropriate less from the corporations and manage the corporations well; otherwise they will use the companies to satisfy their own needs. The older managers of the state holding companies will expropriate as much as they can before they retire and do not care about the bankruptcy of the company for they have not invested any cent in it. The Twin Agency Problems in the widely held company are most serious because the insiders have only a little ownership in the company and they do not care much about the value of the firm. They also have no political career to care about, therefore they are more tempted to steal from the company.

Tables 32 and 33 also indicate that the ROE of state holding companies is less related to their ownership concentration than the non-state holding ones. The correlation between ownership concentration and CR for state holding companies is 0.0079 (table 32), which is much lower than non-state holding ones, 0.0590 (table 32). It also does not indicate an obvious relationship between ownership concentration and CR. The mean value of CR of state holding companies in table 32 is 0.96 (20% cutoff) and in table 33 is 0.99 (10% cutoff), which means state holding companies with an ownership concentration over 20% are not more profitable than those with an ownership concentration between 10% and 20%. This is not the same for the family holding companies. The mean value of CR of family holding companies in table 32 is 2.44 (20% cutoff) and decreases to 2.03 (10% cutoff) in table 33, which means the family holding companies with an ownership concentration over 20% are more profitable than those with an ownership concentration between 10% and 20%. It can be explained by the Twin Agency Problems: the managers of state holding companies do not have any share in the companies and their benefit and behavior are independent on the cash flow right the state holds in the company. The insiders of family holding companies have co-invested in the firms and they care more about the performance of firms when they have more shares in them.

To show this result clearer the ownership concentration is classified into three levels: over 20%, 20%-10% and under 10%, and the CR of each level for both state holding and family holding companies is examined, which is revealed in table 34. As mentioned above the mean value of CR of family holding companies decreases with the descending of the ownership concentration, from 2.44 to 1.16, for the owners have incentives to expropriate the companies when they have fewer shares in the company. And the mean value of CR of the companies widely held is only 0.48, which declares again that dispersed ownership is not effective.

When the ownership concentration decreases from over 20% to 20%-10%, the mean value of CR of state holding companies increases from 0.96 to 1.18, and in the group of 20%-10% the state holding and family holding companies have the similar CR, 1.18 and 1.16 respectively. When the ownership of the state in the company decreases from over 20% to 20%-10%, the ownership held by private families or persons increases, although not as much as the state holds (the state is still the biggest shareholder in the company). It is enough to make the private investors to care more about the firms and have seats in the board of directors. These less concentrated and state holding companies could be more effective than those companies wholly controlled by a group of officials who do not have even one percent ownership in the company. According to the median value, 1st and 3rd quartiles, the state holding companies with a concentration over 20% are a little better than those with a concentration between 20% and 10%.

Another interesting discovery is that the standard deviation of the group of 20%-10% is at the least, which means that there is not much distinction of profitability between all the companies in this group. The reason may be that the decisions of these firms are made more by a group of top managers, instead of by one or two dictators, which is common in the family companies, so these firms are more controlled by an institution than by several important persons. This reason also explains why the mean value of CR of state holding companies in this group is nearly the same as those held by families. Both of these two kinds of companies are controlled by a group of top managers. It is contrary to the companies held by the family with over 20% concentration, which have the highest mean value of CR, but also have the highest standard deviation because most of these firms are controlled by several family members and sometimes only the father of the family. Of course, these dictators will try their best to run the firm, but the risk of making wrong decision is also higher. So, the performance of these corporations depends on the ability and emotion of the ultimate owners and is more unstable.

5.4.3 Relationship between profitability and ownership concentration for companies listed abroad and listed inland

In section 5.3, it has been proved that listing abroad is helpless for the Chinese companies to get more dispersed and this section is to investigate the profitability of the companies listed abroad. As was done in section 5.3, all the samples are classified into two groups, listed abroad and listed only in inland. Because of the difference between state holding and family holding companies, the samples of each group are further divided into state holding, family holding and widely held. Then the CR of each group is analyzed, which is shown in tables 35 and 36.

According to the mean value of CR, the companies listed abroad are not as profitable as those listed inland. The mean value of all the 86 companies listed abroad is 0.96, which is less

than the value of all 1395 companies listed inland, which is 1.25. And this distinction is greater for companies held by family. The mean value of CR of companies held by family and listed abroad is 1.33 and that for those listed inland is 2.52 (20% cutoff). The mean value of CR of companies held by family and listed abroad is 1.06 and this value of those listed inland is 2.09 (10% cutoff). It seems that listing abroad does not make the companies more effective. The only except is the companies widely held. The mean value of CR of companies widely held and listed abroad is 1.41 (10%), greater than those widely held and listed inland, and even greater than the concentrated companies listed abroad (10% cutoff). There are only 4 widely held and listed abroad companies, much less than the samples widely held and listed inland, so this comparison is not so convictive.

Looking at medians of the CR, the result is different. The median of CR of all 86 companies listed abroad is 0.90, which is greater than the median of all 1396 companies listed inland, which is 0.72. The median value of CR of companies held by family and listed abroad is 1.19 (20% cutoff), which means that 50% companies in this group have an ROE higher than the average level of the industry they belong to. But the median value of CR of the companies held by family and listed inland is only 0.9 (20% cutoff), which means that 50% of them have an ROE less than the average ROE of the industry they belong to. These data indicate that there are more good firms in the group listed abroad, although their average CR is not as good as those of the firms in the group listed inland. This is similar with the result of Doidge et al. (2004), who found that firms cross-listed in the US have higher rate of return than those listed in homeland and can be explained with the Twin Agency Problems. The firms listed abroad are less expropriated by inside expropriators and state rulers because of the stricter laws and regulations enforced by foreign exchanges.

Another point worth mentioning is the distinction of standard deviation between companies listed abroad and those listed inland. The deviation of all 86 companies listed abroad is only 1.08, much less than 12.01, the value of all 1396 companies listed inland. Even for the family holding companies, which have the highest deviation in tables 32 and 33, the deviation of those listed abroad is only 0.83 under the 20% cutoff standard (see table 35) and 1.41 under the 10% cutoff standard (see table 36). So the companies listed abroad are more reliable as a whole and the investors have less risk when they choose companies to invest in because the difference between the companies are not so high. And this characteristic might well reflect the advantage of foreign stock market; bad companies are strictly forbidden to step into the market.

Tables 35 and 36 also show that the profitability of companies listed abroad is more related to ownership concentration than those listed inland. The correlation between ownership concentration and CR for all the companies listed abroad is 0.1014, which is higher than this correlation for all the companies listed inland, 0.0234 (see table 35). This value of firms held

by family and listed abroad is 0.2728 (10% cutoff) and for the family holding and listed inland companies it is only 0.0521 (10% cutoff). According to the theory of agency problems, the insiders care more about their share in the firm when the financial market is more advanced, because the value of the company can be better publicly priced and more sensitive to their performance. So, if the companies step into a foreign market, the owners pay more attention to the share value they hold in the company than the private benefit they can divert from the company and the more ownership they have in the company, the more they care about the corporate market value. On the contrary, if the firm value cannot be fair priced and the value of the stocks held by the insiders is not related to their performance, they will not care so much about the profitability shown on the annual report but care more about their own private benefit from the company.

Next, the ownership is classified into three levels: over 20%, 20%-10% and under 10%, and the CR of each level is analyzed for both companies listed abroad and listed inland, as is displayed in table 37.

Similar to the result obtained in the last subsection, the mean value of CR of state holding companies increases when the concentration decreases from over 20% to 20%-10%, and it is suitable to both companies listed inland and abroad, because the state holding companies in the group of 20%-10% are more effective than those in the group of over 20%.

An unexpected datum is the negative mean value of CR of the four family holding listed abroad companies in the group of 20%-10%. It is found that the ROE of these four companies is -60.77%, 21.68%, 22.22% and 8.67% respectively. If the extremely bad one is kicked out of the sample, the mean value of CR of the other three companies is 1.18, which is more reasonable. And it is seen again that the mean value of CR of family holding companies decreases when the ownership concentration decreases from over 20% to 20%-10%.

A very interesting discovery is that the companies listed abroad with an ownership concentration under 10% are really well operated and their mean value of CR is 1.41, which is higher than other listed abroad groups and much higher than the listed inland companies with the same concentration, which is only 0.45. But as mentioned before, the sample in this group is too small, only 4 companies are listed abroad and widely held, so that this result is not convincing. The next section focuses on the well managed and ownership dispersed companies and characteristic of these companies will be examined to get some empirical results.

Table 35: Comparison of CR between companies listed abroad and listed inland (20% Cutoff)

		Number of firms	Mean of CR	Standard deviation of CR	Median of CR	1 st Quartile of CR	3 rd Quartile of CR	Corr. Between ownership concentration and CR
Listed abroad	State holding	54	0.88	0.93	0.80	0.60	1.06	0.1971
	Family holding	19	1.33	0.83	1.19	0.82	1.45	0.1568
	Widely held	13	0.72	1.69	0.92	0.55	1.46	-0.3450
	Non-state holding	32	1.01	1.30	1.06	0.51	1.47	0.1682
	Total	86	0.96	1.08	0.90	0.61	1.32	0.1014
Listed inland	State holding	719	0.96	6.79	0.67	0.32	1.11	0.0068
	Family holding	265	2.52	22.21	0.90	0.52	1.50	0.0422
	Widely held	411	0.93	9.47	0.64	0.21	1.18	0.0119
	Non-state holding	676	1.55	15.76	0.78	0.33	1.34	0.0608
	Total	1,395	1.25	12.01	0.72	0.33	1.19	0.0234
Total		1,481	1.23	11.66	0.73	0.34	1.19	0.0220

*CR=ROE of the firm / ROE of the industry

Table 36: Comparison of CR between companies listed abroad and listed inland (10% Cutoff)

		Number of firms	Mean of CR	Standard deviation of CR	Median of CR	1 st Quartile of CR	3 rd Quartile of CR	Corr. Between ownership concentration and CR
Listed abroad	State holding	59	0.89	0.92	0.79	0.60	1.06	0.1516
	Family holding	23	1.06	1.41	1.19	0.71	1.45	0.2728
	Widely held	4	1.41	0.81	1.07	0.87	1.61	0.3139
	Non-state holding	27	1.11	1.35	1.19	0.72	1.45	0.1637
	Total	86	0.96	1.08	0.90	0.61	1.32	0.1014
Listed inland	State holding	855	1.25	12.01	0.72	0.33	1.19	-0.0027
	Family holding	392	2.09	18.38	0.85	0.45	1.43	0.0521
	Widely held	148	0.45	14.97	0.70	0.20	1.33	-0.0433
	Non-state holding	540	1.64	17.53	0.82	0.35	1.40	0.0603
	Total	1,395	1.25	12.01	0.72	0.33	1.19	0.0234
Total		1,481	1.23	11.66	0.73	0.34	1.19	0.0220

*CR=ROE of the firm / ROE of the industry

Table 37: Comparison of CR between companies listed abroad and listed inland with different ownership concentration

		Cash flow right	Owner	Number of firms	Mean of CR	Standard deviation of CR	Median of CR	1 st Quartile of CR	3 rd Quartile of CR	Corr. Between ownership concentration and CR
Listed abroad	Over 20%	State holding		54	0.88	0.93	0.80	0.60	1.06	0.1971
		Family holding		19	1.33	0.83	1.19	0.82	1.45	0.1568
	20% to 10%	State holding		5	0.94	0.87	0.65	0.39	1.46	0.2012
		Family holding		4	-0.24	2.49	0.97	-0.71	1.45	-0.6840
	Under 10%	Widely held		4	1.41	0.81	1.07	0.87	1.61	0.3139
Listed inland	Over 20%	State holding		719	0.96	6.79	0.67	0.32	1.11	0.0068
		Family holding		265	2.52	22.21	0.90	0.52	1.50	0.0422
	20% to 10%	State holding		136	1.20	3.86	0.60	0.20	0.97	-0.0130
		Family holding		127	1.19	3.53	0.70	0.23	1.16	-0.1089
	Under 10%	Widely held		148	0.45	14.97	0.70	0.20	1.33	-0.0433

*CR=ROE of the firm / ROE of the industry

5.5 Measures taken by the ownership-dispersed corporations to solve the agency problems

5.5.1 Effective ownership structure

5.5.1.1 Ownership structures taken by the ownership-dispersed companies

Through the analyses above, it is known that a few public traded companies are ownership dispersed and some of them have good performance according to the annual report of 2007. So the purpose of this capital is to make a detailed analysis of the ownership structure of these companies to see how these companies disperse their ownership and which structure is more effective.

There are altogether 152 dispersed companies in the samples and the detailed information of these 152 companies is shown in appendix 5. It is found that the ownership structure of these companies can be classified into 4 types: direct dispersed structure, indirect dispersed structure, pyramid structure and foundation structure. And the following 4 examples explain these structures more clearly.

a) Direct dispersed

As indicated by the definition, direct dispersed means that the shares of the listed company is directly dispersed to different owners, nobody of which holds more than 10% share in the company. These owners may be persons or entities and they do not belong to the same ultimate owner.

The following figure 16 shows the ownership structure of Shanghai Broadband Technology Co. Ltd (SBT), a company in the industry of *information technology* and listed on SHSE. The biggest immediate shareholder of SBT is company A, which holds 8.52% share (less than 10%) and is indirectly controlled by Mr. Yan Xiaoqun. He holds none of the shares of other shareholders of SBT. So the shares of SBT are directly dispersed to Mr. Yan and other owners. Because Mr. Yan holds 80% shares of company B, B holds 94% shares of company A, and A holds 8.52% shares of SBT, so the voting rights held by Mr. Yan in SBT is 8.52%, the least of the chain. The cash flow right held by Mr. Yan in SBT is 6.41%, the product of all the percent along the chain: $80\% * 94\% * 8.52\% = 6.41\%$. Mr. Yan holds the most voting right in SBT.

The characteristics of direct dispersed companies are: none of the immediate shareholders holds more than 10% shares in the listed company; and both of the voting right and the cash flow right held by the biggest ultimate owner in the listed company are less than 10%.

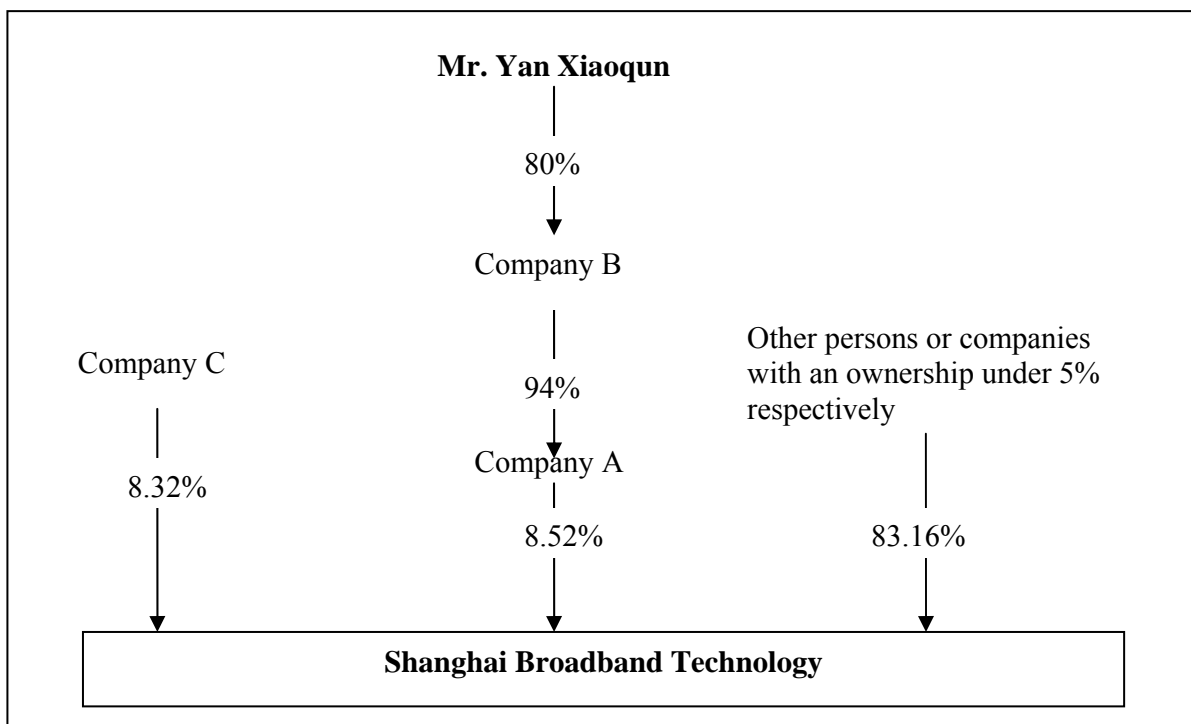


Figure 16: Ownership structure of Shanghai Broadband Technology Co. Ltd.

b) Indirect dispersed

This means that the ownership of the listed company is concentrated by an immediate controlling shareholder, who is an entity and holds more than 10% share of the company, but the voting right of this controlling shareholder is dispersed to many persons and nobody holds more than 10% share in the controlling shareholder.

