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Board composition, board activity and ownership concentration, the impact on firm performance

Abstract

This paper provides a parallel investigation of the impact of board composition, board activity and ownership concentration on the performance of listed Chinese firms. We find that independent directors enhance firm performance more effectively than other board factors. The frequency of shareholder meetings, rather than board meetings, is positively associated with firm value. Tradable share ownership concentration has a positive and linear relationship with firm value, while state and total share ownership concentration represent U(V) shapes. Importantly, companies with the highest levels of both total share and tradable share ownership concentration have a greater firm values than those with the highest levels of only a single concentration.

Keywords: board composition, ownership, concentration, performance, firm value.
JEL Classification: G32, G34.

Introduction

One feature of a modern corporation is the general separation of ownership and management. The productivity is improved due to promoting individual strength of managers. However, the separation incurs an agency problem that the managers of firms might pursue their own interests rather than the interests of owners, which is against the principle of maximization of shareholders' wealth (Jansen and Meckling, 1976). The board of directors is an instrument through which shareholders can exert influence on the behavior of managers to ensure that a firm is operated in their interests. The board may be less influential when the board's composition or board activities are inappropriate.

Another feature is the establishment and operation of a modern corporation with huge amount of capital gathered from massive investors. Firms' profitability signals the fund to the most productive sectors. However, large shareholders may end up in control, forcing the firm to take actions that benefit themselves at the expense of the minority shareholders. Nevertheless, in situations without controlling shareholders, dispersed investors may lack the incentive to monitor firms, giving the managers a "free ride". It is argued that if large shareholders with sufficiently large stakes will be in line with the interests of the firm, in other words, large shareholders would have no incentive to expropriate the minority shareholders, and would engage in the monitoring the firm.

The modern corporations appear in China within a short history about 20 years. China's economic reforms began in 1978, shifting from a centrally-controlled economy to a more market-oriented economy with the aim of increasing efficiency. Since the establishment of stock markets in 1990 until April 2008, about 1552 companies have been listed on either Shanghai or Shenzhen stock exchange. Explicitly, firm administration is being structured similar to those of western countries. The board of directors is the headquarter of the firm, which represents the shareholders in making important decisions, such as appointment of the management team including the CEO, authorization of compensation and dividend policies, and review and suggestion of operating strategy. The board is led by the Chairman and comprise inside directors and independent/outside directors. The listed firms represent the separation of management and ownership, where a number of shareholders own various stakes of shares.

However, Chinese firms have many implicit special features. First, many listed firms are reformed state enterprises. The boards and management teams tend to be filled with the original state enterprises' senior staff or imbued with relevant government officers. Secondly, China is still on the way to approaching a pure market-oriented economy. The goal of shareholder wealth maximization is frequently interrupted by politics. Not only the politic policy is a concern in the firm operation, but also the members of political party may posit important positions in board or management teams[1]. Thirdly, as regards market capitalization, state shares account for 32.52% (weighted average 38.85%) of total shares outstanding. Since the state and legal person shares are non-tradable, the tradable shares are only 38.96% of total shares outstanding[2].

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[1] Fan et al. (2007) have a research on the involvement of government bureaucrats and politic organization in the corporate governance of China's listing firms.
[2] The percentages of ownership are calculated using the data for 2003 and 2004, the sample period of this research.

Regarding mature markets of developed countries, a large number of papers on the impact of board composition and ownership concentration on firm performance have been published. The new emergence market of China and its unique characteristics have attracted increasing attention. Scholars intend to see whether or not the corporate governance and ownership structure of China's firms have the similar impact on firm value as those in developed countries. For example, Chang and Wong (2003) investigate the relationship between managerial discretion and firm performance. Kato and Long (2005) examine the impact of CEO turnover on firm performance. Fan et al. (2007) study the efficiency enhancement of politically-connected CEOs. Chen et al. (2006) conduct research on the engagement of executive and non-executive directors in fraud. Li et al (2008) analyze the relationship between corporate governance factors and financial distress.

The first novelty of this research is to provide parallel tests on relationships between board composition, board activities, ownership concentration and firm performance, respectively. It then accordingly gives a comprehensive analysis on the impact of board composition, board activities, and ownership concentration on firm value. The second novelty of this research is that, in addition to state ownership, we designate the total share ownership concentration and tradable share ownership concentration. Thus, the interactive effect of different ownership concentration is investigated. The robust tests on endogenous problems are logically accounted for.

We have the following findings in this paper including: 1) board size and board diversity have no observable influence on firm value; 2) the addition of independent directors to the boards enhances firm value; 3) board's activities as represented by the frequency of board meetings and general shareholder meetings are associated with negative and positive firm performance, respectively; 4) the tradable share ownership concentration has a positive and linear relationship with firm value; 5) companies with the highest levels of both total share and tradable share ownership concentration have a greater firm value than companies with only a single highest level of ownership concentration. These companies are also found to have greater firm value than those with the highest levels of both total share and state ownership concentration.

The rest of this paper is structured as follows: Section 1 reviews the literature related to this research. Section 2 describes the data and defines the variables; Section 3 interprets basic statistics and conducts Variance Analysis (ANOVA); Section 4 applies regression analysis using OLS modelling; Section 5 deals with endogenous problems using logit and 2SLS methods. The final section concludes this research.

1. Relevant literature

What board composition and board activities can effectively monitor managers and therefore lead to firm good performance is always research focus. One important characteristics of board composition is board size which is represented by the number of directors. Jensen (1993) argued that large corporate boards are less effective in making decisions. CEOs find it easier to persuade directors of large boards to follow their intentions. Yermack (1996) raises evidence in support of Jensen's argument. He states that companies with small boards exhibit a superior financial ratio, and provide strong performance incentives for CEOs through compensation and the threat of dismissal. Alternatively, board size increases according to company performance as troubled firms are more likely to add directors to increase their monitoring capacity. However, Linck et al. (2008) provide evidence that smaller boards are not necessarily better than larger ones.

It is argued that inside directors dominate boards. Fama and Jensen (1983) point out that outside directors exhibit more independence of the CEO. A board with a great presence of outside directors may administrate to safeguard the interests of shareholders. However, outsiders are less informed about firm projects. Inside managers are an important source of firm-specific information, and their inclusion in boards can lead to more effective decision making. Klein (1998) finds a positive relationship between the percentage of inside directors and firm performance. Hermalin and Weisbach (1991) and Yermack (1996) deny this relationship. Dahya and McConnell (2005) conclude that boards with a greater proportion of outside directors make better decisions particularly on the appointment of CEOs. Chen et al. (2006) provide evidence from Chinese cases that firms having a high proportion of outside directors on the board are less likely to engage in fraud.

The contribution of board diversity to firm performance also attracts plenty of studies. Carter et al. (2003) state that diversity increases board independence because people with different genders and ethnic or cultural backgrounds tend to ask questions that would not come from directors with more traditional backgrounds. Agrawal and Knoeber (2001) and Carter et al. (2003) document significant positive relationships between firm value and the fraction of women and minorities on boards. Erhardt et al. (2003) indicate that if women are seen to be add-

ing new perspectives, then they would become more prevalent on boards, and be associated with good firm performance. Alternatively, if the inclusion of women on the boards is merely "window dressing" for the public, the presence of women may actually decrease the firm value.

A lot of criticism has been put forward regarding the dual appointment of board chairmen and firm CEOs. Duality is seen to give too much power to the individual and therefore reduces the checks and balances in top management (Jensen, 1993). This can make it easier to abuse power and engage in activities that are not in the best interests of shareholders. Bai et al. (2004) find that duality reduced the firm value for Chinese listed firms. However, an alternative view argues that separating the roles of chairman and CEO in the case of Chinese listed firms created a paralysis whether the two positions did not agree on decisions or strategies (Chen et al., 2006).

The primary responsibility of the board of directors is to engage, monitor and replace company management where necessary. The decisions and information announcements are usually made at either board meetings or general shareholder meetings. Thus, the initiative and activities of the board can be observed from the frequency of board meetings and general shareholder meetings. Vafeas (1999) finds that frequent board meetings tend to follow poor performance, and herald improvements in profitability. Chen et al. (2006) find board meeting frequency is positively associated with fraud for Chinese listed firms. This might imply that a firm's questionable or illegal activities were actually discussed by the board over a number of meetings.