This type can be divided into two subclasses: employee holding or non-employee holding. The former means that most of the owners of the controlling shareholder are managers or employees of the listed company. The ultimate owners can be hundreds of or even more than 1000 of persons. The latter means, most of the ultimate owners are not managers or employees of the listed company, but only one or two of them have places in the group of top managers of the listed company, sometimes none of them enters into the board of directors. In all the samples, there are altogether 16 indirectly dispersed companies, 14 of which are employee holding and only 2 are held by non-employees.

Figure 17 displays the ownership structure of Jilin AoDong Medicine Industry Group Co. Ltd (AoDong), a typical employee holding medical company and listed on SZSE. The biggest immediate shareholder of AoDong is company A, which holds 25.57% (more than 10%) shares in AoDong, so the ownership of AoDong is not directly dispersed. But the ultimate shareholders of AoDong are 1029 employees of AoDong and none of them holds more than 3% (less than 10%) share in company A, so the ownership of AoDong is indirectly dispersed through company A and the cash flow right held by each ultimate owner in AoDong is less than 1%. In this situation, both the voting right and cash flow right of each ultimate owner is

very small, and both of them are defined in this study as 1%, otherwise the value of voting right/cash right will be too high and distort the separation of voting right from cash flow right (V/C) of this kind of companies¹.

The characteristics of indirect dispersed companies are: the biggest immediate shareholder holds more than 10% share in the listed company; but the voting right of the biggest immediate shareholder is dispersed to many persons; and both of the voting right and the cash flow right held by the biggest ultimate owner in the listed company are less than 10%.

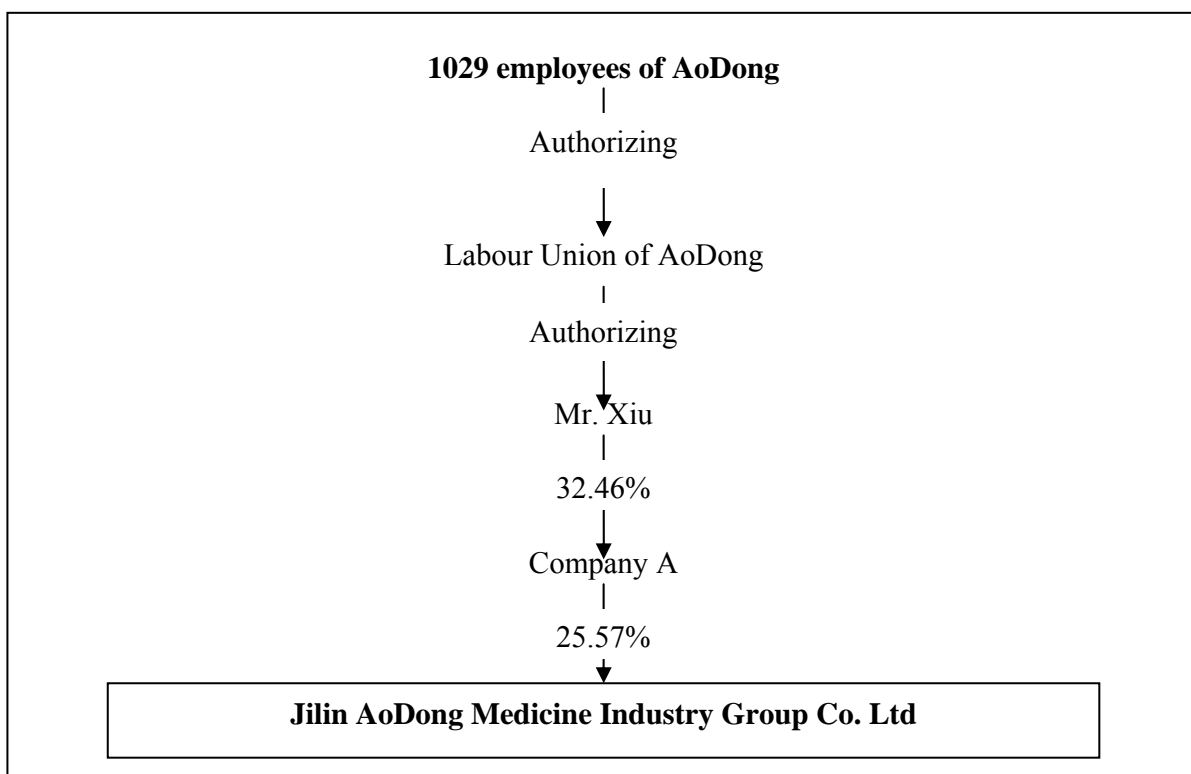


Figure 17: Ownership structure of Jilin AoDong Medicine Industry Group Co. Ltd.

c) Pyramid

Pyramid structure is popularly used by the enterprisers to reduce their investment in the company, but still sustain their control of it. 114 ownership-dispersed companies in the sample use the pyramid structure. In the pyramid structure, the ultimate owner controls the company of each floor of the pyramid, but his cash flow right in the listed company is less than 10% because cash flow right decreases with the lengthening of the pyramid chain.

Figure 18 shows an example of pyramid structure of Tianjin Tasly Pharmaceutical Co. Ltd (Tasly), a medical company and listed on SHSE. The controlling shareholder of Tasly is company A, which holds 50.02% (more than 10%) shares of Tasly, and company A is controlled by company B with 60% (more than 10%) ownership, which is controlled by

¹ In the following section the index of V/C, Voting rights/Cash flow right, is used to value the separation of voting right and cash flow right and to analyse the effect of this separation on the profitability of the company.

company C with 51% (more than 10%) ownership, which is controlled by Mr. Yan Xijun with 50% (more than 10%) ownership. So, the voting right of Tasly is not dispersed and Mr. Yan Xijun is the ultimate controller, who controls 50% (more than 10%) voting rights in Tasly, the least of the chain. The cash flow right is dispersed through a chain of companies, and Mr. Yan's cash flow right in Tasly is only 7.65% (less than 10%), which is the product along the chain. If the pyramid is higher, his cash flow right can be even less without the loss of control over Tasly.

The characteristics of pyramid structure is: the biggest immediate shareholder holds more than 10% share in the listed company; the ultimate owner controls the listed company through a chain of companies and the voting right of all the controlling companies on the chain is not dispersed; the voting right held by the biggest ultimate owner in the listed company is more than 10%, but the cash flow right held by him in the listed company is less than 10%.

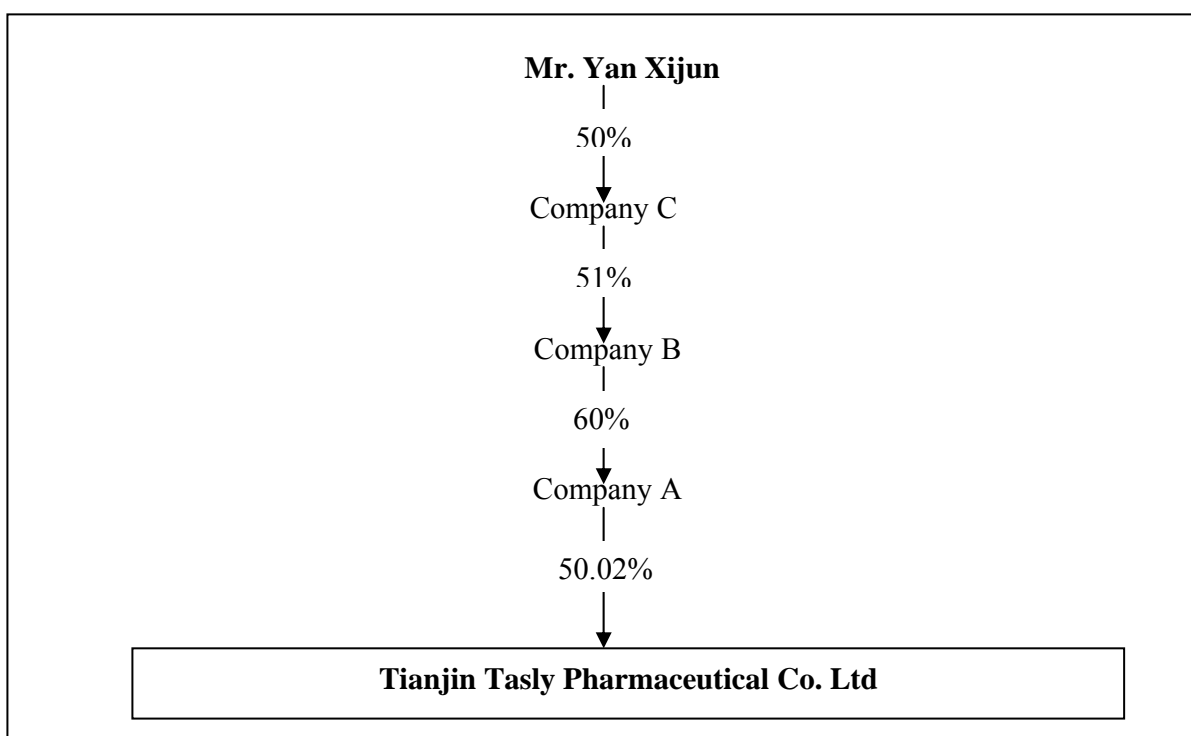


Figure 18: Ownership structure of Tianjin Tasly Pharmaceutical Co. Ltd.

d) Foundation

Many of the listed companies are co-invested by foundations, but most foundations have only a little share in each company and only 4 firms in the sample are controlled by a foundation, which means the foundation or financial institution is the biggest shareholder of the listed company and has more than 10% share in the company. But virtually the ownership of this company is dispersed, because the foundation is only the agent of thousands of investors.

Figure 19 is the ownership structure of Zhuhai Zhongfu Enterprise Co. Ltd (Zhongfu), which is a company in the industry of *petroleum, chemistry and plastic*, and listed on SZSE. The

immediate controlling owner of Zhongfu is Asia Bottles (HK) Company Limited with 29% (more than 10%) ownership, which is held by Asia Bottles Company Limited with 100% ownership, which is held by Asia Bottles Holdings Limited with 100% ownership, which is held by Asia Group Holdings Limited with 100% ownership, which is held by CVC Capital Partners Asia Pacific II (83.82% ownership) and CVC Capital Partners Asia Pacific II Parallel Fund - A. LP (16.18% ownership), which are ultimately invested by Citigroup Pension funds and others. The ultimate owner of Zhongfu is a foundation, Citigroup Pension funds, who controls 29% voting right in Zhongfu. But the ownership of Citigroup Pension funds belongs to thousands of investors, so the cash flow right of Zhongfu is finally dispersed.

The characteristics of foundation structure is: the biggest immediate shareholder holds more than 10% share in the listed company; the ultimate owner of this controlling shareholder is a foundation and controls more than 10% voting rights in the listed company; the ownership of this foundation is dispersed to many investors so the cash flow right held by each investor in the listed company is less than 10%.

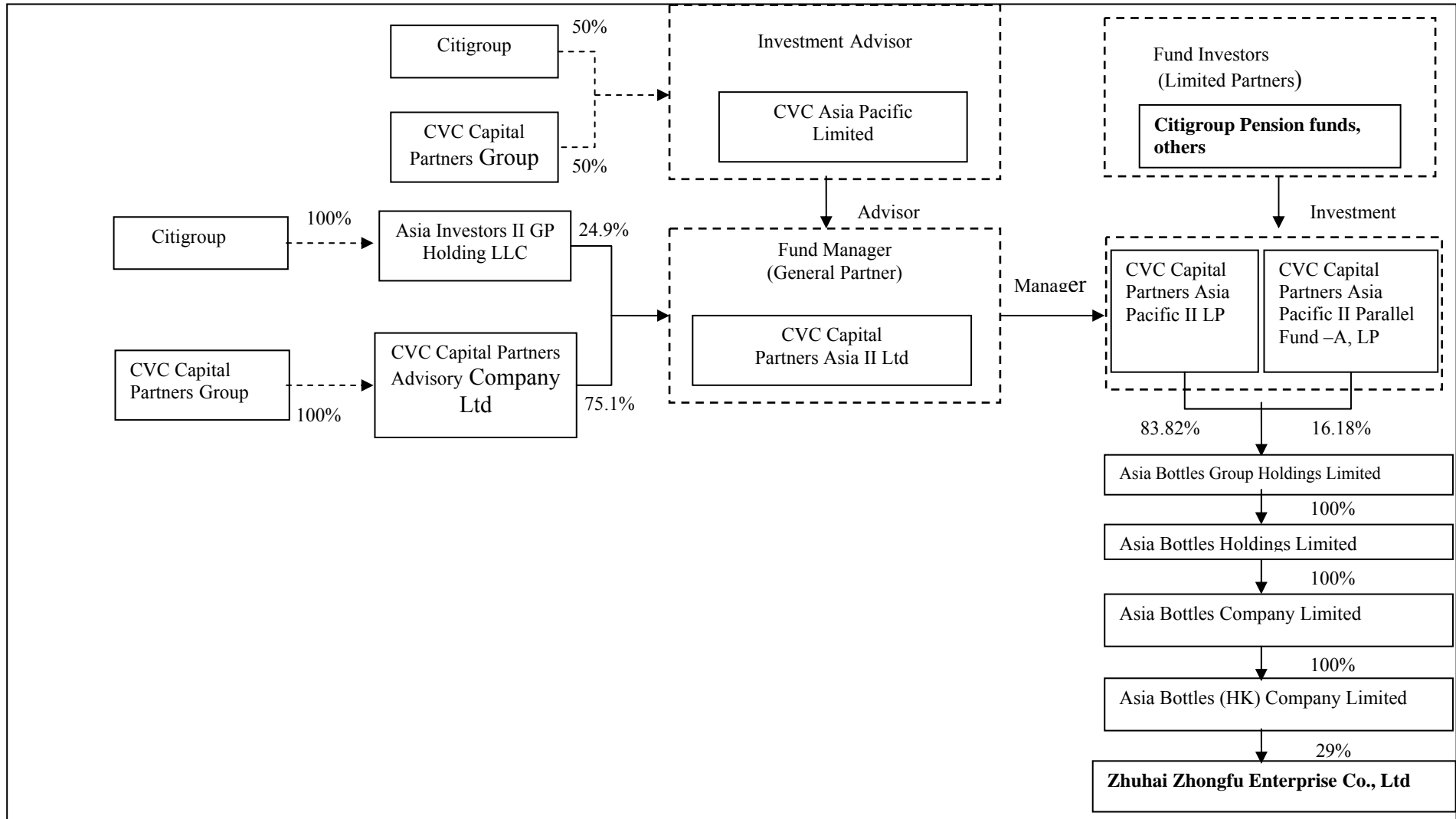


Figure 19: Ownership structure of Zhuhai Zhongfu Enterprise Co. Ltd.

5.5.1.2 The effect of different ownership structure on profitability

In the last section this study has shown the four kinds of ownership structures of the publicly traded and ownership-dispersed companies in China. The profitability of the companies with different ownership structures is compared to see whether some structure is more effective than others.

All the 152 dispersed companies are classified into 4 groups, according to their ownership structure and the average value of CR of each group is calculated.

The indices in table 38 are calculated as:

Mean of CR of direct dispersed companies = Mean of CR of 18 companies, which are all direct dispersed.

Mean of CR of indirect dispersed companies = Mean of CR of 16 companies, which are all indirect dispersed.

Mean of CR of pyramid structural companies = Mean of CR of 114 companies, which are all pyramid structural.

Mean of CR of foundation holding companies = Mean of CR of 4 companies, whose ultimate owners are all foundation.

Mean of CR of all dispersed companies = Mean of CR of 152 companies, which are all ownership dispersed.

Other indices are calculated in the same way.

Table 38: Comparison of profitability between different ownership structures of ownership-dispersed companies in China

Ownership structure	Number of firms	Mean of CR	Standard deviation of CR	Median of CR	1 st Quartile of CR	3 rd Quartile of CR
Direct dispersed	18	0.81	0.52	0.74	0.47	1.05
Indirect dispersed	16	1.24	1.11	1.15	0.28	2.13
Pyramid	114	0.29	17.05	0.65	0.15	1.33
Foundation	4	1.23	0.62	1.27	0.99	1.51
Total	152	0.48	14.77	0.71	0.20	1.33

CR=ROE of the firm / ROE of the industry.

According to the mean and median of CR, indirect dispersed structure and foundation holding structure have the highest profitability, with a mean value over 1.2, which means that these companies are better than other dispersed companies and even better than the average level of the industry they belong to. It is very interesting and important because it declares that ownership dispersion can also be effective as long as the agency problems are well solved. And one of the solutions is the ownership structure itself. But foundation structure is used infrequently in China and all of the four foundation holding companies are controlled by

foreign foundation instead of foundation in China. According to the result of Ferreira and Motos (2006), institutional investors reveal a strong preference for large and liquid stocks with good governance practices and foreign institutional ownership has real effects as it is positively associated with higher firm valuation. The extremely low proportion of foundation holding ownership in the sample might reflect the bad governance practices in China.

The most ineffective structure is the pyramid structure but it is the one used by most companies, 75% of companies in the total of 152 samples use this ownership structure to decrease the cash flow right of the ultimate owner. Almeida and Wolfenzon (2005) argue that “the level of investor protection plays a crucial role in the choice of structure. Poor investor protection leads to high diversion of cash flows, which makes the pyramidal structure more attractive for two reasons. First, diversion increases the family’s private benefits of control, at the expense of a reduction in security benefits. Because in a pyramidal structure the family shares the security benefits with non-family shareholders, while in the horizontal structure it keeps them entirely, high diversion increases the family’s payoff under the pyramidal structure relative to the payoff under the horizontal structure (payoff advantage). Second, because external investors anticipate diversion and discount the terms at which they are willing to provide finance, it is optimal for the controlling shareholders to use internal funds of existing firms to set up new firms, before an external finance is raised. Thus, the family’s ability to use the entire stock of retained earnings of existing group firms when it chooses the pyramid becomes more valuable (financing advantage).” (Almeida and Wolfenzon 2005, page 3).

Another point worth mentioning is that the standard deviation of companies with indirect dispersed structure or foundation holding structure is much lower than pyramid structure. This means that the investment in the former two kinds of companies is less risky than in the companies with pyramid structure, whose standard deviation of CR is highest. Although the standard deviation of companies held by foundation is a little less than indirect dispersed ones, it cannot be concluded that foundation holding companies are less risky than indirect dispersed one. This is because foundation structure is used only by four companies. The reason why the standard deviation of companies with indirect dispersed structure or foundation holding structure is much lower than pyramid structure might be that the decisions of the former two kinds companies are made by a group of managers. This is not like the companies with a pyramid structure, where the important strategies and decisions are made by several family members, sometimes only by the head of the family. So that the performance of the pyramid companies depends more on the ability and character of individual, which brings more risk.

All the 152 ownership-dispersed companies are divided into effective and ineffective groups and the ownership structures of these two groups are compared. A company is defined as effective when the following two conditions are satisfied: its CR is more than 1, according to

its ROE in 2007, which means its profitability is better than the average level of the industry it belongs to; and it has not lost in last three years, 2005, 2006 and 2007 (Financial data of last three years are disclosed in annual report 2007). These two standards are prescribed for the reason that some firms have won only a little in 2007, but have a higher CR because they have lost much in last years and their ratio of net capital is very low, which makes them have a higher ROE. So the performances of the last three years are considered here. According to these standards, there are only 42 companies that can be called effective and dispersed company. The performance of all other 110 companies is worse than the average level of their industry.

Table 39 displays the comparison of ownership structure between the effective and ineffective companies. The percentage of each structure is calculated as:

Percentage of direct dispersed companies in effective companies = the number of direct dispersed and effective companies/the number of all effective companies

Percentage of indirect dispersed companies in effective companies = the number of indirect dispersed and effective companies/the number of all effective companies

Percentage of pyramid structural companies in effective companies = the number of pyramid structural and effective companies/the number of all effective companies

Percentage of foundation holding companies in effective companies = the number of foundation holding and effective companies/the number of all effective companies

Percentage of direct dispersed companies in ineffective companies = the number of direct dispersed and ineffective companies/the number of all ineffective companies

Percentage of indirect dispersed companies in ineffective companies = the number of indirect dispersed and ineffective companies/the number of all ineffective companies

Percentage of pyramid structural companies in ineffective companies = the number of pyramid structural and ineffective companies/the number of all ineffective companies

Percentage of foundation holding companies in ineffective companies = the number of foundation holding and ineffective companies/the number of all ineffective companies

Percentage of direct dispersed companies in all dispersed companies = the number of all direct dispersed companies/the number of all dispersed companies

Percentage of indirect dispersed companies in all dispersed companies = the number of all indirect dispersed companies/the number of all dispersed companies

Percentage of pyramid structural companies in all dispersed companies = the number of all pyramid structural and dispersed companies/the number of all dispersed companies

Percentage of foundation holding companies in all dispersed companies = the number of foundation holding companies/the number of all dispersed companies

Similar to the results in table 38 above, indirect dispersed and foundation holding are more used by effective companies than ineffective companies. 21.43% of the effective companies use indirect dispersed structure and only 6.36% of the ineffective companies use this structure. 7.14% of the effective companies use foundation structure, which is used by only 0.91% of ineffective companies. Actually, foundation structure can also be seen as indirect dispersed because the ultimate ownership of this kind of companies is also distributed to thousands of persons and they entrust the shares to the manager of the foundation. And the ineffective companies have a higher ratio in pyramid structure. 79.09% of the ineffective companies use pyramid structure and this ratio of effective companies is 64.29%.

Table 39: Comparison of ownership structure between effective and ineffective companies

	Number of firms	Direct dispersed (%)	Indirect dispersed (%)	Pyramid (%)	Foundation (%)
Effective	42	7.14%	21.43%	64.29%	7.14%
Ineffective	110	13.64%	6.36%	79.09%	0.91%
Total	152	11.84%	10.53%	75.00%	2.63%

The reason why indirect dispersed companies are more effective than pyramid structure might be:

a) The danger brought by the separation of voting rights from cash flow rights is less.

The company with pyramid structure always has a high degree of separation of voting rights from cash rights. The top manager of the listed company has absolute or relative control right in the firm and he can make decisions to benefit himself but hurt the listed company, and other members in the board cannot protest because they do not have enough voting rights. And these decisions will not hurt the top manager himself because the capital he really has invested in the listed company is not as much as it seems and the private benefit he gets from these expropriating decisions are more than his loss in the cash dividend or stock value of the firm. So pyramid is a popular ownership structure used by the controlling shareholder to steal money from the minority shareholders.

It is different for the companies held by employees. The top manager himself has little share in the company, which means both his voting rights and cash flow rights in the listed company is very little, and his controlling right in the firm is given by the employees. Sometimes the employees authorize their share to more than one top manager. So the manager's behavior is limited and he cannot make important decisions only by himself. Moreover, if he has done wrong or has stolen from the company he will be replaced by others.

b) All of the managers and employees have been inspired to do well.

In companies held by employees all managers or even all employees have direct or indirect share in the listed company, so they all are encouraged by their economic interest, not only to be productive in their own job, but also to care more about the performance of the company because they are also owners. They will supervise each other and keep their eyes on the top managers. Any cent stolen or wasted by the managers from the company is actually taken from the pockets of all the employees who have share in the company. In this situation, the expropriation by the managers is discovered and punished with much higher possibility, for the employees of the listed company act as monitors and benefit all other minority shareholders.

For the direct dispersed companies, their V/C is also low, but their performance is not as good as the employee holding companies, which may be explained as: they have only the first advantage mentioned above, namely the top manager has less right to expropriate; but they lack of monitors in the company, namely more managers or employees who have share in the company.

In the next subsections these two hypotheses will be analyzed in detail: the effect of separation of voting rights from cash rights on the profitability; and the effect of economic encouragement to more managers and employees on the profitability.

5.5.2 Lower separation of voting rights from cash flow rights

In the last subsection, it has been mentioned that the separation of voting rights from cash flow rights will increase the incentive of the managers to expropriate from the company. This subsection analyses this separation in detail to testify that the effective companies have less separation of voting rights from cash flow rights. Dual-class firms, i.e. corporations with two classes of shares that differ in their voting rights, are forbidden by the law in China. So the separation of voting rights from ownership in China is caused by the pyramidal ownership structure.

Here, the degree of voting rights concentration is defined as the percentage of voting rights controlled by the ultimate owner of the listed company. Cash flow rights concentration is defined as the percentage of cash flow rights owned by the ultimate owner. The calculation of voting rights and cash rights controlled or owned by ultimate owner is executed in the same way as was done to Zhejiang Yankon Group Co. Ltd, which is shown by figure 15 in Chapter 5.2.1. V/C equals the degree of voting rights concentration divided by the degree of cash flow rights concentration.

At first, the average concentration of voting rights and cash flow rights are calculated for each ownership structure, and then the average degree of the separation, V/C, is calculated, which means that the value of voting rights is divided by cash flow rights.

The indices in table 40 are calculated as:

Mean of voting rights concentration of direct dispersed companies = mean of the degree of voting rights concentration of 18 companies, which are all direct dispersed.

Mean of cash flow rights concentration of direct dispersed companies = mean of the degree of cash flow rights concentration of 18 companies, which are all direct dispersed.

Mean of V/C of direct dispersed companies = mean of V/C of 18 companies, which are all direct dispersed.

Other indices are calculated in the same way.

Table 40: Separation of voting rights from cash flow rights for different ownership structures

		Voting rights concentration		Cash flow rights concentration		V/C	
Owner structure	Number of firms	Mean	Median	Mean	Median	Mean	Median
Direct dispersed	18	7.86	8.73	6.55	6.58	1.40	1.00
Indirect dispersed	16	1.81	1.00	1.00	1.00	1.81	1.00
Pyramid	114	21.46	20.88	6.24	6.59	4.03	3.33
Foundation	4	1.00	1.00	1.00	1.00	1.00	1.00
Total	152	16.84	17.76	5.50	5.83	3.35	3.06

V/C=Voting rights concentration / Cash flow rights concentration

It is shown that the pyramid structure has the highest voting rights concentration and V/C, while the indirect dispersed structure and the foundation structure have the lowest voting rights concentration and V/C. This indicates that the separation of voting rights from cash flow rights might be the reason why pyramid structure is less effective than indirect dispersed structure.

Claessens et al. (1999) examined the evidence on expropriation of minority shareholders in publicly-traded companies in East Asia and found that the concentration of control rights has negative effect on firm value and the separation of voting rights from cash-flow rights is especially associated with lower market value, which is consistent with Mocerck et al. (1988) and Shleifer and Vishny (1997).

Next, the comparison of this separation between effective and ineffective companies is made, which is shown in table 41.

Table 41: Comparison of separation of voting rights from cash flow rights between effective and ineffective companies

		Voting rights concentration		Cash flow rights concentration		V/C	
	Number of firms	Mean	Median	Mean	Median	Mean	Median
Effective	42	14.20	14.39	4.95	4.53	3.03	2.55
Ineffective	110	18.43	19.83	5.84	6.45	3.58	3.18
Total	152	16.84	17.76	5.50	5.83	3.35	3.06

V/C=Voting rights concentration / Cash flow rights concentration

It is shown that the ineffective companies have a higher V/C, but not much higher than the effective ones. This might indicate that the lower degree of separation of voting rights from cash flow rights is only one of the reasons why pyramid structure is less effective than indirect dispersed structure and there must be other causes leading the indirect dispersed structure to be more effective. Therefore, lower separation of voting rights from cash flow rights is only one of the solutions to the agency problems.

This result reveals the reason why the direct dispersed companies are more effective than pyramid structure, although both of them give no ownership to more managers and employees and thus have no monitors in the company.

5.5.3 Ownership encouragement to more top managers and employees

In subsection 5.5-1, it has been mentioned that companies held by employees are effective because all the managers and employees are encouraged by their ownership in the company to do well and this subsection investigates the effect of ownership encouragement on the company's profitability.

There are many measures of economic encouragement, but here this study examines only the encouragement brought by ownership. As displayed by the annual report the top managers, who are revealed in the report, can hold shares in the listed company through two ways. One way is directly holding stocks of the listed company. It is easy to find out how many top managers hold stocks in the listed company, for the report must reveal whether and how many stocks the top managers hold in the listed company. The other way is indirect holding, which means the principle owner of the listed company is an entity and the managers of the listed company hold shares of this entity.

For example, the report of AoDong has revealed 13 top managers, including directors, supervisors, CEO and CFO, and 4 persons of them come from companies or institutions outside AoDong¹, the other 9 persons work in AoDong. As is shown by figure 17, AoDong is an employee holding company and all the managers and employees indirectly hold shares in AoDong, so the number of top managers who hold shares in the listed company is 9.

For the non-employee holding companies, it is difficult to judge whether the top managers indirectly have shares in the listed company, because some reports do not disclose whether the top managers are indirect owners of the listed company. So for these companies, the number of managers who indirectly hold shares in the listed company might be undervalued.

In this research, it is found that in most of the companies there are a group of top managers who directly or indirectly hold shares in the company. In some companies only one or two top managers are owners, and in the others nearly all the managers have shares in the company.

¹ In China all listed companies must hire independent directors to sit in the directorate.

Some managers hold only stocks, some only indirectly hold shares and others hold both stocks and indirect shares. The number of managers holding stocks is defined as the number of the managers, who directly hold stocks of the public traded company. The number of managers holding shares is the number of managers who directly hold stocks or indirectly hold shares in the listed company; in any case they are owners of the company.

Table 42 shows the ownership encouragement of different ownership structures. The indices are calculated as:

Percentage of direct dispersed firms whose managers hold stocks = the number of direct dispersed firms, where some or all top managers direct hold stocks of the listed company / the number of all direct dispersed companies, namely 18.

Percentage of direct dispersed firms whose managers hold shares = the number of direct dispersed firms, where some or all top managers direct hold stocks or indirect hold shares of the listed company / the number of all direct dispersed companies, namely 18.

Mean of number of managers holding stocks of direct dispersed companies = mean of the number of the managers holding stocks of the direct dispersed companies where some or all top managers hold stocks in the listed company.

Mean of number of managers holding shares of direct dispersed companies = mean of the number of the managers holding shares of the direct dispersed companies where some or all top managers hold shares in the listed company.

Other indices are calculated in the same way.