The optimum level and nature of ownership concentration for firm good performance have drawn a broad investigation. Berle and Means (1932) suggest that a negative link can be observed between ownership dispersion and firm performance. Concentrated ownership provides the large investors with both sufficient incentive and power to discipline management, and thus improve firm performance by decreasing monitoring costs (Shleifer and Vishny, 1986 and 1996). Demsetz and Lehn (1985) document a linear relationship between ownership concentration and ex-post firm performance measures. This similarly linear relationship is also found on the Chinese market (Xu and Wang, 1999; Chen and Gong, 2000; Gul and Zhao, 2000) and Czech market (Claessens et al., 1996 and 1997).

However, research also suggests a nonlinear relationship between ownership concentration and firm performance. Increasing ownership concentration from a low level develops the incentive and power for large shareholders to monitor management. However, a further increase in ownership concentration may create controlling ambition and capability for large shareholders to manipulate the firm and expropriate minority shareholders. When the ownership concentration approaches one hundred percent, the interests of controlling shareholders and the firms become aligned and the incentive of tunnelling is removed. With this type of explanation, Morck et al. (1988) find a U-shape firm value relationship to ownership concentration on the U.S. market. Tian (2002) makes a similar argument, revealing this U-shaped relationship in Chinese firms.

There is also evidence that ownership concentration has no relationship with or in fact reduces firm value. Demsetz and Lehn (1985) assert that they find no relationship between ownership concentration and firm performance for U.S. firms. Agrawal and Knoeber (1996) affirm this viewpoint by showing this relationship to be insignificant. Leech and leahy (1991) analyze U.K. firms by using several measures of ownership concentration. They display a negative and significant relationship between ownership concentration and firm value and profitability. Mudambi and Niclosia (1998) confirm this observation as well.

Another group of research examines the impact of specific ownership concentration on firm performance. Holderness et al. (1999) document that low levels of managerial ownership increases firm value, but at higher levels decreases firm value. McConnell and Servaes (1990) conduct research into the consideration of institutional ownership. They find that a positive relationship is observable between ownership concentration of non-banking financial institutions and the performance of those institutions. Xu and Wang (1999) and Qi et al. (2000) find that the performance of China's listed firms is negatively related to state ownership but positively related to legal person ownership.

2. Data and variables

Our research focuses on firms listed on the Shanghai and Shenzhen stock exchanges in 2003 and 2004, time during which the regulatory framework was relatively more stable and consistent compared to other periods[1]. We exclude some types of firms from our sample, namely financial firms which are specially regulated and usually have extremely high leverage ratios compared to other firms. We have

[1] In July 2005 China started to implement new Split Share Structure Reforms through which some non-tradable shares were floated by disposing a portion of the state's shares. This policy has made a little change of the ownership structure.

also excluded firms classified by the China Securities Regulatory Commission (CSRC) as "special treatment" (ST) or "particular transfer" (PT) firms. The ST and PT firms are specially monitored due to their poor operation and restrictions have been imposed on the trading of their shares as well[1]. The third type of firms excluded is those with foreign ownership, such as the firms which issue B-shares on the domestic market and H-shares on the Hong Kong Stock Exchange. Firms with foreign ownership are subject to different requirements for listing, reporting and even a different accounting standards. We will include firms with foreign ownership in our future studies. The last category of firms excluded is those with data missing or incomplete information for our modelling. Therefore, we retain the 1975 set of observations of firms. Our data were mainly obtained from the China Stock Market and Accounting Research Database (*CSMAR*) created by GTA Information Technology Company and The University of Hong Kong. We have made a number of corrections on the data with references from several other data sources.

We structure the variables into several categories for our analysis, which represent firm performance (value), board composition, board activity, ownership and ownership concentration.

The most widely used firm performance measures in financial literature are Tobin-Q, return on equity, return on sale, return on asset, etc. Tobin-Q is argued to have the advantage of reflecting the firm's current value and future profitability potential. However, in the extremely speculative and emerging market of China, share prices are manipulated. In particular, a large proportion of outstanding shares are non-tradable. Using the market price of tradable shares to calculate the market value of non-tradable shares would overvalue the firms. Return on equity seems to be an appropriate measure of investment profitability. But return on equity is useless for the firms which have negative equity or both negative profit and equity, which is not exceptional amongst Chinese firms. Therefore, we utilize the return on asset as the primary firm performance measure and return on sale as the secondary firm performance measure. The return on asset is defined as the annual net profit divided by the average book value of assets at the beginning and end of year (*Return_asset*). The return on sale (*Return_sale*) is calculated as annual net profit divided by the value of sale in the year.

With respect to the board composition variables, the number of directors (*Num_dir*) is the total number of directors in a board. Large board size is associated with sufficient capacity to monitor the company. Large boards are also associated with lower efficiency due to the time consumed in reaching agreements. Yermack (1996) finds there is a negative relationship between board size and firm performance. Cheng (2008) documents that large boards increase the stability of firm performance. Independent directors are defined as those who have no position in the management team and no direct business or benefit links within the firm. Thus, we propose they are pure representatives of the shareholders with no hesitance in monitoring the firms. Increasing the number of independent directors on a board (*Num_indir*) is a positive driver of firm value for firms dominated by inside ownership[2]. We created a dummy variable (*CEO_chair*) that equals one if the chairman of the board of directors is also the CEO of a firm and zero otherwise. The duality of CEO-chairman may either improve the decision making speed of the CEO or reduce the monitoring responsibility of the chairman. We suspect that on average the duality of CEO-chairman has insignificant effect on firm value.

The average age of directors (*Age_dir*) reflects the monitoring experience of board. Experienced board should increase the firm's value provided that the directors are not "too old" and reluctant to admit new technologies and markets. In line with this conjecture, we expect that the average age of board members is positively related to firm value. Board diversity is defined as the presence and percentage of women, African American, Asians and Hispanics in a board of directors (Carter, 2003). Carter (2003) finds that diversity increases

[1] In order to enhance the listing firm governance and protection to investors' interests, the CSRC introduced a special delisting mechanism in 1998. Under the guidelines set forth by the CSRC, a firm that has negative profits for two consecutive years will be designated an ST firm. If an ST firm continues to suffer loss for one more year, it will be designated a PT firm. A PT firm will be delisted if it cannot turn profitable within another one year. The shares of ST firms are traded with a 5% price change limit each day versus 10% for normal firms' shares. The midterm reports must be audited. The shares of PT firms can only be traded on Friday, with a maximum 5% upside limit to last Friday's closing price, but no limit on the downside (Bai et al., 2002).

[2] It was difficult to classify inside and outside directors for China's listed firms. As many listing firms were transferred from state enterprises or other legal entities, State and legal person ownership account for more than fifty percent. The members of board used to be the prior staff of the state enterprises and legal entities and nominated by the parent companies or government authorities. They normally received salary from the listed firms and involved in routine firm management. To regulate the board activities and protect the interests of minority shareholders, the CSRC issued the guidelines to introduce independent directors in 2001. An independent director is not employed by the firm, does not supply service to the firm, or more generally does not have a conflict interest in the accomplishment of her oversight mission. Actually, the independent directors in China's listed firms can be thought as outside directors that are defined in the literature (Kato and Long, 2005).

board independence because people with different genders, ethnic, or cultural background tend to ask questions that would not come from directors with more traditional backgrounds (Carter, 2003). We apply three variables to define board diversity. One is a female chairman dummy (*F_chair*) that equals 1 for female chairman and 0 otherwise. The other is the number of female directors (*Num_fdir*) in a board. In addition, we also set a female CEO dummy (*F_CEO*) which is 1 for a CEO being a female and 0 otherwise. We predict that board diversity will have a positive effect on firm value.