Table 42: Comparison of ownership encouragement on top managers between different ownership structures

	Number of firms	Percentage of firms		Number of managers holding stocks ³		Number of managers holding shares ⁴	
		Holding stocks ¹	Holding shares ²	Mean	Median	Mean	Median
Direct dispersed	18	77.78%	77.78%	3.36	2.00	4.86	2.50
Indirect dispersed	16	62.50%	93.75%	5.70	4.50	6.07	5.00
Pyramid	114	60.53%	78.95%	3.77	3.00	4.08	3.00
Foundation	4	75.00%	75.00%	4.67	4.00	5.00	4.00
Total	152	62.50%	80.26%	3.94	3.00	4.43	3.00

1. The percentage of the firms where some or all top managers direct hold stocks in the listed company.
2. The percentage of the firms where some or all top managers direct or indirect hold shares in the listed company.
3. Average number of the managers holding stocks of the companies where some or all top managers direct holding stocks in the listed company.
4. Average number of the managers holding shares of the companies where some or all top managers direct or indirect hold shares in the listed company.

According to the data, more indirect dispersed companies give ownership to their top managers (93.75%) and more managers in the indirect dispersed companies directly or indirectly hold shares in the listed company (6.07). It is known that most of the indirect dispersed companies are employee holding companies. So it proves the second advantage of employee holding structure mentioned in section 5.5-1: all of the managers and employees have been encouraged to do well, and all the members of top manager group act as monitors for each other, which benefit also other minority shareholders.

Next, the comparison of ownership encouragement between effective and ineffective companies is made. The indices in table 43 are calculated as:

Percentage of effective firms whose managers hold stocks = the number of effective firms, where some or all top managers direct hold stocks of the listed company / the number of all effective companies, namely 42.

Percentage of effective firms whose managers hold shares = the number of effective firms, where some or all top managers direct or indirect hold shares of the listed company/the number of all effective companies, namely 42.

Mean of number of managers holding stocks of effective companies = mean of the number of the managers holding stocks of the effective companies where some or all top managers hold stocks in the listed company.

Mean of number of managers holding shares of effective companies = mean of the number of the managers holding shares of effective companies where some or all top managers hold shares in the listed company.

Other indices are calculated in the same way.

Table 43: Comparison of ownership encouragement on top managers between effective and ineffective companies

		Percentage of firms		Number of managers holding stocks ³		Number of managers holding shares ⁴	
	Number of firms	Holding stocks ¹	Holding shares ²	Mean	Median	Mean	Median
Effective	42	69%	93%	5.20	4.00	5.64	5.00
Ineffective	110	59%	75%	3.32	2.00	3.87	3.00
Total	152	62.50%	80.26%	3.94	3.00	4.43	3.00

1 The percentage of the firms where some or all top managers direct hold stocks in the listed company.

2 The number of the firms, where some or all top managers direct or indirect hold shares in the listed company.

3 Average numbers of the managers holding stocks of the companies, where some or all top managers direct hold stocks in the listed company.

4. Average number of the managers holding shares of the companies, where some or all top managers direct or indirect hold shares in the listed company.

It is shown that 93% of the effective companies encouraged their managers with ownership and this ratio for the ineffective companies is only 75%. And the effective companies also have

more managers holding ownership in the company, averagely more than 5 persons in the top manager group, while in the ineffective companies only 3 members of the group who make important decisions have stocks or shares of the listed company. So it indicates that ownership encouragement is more used by effective dispersed company. Therefore, encouraging more top managers with ownership is another solution to the Twin Agency Problems.

5.6 Suggestions indicated by the empirical data

Through all the practical analyses above it is known that although the Chinese financial market has experienced a fast expansion since 1990 when the Shanghai Stock Exchange was re-opened and Shenzhen Stock Exchange was built. Compared to the global stock exchanges such as NYSE, Tokyo, LSE and so on, it is still undeveloped. Considering the economic boom in China in last the 30 years, the progress of Chinese financial market is much lagged and disproportional to the economic scale in the country. How to drive the Chinese financial market forward is an important and difficult task for the politicians and economists.

Remembering the discussion about Twin Agency Problems in the former Chapters (Chapters 2 to 4), it is known that when the Twin Agency Problems worsen, diffuse ownership is inefficient and ownership concentration becomes the best choice. But ownership concentration limits a country's ability to benefit from financial globalization and leads to lower financial development, lower firm valuations, smaller firms, and lower economic growth. So in this Chapter, the situation of ownership concentration in China is investigated and the effect of Twin Agency Problems on corporate finance is examined to find out some empirical solutions to the Twin Agency Problems in China.

On the basis of the annual reports of 1,481 listed Chinese companies, it is found that most Chinese listed companies are ownership concentrated and cash flow rights of more than half of these companies are concentrated in the state. This badly limits the advance of the Chinese financial market, but this is the result of Twin Agency Problems and the best choice of the investors. If the Twin Agency Problems are not solved or lightened, the ownership of these listed companies cannot be shared by more investors and the Chinese financial market cannot grow up to be a global one.

But under the actual situation, how could the Twin Agency Problems be solved? In the research, a few effective but ownership dispersed companies are revealed, which means that the Twin Agency Problems are better solved in these companies and ownership dispersal is not impossible under the actual situation.

After a detailed examination of all these samples, it comes to the following suggestions, which might be helpful to solve the Twin Agency Problems and make the Chinese financial market go further:

A. Not relying on foreign financial market, but concentrating on the advancement of legal sense, laws and regulations inland.

In Chapter 4, it is pointed out that to solve the Twin Agency Problems, the legal sense should be improved through education and the constraint on insider and outside expropriators should be strengthened through stricter laws and regulations. The process of these reforms must take a long time and the effect of all these measures can't emerge immediately. Listing abroad is suggested to be a good way to borrow the laws and regulations of the foreign market. But according to the result in section 5.3, the Chinese companies listed abroad are not more decentralized than those listed only inland. This means that the risk of these firms is still concentrated. So we cannot rely on the foreign financial market to meliorate the corporate governance of Chinese company, because all the managers of the company and the outside expropriators from the government live in China, commit the sin in China and can only be constrained and punished by Chinese laws and regulations. So what should be done is to learn the experiences of foreign countries and implement them into China, including the improvement of both education and law system inland. Only when those expropriators who live in China have no chance to steal from or rob the company, can more investors transfer their saving from bank to stock exchanges.

B. Strictly examining the companies which apply to be listed on the exchange and prevent the bad companies from going into the market.

Section 5.4-3 shows that the difference of profitability between companies listed abroad is much less than the difference between those listed only inland. This means that the companies listed abroad are more reliable as a whole and the investors have less risk if they choose their favorable companies among these listed abroad companies to invest. This well reflects the advantage of foreign stock markets: bad companies are strictly forbidden to step into the market. First of all, the gate of stock exchanges should be carefully guarded, so that the bad and deceitful companies must not step in. If this is not well done the reputation of the financial market cannot be rebuilt and the investors will no longer have faith in these listed companies. The entrance standard could not be lowered down to let more companies into the market.

C. Beginning the decentralization of ownership with relative smaller companies.

In section 5.3.4, it is obtained the relatively smaller companies are less concentrated. This is because the actual Chinese financial market is still undeveloped and the sum of the capital that can be collected from the stock market is limited. It would be better to begin the process of decentralization with these smaller firms and the capital to be financed at each time cannot be

too high. Only when the investment in these smaller companies has a good reward and the dispersed ownership is shown to be effective. This indicates that if the Twin Agency Problems are lightened or solved, the investors will put more money in the market and the ownership of the relatively greater companies can be also dispersed.

D. Transforming state holding company into employee holding dispersed company.

In section 5.5.1, this study has analyzed the effect of ownership structure on profitability and has found out that employee holding is an effective ownership structure because all the managers and employees have direct or indirect shares in the company. It is a good way to transform the state holding companies into widely held companies.

At the moment, more than half of the listed companies are controlled by the state but in future the government will continuously decrease their investment in most of these companies. So who should be the new owners of these state holding companies? Should it be a family holding company or a widely held one? Because most of these companies are giant companies, it is difficult to find a family who has enough capital to buy the control right of the whole company. But if they are transferred to widely held ones, what should be done to keep and enhance the performance of these companies? Employee holding structure might be a better choice.

At first, the dispersal of ownership to all the managers and employees encourage all of them to do well in their job and care more about the performance of the company, for the value of their wealth is influenced by the fluctuation of the market price of the company.

Secondly, nobody has absolute or relative control right in the company for the cash flow right is decentralized, and the top manager is entrusted by the employees. So the manager's behavior is limited by the contract between him and the employees, and he cannot make all decisions freely. So the top managers of these companies have less right to expropriate other shareholders.

Finally, when all members of the top manager group have shares in the company, they act as monitors for each other because any cent stolen or wasted from the company is the same as stolen from their own pockets. So if anyone tries to steal or hurt the company, it is easier to be discovered, prevented and punished. Consequently, the top managers are more constrained to be honest and principled.

So the shares of the state holding companies can firstly be sold to the managers and employees and when higher profitability has been shown more shares can be publicly sold.

E. Eliminating or decreasing the separation of voting rights from cash flow rights.

Section 5.5.1 indicates that the pyramid structure is a popular structure used by the widely held companies, but this structure results in the separation of voting rights from the cash flow rights. This enables the controlling shareholder sustaining his control of the listed company, but at the same time reducing his actual investment in it. So the controlling shareholder has right and incentive to make decisions, which brings him private benefit but hurts the company. And because his ownership in the company is small his expropriation does not hurt himself.

So in the reform of state holding companies, the pyramid structure should be avoided, but direct or indirect dispersed and foundation holding structure should be encouraged. For the existing pyramid structural companies the voting rights of the ultimate owners should be limited or the ultimate owner should put more money in the company.

F. Encouraging and supervising the managers by giving more managers stocks or shares of the company.

Analysis in section 5.5.3 proves that in the effective dispersed companies more managers have stocks or indirect shares of the listed companies. This encourages them to do well and care more about the performance and the market price of the company but lessens their incentive to divert private benefit from the company. The function of this measure is like the employee holding ownership structure. If the ultimate owner wants to improve the company governance and to show his righteousness and blamelessness he should let more top managers hold shares in the company.

5.7 Summary

This Chapter makes a practical investigation of the financial market in China to see the actual situation of the financial market and to find some empirical measures to solve the agency problems.

Since 1990, when Shanghai Stock Exchange re-opened and Shenzhen Stock Exchange was built, the Chinese financial market has experienced a fast expansion (see figures 2 to 7). But compared to other global stock exchanges the development of Chinese financial market is lagged and disproportional to the economic prosperity of the country (see figures 8 to 14), so developing the financial market in China is a pressing need.

According to the theoretical model in this study, the development of the financial market is badly limited when the ownership of the company is concentrated because of the Twin Agency Problems. The ownership concentration of Chinese companies is examined to see how serious the Twin Agency Problems are in china. On the basis of annual reports of 2007 of 1481 listed Chinese companies, including companies listed mainland and abroad, it is revealed that only a little fraction of the listed companies are ownership dispersed (see tables 7 to 9) and the

average degree of ownership concentration of the listed companies in China is much higher than most of the other countries in east Asia (see tables 14 to 15). This indicates that the agency problems are serious in China at the moment and ownership concentration is the best choice for most companies. This also embarrasses the dispersal of the risk and the further development of the financial market.

In the process of investigating the difference of ownership concentration between companies listed mainland and those listed abroad, the following results are obtained. The state holding companies are more concentrated than family holding ones. Ownership concentration is moderately positively related to capital scale of the company. The companies listed longer on NYSE are not less concentrated than those newly listed; and the companies listed abroad are not less concentrated than those listed only inland.

The higher ownership concentration of state holding companies indicates that the agency problems are more serious in these companies controlled by the state. In the future these state holding companies must be transformed, and the investment from the state into these companies will decrease continuously. To whom should these companies belong, a few rich families or a great deal of common minority investors? This is a key of the development of the Chinese financial market, even the development of the economy and the society.

As to the relationship between capital scale and ownership concentration, it is found that the ownership concentration of the biggest 50 companies is much greater than that of the smallest 50 companies, but the ownership concentration is moderately related to the capital scale. The capital need of the small companies is much less than that of the giant companies and easy to be collected from the controlling family and the public, so they are more held by the family and less concentrated. On the contrary, all of the top 50 companies are held by the state, because only the state can satisfy their need of capital under the situation of undeveloped financial market. Therefore, on an undeveloped financial market, the ownership decentralization should begin with the relatively smaller companies.

Listing abroad is revealed by other articles to be a good way to solve the agency problems, but according to the evidence in this Chapter, the Chinese companies listed abroad are not less concentrated than those listed only inland. This indicates that listing abroad is not an effective way for Chinese companies to solve the agent problems and make the ownership more dispersed. The key point should be laid inland, which means something should be done to improve the legal sense, laws and regulations in land, because the companies and the expropriators all live in China and are regulated by Chinese laws and regulations.

According to the theory, the ownership concentrated companies should have better performance than the dispersed. In the practical research, it is shown that for most industries the return of equity (ROE) of ownership concentrated companies is higher than the dispersed

ones. There is no obvious relativity between profitability and ownership concentration. The profitability of family holding companies is higher than the state holding ones and the ROE of state holding companies is less related to their degree of ownership concentration than the non-state holding companies. The widely held companies have the lowest profitability. But there exist a few widely held companies, which also have higher ROE.

Through the comparison of the profitability between companies listed abroad and those listed only inland, it is discovered that although the average profitability (mean value) of companies listed abroad is lower than the companies only listed inland, the standard deviation of profitability of companies listed abroad is much less than those only listed inland. This indicates that companies listed abroad are more reliable as a whole and bad companies have been strictly forbidden to step into the foreign stock market. And the profitability of companies listed abroad is more related to their ownership concentration degree than the companies listed only inland, because the market value of these listed abroad companies are fairly priced and their market value is more related to their performance.

Next, this study concentrates on the widely held companies to see how the Twin Agency Problems are solved by these firms. Of all the 1,481 samples there are only 152 ownership dispersed companies, whose ownership is decentralized through direct dispersed structure, indirect dispersed structure, pyramid structure and foundation structure, and pyramid structure is used by most of the widely held companies. But the average profitability of those pyramid structured companies is much lower than that of the indirect dispersed companies. Of these 152 dispersed companies there are only 42 companies, whose ROE is higher than the average level of the industry they belong to and indirect dispersed structure is more used by these more effective companies.

In the research, a typical indirect dispersed structure is discovered: employee holding company, which means the ultimate controllers of the listed company are all the managers and employees of the listed company. This structure is more effective than pyramid structure because the danger brought by the separation of voting rights from cash flow rights is decreased, and all the managers and employees have been encouraged by their ownership in the company to do well and act as monitors for each other.

The comparison of separation of voting rights from cash flow rights between the effective and ineffective dispersed companies shows that the ineffective companies have a higher separation than the effective. Hence, eliminating or decreasing this separation can be helpful to solve the Twin Agency Problems.

In the research, it is also revealed that in the effective dispersed companies more members of the top manager group are given direct or indirect shares in the company. This encourages

more managers to be righteous and honest, and when these top managers supervise each other expropriation is difficult to be carried out.

Through all these practical analyses the following suggestions are proposed to solve the Twin Agency Problems and make the Chinese financial market go further:

- a) Not relying on foreign financial market but concentrating on the advancement of legal sense, laws and regulations inland;
- b) Strictly examining the companies which apply to be listed on the exchange and prevent the bad companies from going into the market;
- c) Beginning the decentralization of ownership with relative smaller companies;
- d) Transforming state holding company into employee holding dispersed company;
- e) Eliminating or decreasing the separation of voting rights from cash flow rights;
- f) Encouraging and supervising the managers by giving more managers stocks or shares of the company.

6 Conclusion and Recommendations

6.1 Conclusion

Since the end of World War II, the barriers of cross-border trade in financial assets have been sharply reduced. Financial markets have increasingly extended beyond national borders. Financial globalization is an inherent feature of today's economies.