Regarding the board's activities, we apply three measures. The board of directors has the responsibility to appoint and remove the CEO and senior management team, determine the system of internal management and undertake other necessary decisions. The number of board meetings per year (*Dir_mting*) represents the depth of board involvement in monitoring. A proper frequency of board meetings enhances the vigilance and oversight of firm management and adds to firm value. Alternatively, overloading board meetings may discourage the initiative of managers or increase the times controversial decisions are made that may involve illegal or questionable activities. Vafeas (1999) finds that frequent board meetings following poor performance can herald improvements in profitability. Chen et al. (2006) find that board meeting frequency is positively associated with fraud in China and decreases firm value. We suggest that the frequency of board meetings is negatively correlated with firm value.

The general shareholder meeting is the venue of super decision making. The appointments of CEO and chairman, dividend polices, investment proposals and financial schemes need to be ultimately discussed and approved in the general meetings. The more frequent the general shareholder meetings, the more chances that shareholders will invigilate with both the management team and the board of directors. Also, a board with confidence in their decision proposals will likely hold more frequent general shareholder meetings. Boards that believe their proposals will be accepted generally treat their meeting as a superb opportunity to broadcast their monitoring ability. Thus, we expect that the frequency of general shareholder meetings per year (*Holder_mting*) increases firm value. The ratio of ownership representation involves the shares owned by the shareholders who are present in general meeting to the total shares outstanding (*Ratio_rep*). It reflects the enthusiasm of shareholders in monitoring firms and the intention of holding the shares. Confident boards of directors always encourage the participation of shareholders at general meetings. In turn, the high ratio of ownership representation enhances the efforts of the board and management team and adds to firm value.

With regards to ownership concentration, the first variable is the total share ownership concentration, which is the ratio of shares held by the top ten (total)[1] shareholders to the total shares outstanding (*Top10_total*). Morck et al. (1988) and Bai et al. (2004) state that increasing the ownership concentration from a low level lessens the free-ride problem. However, further increases may provide large shareholders with the possibility to expropriate small shareholders' wealth. When ownership concentration approaches one-hundred percent, the interests of large shareholders align with the firm completely and the incentive of expropriation disappears. Thus, the relationship between ownership concentration and firm value displays a U-shape. We find that the top ten total shareholders own 61.55% (or weighted average 56.78%) of total shares outstanding. Among the top ten total shareholders, 53.85% of them are non-tradable shareholders with a ratio of their non-tradable shares to their total shares being 91.97%. This means that about six of the top ten total shareholders (53.85%) hold about 56.61% (i.e.: 61.55% of the 91.97%) shares on the market and their shares are non-tradable. Since they cannot sell the shares even they forecast the share price going to be unfavorable, while the possible incentive of tunnelling is alleviative, they also have intention of propping when the firm confronts financial problems[2]. Therefore, we argue an asymmetric U(V) shape with a high right hand side.

The second variable is the tradable share ownership concentration, which is the ratio of tradable shares held by the top ten tradable shareholders to the total tradable shares (*Top10_trade*). As the total tradable shares are only 33.50% of total shares outstanding and the top ten tradable shareholders hold 9.83% of the total tradable shares on average, the top tradable shareholders seldom have the dominating power to expropriate the other shareholders. They either pay attention to monitoring firms or sell the shares to become smaller shareholders. Hence, we expect a positive relationship between firm value and ownership concentration measured by the ratio of the top ten tradable shares.

[1] In the context, we will use "top ten total shareholders" to replace "top ten shareholders" to make an explicit difference from "top ten tradable shareholders".

[2] Actually, the non-tradable shares can be sold by negotiation between the legal persons. However, the transaction of non-tradable shares needs to be approved by the authority. Trading of non-tradable shares is for the restructure of ownership instead of making profit. The prices applied are subject to negotiation and are significantly lower than the market price.

Our third variable is the concentration of state ownership, which is the ratio of state-owned shares to the total shares outstanding (*Ratio_state*). As many share-ownership firms were reformed from state-owned enterprises, the state retains about 32.52% (or weighted average 38.85% of shares) on average. On the one hand, state-owned shares represent managerial bureaucracy and inefficiency. Increasing state ownership decreases firm value. On the other hand, the state always retains a large share stake in firms that occupy the broad market and have high profitability. The state also supports firms with favorable policies in tax, capital and product materials. Therefore, we imply a flat U-shape for the association between the ratio of state-owned shares and firm value.

With the control variables necessarily employed in the regression analyses, we include the total number of shares outstanding (*Total_share*) and total number of shareholders (*Total_holder*) to control ownership size effect. Ownership size influences the ownership concentration. For a given number of shares outstanding, large number of shareholders tends to lower ownership concentration. For a given number of shareholders, large number of shares tends to increase ownership concentration. Another point of view is that large number of shares outstanding tends not to foster dominating shareholders. We also apply industry control variables such as the firm characteristics of corporate governance, capital structure, ownership attributes and profitability which vary in terms of industries. The industry control variables that follow comprehensive classifications and are most popularly used in China include utility, manufacture, commerce, conglomerate, financial and property. In the regression, we adopt four dummy variables for utility (*Util_indtry*), manufacture (*Manu_indtry*), commerce (*Comm_indry*) and conglomeration (*Cong_indry*). The property (*Prop_indry*) will be carried in the intercept to avoid the dummy variable trap.

3. Univariate interpretation and ANOVA (analysis of variance)

3.1. Univariate interpretation. The statistics of designated variables are reported in Table 1. The return on asset (Return_assets) is 0.0247 on average with a median of 0.0261. The return on asset varies a lot with a minimum of -0.6121 and a maximum of 0.3138. The return on sale is 0.0366 on average with a median of 0.0441. The variation of the return on sale is larger than that of return on asset. The minimum return on sale is -1.6635 and maximum is +1.1630. The absolute values of return on sale larger than 1 imply the existence of non-product related profit or loss.

Table 1. Summary of statistics

Summary of statistics of total 1975 sets of observations of firms listed on either Shanghai or Shenzhen stock exchange in 2003 or 2004. Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Return_sale is annual net profit divided by the value of sale in the year. Num_dir is the number of directors. Num_indir is the number of independent directors. Age_dir is the average age of directors. CEO_chair is a dummy of duality of CEO and chairman. F_chair is a dummy of female chairman. F_CEO is a dummy of female CEO. Num_fdir is the number of female directors. Dir_mting is the frequency of board meetings. Holder_mting is the frequency of shareholder general meetings. Ratio_rep is the ratio of shares owned by the shareholders participated in the shareholder general meetings to the total shares outstanding. Top10_total is the ratio of shares held by the top ten total shareholders to the total shares outstanding. Top10_trade is the ratio of tradable shares held by the top ten tradable shareholders to the total tradable shares. Ratio_state is the ratio of state-owned shares to total shares outstanding. Total_share (million) is total number of shares outstanding. Total_holder (thousand) is the total number of shareholders. Util_indtry is the industry of utility. Prop_indry is the industry of property. Cong_indry is the industry of conglomeration. Manu_indtry is the industry of manufacture. Comm_indry is the industry of commerce.

Variable	Mean	Std	Median	Mode	Minimum	Maximum
Firm value/performance						
Return_asset	0.0247	0.0626	0.0261	-	-0.6121	0.3138
Return_sale	0.0366	0.1923	0.0441	-	-1.6635	1.1630
Board composition						
Num_dir	9.79	2.23	9	9	5	21
Num_indir	3.25	0.82	3	3	1	7
Age_dir	47.84	3.98	47.80	49.00	35.38	61.78
CEO_chair	0.0946	0.2928	0	0	0	1
F_chair	0.0349	0.1836	0	0	0	1
F_CEO	0.0334	0.1797	0	0	0	1
Num_fdir	0.9317	0.9905	1	0	0	6
Board activities						
Dir_mting	7.42	3.01	7	6	2	26
Holder_mting	2.00	0.99	2	2	1	7
Ratio_rep (%)	57.79	13.46	60.00	60.00	10.23	100.00

Table 1 (cont.). Summary of statistics

Ownership concentration						
Top10_total (%)	61.55	12.24	63.31	60.83	7.86	89.48
Top10_trade (%)	8.47	9.36	4.66	-	0.77	87.57
Ratio_state (%)	32.52	26.91	35.00	-	0.00	85.00
Others						
Total_share (million)	457.04	2921.73	256.30	200.00	50.50	125120.00
Total_holder (thousand)	46.84	50.12	33.75	12.28	2.04	728.76
Util_indtry	0.1073	0.3096	0	0	0	1
Prop_indry	0.0506	0.2192	0	0	0	1
Cong_indry	0.1240	0.3297	0	0	0	1
Manu_indtry	0.6518	0.4765	1	1	0	1
Comm_indry	0.0663	0.2489	0	0	0	1

The number of director seems to be more or less even across the firms with a mean of 9.79 and median and mode of 9. The largest board has 21 directors, and the smallest has only 5 directors. The range of this variable seems to conform to Chinese Company Law that stipulates joint stock companies require five to nineteen directors. The number of independent directors ranges from 1 to 7 with similar mean 3.25, median 3 and mode 3, respectively. It is generally cited that CSRC stipulates that there should be at least two independent members on each listed firm's board of directors by June 30, 2002, and independent directors should further constitute at least one third of the total number of directors by June 20, 2003 (Kato and Long, 2005). However, our dataset shows that the guideline regarding independent directors has not been well implemented.

The ages of directors are symmetrically distributed with the mean, median and mode around 48 years. In particular, the standard deviation of ages is comparatively smaller than the mean. The duality of CEO-chairman is not prevalent. The mean of 0.0946 implies that only 9.46% of chairmen concurrently occupy the position of CEO. The boards are not widely diversified with little involvement of female directors. For instance, only 3.49% chairmen and 3.34% CEOs are female. The number of female directors approaches just one (0.9317) on average in each board.

Normally, the board of directors holds meetings about 7 times a year. But some boards hold meetings more frequently up to 32 times a year. The general shareholder meeting is held twice a year on average, at least once and at most seven per year. On average, the ownership of shareholders participating in the meetings represents 57.79% of total shares outstanding. However, representatives account for only 10.23% in some cases compared to 100% in extreme cases.

The ownership of Chinese firms is excessively concentrated. The top ten total shareholders own 61.55% total shares outstanding on average, with a maximum of 89.48%. Thus, the top ten total shareholders are able to control the firms and dominate other shareholders. The top ten tradable shareholders own 8.47% tradable shares on average, with an extreme case of 87.57%. The top ten tradable shareholders may have the capacity to influence market prices. The average ratio of state-owned shares is 32.52% of total shares outstanding (It is 38.58% with value weighted average. If we take into account indirect state ownership, such as shares owned by legal persons whose parent companies are state enterprises, average state ownership would be larger). The state is always the largest shareholder for many firms in China. However, there are also some firms free of state ownership or direct state ownership.

The ownership size varies greatly across firms. The minimum number of total shares outstanding is 50.50 million and the maximum is 125,120 millions with a mean of 457.30 million. The minimum number of shareholders is 2.04 thousand and the maximum is 728.76 thousand with an average of 46.86 thousand. In the sample, manufacturing is the largest industry with 65.18% of total firms, while the property was the smallest industry accounting for only 5.06% of the total number of firms. Outside the sample, the nine financial firms accounted for only 0.91% of firms on the market.

3.2 ANOVA. In this part we conduct ANOVA analyses to test the value (performance) of firms that have different characteristics in board composition, board activities and ownership concentration. To save the space we report and discuss the results by using return on asset as firm value measure only. The results by using return on sale are almost the same except for a little low in statistical significance.

3.2.1. The impact of board composition on the firm value. The basic characteristics of board composition have been interpreted in the last subsection. Now we investigate the impact of board composition on firm value. The results of ANOVA are arranged

in Table 2. In Panel 1, we classify the firms into three groups in terms of the distribution of the number of directors: 1) the firms with a board comprising less than 9 directors; 2) firms comprising 9 to 10 directors (around the mean, median and mode); and 3) firms comprising more than 10 directors. The results show that firm value increases as the number of directors grows, but only insignificantly. Our results seem to be inconsistent with Yermack's (1996) evidence. He finds an inverse and significant association between board size and firm value in a sample of 452 large U.S. industrial corporations between 1984 and 1989, using Tobin's Q as an approximation of market valuation.

Table 2. ANOVA analyses on the impact of board composition on firm value

Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Num_dir is the number of directors. Num_indir is the number of independent directors. Age_dir is the average age of directors. CEO_chair is a dummy for duality of CEO and chairman. F_chair is a dummy of female chairman. F_CEO is a dummy of female CEO. F_dir is a dummy of female director presence.

Panel 1: Firm value by number of directors		
	Return_asset	
Num_dir	Obs.	Mean
≤8	374	0.0205
9-10	949	0.0250
≥11	652	0.0267
	F=1.05	P<0.3490
Panel 2: Firm value by number of independent directors		
	Return_asset	
Num_indir	Obs.	Mean
≤2	248	0.0092
3	1148	0.0251
≥4	579	0.0306
	F=10.32	P<0.0001
Pane1 3: Firm value by average age of directors		
	Return_asset	
Age_dir	Obs.	Mean
<45	488	0.0147
45-50	893	0.0235
>50	594	0.0348
	F=14.41	P<0.0001
Pane1 4: Firm value by duality of CEO and chairman		
	Return_asset	
CEO_chair	Obs.	Mean
Yes	186	0.0255
No	1789	0.0246
	F=0.03	P<0.8579
Panel 5: Firm value by female chairman		
	Return_asset	
F_chair	Obs.	Mean
Yes	69	0.0285
No	1906	0.0246
	F=0.26	P<0.6086
Panel 6: Firm value by female CEO		
	Return_asset	
F_CEO	Obs.	Mean
Yes	66	0.0246
No	1909	0.0270
	F=0.09	P<0.7598
Panel 7: Firm value by female director presence		
	Return_asset	
F_dir	Obs.	Mean
Yes	1179	0.0226
No	796	0.0279
	F=3.39	P<0.0659

We also divide the firms into three groups in terms of the distribution of the number of independent directors: 1) firms with a board consisting of less than 3 independent directors; 2) firms consisting of 3 independent directors (the median and mode); and 3) firms consisting of more than 3 independent directors. Panel 2 displays a significant and positive relationship between the number of independent directors and firm value. The mean values for return on asset are 0.0092, 0.0251 and 0.0306 for firms with less than 3, equal to 3 and larger than 3 independent directors, respectively. We have indicated previously that independent directors of China's firms actually represent outside directors. The effect of outside directors on firm value is uncertain in the literature. For example, Fama and Jensen (1983) point out that outside directors are more effective in safeguarding the interests of shareholders. However, they are less informed and thence less effective in decision making. Klein (1998) finds a negative relationship between the percentage of outside directors and firm performance. Dahya and McConnell (2005) conclude that boards with a greater proportion of outside directors make better decisions and generate firm good performance. We argue that independent directors may have not too much chance to carry out their duty in a mature and well invigilated market. In contrast, they may be more pronounced in protecting shareholder interests in an immature and not well regulated market. The function of independent directors is more apparent when initially introduced into the inside directors dominated boards. The latter is suitable to explain the new emerging market of China.

To test whether the elder directors represent the administrative experience of boards and add to firm value, we sort the boards with the average ages of board members less than 45 years' old, 45 to 50 years' old (around the mean, median and mode) and more than 50 years' old respectively. Panel 3 shows that the elder boards are indeed accompanied with high firm values, which was our expectation. For example, the "eldest board" with an average age over 50 had a return on asset of 0.0348, while the "youngest board" with an average age under 45 had a return on asset of 0.0147. The former is over double the latter. Panel 4 shows the firm value represented by return on asset for the firms with the duality of CEO-chairman and for the firms with the separation of CEO and chairman, respectively. The difference of the mean returns is minimal and insignificant. The dual position of CEO and board chairman does not seem to be a matter for firm performance in China.