But the positive impact of financial globalization has been surprisingly limited and some puzzling evidence has been found recently. Capital flows uphill from "poor" to "rich", not as expected to emerging market; international investors continue to have strong preference for domestic financial assets, called home bias; the corporations are generally ownership concentrated and only a few firms are widely held.

To explain these puzzles, Stulz argues that finance is critically affected by Twin Agency Problems. Firstly, the controlling shareholders can use their power for their own benefit but at the expense of outside investors, which is called "the agency problem of corporate insider discretion". Secondly, the state rulers can use their power to improve their own welfare at the expense of all shareholders, which is called "the agency problem of state ruler discretion". When these agency problems worsen, diffuse ownership is inefficient and ownership concentration is the best choice. Ownership concentration inversely limits a country's ability to benefit from financial globalization. It causes lower financial development, more consumption volatility, stronger correlation between savings and investment, less foreign investment, lower firm valuations, smaller firms, and lower economic growth.

On the basis of Stulz's theory and remaining the central role of the Twin Agency Problems in fostering ownership concentration, this study relaxes some simplified assumptions in Stulz's model and develops a more practical one: one-period model is developed into a multi-period one; value model of corporate existing n periods is built; factor k , the quality of basic legal environment is added; debt is considered in the model; and the concrete quadratic cost function is substituted by an abstract one, which satisfies a series of conditions.

With the improved multi-period model the expropriators' decisions on expropriating the existing firm is investigated. Both the controlling shareholders and the state rulers will trade off their gain and loss in the process of expropriation and choose the optimal fraction diverted from the company to maximize their benefit. The optimal fraction chosen by corporate insiders is negatively related to the extent of ownership concentration, the quality of protection of minority shareholders, the severity of the constraint on state rulers, the level of legal sense and the expected rate of return. It is positively related to the fraction diverted by state rulers and the

capital cost of the firm. The optimal expropriation fraction chosen by state rulers negatively related to the quality of constraint on state rulers and the level of legal sense.

A corporate value model with the consideration of Twin Agency Problems is also built. As a result it can be deduced that the more the corporate insiders and state rulers expropriate, the lower the firm value. Analysis on the important factors affecting corporate value reveals that the corporate market value increases with higher expected rate of return, higher degree of ownership concentration, better protection of minority shareholders, better legal sense and stricter constraint on state rulers. Nevertheless, it decreases with higher capital cost.

The research shows that although the improvement of protection of minority shareholder, legal sense and constraint on state rulers can reduce expropriation by controlling shareholders and state rulers, corporate insiders' or state rulers' benefit from the existing firms will be decreased by this improvement, so that these expropriators are reluctant to make such betterment. On the contrary, higher expected rate of return and lower capital cost can decrease expropriation by the corporate insiders and at the same time increase their benefit from the firm, so that active economic policies will be welcome.

Before the company is established, the corporate insiders will make their financing and investment decisions. The controlling shareholders will invest all his initial wealth in the firm if starting a firm is profitable. If they do not have enough money to start the firm, they must sell part of the future cash flow to outside investors to collect the remaining capital. Their willingness to start a firm will be enhanced by higher expected rate of return, lower capital cost and the improvement of constraint on state rulers. This willingness is also related to the quality of minority shareholder protection and the legal sense, but the direction of the influence (positive or negative) is uncertain. The capital supplied by the outside investors will be increased by the improvement of protection of minority shareholder, legal sense and constraint on state rulers. Hence, the corporate insiders in need of capital have more incentive to improve the quality of outside investor protection on firm level (q) and are eager to canvass the state rulers to improve the protection of investor on state level (k and p), which has impact on outside investors' investment decision. Before establishing of the corporations, the state rulers will trade off their gain and loss from the existing and potential companies and make decisions on improving investor protection. If the improvement of the protection of minority shareholder, legal sense and the constraint on themselves can encourage the entrepreneurs to start more firms and increase their total benefit from the existing and future firms, they will make such amelioration.

Combining the results above, what should be done to reduce the expropriation can be obtained. The improvement of legal sense (k) and constraint on state rulers (p) can decrease the expropriation by both insider expropriators and state rulers. The strengthening of constraint on

insider expropriators (q), higher ownership concentration (f), the increase of expected rate of return (R), and the lower capital cost (i) can decrease the expropriation by insider expropriators. But not all these measures could be done successfully because the benefit of some expropriators will be affected and they will disagree with the improvement. The research shows that the following measures will come up against less embarrassment: the improvement of legal sense (k), the strengthening of constraint on state rulers (p), the increase of expected rate of return (R) and the reduction of capital cost (i).

Although the Chinese financial market has experienced a fast expansion since 1990, compared to other global stock exchanges, the development of Chinese financial market is lagged and disproportional to the economic prosperity of the country. So developing the financial market in China is very necessary. According to Stulz' theory, the development of the financial market is badly limited when the ownership of the company is concentrated because of the Twin Agency Problems. Therefore, this study goes on to make a practical investigation of Chinese companies listed on Shanghai, Shenzhen or NYSE to see the actual situation of ownership concentration in China and to find some empirical measures to solve the agency problems.

On the basis of annual reports 2007 from 1481 listed companies, it is revealed that only a few of the listed companies are ownership dispersed and the average degree of ownership concentration of these companies is much higher than most of the other countries in east Asia. This indicates that the agency problems are serious in China at the moment and ownership concentration is the best choice of most companies.

The investigation of difference of ownership concentration between companies listed in mainland and abroad shows that the Chinese companies listed abroad are not less concentrated than those listed inland. Also, the companies listed before on NYSE are not less concentrated than those newly listed. This indicates that listing abroad is not an effective way for Chinese companies to become less ownership dispersed, although listing abroad is revealed by other articles to be a good way to solve agency problems. This study points out that the efforts laid inland, which improve the legal sense, laws and regulations inland, are more important than listing abroad, because the companies and the expropriators all live in China and are more controlled by Chinese laws and regulations.

The state holding companies are found to be more concentrated than family holding ones because state holding companies are very huge and in a country without advanced financial market these companies can only be financed by the government. It is also revealed that ownership concentration is moderately positively related to capital scale of the company, which can be explained as: if the financial market is undeveloped, the sum of the capital supplied by

the minority shareholders is limited, so that in the companies with greater capital scale the shares held by the minority shareholders is lower.

In the practical research, it is shown that for most industries the ownership concentrated companies are more profitable than the dispersed ones, but there is no obvious relativity between profitability and ownership concentration. The profitability of family holding companies is higher than that of the state holding ones and the profitability of state holding companies is less related to their degree of ownership concentration. The widely held companies have the lowest profitability, but there exist a few widely held companies, which also have good performance. Through the comparison of the profitability between companies listed abroad and those listed only inland, it is discovered that, although the average profitability of companies listed abroad is lower the standard deviation of profitability of these companies is much less than those listed inland. This indicates companies listed abroad are more liable as a whole and bad companies are not allowed to step into the foreign stock market. And the profitability of companies listed abroad is more related to their ownership concentration degree because the market value of these companies are more fairly priced than those listed inland and their market value is more related to their performance.

Of all the 1,481 samples there are only 152 ownership dispersed companies, whose ownership is decentralized through direct dispersed structure, indirect dispersed structure, pyramid structure or foundation structure. Pyramid structure is most used, but the average profitability of these pyramid structured companies is much lower than the indirect dispersed ones. Of these 152 dispersed companies only 42 effective companies exist, whose profitability is higher than the average of the industry and indirect dispersed structure is more used by these effective companies. It is found that most of the indirect dispersed companies are employee-holding companies, which means the ownership of these companies are decentralized to all managers and most of their employees. Employee-holding structure is found to be more effective because, the separation of voting rights from cash flow rights of these companies is lower; all the managers and employees are encouraged with ownership to do well and they act as monitors for each other.

6.2 Recommendations

Through all these theoretical and practical researches, the following strategies and suggestions are proposed to solve the Twin Agency Problems and make the Chinese financial market go further:

a) Improving the legal sense through education

The improvement of legal sense increases the cost of theft and decreases the expropriation by both inside expropriators and state rulers. Legal sense requires some time and is influenced by culture, tradition, history and religion. This strategy should be implemented as a long-term policy. Legal sense should be taught from the childhood and in the whole society. The Christians are taught to obey the words of God when they go to the church from childhood with their parents, which is their original legal sense. But in some countries religion is not common, so kindergarten and schools are the important places where legal sense should be taught to the future managers and officials.

b) Improving the expected profitability with active economic policies

Active economic policies include creating more profitable investment opportunities, decreasing the rate of interest regulated by the central bank, reducing the rate of taxes, taking preferential tax policies and so on. These measures encourage the entrepreneurs to set up more new firms or invest more in the company, which give the entrepreneurs more interest to improve investor protection and divert less from the company. The state rulers will also grab less from one firm, when more firms are expected to be set up, because they know this reduction of expropriation can encourage more companies to be built and their total benefit from all the firms will increase. Although this strategy will be agreed by all expropriators and won't come up with resistance, it can only be seen as temporal measures and the balance of the treasury in one country must be considered.

c) Strengthening the constraint on expropriators through laws and regulations

Strengthening the constraint means the expropriators are more likely to be caught and the punishment is often very severe when they are caught. This increases the cost burdened on the expropriators and reduces the fraction diverted by them from the company. This strategy must be seen as a long term policy and hence the laws and regulations must be improved and modified continuously, since the situation and society changes continuously. Some researches find that civil law countries exhibit heavier regulation, less secure property rights, more corrupt and less efficient government, and even less political freedom than the common law countries (La Porta, Lopez-de-Silanes, Shleifer and Vishny 1999; La Porta, Lopez-de-Silanes, and Shleifer 2002; Djankov et al., 2002). Common law countries are more financially developed than civil law countries (La Porta et al., 1997, 1998). So, how to develop the financial market in a civil law country is an intractable problem for the jurists and economists.

d) Implementing the above three strategies together

Strengthening the laws and regulations comes with strong resistance, because it affects the benefit of certain persons or existing interest groups, who will canvass the government not to do so. But if this strategy is taken together with the other two strategies above, resistance may be cut down. When the legal sense is being improved in the whole country, the resistance against the modification and perfecting of concrete laws and regulations will be minimized. If the economic cycle is in the climbing stage, the expropriators will also agree with the betterment of the law system, because this improvement encourages more companies to be set up, which benefits the outside investors, entrepreneurs and state rulers.

e) Improving investor protection during the development of financial market

The improvement of investor protection increases the sum of capital that can be collected from the market. This means that the improvement of investor protection is helpful to expand the financial market and enhances the possibility for new companies and projects to be created. This in turn encourages the state rulers and controlling shareholders to improve the investor protection, so that there is a feedback relationship between investor protection and stock market development. When better investor protection is expected, companies can issue more equity, and this leads to a broad stock market. In truth, more equity issuance expands the shareholder base and increases the political support for shareholder protection.

f) Not relying on foreign financial markets but concentrating on the advancement of legal sense, laws and regulations inland

The investigation of Chinese companies shows that listing abroad is not a good way for Chinese companies to become ownership dispersed, which indicates that there is no reliance on the foreign financial market to improve the corporate governance of Chinese company. This is because all the controlling shareholders and state rulers live inland, commit the faults inland and can only be constrained and punished by laws and regulations of the country where the company is operated. So, what is more important is to get the experiences of foreign countries and transplant them inland. This should include the improvement of both legal sense and law system inland. Only when those expropriators who live inland have no reason and chance to steal from or rob the company, can the ownership of the public traded companies be decentralized and distributed to more minority investors.

g) Strictly examine the companies which apply to be listed on the exchanges and prevent the bad companies from going into the market

The evidence of Chinese companies shows that the companies listed abroad are more reliable as a whole because the bad companies are not allowed to step into the financial market.

The purpose of stock exchange is not to attract more companies but to afford a reliable place of financing and investment. So, first of all, the gate of stock exchanges must be carefully guarded and the bad and deceitful companies must be obstructed from stepping in. The investors will have no faith in these listed companies and the financial market won't be expanded unless the reputation of the financial market can be rebuilt. The entrance standard must not be lowered down to let more companies go into the market.

h) Beginning the decentralization of ownership with relative smaller companies

If the financial market in one country is undeveloped the sum capital that can be financed from the stock market is limited. This affects the dispersion of ownership to minority shareholders and leads to higher ownership concentration by the controlling shareholders. Hence, it will be easier when the process of decentralization is started with the relative smaller firms and the capital to be collected at each time can't be too great. When the investment in smaller companies has a high yield and dispersed ownership has been effective, which indicates that Twin Agency Problems in these listed companies have been lightened or solved, the investors will invest more money in the market and the ownership of relatively greater companies can just be dispersed.

i) Transforming the state holding company into employee holding dispersed company

The higher ownership concentration of state holding companies indicates that the agency problems are more serious in the state holding companies. In the future, these state holding companies must be transformed, and the investment from the state into these companies will decrease continuously. To whom should these companies belong, a few rich families or a great deal of common minority shareholders? If transferred to family holding companies, it is difficult to find a family who has enough capital to buy the control right of the companies because most of these state held companies are very huge. But, if transferred to ownership dispersed companies, it is difficult to keep or enhance the performance of these companies because most of the widely held companies have poor performance. In the research it is found that the dispersed companies held by the employees have a good performance. When the ownership is decentralized and transferred to the employees, all of the employees and managers will be encouraged by the ownership to do well and they act as monitors to each other, so that the top managers have less chance and right to steal from the company. Selling the shares of these state holding companies to managers and employees might be a good way to decentralize these state holding companies.

j) Eliminating or decreasing the separation of voting rights from cash flow rights

The separation of voting rights from cash flow rights gives the ultimate owner more rights and reasons to steal from the listed company because he can preserve his control on the listed company and at the same time reduce his actual investment in it. So the ultimate controller can make decisions to benefit himself, but hurt the company and other investors. Therefore in the reform or building of the companies this separation should be avoided. The direct dispersed structure, indirect dispersed structure or foundation holding structure should be the preference because these structures have lower separation of voting rights from cash flow right. For the existing pyramid structural companies, which have higher separation of voting rights from cash flow rights, the voting rights of the ultimate owners should be limited or the ultimate owner should put more money in the company.

k) Encouraging and supervising the managers by giving more managers and employees stocks or shares of the company

More managers and employees should hold stocks or indirect shares of the listed companies. This encourages them to do well and care more about the performance and the market price of the company, but reduces their incentive to divert private benefit from the company. Furthermore, if all top managers have ownership in the company they act as monitors for each other and everyone has less opportunity to steal from the company. The function of this encouragement is similar with the employee-holding ownership structure.