Now we turn to test board diversity and firm performance. Panel 5 shows the firm values for firms with a female chairman and firms with a male chairman. Panel 6 shows the firm values for firms with a female CEO and firms with a male CEO. Panel 7 shows the firm value for firms with female directors in their boards and firms without female directors. The F-tests imply that neither a female chairman nor female CEO have a significant influence on firm value. Only the boards with general female directors have a marginal association with low firm values. The findings are beyond our expectations and against the evidence put forward by Carter et al. (2003) and Farrell and Hersch (2005). They document that board diversity with female directors adds to firm value. We argue that if a board includes a member in consideration of share owners' interests, the firm value will be expected to increase. If a board includes a member merely for he sake of "window dressing" or for "diversity, multicultural and democracy", the selection might not be based on their skills and abilities and thus firm value may be negatively influenced. Thus, we suspect, in China, female chairmen and CEOs are appointed in terms of management priority, while some general female directors are merely nominated for the sake of "window dressing".

3.2.2. The impact of board activities on firm value. The ANOVA on the impact of board activities on firm value is arranged in Table 3. In relation to the frequency of board meetings, firms are grouped under three categories: less than 7, 7 to 9 (including mean and median), and more than 9 board meetings. Panel 1 shows that the return on asset declines significantly from firms with a low frequency of board meetings to firms with a high frequency of board meetings. Frequent board meetings might imply either the inefficiency of the board in making decisions leading to low firm performance, or the board endeavor to deal with existing problems (Vafeas, 1999).

Table 3. ANOVA analyses on the impact of board activities on firm value

Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Dir_mting is the frequency of board meetings. Holder_mting is the frequency of shareholder general meetings. Ratio_rep is the ratio of shares owned by the shareholders participated in the shareholder general meetings to the total shares outstanding.

Panel 1: Firm value by frequency of board meetings		
	Return_asset	
Dir_mting	Obs.	Mean
≤6	866	0.0296
7-9	779	0.0251
> 9	330	0.0110
	F=10.65	P<0.0001
Panel 2: Firm value by frequency of shareholder general meetings		
	Return_asset	
Holder_mting	Obs.	Mean
≤1	704	0.0204
2	766	0.0253
≥3	505	0.0297
	F=3.27	P<0.0383
Pane1 3: Firm value by ratio of shareholder representative		
	Return_asset	
Ratio_rep (%)	Obs.	Mean
<50	502	0.0111
50-60	496	0.0156
>60	977	0.0363
	F=35.03	P<0.0001

We also classify firms with the frequencies of general shareholder meetings of less than 2, being 2 (mean, mode and median), and more than 2. Panel 2 shows that the return on asset is higher for firms with more general shareholder meetings than for those with fewer general shareholder meetings. The significance is 5%, represented by F-statistics. The general shareholder meetings either enhance the invigilation of shareholders in the firm's management, thereby improving firm value, or allow highly performed firms to broadcast their achievements.

In Panel 3, firms are sorted in terms of the ratios of ownership representative in general shareholder meetings, the ratio less than 50%, between 50% and 60% (including mean, median and mode), larger than 60%. We find that high ratios of ownership representation usually accompany good firm performance. High ratios of ownership representation mean that either the sound depth of shareholders' involvement in monitoring firm management, or the willingness that shareholders attend the general meetings of high performed firms. Overall, the impact of board activities on firm value is as we anticipated previously.

3.2.3. The impact of ownership concentration on the firm value. We have already designed three variables for the proxy of ownership concentration. The top ten total share ratios represent total share ownership concentration. To investigate the influence of ownership concentration on firm value, we sorted the firms in terms of the quintuples of the top ten total share ratios ascendingly. Panel 1 in Table 4 shows firm values within every quintuple. The firm value initially decreases and reaches a trough in the second quintuple. Thereafter, the firm value increases in the third quintuple and is retained in the fourth quintuple, and finally reaches a peak in the fifth quintuple. Firm values display an asymmetric U (or V) shape in line with the total share ownership concentration. As we previously analyzed, the increase of ownership concentration from low levels lessens the free-ride problem. A further increase may foster large shareholders with the power to expropriate the minority shareholders. When the ownership converges sufficiently, the interests of large shareholders align properly with the firm and the incentive of expropriation will fade away (Morck et al., 1988; Bai et al., 2004). Since large shareholders retain a large proportion of non-tradable shares, their interests may align with the firm more quickly.

Table 4. ANOVA analyses on the impact of ownership concentration on firm value

Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Top10_total is the ratio of shares held by the top ten total shareholders to total shares outstanding. Top10_trade is the ratio of tradable shares held by the top ten tradable shareholders to total tradable shares. Ratio_state is the ratio of state-owned shares to total shares outstanding.

Panel 1: Firm value by the ratio of top ten ownership			
Top10_total (%)		Return_asset	
Quintuple	Range	Obs.	Mean
1	<52.16	395	0.0136
2	52.16-60.45	395	0.0113
3	60.54-65.75	395	0.0212
4	65.75-71.74	395	0.0221
5	>71.74	395	0.0553
		F=33.60	P<0.0001
Panel 2: Firm value by the ratio of top ten tradable share ownership			
Top10_trade (%)		Return_asset	
Quintuple	Range	Obs	Mean
1	<2.52	395	0.0024
2	2.52-3.76	395	0.0094
3	3.76-6.04	395	0.0193
4	6.04-13.23	395	0.0341
5	>13.23	395	0.0583
		F=55.60	P<0.0001
Panel 3: Firm value by the ratio of state ownership			
Ratio_state (%)		Return_asset	
Level	Range	Obs.	Mean
1	=0	547	0.0232
2	0< & <50	745	0.016
3	≥50	683	0.0354
		F=18.47	P<0.0001

The top ten tradable share ratios represent tradable share ownership concentration. We also sorted firms in terms of the quintuples of the top ten tradable share ratios ascendingly. Panel 2 shows that the firm value grows substantially and consistently along with the increase of tradable share ownership concentration, which represents a linear relationship that is as we anticipated. Tradable shares in China account for 33.50% of total shares outstanding and the top ten tradable shareholders possess about 10% of total tradable shares. The large tradable shareholders have no power to expropriate other shareholders. Instead, they not only engage in monitoring the firm by sending questions and suggestions, but also they may change their positions by selling the shares if the firms run out of their expectation. Share selling is the reaction to bad management and an enhancement of shareholder alertness. Therefore, the increase in tradable share ownership concentration will continue to add to firm value.

The ratio of state ownership is the shares directly owned by the state to the total shares outstanding. We group firms into no state ownership, state ownership less than 50% and state ownership over 50%. We find from Panel 3, that the firm values are significantly different between firms with various levels of state ownership. Firms with some state ownership but less than 50% underperform against other firms. Clearly, it is a U (or V) shaped relationship between the ratio of state shares and firm value, which is consistent with our previous discussion but against the Sun and Tong (2002) argument that state ownership has negative effect on firm performance. State ownership may represent inefficiency in management. When the state ownership increases from a low level, firms tend to underperform on the average market. However, a large firm with a high proportion of state ownership is usually protected by the government with special policies regarding tax consideration, capital financing and industry monopoly.

3.2.4. The interactive effects of ownership concentration on firm value. We suspect that the different categories of ownership concentration may have interactive effects on firm value. For example, many listed firms in China were transferred from state enterprises. The state usually retains a bulk of the shares of these firms. However, over recent years, some firms that have experienced no state ownership (or direct state ownership) were listed on the market as well (see Panel 3 in Table 4). Therefore, we are going to see whether or not the impact of total share ownership concentration on firm value varies in terms of the levels of state ownership concentration.

The results of an interactive ANOVA between state share and total share ownership concentration are arranged in Panel 1 of Table 5. The rows represent firms according to their level of state ownership and the columns represent firms classified by the quintuples of total share ownership concentration. The data in each intersection of the matrix are mean return on assets and number of observations. From the rows, we observe that when there is no state ownership or the state ownership is less than 50%, firm values display an asymmetric U (V) shape as the total share ownership concentration enlarges. However, when state ownership is over 50%, the asymmetric U (V) shape of firm values varies. In particular, in the first quintuple of total share ownership concentration the mean return on asset is minimal with a negative of-0.0168. In the fifth quintuple of total share ownership concentration, the mean return on asset is the greatest with the value of 0.0624. Another possible explanation is that when state ownership dominates a firm but is held by relatively

dispersed representatives[1], the firm has serious free-ride problems and incurs a lower firm value. In contrast, when the dominant state ownership is held by a relatively concentrated number of representatives, the free-ride problem is mitigated to some extent which leads to a higher firm value. The expropriation of minority shareholders may not be a problem when firms are dominated by a concentrated state ownership. We also find that 0.0624 is the largest return on asset in Panel 1 and achieved by companies with the highest levels of ownership concentration of both state shares and total shares, which is greater than the 0.0553 and 0.0354 obtained by companies with a single highest level in either state ownership concentration or total share ownership concentration, respectively.