Appendix

Appendix 1: Yearly Market Overview of Shanghai Stock Exchange (1990-2008)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of Listed Companies	8	8	29	106	171	188	293	383	438	484
Number of Listed Securities	30	46	87	190	259	258	368	467	526	576
Stocks										525
Corporate Bonds										
Convertible Bonds										
Treasury Bonds										
Funds										
Warrants and Rights										
Stock issued Capital (Mil. Shs)	261	272	4,694	23,554	41,888	56,066	74,986	97,537	128,035	158,015
Stock Negotiable Capital (Mil. Shs)										49,441
Stock Market Value (RMB Mil.)	1,234	2,943	55,840	220,620	260,013	252,566	547,781	921,806	1,062,590	1,458,047
Stock Nego. Market Val (RMB Mil.)										424,969
	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Number of Listed Companies	572	646	715	780	837	834	842	860	864	
Number of Listed Securities	657	744	826	914	996	1,069	1,126	1,125	1,184	
Stocks	614	690	759	824	881	878	886	904	908	
Corporate Bonds		11	11	19	27	50	66	73	103	
Convertible Bonds		1	3	13	19	18	19	12	12	
Treasury Bonds		19	28	30	44	52	111	113	131	
Funds		23	25	25	25	25	24	17	16	
Warrants and Rights							18	6	14	
Stock issued Capital (Mil. Shs)	203,242	316,444	372,784	417,039	470,055	502,305	1,027,954	1,417,310	1,541,000	
Stock Negotiable Capital (Mil. Shs)	64,899	83,753	99,253	115,710	136,658	156,121	225,448	339,930	491,600	
Stock Market Value (RMB Mil.)	2,693,086	2,759,056	2,536,372	2,980,492	2,601,434	2,309,613	7,161,238	26,983,887	9,725,200	
Stock Nego. Market Val (RMB Mil.)	848,133	838,211	74,673	820,114	735,088	2,309,613	1,642,833	6,453,217	3,230,600	

Appendix 2: Yearly Market Overview of Shenzhen Stock Exchange (1991-2008)

	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of Listed Companies	6	24	77	120	135	237	362	413	463
Number of Listed Securities	7	39	105	212	192	299	429	483	540
Stocks	6	33	95	142	161	270	399	454	504
Corporate Bonds	1	5	8	6	1	1	2	2	3
Convertible Bonds		0	1	1	1	0	0	1	2
Treasury Bonds		0	0	40	13	18	18	16	15
Funds		0	0	8	10	10	10	10	16
Warrants and Rights		1	1	15	6	0	0	0	0
Stock issued Capital (Mil. Shs)	357	2,657	12,206	22,059	26,739	43,954	79,586	106,501	132,870
Stock Negotiable Capital (Mil. Shs)	244	855	3,619	7,757	10,513	15,876	27,506	36,121	45,793
Other Listed Par (RMB Mil.)			768	2,753	2,808	2,158	5,558	7,558	28,554
Stock Market Value (RMB Mil.)	7,976	48,975	133,532	109,049	94,862	436,457	831,117	887,973	1,189,070
Stock Nego. Market Val (RMB Mil.)	3,767	17,064	43,769	38,194	35,122	145,829	269,095	279,815	396,428
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of Listed Companies	514	508	508	505	536	544	579	670	740
Number of Listed Securities	596	598	615	627	673	708	768	868	964
Stocks	557	550	551	548	578	586	621	712	782
Corporate Bonds	2	1	4	9	13	16	24	26	41
Convertible Bonds	3	3	6	10	13	11	7	5	5
Treasury Bonds	16	19	25	31	39	53	62	70	85
Funds	18	25	29	29	30	39	46	48	48
Warrants and Rights	0	0	0	0	0	3	8	7	3
Stock issued Capital (Mil. Shs)	158,097	167,391	173,515	182,754	200,447	213,365	237,583	278,172	344,186
Stock Negotiable Capital (Mil. Shs)	58,424	64,335	68,741	74,022	82,281	93,430	117,690	151,122	202,375
Other Listed Par (RMB Mil.)*	32,860	38,300	54,910	61,850	75,779	79,731	92,899	108,044	128,110
Stock Market Value (RMB Mil.)	2,116,008	1,593,164	1,296,541	1,265,279	1,104,123	933,415	1,779,152	5,730,202	2,411,453
Stock Nego. Market Val (RMB Mil.)	760,619	608,106	501,726	497,738	433,776	387,591	857,531	2,853,218	1,290,799

* Other listed Par includes corporate bonds, convertible bonds, funds and warrants.

Appendix 3: Ownership concentration of public traded financial companies in China

No.	Corporate name	Listed on	Listed code	Ownership concentration		Gross asset (th. RMB)	Net asset (th. RMB)
				Cash flow (%)	Owner		
1	Industry and commercial bank of China Limited	Shanghai, Hong Kong	601398	70.60	State	8,684,288,000	576,741,000
2	China Construction Bank Corporation	Shanghai, Hong Kong	601939	67.97	State	6,598,177,000	422,281,000
3	Bank of China Limited	Shanghai, Hong Kong	601988	67.49	State	5,995,553,000	454,993,000
4	Bank of Communications Co. Ltd	Shanghai, Hong Kong	601328	20.36	State	2,103,626,000	128,797,000
5	China Merchants Bank Co. Limited	Shanghai, Hong Kong	600036	17.29	State	1,310,552,000	67,984,000
6	China Citic Bank Corporation Limited	Shanghai, Hong Kong	601998	70.61	State	1,011,236,000	84,136,000
7	China Minsheng Banking Corp., Ltd	Shanghai	600016	5.90	Widely held	919,796,410	50,186,175
8	Shanghai Pudong Development Bank Co. Ltd	Shanghai	600000	28.41	State	914,980,346	28,297,868
9	China Life Insurance Company Limited	Shanghai, Hong Kong, New York	601628	68.37	State	894,604,000	170,213,000
10	Industry Bank Co. Ltd	Shanghai	601166	20.40	State	851,335,270	38,897,077
11	Ping An Insurance (Group) Company of China, Ltd	Shanghai, Hong Kong	601318	0.17	Widely held	651,104,000	107,234,000
12	Hua Xia Bank Co. Limited	Shanghai	600015	25.47	State	592,338,274	13,055,627
13	Bank of Beijing Co. Ltd	Shanghai	601169	10.40	State	354,222,941	26,667,945
14	Shenzhen Development Bank Co. Ltd	Shenzhen	000001	5.57	Widely held	352,539,361	13,006,063
15	China Pacific Insurance (Group) Co.Ltd.	Shanghai	601601	45.46	State	309,010,000	62,807,000
16	Citic Securities Co. Ltd.	Shanghai	600030	30.10	State	189,653,882	46,279,268
17	Bank of Nanjing Co. Ltd	Shanghai	601009	12.99	State	76,063,712	9,942,463
18	Bank of Ningbo Co. Ltd	Shenzhen	002142	10.80	State	75,510,771	8,022,317
19	Hong Yuan Securities Co. Ltd	shenzhen	000562	66.88	State	22,799,755	5,998,519
20	Guoyuan Securities Companies Limited	shenzhen	000728	41.96	State	18,944,188	5,167,938
21	Northeast Securities Co. Ltd	shenzhen	000686	38.69	State	13,410,394	2,138,310
22	The Pacific Securities Co. Ltd	shanghai	601099	12.30	Family Liu	4,933,251	2,025,093
23	Shanghai AJ Corporation	shanghai	600643	22.65	State	2,704,053	1,167,098
24	Shaanxi International Trust & Investment Corp. Ltd	shenzhen	000563	44.34	State	1,389,615	536,059
25	Anxin Trust & Investment Co. Ltd	shanghai	600816	18.43	Family Gao	504,989	146,828

Appendix 4: Ownership concentration of top 50 public traded non-financial companies in China

No.	Industry	Corporate name	Listed on	Listed code	Ultimate Owner		Gross asset (th. RMB)	Net asset (th. RMB)
					Cash flow (%)	Owner		
1	Mining	PetroChina Company Limited	Shanghai, Hong Kong, New York	601857	86.29	State	994,092,000	677,367,000
2	Mining	China Petroleum & Chemical Corporation	Shanghai, Hong Kong, New York, London	600028	75.84	State	718,572,000	300,949,000
3	Information technology	China Mobile Limited	NYSE	CHL	74.29	State	563,493,000	373,751,000
4	Information technology	China Telecom Corporation Limited	NYSE	CHA	70.89	State	408,004,000	220,921,000
5	Mining	China Shenhua Energy Company Limited	Shanghai, Hong Kong	601088	73.86	State	238,821,000	128,250,000
6	Construction	China Railway Group Limited	Shanghai, Hong Kong	601390	58.30	State	215,212,719	58,929,469
7	Metal and nonmetal material	Baoshan Iron & Steel Co. Ltd.	Shanghai	600019	73.97	State	188,336,000	88,504,000
8	Petroleum, chemistry and plastic	CNOOC Limited	NYSE	CEO	64.41	State	179,793,244	134,314,738
9	Information technology	China Unicom Limited	NYSE	CHU	71.18	State	149,422,000	97,217,000
10	Information technology	China United Telecommunications Corporation Limited	Shanghai	600050	48.09	State	144,509,225	54,424,091
11	Electric power, gas and water	Huaneng Power International, INC.	Shanghai, Hong Kong	600011	32.70	State	122,139,350	46,119,679
12	Electric power, gas and water	Datang International Generation Co. Ltd	Shanghai, Hong Kong	601991	33.74	State	121,515,641	34,007,341
13	Communication, transport and storage	China COSCO Holdings Company Limited	Shanghai, Hong Kong	601919	53.57	State	113,663,440	54,011,157
14	Machine, equipment and instrument	SAIC Motor Corporation Limited	Shanghai	600104	83.83	State	101,815,488	37,384,768
15	Real estate	China Vanke Co. Ltd	Shenzhen	000002	14.70	State	100,094,468	29,278,648
16	Wholesale and retail	Haitong Securities Company Limited	Shanghai	600837	6.75	Widely held	95,345,163	36,632,307
17	Metal and nonmetal material	Aluminum Corporation of China Limited	Shanghai, Hong Kong, New York	601600	38.56	State	94,338,362	57,924,660

A4: Ownership concentration of top 50 public traded non-financial companies in China-continued

No.	Industry	Corporate name	Listed on	Listed code	Ultimate Owner		Gross asset (th. RMB)	Net asset (th. RMB)
					Cash flow (%)	Owner		
18	Communication, transport and storage	Air China Limited	Shanghai, Hong Kong, London	601111	51.66	State	88,295,539	31,288,095
19	Metal and nonmetal material	Angang Steel Co. Ltd	Shenzhen, Hong Kong	000898	67.28	State	86,786,000	54,255,000
20	Communication, transport and storage	China Southern Airlines Company Limited	Shanghai, Hong Kong, New York	600029	50.30	State	82,453,000	12,232,000
21	Metal and nonmetal material	Maanshan Iron & Steel Company Limited	Shanghai, Hong Kong	600808	56.68	State	71,083,141	23,008,971
22	Communication, transport and storage	China Eastern Airlines Corporation Limited	Shanghai, Hong Kong, New York	600115	59.67	State	67,141,714	3,568,007
23	Electric power, gas and water	Huadian Power International Corporation Limited	Shanghai, Hong Kong	600027	49.18	State	65,753,194	18,209,755
24	Metal and nonmetal material	Wuhan Iron and Steel Company Limited.	Shanghai	600005	63.82	State	64,946,819	25,772,747
25	Electric power, gas and water	China Yangtze Power Co. Ltd.	Shanghai	600900	62.60	State	64,314,083	41,253,231
26	Electric power, gas and water	GD Power Development Co. Ltd	Shanghai	600795	53.42	State	59,605,767	13,418,864
27	Mining	China Coal Energy Company Limited	Shanghai, Hong Kong	601898	65.00	State	57,959,436	34,235,428
28	Metal and nonmetal material	Shanxi Taigang Stainless Steel Co. Ltd	Shenzhen	000825	70.53	State	57,661,233	16,906,747
29	Communication, transport and storage	Shanghai International Port (Group) Co. Ltd	Shanghai, Hong Kong	600018	55.13	State	55,542,872	28,201,722
30	Electron	SVA Electron Co. Ltd.	Shanghai	600602	18.32	State	52,795,587	2,735,783
31	Communication, transport and storage	Daqin Railway Co. Ltd	Shanghai	601006	72.94	State	51,107,589	37,533,997
32	Metal and nonmetal material	Hunan Valin Steel Tube & Wire Co. Ltd	Shenzhen	000932	33.92	State	48,422,439	14,911,080
33	Communication, transport and storage	China Shipping Container Lines Company Limited	Shanghai, Hong Kong	601866	47.89	State	48,381,402	32,657,980
34	Real estate	Poly Real Estate Group Co. Ltd	Shanghai	600048	48.97	State	40,894,664	11,925,244

A4: Ownership concentration of top 50 public traded non-financial companies in China-continued

No.	Industry	Corporate name	Listed on	Listed code	Ultimate Owner		Gross asset (th. RMB)	Net asset (th. RMB)
					Cash flow (%)	Owner		
35	Metal and nonmetal material	China International Marine Containers (Group) Co. Ltd	Shenzhen	000039	18.71	State	40,391,920	15,913,757
36	Communication, transport and storage	Hainan Airlines Company Limited	Shanghai	600221	21.01	State	39,839,946	8,435,434
37	Information technology	ZTE Corporation	Shenzhen, Hong Kong	000063	17.89	State	39,173,100	12,137,200
38	Machine, equipment and instrument	Dongfang Electric Corporation Limited	Shanghai, Hong Kong	600875	69.87	State	36,378,397	3,007,507
39	Metal and nonmetal material	Tangshan Iron and Steel Co. Ltd	Shenzhen	000709	51.11	State	35,613,832	11,116,126
40	Textile, clothes and leather	Youngor Group Co. Ltd	Shanghai	600177	7.93	Widely held	35,344,370	15,734,774
41	Electron	Semiconductor Manufacturing International Corporation	New York	SMI	10.94	State	34,324,557	21,961,264
42	Metal and nonmetal material	Inner Mongolia BaoTou Steel Union Co. Ltd.	Shanghai	600010	39.41	State	33,626,462	14,074,686
43	Wholesale and retail	Minmetals Development Co. Ltd	Shanghai	600058	63.22	State	33,253,570	4,273,480
44	Metal and nonmetal material	Anhui Conch Cement Co. Ltd	Shanghai, Hong Kong	600585	20.51	State	31,040,609	11,079,605
45	Petroleum, chemistry and plastic	Shanghai Petrochemical Co. Ltd	Shanghai, Hong Kong, New York	600688	42.14	State	30,494,334	20,999,444
46	Machine, equipment and instrument	China CSSC Holdings Limited	Shanghai	600150	61.06	State	30,477,268	9,359,136
47	Metal and nonmetal material	Jiangxi Copper Co. Ltd	Shanghai, Hong Kong, London, New York	600362	42.41	State	30,054,809	18,382,542
48	Petroleum, chemistry and plastic	Sinopec Shanghai Petrochemical Company Limited	New York	SHI	55.56	State	29,853,050	20,952,029
49	Metal and nonmetal material	Bengang Steel Plates Co. Ltd	Shenzhen	000761	82.12	State	29,356,299	16,740,763
50	Machine, equipment and instrument	Shanghai Zhenhua Port Machinery Co. Ltd	Shanghai	600320	30.34	State	29,115,331	11,311,835