Table 5. ANOVA analyses on the interactive effects of ownership concentration on firm value

Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Top10_total is the ratio of shares held by the top ten total shareholders to total shares outstanding. Top10_trade is the ratio of tradable shares held by the top ten tradable shareholders to total tradable shares. Ratio_state is the ratio of state-owned shares to total shares outstanding.

Panel 1: Firm value by the interactive determination of state share and total share ownership concentration										
Ratio_state (%)			Top10_total (%)							
Level	Quintuple		1	2	3	4	5	Total		
	Range		<52.16	52.16-60.45	60.54-65.75	65.75-71.74	>71.74	7.86-89.97	F=	P<
1	0	Obs	119	103	103	111	111	547		
		Mean	0.0179	0.0099	0.0172	0.0193	0.051	0.0232	6.53	0.0001
2	0< & <50	Obs	269	179	135	86	76	745		
		Mean	0.0125	0.0064	0.0187	0.0190	0.042	0.0160	4.52	0.0013
3	≥50	Obs	7	113	157	198	208	683		
		Mean	-0.0168	0.0204	0.0256	0.0252	0.0624	0.0354	21.66	0.0001
Total		Obs	395	395	395	395	395			
		Mean	0.0136	0.0113	0.0212	0.0221	0.0553		33.60	0.0001
	F=		1.65	3.55	3.11	3.97	4.32	18.47		
	P<		0.1934	0.0297	0.0457	0.0196	0.0139	0.0001		
Panel 2: Firm value by the interactive determination of total share and tradable share ownership concentration										
Top10_total (%)			Top10_trade (%)							
Quintuple	Quintuple		1	2	3	4	5	Total		
	Range		<2.52	2.52-3.76	3.76-6.04	6.04-13.23	>13.23	0.77-77.77	F=	P<
1	<52.16	Obs	121	71	86	77	40	395		
		Mean	-0.0035	-0.0003	0.0174	0.0342	0.0425	0.0136	5.48	0.0001
2	52.16-60.45	Obs	85	94	93	81	42	395		
		Mean	0.002	0.0016	0.0115	0.0244	0.0264	0.0113	2.42	0.0484
3	60.54-65.75	Obs	80	88	86	84	57	395		
		Mean	0.0061	0.0121	0.0230	0.0268	0.0454	0.0212	3.91	0.004
4	65.75-71.74	Obs	70	86	74	79	86	395		
		Mean	-0.0025	0.0127	0.0133	0.0339	0.0481	0.0221	11.87	0.0001
5	>71.74	Obs	39	56	56	74	170	395		
		Mean	0.023	0.0252	0.0377	0.0531	0.0794	0.0553	20.13	0.0001
Total	7.86-89.97	Obs	395	395	395	395	395			
		Mean	0.0024	0.0094	0.0193	0.0341	0.0583		55.6	0.0001
	F=		2.44	2.21	2.99	3.61	13.37	33.6		
	P<		0.0465	0.0673	0.0188	0.0066	0.0001	0.0001		

[1] The state shares of a firm can be held by state government (Bureau of State Asset Administration), provincial government, local government and different legal entities that are currently or previously state enterprises.

We conducted another interactive ANOVA between total share ownership and tradable share ownership concentration. In Panel 2 of Table 5, the rows are the quintuples of total share ownership concentration and the columns are the quintuples of tradable share ownership concentration. From the rows, we find that on any level the total share ownership concentration firm values increase as the tradable share ownership concentration goes up. The change of total share ownership concentration does not alter the liner relationship between tradable share ownership and firm values. Even the tradable shares account for only a small proportion of the total outstanding shares, the tradable shareholders are genuine watchdogs of the firms. They monitor the firms while having no intention or power to manipulate firms in their own interest that is against firm values. Thus, floating nontradable shares would be a strategy to improving firms and the performance of the entire market.

By observing Panel 2, we find that firm values have an increasing trend from the top-left corner to the bottom-right corner, which appears as a diagonal line. The minimum mean return on asset of -0.0035 appears on the intersection of the lowest levels of total share and tradable share ownership concentration, while the maximum return on asset of 0.0794 exists on the intersection of the highest levels of total share and tradable share ownership concentration. Interestingly, companies with the lowest levels of both total share and tradable ownership concentration have a smaller firm value (the mean return of -0.0035) than companies with only a single lowest level of ether total share (0.0136) or tradable share (0.0024) concentration. In contrast, companies with the highest levels of both total and tradable share ownership concentration (0.0794) have a greater firm value than those with only a single highest level of either total share (0.0553) or tradable share ownership concentration (0.0583). These companies also have a greater firm value than companies with the highest levels of both total share and state ownership concentration in Panel 1.

4. Multivariate analysis

The separate impacts of individual variables on firm performance have been analyzed. Now we pool those variables in the OLS model to test the impact of an individual variable under the condition of other variable effects.

$$V = \alpha + W_j^{'}\beta_j + X_k^{'}\eta_k + Y_l^{'}\gamma_l + Z_m^{'}\varphi_m + e \ , \qquad (1)$$

where V is a variable of firm value/performance, W is a vector of board composition variables, X is a vector of board activity variables, Y is a vector of ownership concentration variables, Z is a vector of other control variables, α is intercept, e is the error term, β, η, γ, and φ are the vectors of coefficients. j, k, l, m represent the dimensions of related vectors. The individual variables in each vector have been initially interpreted in section 3 and listed in Table 1. However, we transposed some variables for the specified application in the model. First, we employed the form of a logarithm for some variables to avoid the influence of their observations being asymmetrically distributed. Secondly, we adopted the ratio of independent directors to total directors (Ratio_indir) to avoid the effects of multicollinearity between the numbers of directors and independent directors. Thirdly, for the same reason as the second, we changed the number of female directors into a dummy variable, i.e., if a board includes female directors. Finally, we added quadratic terms for the state share ratio (Ratio_state2) and the top ten total share ratio (Top10_total2) respectively to absorb the possible nonlinear relationship of these two variables with firm value.

Table 6 reports the results generated from this model. Return on asset is the measure of firm value in Panel 1 and return on sale is the measure of firm value in Panel 2. Most of the results are consistent with evidence obtained in ANOVA analyses. Regarding board composition, the number of directors has positive and insignificant coefficients, which means that increasing board size provides more oversight capacity for some firms to promote the firm value, but not effectively for all firms. The coefficients of the ratio of independent directors are positive and significant at 1% level. Independent directors seem to carry out their responsibility well in China. Additional independent directors promote firm value. The average age of directors has a significantly positive coefficient in Panel 1 only and insignificantly negative in Panel 2. The age of board members whether or not represents experience and improves firm value is not clear. The duality of CEO and chairman, female chairman, female CEO and the presence of female directors in a board are associated with very small and insignificant coefficients, and can be thought of as having no influence on firm value. However, the presence of female directors in a board is detected as a negative factor to the firm value in ANOVA analysis. The results in the regression analysis suggest that, taking other factors into consideration, the presence of female directors on a board does not affect firm value.

Table 6. Results of OLS regression analyses

Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Return_sale is annual net profit divided by the value of sale in the year. Num_dir is the number of directors. Ratio_indir is the ratio of number of independent directors to number of total directors. Age_dir is average age of directors. CEO_chair is a dummy of duality of CEO and chairman. F_chair is a dummy of female chairman. F_CEO is a dummy of female CEO. F_dir is a dummy of female director presence. Dir_mting is the frequency of board meetings. Holder_mting is the frequency of shareholder general meetings. Ratio_rep is the ratio of shares owned by the shareholders participated in the shareholder general meetings to the total shares outstanding. Top10_total is the ratio of shares held by the top ten total shareholders to the total shares outstanding. Top10_total2 is the square of Top10_total. Top10_trade is the ratio of tradable shares held by the top ten tradable shareholders to the total tradable shares. Ratio_state is the ratio of state-owned shares to total shares outstanding. Ratio_state2 is the square of Ratio_state. Total_share (million) is total number of shares outstanding. Total_holder (thousand) is the total number of shareholders. Util_indtry is the industry of utility. Prop_indry is the industry of property. Cong_indry is the industry of conglomeration. Manu_indtry is the industry of manufacture. Comm_indry is the industry of commerce. The word "logarithm" in the brackets means the value of the variable is in logarithm form. The word "dummy" in the brackets means the value being one if the statement is affirmed and zero otherwise. When a p-value is smaller than 0.01, it is represented as 0.01.

	Panel 1			Panel 2		
Dependent variable	Return_asset			Return_sale		
Independent variable	Coefficient	t-value	p-value	Coefficient	t-value	p-value
Intercept	-0.3339	-4.40	0.01	-0.5512	-2.27	0.02
Board composition						
Num_dir (logarithm)	0.0080	1.27	0.20	0.0253	1.25	0.21
Ratio_indir	0.0870	3.50	0.01	0.2104	2.65	0.01
Age_dir (logarithm)	0.0405	2.41	0.02	-0.0284	-0.53	0.60
CEO_chair (dummy)	0.0014	0.32	0.75	-0.0107	-0.74	0.46
F_chair (dummy)	0.0057	0.78	0.43	-0.0043	-0.18	0.86
F_CEO (dummy)	0.0048	0.65	0.52	0.0040	0.17	0.86
F_dir (dummy)	-0.0022	-0.81	0.42	0.0002	0.02	0.99
Board activities						
Dir_mting (logarithm)	-0.0195	-4.95	0.01	-0.0380	-3.03	0.01
Holder_mting (logarithm)	0.0078	2.68	0.01	0.0155	1.66	0.10
Ratio_rep	0.0091	4.19	0.01	0.0025	3.76	0.01
Ownership concentration						
Top10_total	-0.0914	-1.23	0.22	-0.1521	-0.64	0.52
Top10_total2	0.0144	0.22	0.83	0.0112	0.05	0.96
Ratio_state	-0.0503	-2.56	0.01	-0.0597	-1.75	0.09
Ratio_state2	0.0846	2.83	0.01	0.1242	1.80	0.08
Top10_trade	0.1438	8.48	0.01	0.3299	6.06	0.01
Others						
Total_share (logarithm)	0.0162	5.81	0.01	0.0381	4.20	0.01
Total_holder (logarithm)	-0.0128	-5.17	0.01	-0.0169	-2.14	0.03
Util_indtry (dummy)	0.0028	0.40	0.69	0.0564	2.51	0.01
Cong_indry (dummy)	-0.0085	-1.23	0.22	0.0009	0.04	0.97
Manu_indtry (dummy)	-0.0052	-0.86	0.39	-0.0210	-1.08	0.28
Comm_indry (dummy)	-0.0067	-0.87	0.39	-0.0189	-0.76	0.45
Adj R-Square		0.1561			0.1091	
Observation		1975			1975	

Referring to board activities, the number of board meetings has negative coefficients at 1% leved of significance. Frequent board meetings are associated with worse firm performance. As indicated previously, frequent board meetings reflect either inefficiency in board decision making or problems the firm needs to discuss in the board meetings. In contrast, the number of general shareholder meetings has positive coefficients statistically at either 1% or 10% significances. As discussed before, the general shareholder meetings provide monitoring opportunities for shareholders, which enhance firm performance. Also, the management team and board in confident and progressive firms treat the general shareholder meetings as an opportunity to disclosure good news. They prefer holding more general shareholder

meetings if possible. The ratios of ownership representation in general shareholder meetings are positively related to the firm value at a 1% level of significance. On one hand, the more shareholders participating in the general shareholder meetings, the more likely there will be monitoring and suggestions being put forwarded. On the other hand, a confident and progressive firm is likely to attract more shareholders to participate in the meetings in that they advocate firm value.

In relation to ownership concentration, the first power of the top ten total ownership ratios has negative coefficients and the second power has positive coefficients. Although they are statistically insignificant, the result still has the meaning that the total share ownership concentration is nonlinear related to the firm performance. Less or more concentrated ownership is better for firm performance than moderate ownership concentration. Similarly it is the state ownership concentration represented by state share ratio. In addition, the coefficients of the first power and second power of the state share ratio are significantly negative and positive at 1% level of significance in Panel 1 and 10% in Panel 2. The state share ratio is more convex and is more related to the firm value than the top ten total ownership ratios. The tradable share ownership concentration has a positive relation to firm performance at a 1% level of significance. Tradable shareholders have a strong incentive to monitor the firms and therefore improve firm value. The impacts of the three types of ownership concentration on firm value are consistent to our previous analyses.

The control variables are supposed to be unchanged in the regression analysis. Even so, the coefficients for the ownership size control variables are in line with our expectations. For a given number of shares, a large number of shareholders tends to lower ownership concentration, and for a given number of shareholders a large number of shares is apt to increase ownership concentration. The significantly positive coefficient of total number of shares and negative coefficient of total number of shareholders support our findings that ownership concentration benefits firm performance[1].

5. Further considerations

The panel data contain information about the same individuals viewed at several moments in time. Using panel data may introduce omitted variable problems that lead to a biased estimation of parameters. For example, the changes of policies, trading rules, macroeconomic conditions, etc. over time influence firm values, but cannot be specified as variables in the model. The more frequently observed points are in time, the more likely the omitted variable problem incurs. One method to deal with this problem is employing the fixed-effect model (Hausman and Taylor, 1981), which ignores the different intercepts of each individual variable. Our data set contains the information companies observed in two consecutive years when the market was relatively stable and before the Share Split Reform in ownership restructure in 2005 as mentioned in the introduction. The omitted variable problem was minor. In general practice, we apply OLS in that we keep the meaningful different intercepts for the firms.

It is generally argued that some independent variables measuring ownership concentration, board composition and activities are possibly endogenous (Demsetz, 1983; Hermalin and Weisback, 2000), while they have impacts on the firm value. Each of the variables with endogeneity may be determined by other variables in the system of regression. If the endogeneity heavily exits, the estimated coefficients are subject to bias. One practical method to deal with the endogenous problem is to apply a two-stage least square regression (2SLS).

It is impossible and unnecessary to consider the endogeneity of every independent variable. We simply select the independent variables that are at least 5% significance in prior regression. However, we do not think the average age of directors is endogenous. We also ignore the concern with controlling variables and the variables that have a quadratic effect. Thus, we have five variables as endogenous regressors: the ratio of independent directors, the ratio of ownership representative, the top ten tradable share ratios, the frequency of board meetings and the frequency of general shareholder meetings. Because the logit model applies a binary dependent variable that can be defined from two classifications of values by omitting a model range, the key determined variables will be more explicitly detected. Thus, we conduct a set of logit modelling to define the key determined factors of the endogenous regressors.

$$L^i = c^i + E_n^{i'} \lambda_n^i + \upsilon^i , \quad (2)$$

where L is a binary of an endogenous variable, E is a vector of determined variables, λ is a vector of coefficients, c is intercept, υ is the error term, i indicates a specific logit model, n represents the dimension of related vectors. The binary variables are defined by considering variable distribution by omitting a range of values around the mean, mode or median. There-

[1] Even the top ten total share ratios are non-linear related to firm values, the trend of those ratios are positively correlated with the trend of firm values, which can be known from Panel 1 of Table 4.

fore, in Panel 1 of Table 7, L^1 takes a value of one for a firm with more than 3 independent directors and zero for those with less than 3. In Panel 2, L^2 takes a value of one for a firm with the ratio of ownership representation greater than 60% and zero for those smaller than 50%. In Panel 3, L^3 takes a value of one for firms with more than 5% of the top ten tradable share ratio and zero for those less than 4.67%. In Panel 4, L^4 takes a value of one for firms with more than 7 board meetings a year, and zero for those less than 7. In Panel 5, L^5 takes a value of one for firms where the frequency of general shareholder meetings is more than 2 per year, and zero for those less than 2. Due to the omission of intermediate range of values, the observations in each panel decline to 827, 1478, 1918, 1963 and 1209, respectively.