Appendix 5: Data of 152 ownership-dispersed public traded companies in China

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
1	Finance and insurance	China Minsheng Banking Corp., Ltd.	SHSE	600016	5.90	5.90	1.00	919,796,410	50,186,175	6,335,176	12.62%	0.82	Direct dispersed	0	0
2	Finance and insurance	Ping An Insurance (Group) Company of China, Ltd.	SHSE and HKEx	601318	1.00	1.00	1.00	651,104,000	107,234,000	15,086,000	14.07%	0.92	Direct dispersed	19	4
3	Finance and insurance	Shenzhen Development Bank Co. Ltd.	SZSE	000001	1.00	1.00	1.00	352,539,361	13,006,063	2,649,903	20.37%	1.33	Foundation	3	3
4	Wholesale and retail	Haitong Securities Company Ltd.	SHSE	600837	6.75	6.75	1.00	953,45,163	36,632,307	5,456,721	14.90%	1.08	Direct dispersed	0	0
5	Textile, clothe and leather	Youngor Group Co. Ltd.	SHSE	600177	2.05	7.93	3.03	35,344,370	15,734,774	2,475,710	15.73%	1.88	Pyramid	5	5
6	Real estate	Gemdale Corporation	SHSE	600383	8.94	8.94	1.00	25,314,965	8,442,208	964,970	11.43%	0.99	Direct dispersed	0	0
7	Mining	Western Mining Co. Ltd.	SHSE	601168	28.21	8.80	3.21	15,785,921	10,132,856	1,725,844	17.03%	0.91	Pyramid	0	0
8	Textile, clothe and leather	China Union Holdings Ltd.	SZSE	000036	20.89	6.52	3.20	13,422,719	1,654,026	-382,142	-23.10%	-2.76	Pyramid	0	0
9	Mining	Inner Mongolia Yitai Coal Company Ltd.	SHSE	900948	1.00	1.00	1.00	12,027,749	3,632,919	1,539,976	42.39%	2.26	Indirect dispersed - employee holding	9	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
10	Food and drink	Inner Mongolia Yili Industrial Group Co. Ltd.	SHSE	600887	10.50	6.41	1.64	10,173,901	4,212,888	-20,599	-0.49%	-0.04	Pyramid	4	4
11	Machine, equipment and instrument	TBEA Co. Ltd.	SHSE	600089	13.10	4.43	2.96	10,030,575	2,466,661	538,564	21.83%	1.61	Pyramid	7	7
12	Social service	DaZhong Transportation (Group) Co. Ltd.	SHSE	600611	1.00	1.00	1.00	9,972,172	4,044,984	466,100	11.52%	1.14	Indirect dispersed - employee holding	7	6
13	Electron	Konka Group Co. Ltd.	SZSE	000016	8.70	8.70	1.00	9,277,975	3,785,989	209,198	5.53%	1.13	Direct dispersed	2	2
14	Textile, clothese and leather	Shanghai Haixin Group Co. Ltd.	SHSE	600851	8.50	8.50	1.00	8,923,380	5,886,989	5,095	0.09%	0.01	Direct dispersed	4	4
15	Miscellaneous	Orient Group Incorporation	SHSE	600811	27.29	8.89	3.07	8,276,008	4,320,475	154,740	3.58%	0.39	Pyramid	3	3
16	Miscellaneous	Shanghai DaZhong Public Utilities (Group) Co. Ltd	SHSE	600635	1.00	1.00	1.00	8,184,489	2,350,233	250,103	10.64%	1.16	Indirect dispersed - employee holding	13	13
17	Miscellaneous	Guangdong Meiyuan Hydropower Co. Ltd.	SHSE	600868	10.39	1.46	7.13	8,095,800	2,215,821	-161,087	-7.27%	-0.79	Pyramid	9	9
18	Paper making and print	Dare Technology Co. Ltd.	SZSE	000910	40.00	9.45	4.23	7,897,101	1,833,617	215,624	11.76%	1.00	Pyramid	1	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
19	Machine, equipment and instrument	Zhengzhou Yutong Bus Co. Ltd.	SHSE	600066	15.00	3.67	4.08	7,895,888	2,658,198	376,964	14.18%	1.05	Pyramid	8	8
20	Wholesale and retail	Shanghai Yuyuan Tourist Mart Co. Ltd.	SHSE	600655	17.26	7.78	2.22	7,010,760	3,164,652	760,181	24.02%	1.74	Pyramid	6	4
21	Mining	Shanxi Lanhua Sci-tech Venture Co. Ltd	SHSE	600123	33.79	5.86	5.76	6,682,128	2,874,037	576,702	20.07%	1.07	Pyramid	9	9
22	Textile, clothes and leather	Lu Thai Textile Co. Ltd.	SZSE	000726	14.31	3.01	4.76	5,869,633	2,266,024	459,725	20.29%	2.42	Pyramid	12	12
23	Miscellaneous	China Baoan Group Co. Ltd.	SZSE	000009	11.64	9.95	1.17	5,839,300	1,709,735	230,389	13.48%	1.47	Pyramid	4	4
24	Medicine and biology	Jilin AoDong Medicine Industry Croup Co. Ltd.	SZSE	000623	1.00	1.00	1.00	5,638,500	4,608,095	1,992,260	43.23%	3.90	Indirect dispersed - employee holding	9	4
25	Information technology	Founder Technology Group Corp.	SHSE	600601	11.39	7.88	1.44	5,328,326	2,680,741	208,124	7.76%	0.49	Pyramid	0	0
26	Electric power, gas and water	Shenyang Jinshan Energy Co. Ltd.	SHSE	600396	29.80	10.52	2.83	5,255,135	978,340	111,599	11.41%	1.14	Pyramid	6	6
27	Petroleum, chemistry and plastic	Zhuhai Zhongfu Enterprise Co. Ltd.	SZSE	000659	1.00	1.00	1.00	5,111,758	1,856,159	85,960	4.63%	0.31	Foundation	0	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
28	Metal and nonmetal material	Xishui Strong Year Co. Ltd. Inner Mongloia	SHSE	600291	14.58	1.57	9.29	4,894,561	3,830,491	31,758	0.83%	0.06	Pyramid	0	0
29	Electric power, gas and water	Shandong Luneng Taishan Cable Co. Ltd.	SZSE	000720	26.07	9.44	2.76	4,756,124	1,193,484	-	-	-	Pyramid	2	2
30	Electric power, gas and water	Wuhan Kaidi Electric Power Co. Ltd.	SZSE	000939	7.50	1.00	7.50	4,694,555	1,174,270	321,982	27.42%	2.75	Indirect dispersed - non-employee holding	1	1
31	Electron	Jiangsu Changjiang Electronics Technology Co. Ltd.	SHSE	600584	16.21	8.27	1.96	4,463,516	1,586,219	141,445	8.92%	1.82	Pyramid	1	0
32	Machine, equipment and instrcument	Trina Solar Ltd.	NYSE	TSL	9.54	9.54	1.00	4,378,913	2,678,995	260,472	9.72%	0.72	Direct dispersed	14	12
33	Miscellaneous	Shanghai Ace Co. Ltd.	SHSE	600652	9.09	2.73	3.33	4,368,633	873,954	25,557	2.92%	0.32	Direct dispersed	2	2
34	Information technology	Insigam Technology Co. Ltd.	SHSE	600797	17.36	1.95	8.88	4,213,712	1,411,257	152,293	10.79%	0.68	Pyramid	0	0
35	Miscellaneous	Zhejiang China Light & Textile Industrial City Group Co. Ltd.	SHSE	600790	26.11	3.00	8.70	4,184,066	1,141,379	138,945	12.17%	1.33	Pyramid	9	4

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
36	Food and drink	Henan Shuanghui Investment & Development Co. Ltd.	SZSE	000895	1.00	1.00	1.00	4,024,117	2,177,648	561,881	25.80%	2.07	Foundation	4	4
37	Communication, transport and storage	Jinzhou Port Co. Ltd.	SHSE	600190	24.33	2.17	11.22	3,934,759	1,392,785	61,331	4.40%	0.28	Pyramid	4	4
38	Wholesale and retail	Beijing Hualian Hypermarket Co. Ltd.	SHSE	600361	22.78	3.96	5.75	3,832,738	1,646,870	202,083	12.27%	0.89	Pyramid	0	0
39	Machine, equipment and instrument	Beihai Yinhe Hi-Tech Industrial Co. Ltd.	SZSE	000806	15.55	5.02	3.10	3,743,847	1,522,144	11,738	0.77%	0.06	Pyramid	5	5
40	Petroleum, chemistry and plastic	Ningxia Yinglite Chemicals Co. Ltd.	SZSE	000635	17.79	3.77	4.72	3,723,785	367,814	97,027	26.38%	1.75	Pyramid	0	0
41	Petroleum, chemistry and plastic	Inner Mongolia Yuan Xing Energy Company Ltd.	SZSE	000683	21.02	4.63	4.54	3,633,720	636,013	114,502	18.00%	1.19	Pyramid	3	3
42	Construction	Changjiang & Jinggong Steel Building (Group) Co. Ltd.	SHSE	600496	28.72	5.22	5.50	3,613,339	756,694	99,886	13.20%	1.87	Pyramid	1	0
43	Machine, equipment and instrument	Fujin Longking Co. Ltd.	SHSE	600388	21.98	9.56	2.30	3,540,664	1,054,231	124,295	11.79%	0.87	Pyramid	2	1

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Holding shares	Holding stocks
					Voting right	Cash flow									
44	Miscellaneous	Huawen Media Investment Corporation	SZSE	000793	20.31	9.64	2.11	3,454,682	1,961,836	131,033	6.68%	0.73	Pyramid	1	1
45	Food and drink	Yantai Changyu Pioneer Wine Co. Ltd.	SZSE	000869	1.00	1.00	1.00	3,251,224	2,229,020	635,628	28.52%	2.28	Indirect dispersed - employee holding	5	0
46	Medicine and biology	Tianjin Tasly Pharmaceutical Co. Ltd.	SHSE	600535	50.02	7.65	6.54	3,094,334	1,818,288	177,743	9.78%	0.88	Pyramid	1	0
47	Machine, equipment and instrument	Holley Pharmaceuticals Co. Ltd.	SZSE	000607	23.52	6.91	3.41	3,058,735	568,916	-199,111	-35.00%	-2.59	Pyramid	10	5
48	Social service	Shanghai QiangSheng Holding Co. Ltd.	SHSE	600662	1.00	1.00	1.00	3,046,048	1,408,395	213,011	15.12%	1.50	Indirect dispersed - employee holding	8	7
49	Food and drink	V V Food & Beverage Co. Ltd	SHSE	600300	1.00	1.00	1.00	2,978,478	1,497,882	85,630	5.72%	0.46	Indirect dispersed - employee holding	2	0
50	Miscellaneous	Shenzhen Huaqiang Industry Co. Ltd.	SZSE	000062	38.29	9.93	3.86	2,784,875	1,760,655	116,411	6.61%	0.72	Pyramid	6	5
51	Petroleum, chemistry and plastic	Sichuan Jinlu Group Co. Ltd.	SZSE	000510	9.45	5.41	1.75	2,745,108	1,190,537	80,665	6.78%	0.45	Direct dispersed	2	2
52	Textile, clothese and leather	Ningbo Veken Elite Group Co. Ltd.	SHSE	600152	24.28	4.28	5.67	2,692,293	860,030	110,463	12.84%	1.53	Pyramid	6	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
53	Information technology	Daheng New Epoch Technology, Inc.	SHSE	600288	20.00	5.52	3.62	2,560,820	928,560	67,501	7.27%	0.46	Pyramid	0	0
54	Miscellaneous	Jonjee Hi-Tech Industrial & Commercial Holding Co. Ltd.	SHSE	600872	8.76	8.76	1.00	2,552,781	1,458,411	73,981	5.07%	0.55	Direct dispersed	0	0
55	Petroleum, chemistry and plastic	Guangdong Xinhui Media Nylon Co. Ltd.	SZSE	000782	20.23	6.64	3.05	2,532,695	1,000,904	37,566	3.75%	0.25	Pyramid	6	3
56	Petroleum, chemistry and plastic	Baotou Tomorrow Technology Co. Ltd.	SHSE	600091	10.32	1.67	6.18	2,531,217	1,851,019	10,241	0.55%	0.04	Pyramid	2	2
57	Medicine and biology	WuXi Pharma Tech Inc.	NYSE	WX	1.00	1.00	1.00	2,506,120	1,832,691	247,153	13.49%	1.22	Foundation	8	7
58	Real estate	Celebrities Real Estate Development Group Co. Ltd.	SZSE	000667	18.82	7.53	2.50	2,493,533	1,439,734	295,764	20.54%	1.77	Pyramid	1	0
59	Machine, equipment and instrument	Huayi Compressor Co. Ltd.	SZSE	000404	29.92	9.16	3.26	2,409,717	419,806	7,897	1.88%	0.14	Pyramid	1	1
60	Information technology	Ningbo Bird Co. Ltd.	SHSE	600130	21.23	7.64	2.78	2,379,443	756,788	-593,640	-78.44%	-4.93	Pyramid	1	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)									Number of Managers	
					Voting right	Cash flow	V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Holding shares	Holding stocks
61	Agriculture	Haikou Agriculture & Industry (Luoniushan) Co. Ltd.	SZSE	000735	10.31	2.61	3.95	2,347,263	1,409,249	366,218	25.99%	3.08	Pyramid	7	7
62	Petroleum, chemistry and plastic	Shandong Shengli Co. Ltd.	SZSE	000407	3.18	1.00	3.18	2,315,213	644,024	22,318	3.47%	0.23	Direct dispersed	5	5
63	Food and drink	Sichuan Swellfun Co. Ltd.	SHSE	600779	1.00	1.00	1.00	2,263,962	1,302,831	201,240	15.45%	1.24	Indirect dispersed - employee holding	18	17
64	Real estate	Dongguan Winnerway Industrial Zone Co. Ltd.	SZSE	000573	13.98	8.25	1.69	2,230,880	1,473,227	32,572	2.21%	0.19	Pyramid	3	3
65	Miscellaneous	Shenzhen Hongkai (Group) Co. Ltd.	SZSE	000040	13.17	4.39	3.00	2,227,239	996,359	76,936	7.72%	0.84	Pyramid	5	5
66	Metal and nonmetal material	Chengdu Dr. Peng Technology Co. Ltd.	SHSE	600804	9.99	5.88	1.70	2,223,926	1,516,354	168,316	11.10%	0.75	Direct dispersed	2	1
67	Information technology	China Scholars Group Co. Ltd.	SZSE	000547	19.96	6.57	3.04	2,221,430	1,706,491	18,102	1.06%	0.07	Pyramid	2	1
68	Real estate	Shenyang Ingenious Development Co. Ltd.	SZSE	000511	20.34	6.89	2.95	2,160,723	1,296,664	141,683	10.93%	0.94	Pyramid	2	2
69	Electron	Hangzhou Silan Microelectronics Co. Ltd.	SHSE	600460	17.40	9.19	1.89	2,135,022	939,810	21,582	2.30%	0.47	Pyramid	11	11

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
70	Communication, transport and storage	Zhejiang Haiyue Co. Ltd.	SHSE	600387	18.53	4.06	4.57	2,058,683	1,032,814	159,917	15.48%	0.99	Pyramid	17	17
71	Miscellaneous	JiangSu WuZhong Industrial Co. Ltd.	SHSE	600200	20.00	4.26	4.70	2,002,212	803,458	-64,327	-8.01%	-0.88	Pyramid	6	6
72	Electric power, gas and water	Qianjiang Water Resources Development Co. Ltd.	SHSE	600283	25.55	9.42	2.71	1,973,642	1,017,791	33,551	3.30%	0.33	Pyramid	0	0
73	Agriculture	Yuan Longping High-Tech Agriculture Co. Ltd.	SZSE	000998	22.22	6.84	3.25	1,944,805	1,049,916	49,331	4.70%	0.56	Pyramid	3	2
74	Electron	China Digital TV Holding Co. Ltd.	NYSE	STV	25.80	9.98	2.59	1,922,628	1,806,834	246,519	13.64%	2.78	Pyramid	9	6
75	Wholesale and retail	Kunming Sinobright (Group) Co. Ltd.	SZSE	000560	35.08	9.86	3.56	1,897,979	86,801	74,930	86.32%	6.24	Pyramid	2	1
76	Construction	Keda Group Co. Ltd.	SHSE	600986	19.00	9.69	1.96	1,778,297	576,880	8,022	1.39%	0.20	Pyramid	1	1
77	Paper making and print	Jincheng Paper Co. Ltd.	SZSE	000820	27.30	5.15	5.30	1,750,398	401,854	90,363	22.49%	1.91	Pyramid	6	4
78	Miscellaneous	China Hi-Tech Group Co. Ltd.	SHSE	600730	12.50	3.04	4.11	1,679,256	687,832	218,613	31.78%	3.47	Pyramid	0	0
79	Medicine and biology	Shanghai Jiaoda Onlly Co. Ltd.	SHSE	600530	17.73	6.82	2.60	1,675,369	1,005,604	5,110	0.51%	0.05	Pyramid	0	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
80	Miscellaneous	Feilo Acoustics Co. Ltd. Shanghai	SHSE	600651	6.21	6.21	1.00	1,591,590	814,861	53,875	6.61%	0.72	Direct dispersed	2	2
81	Machine, equipment and instrument	Guangdong Mingzhu Group Co. Ltd.	SHSE	600382	23.49	5.79	4.05	1,582,105	753,914	90,029	11.94%	0.88	Pyramid	1	1
82	Miscellaneous	Wuhan East Lake High Technology Group Co. Ltd.	SHSE	600133	7.50	1.00	7.50	1,571,183	808,226	32,165	3.98%	0.43	Indirect dispersed - non-employee holding	0	0
83	Machine, equipment and instrument	Sundiro Holding Co. Ltd.	SZSE	000571	12.16	1.86	6.55	1,565,759	1,001,380	22,511	2.25%	0.17	Pyramid	1	1
84	Textile, clothes and leather	Jiangsu Sanfangxiang Industry Co. Ltd.	SHSE	600370	27.04	7.81	3.46	1,538,094	1,111,101	57,705	5.19%	0.62	Pyramid	7	7
85	Medicine and biology	Guangxi Beisheng Pharmaceutical Co. Ltd.	SHSE	600556	13.84	2.85	4.85	1,492,017	438,488	-319,120	-72.78%	-6.57	Pyramid	1	0
86	Metal and nonmetal material	Xinjiang Jionworid Co. Ltd.	SHSE	600888	13.10	1.44	9.10	1,469,723	617,691	120,340	19.48%	1.32	Pyramid	1	0
87	Miscellaneous	Shenzhen Fountain Corporation	SZSE	000005	20.14	6.71	3.00	1,457,024	750,360	77,375	10.31%	1.13	Pyramid	2	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
88	Wholesale and retail	Xian Kaiyuan Holding Group Company Ltd.	SZSE	000516	19.78	2.07	9.57	1,450,059	537,694	79,243	14.74%	1.07	Pyramid	1	1
89	Information technology	Beijing Tianqiao Beida Jade Bird Sci-Tech Co. Ltd.	SHSE	600657	12.79	3.33	3.85	1,437,840	73,200	-76,457	-104.45%	-6.57	Pyramid	0	1
90	Electron	Guoguang Electric Co. Ltd.	SZSE	002045	30.58	9.40	3.25	1,404,143	710,114	78,713	11.08%	2.26	Pyramid	8	0
91	Food and drink	Shandong Hiking International Co. Ltd.	SHSE	600735	19.17	8.10	2.37	1,391,712	155,708	112,770	72.42%	5.80	Pyramid	5	0
92	Food and drink	Guangxi Guitang (Group) Co. Ltd.	SZSE	000833	18.69	3.32	5.63	1,320,464	699,209	61,951	8.86%	0.71	Pyramid	4	4
93	Medicine and biology	Inner Mongolia Jinyu Group Co. Ltd.	SHSE	600201	14.46	4.45	3.25	1,295,207	697,820	92,925	13.32%	1.20	Pyramid	9	6
94	Metal and nonmetal material	Sichuan Golden Summit (Group) Joint-Stock Co. Ltd.	SHSE	600678	18.65	9.51	1.96	1,276,503	416,251	25,705	6.18%	0.42	Pyramid	3	2
95	Machine, equipment and instrucment	QingHai HuaDing Industrial Co. Ltd.	SHSE	600243	50.00	8.39	5.96	1,220,738	483,588	32,911	6.81%	0.50	Pyramid	3	2
96	Medicine and biology	Kunming Pharmaceutical Corp.	SHSE	600422	23.29	5.60	4.16	1,190,148	574,509	29,069	5.06%	0.46	Pyramid	0	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
97	Wholesale and retail	Xi'an Minsheng Group Co. Ltd.	SZSE	000564	1.00	1.00	1.00	1,187,594	591,146	22,771	3.85%	0.28	Indirect dispersed - employee holding	5	5
98	Electron	Tianshui Huatian Technology Co. Ltd.	SZSE	002185	1.00	1.00	1.00	1,186,020	788,999	80,899	10.25%	2.09	Indirect dispersed - employee holding	4	0
99	Metal and nonmetal material	NBTM New Materials Group Co. Ltd.	SHSE	600114	27.65	9.22	3.00	1,169,586	600,226	21,375	3.56%	0.24	Pyramid	4	1
100	Wholesale and retail	Beijing Hualian Development Store Co. Ltd.	SZSE	000882	25.14	6.90	3.64	1,136,503	587,220	25,586	4.36%	0.32	Pyramid	4	4
101	Other manufacture	Zhejiang Weixing Industrial Development Co. Ltd.	SZSE	002003	12.72	9.27	1.37	1,088,453	536,420	115,716	21.57%	1.36	Pyramid	5	3
102	Petroleum, chemistry and plastic	Hebei Weiyuan Bio-chemical Co. Ltd.	SHSE	600803	29.74	5.42	5.49	1,077,675	369,160	16,690	4.52%	0.30	Pyramid	0	0
103	Medicine and biology	Shanxi Yabao Pharmaceutical Group Co. Ltd.	SHSE	600351	20.07	6.02	3.33	1,074,311	360,257	45,060	12.51%	1.13	Pyramid	0	0
104	Machine, equipment and instrument	Zhejiang Jinggong Science & Technology Co. Ltd.	SZSE	002006	28.72	9.06	3.17	1,053,826	335,233	5,206	1.55%	0.11	Pyramid	5	3

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
105	Electric power, gas and water	Shantou Electric Power Development Co. Ltd.	SZSE	000534	18.68	9.68	1.93	976,721	658,297	144,182	21.90%	2.20	Pyramid	3	2
106	Wholesale and retail	Sanlian Commercial Co. Ltd.	SHSE	600898	1.00	1.00	1.00	952,973	339,048	-5,655	-1.67%	-0.12	Indirect dispersed - employee holding	2	0
107	Medicine and biology	Henan Lingrui Pharmaceutical Co. Ltd.	SHSE	600285	9.96	9.96	1.00	942,551	559,979	69,497	12.41%	1.12	Direct dispersed	2	2
108	Real estate	Hainan Pearl River Holdings Co. Ltd.	SZSE	000505	25.31	7.83	3.23	939,167	195,690	-31,200	-15.94%	-1.38	Pyramid	1	1
109	Information technology	Shandong Inspur Software Co. Ltd.	SHSE	600756	26.50	5.77	4.59	937,415	559,618	18,362	3.28%	0.21	Pyramid	0	0
110	Information technology	Hundsun Technologies Inc.	SHSE	600570	18.84	7.49	2.52	917,122	591,248	126,418	21.38%	1.34	Pyramid	10	10
111	Information technology	Shanghai Broadband Technology Co. Ltd.	SHSE	600608	8.52	6.41	1.33	905,807	105,792	25,472	24.08%	1.51	Direct dispersed	6	6
112	Wholesale and retail	The First Investment & Merchant Co. Ltd.	SHSE	600515	23.59	9.60	2.46	900,224	138,479	135,593	97.92%	7.08	Pyramid	4	3

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
113	Medicine and biology	Wuhan Jianmin Pharmaceutical Groups Corp. Ltd.	SHSE	600976	20.87	5.01	4.16	885,696	716,591	8,326	1.16%	0.10	Pyramid	3	1
114	Metal and nonmetal material	Anhui Chaodong Cement Co. Ltd.	SHSE	600318	33.06	7.58	4.36	866,927	514,081	22,314	4.34%	0.29	Pyramid	1	0
115	Metal and nonmetal material	Zhongshan Vantage Gas Appliance Stock Co. Ltd.	SZSE	002035	39.00	9.04	4.31	866,497	330,353	14,818	4.49%	0.30	Pyramid	5	1
116	Machine, equipment and instrument	Wuzhou Minovo Co. Ltd.	SHSE	600873	16.00	3.27	4.90	836,487	218,799	11,558	5.28%	0.39	Pyramid	7	4
117	Information technology	Chang An Information Industry (Group) Co. Ltd.	SHSE	600706	12.68	3.17	4.00	828,557	29,770	6,497	21.82%	1.37	Pyramid	1	0
118	Other manufacture	Xinlong Holding (Group) Company Ltd.	SZSE	000955	20.95	6.49	3.23	808,416	359,534	-54,245	-15.09%	-0.95	Pyramid	1	0
119	Machine, equipment and instrument	Hubei Hongcheng Cereal Machinery Co. Ltd.	SHSE	600566	3.94	1.00	3.94	802,322	497,822	10,876	2.18%	0.16	Indirect dispersed - employee holding	1	1
120	Construction	Shenzhen Universe (Group) Co. Ltd.	SZSE	000023	15.00	4.78	3.14	799,195	294,707	20,166	6.84%	0.97	Pyramid	8	2

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
121	Agriculture	Yunnan Jinggu Forestry Co. Ltd.	SHSE	600265	24.11	7.23	3.33	796,806	378,564	33,289	8.79%	1.04	Pyramid	1	0
122	Wholesale and retail	Baoji Department Store (Group) Co. Ltd.	SZSE	000796	1.00	1.00	1.00	782,176	378,737	1,671	0.44%	0.03	Indirect dispersed - employee holding	2	2
123	Information technology	Weifang Beida Jadebird Huaguang Technology Co. Ltd.	SHSE	600076	17.62	4.58	3.85	750,825	103,771	-155,105	-149.47%	-9.40	Pyramid	2	2
124	Machine, equipment and instrument	Guizhou Changzhen Electrical Apparatus Co. Ltd.	SHSE	600112	32.27	7.96	4.06	714,866	404,409	32,896	8.13%	0.60	Pyramid	0	0
125	Medicine and biology	Chengdu Hoist Inc., Ltd.	SZSE	000790	24.00	6.93	3.46	704,754	388,709	1,846	0.47%	0.04	Pyramid	3	3
126	Construction	Shanghai Lingyun Industries Development Co. Ltd.	SHSE	900957	24.26	4.75	5.10	698,320	376,945	2,344	0.62%	0.09	Pyramid	0	0
127	Wholesale and retail	Jilin Wuhua Group Co. Ltd.	SHSE	600247	8.99	8.99	1.00	675,203	472,427	14,631	3.10%	0.22	Direct dispersed	3	3

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holdin g shares	Holding stocks
128	Miscellaneous	Hainan Huandao Industry Co. Ltd.	SZSE	000691	9.97	5.18	1.92	663,567	389,916	24,345	6.24%	0.68	Direct dispersed	1	1
129	Communication, transport and storage	Ningbo Fubang Jingye Group Co. Ltd.	SHSE	600768	13.50	1.99	6.78	662,487	212,262	3,933	1.85%	0.12	Pyramid	7	1
130	Machine, equipment and instrument	Shanghai Hanbell Precise Machinery Co. Ltd.	SZSE	002158	22.80	8.39	2.72	643,257	512,478	53,725	10.48%	0.77	Pyramid	1	0
131	Machine, equipment and instrument	Hubei Bothwin Investment Co. Ltd.	SZSE	000760	21.20	4.81	4.41	626,056	285,390	62,322	21.84%	1.61	Pyramid	2	1
132	Medicine and biology	Shanghai Kehua Bio-Engineering Co. Ltd.	SZSE	002022	8.12	8.12	1.00	612,642	459,213	117,997	25.70%	2.32	Direct dispersed	4	1
133	Textile, clothes and leather	NingBo YAK Technology Industrial Co. Ltd.	SZSE	002036	23.09	4.96	4.65	570,739	336,960	16,579	4.92%	0.59	Pyramid	3	3
134	Machine, equipment and instrument	Jiangxi Special Electric Motor Co. Ltd.	SZSE	002176	25.42	7.98	3.18	525,138	335,694	31,468	9.37%	0.69	Pyramid	7	7
135	Petroleum, chemistry and plastic	Shanghai FengHWA Ball Pen Co. Ltd.	SHSE	600615	21.13	4.31	4.91	521,841	173,049	4,093	2.37%	0.16	Pyramid	0	0

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)			Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow	V/C							Holding shares	Holding stocks
136	Metal and nonmetal material	Jiangsu Tongrun Tool Cabinet Co. Ltd.	SZSE	002150	12.93	7.84	1.65	474,703	397,524	53,195	13.38%	0.90	Pyramid	0	0
137	Metal and nonmetal material	Chong Qing Dong Yuan Industry Development Co. Ltd.	SZSE	000656	13.14	5.36	2.45	462,345	409,834	19,557	4.77%	0.32	Pyramid	4	0
138	Machine, equipment and instrument	Zhejiang Holley Technology Co. Ltd.	SHSE	600097	21.51	5.53	3.89	402,084	179,558	3,644	2.03%	0.15	Pyramid	2	0
139	Medicine and biology	Wuhan Guoyao Keji Co. Ltd.	SHSE	600421	23.85	8.52	2.80	390,980	28,193	-445,113	-1578.81%	-142.54	Pyramid	1	0
140	Communication, transport and storage	Yan Bian Road Construction Co. Ltd.	SZSE	000776	1.00	1.00	1.00	385,447	257,360	11,340	4.41%	0.28	Indirect dispersed - employee holding	5	1
141	Food and drink	Tonghua Grape Wine Co. Ltd.	SHSE	600365	17.53	7.19	2.44	323,262	191,597	-264,189	-137.89%	-11.04	Pyramid	1	0
142	Miscellaneous	Hainan Haide Industry Co. Ltd.	SZSE	000567	22.33	4.60	4.85	287,845	129,413	24,809	19.17%	2.10	Pyramid	4	1
143	Wholesale and retail	Shenzhen Huaxin Co. Ltd.	SZSE	000010	23.00	2.66	8.66	285,950	110,872	-28,869	-26.04%	-1.88	Pyramid	0	0
144	Metal and nonmetal material	Hunan Ginde Development Co. Ltd.	SZSE	000639	20.91	2.33	8.99	270,325	127,535	3,290	2.58%	0.17	Pyramid	3	3

Appendix 5: Information of 152 ownership-dispersed public traded companies in China-Continued

No.	Industry	Corporate name	listed on	Listed code	Ownership concentration (%)		V/C	Gross asset (th RMB)	Net asset (th RMB)	Net profit (th RMB)	ROE	CR	Ownership structure	Number of Managers	
					Voting right	Cash flow								Holding shares	Holding stocks
145	Textile, clothese and leather	Shenzhen Victor Onward Textile Industrial Co. Ltd.	SZSE	000018	20.89	6.55	3.19	229,452	169,602	-116,357	-68.61%	-8.18	Pyramid	0	0
146	Textile, clothese and leather	Sichuan Jinyu Automobile City (Group) Co. Ltd.	SZSE	000803	23.51	8.15	2.89	226,463	103,497	6,086	5.88%	0.70	Pyramid	3	3
147	Textile, clothese and leather	Sichuan Joint-Wit Medical & Pharmaceutical Industry Co. Ltd.	SZSE	000809	20.00	7.74	2.58	224,980	130,860	5,902	4.51%	0.54	Pyramid	2	1
148	Miscellaneous	Hubei Xingfu Industry Co. Ltd.	SHSE	600743	19.18	7.67	2.50	204,319	6,713	1,881	28.02%	3.06	Pyramid	0	0
149	Metal and nonmetal material	Dongxin Electrical Carbon Co. Ltd.	SHSE	600691	28.58	9.00	3.17	143,812	2,860	25,558	893.64%	60.35	Pyramid	1	1
150	Information technology	Powerise Information Technology Co. Ltd.	SZSE	000787	11.79	6.01	1.96	141,166	3,207	43,226	1347.86%	84.78	Pyramid	0	0
151	Social service	Hainan Dadonghai Tourism Centre (Holdings) Co. Ltd.	SZSE	000613	10.31	1.00	10.31	135,406	73,693	139,159	188.84%	18.76	Pyramid	1	1
152	Wholesale and retail	Along Tibet Co. Ltd. PLC	SHSE	600773	19.70	6.60	2.99	124,738	11,984	-51,811	-432.33%	31.26	Pyramid	1	0

Note:

1. Voting rights concentration: voting rights held by ultimate owner.
2. Cash flow rights concentration: cash flow rights held by ultimate owner.
3. V/C = voting rights concentration /cash flow rights concentration.
4. Gross asset and net asset come from balance on 31. Dec. 2007, net profit is the profit or loss in 2007.
5. CR = ROE of the firm / ROE of the industry.
6. Number of managers holding shares: Number of top managers who direct or indirect hold shares in the listed company.
7. Number of top managers holding stocks: Number of top managers who direct hold stocks of the listed company.

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