Table 7. Maximum likelihood estimates using logit model analysis

Num_dir is the number of directors. Ratio_indir is the ratio of number of independent directors to number of total directors. CEO_chair is a dummy of duality of CEO and chairman. F_chair is a dummy of female chairman. F_CEO is a dummy of female CEO. F_dir is a dummy of female director presence. Dir_mting is the frequency of board meetings. Holder_mting is the frequency of shareholder general meetings. Top10_total is the ratio of shares held by the top ten total shareholders to the total shares outstanding. Top10_trade is the ratio of tradable shares held by the top ten tradable shareholders to the total tradable shares. Ratio_state is the ratio of state-owned shares to total shares outstanding. Total_share (million) is total number of shares outstanding. Total_holder (thousand) is the total number of shareholders. Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Util_indtry is the industry of utility. Prop_indry is the industry of property. Cong_indry is the industry of conglomeration. Manu_indtry is the industry of manufacture. Comm_indry is the industry of commerce. The word "logarithm" in the brackets means the value of the variable is in logarithm form. The word "dummy" in the brackets means the value being one if the statement is affirmed and zero otherwise. When a p-value is smaller than 0.01, it is represented as 0.01.

	Panel 1		Panel 2		Panel 3		Panel 4		Panel 5	
Dependent variables (binary)	L^1 = 1, if Num_indir > 3; L^1 = 0, if Num_indir <3		L^2 = 1, if Ratio_rep>60%; L^2 = 0, if Ratio_rep<50%		L^3 = 1, if Top10_trade>5%; L^3 = 0, if Top10_trade<4.67%		L^4 = 1, if Dir_mting>7; L^4 = 0, if Dir_mting<7		L^5 = 1, if Holder_mting>2; L^5 = 0 if Holder_mting<2	
Independent variables	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Intercept	-28.2059	0.00	-14.6443	0.01	-7.7835	0.01	3.0746	0.06	-9.5874	0.01
Num_dir (logarithm)	10.4379	0.00	1.3079	0.12	0.1747	0.59	-0.6967	0.05	-0.3660	0.41
Ratio_indir			-0.3445	0.63	-0.2128	0.45	0.2047	0.51	1.4083	0.01
CEO_chair (dummy)	0.3423	0.45	0.0232	0.96	0.0716	0.69	0.2669	0.15	-0.098	0.66
F_chair (dummy)	2.1101	0.05	-0.3077	0.25	-0.0345	0.75	-0.0547	0.64	0.0384	0.79
F_CEO (dummy)			-0.1670	0.78	0.7633	0.01	0.0009	1.00	0.0732	0.85
F_dir (dummy)	0.4878	0.54	2.0488	0.01	-0.2376	0.40	-0.4405	0.17	0.3044	0.39
Dir_mting (logarithm)									2.8965	0.01
Holder_mting (logarithm)			-0.2750	0.30	0.0960	0.37	1.5985	0.00		
Top10_total	-0.8384	0.49	16.8132	0.01	-0.2781	0.58	-0.7006	0.18	0.8666	0.19
Top10_trade	-0.8689	0.59	-2.9041	0.09			-0.0533	0.94	-0.3603	0.68
Ratio_state	-0.3444	0.49	1.2005	0.02	-0.2864	0.15	-0.3913	0.07	-0.2923	0.27
Total_share (logarithm)	0.6648	0.01	0.4584	0.13	1.0656	0.01	0.0245	0.83	0.2119	0.15
Total_holder (logarithm)	-0.5889	0.03	0.2177	0.38	-1.2920	0.01	-0.1713	0.10	-0.2266	0.08
Return_asset	4.5372	0.06	7.3000	0.01	10.7339	0.01	-3.5003	0.00	4.1915	0.01
Util_indtry (dummy)	-1.3576	0.21	-1.6963	0.01	0.0550	0.84	-0.2062	0.49	0.1271	0.73
Cong_indry (dummy)	-2.0585	0.06	-0.8765	0.15	-0.2045	0.45	-0.6482	0.03	0.4154	0.25
Manu_indtry (dummy)	-1.1860	0.25	-0.4414	0.41	0.2945	0.21	-1.0206	0.00	0.7010	0.03
Comm_indry (dummy)	-1.2675	0.26	-0.4889	0.52	0.2521	0.40	-0.7690	0.02	-0.3470	0.40
Global null hypothesis test		0.0001		0.0001		0.0001		0.0001		0.0001
Observation		827		1478		1918		1631		1209

The likelihood estimates of the logit models are represented in Table 7. We choose the variables with coefficients at 10% significance or more as the determined variables of the endogenous regressors at the first stage of the regression model.

$$R^i = d^i + H_p^{i'}\hbar_p^i + \omega^i . \qquad (3)$$

The model at the second stage is the same as model (1).

$$V = \alpha + W_j^{'}\beta_j + X_k^{'}\eta_k + Y_l^{'}\gamma_l + Z_m^{'}\varphi_m + e . \qquad (4)$$

R is a regressor of endogeneity, which is an explanatory variable existing in either vector W or X or Y. H

is a vector of determined variables of a regressor, $\hbar$ is a vector of coefficients, d is intercept, ω is error term. i refers a specific model for a endogenous regressor. The process in choosing the endogenous variables and the determined variables of the regressors allows us to take necessary endogenous variables into account. Meanwhile, the rank and order in the model is not too high. We also apply a set of instrument variables to run this multiple 2SLS model.

However, the initially multiple 2SLS with five endogenous regressors seems not to improve the fitness of the regression as the adjusted *R*-squares do not increase from that in OLS reported in Table 6. We inspect the results obtained from the first stage regression, which are reported in Table 8, we find that the adjusted *R*-squares in Panel 4 and Panel 5 are only 0.0414 and 0.0267, respectively. From an econometrics point of view, a low adjusted *R*-square implies the model is a poor fit. With a small adjusted *R*-square, the significant coefficients only tell us that a large sample has been used in the modelling but does not mean anything. The regressors of board meetings and general shareholder meetings cannot be explained properly with the selected variables. Therefore, we conduct the multiple 2SLS that takes into account the ratio of independent directors, the ratio of representative and the top of ten tradable ownerships as endogenous regressors.

The results of the multiple 2SLS are arranged in Table 9. We compare the results in Table 9 with those in Table 6. We find that the adjusted *R-squares* increase from 0.1561 to 0.1674 in Panel 1 and from 0.1091 to 0.1176. The fit of the regressions is improved with the consideration of endogeneity. Even though the coefficients and significances have a little changed, our previous arguments are able to be sustained. Taking the necessary endogeneity into consideration does not alter our findings in the impact of board composition, board activities and ownership concentration on Chinese firm values.

Table 8. Results from first stage in 2SLS regression analyses

Num_dir is the number of directors. Ratio_indir is the ratio of number of independent directors to number of total directors. F_chair is a dummy of female chairman. F_CEO is a dummy of female CEO. Dir_mting is the frequency of board meetings. Holder_mting is the frequency of shareholder general meetings. Top10_total is the ratio of shares held by the top ten shareholders to the total shares outstanding. Top10_trade is the ratio of tradable shares held by the top ten tradable total shareholders to the total tradable shares. Ratio_state is the ratio of state-owned shares to total shares outstanding. Total_share (million) is total number of shares outstanding. Total_holder (thousand) is the total number of shareholders. Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Ratio_rep is the ratio of shares owned by the shareholders participated in the shareholder general meetings to the total shares outstanding. Util_indtry is the industry of utility. Cong_indry is the industry of conglomeration. Manu_indtry is the industry of manufacture. The word "logarithm" in the brackets means the value of the variable is in logarithm form. The word "dummy" in the brackets means the value being one if the statement is affirmed and zero otherwise. When a p-value is smaller than 0.01, it is represented as 0.01.

	Panel 1		Panel 2		Panel 3		Panel 4		Panel 5	
Dependent variables	Ratio_indir		Ratio_rep		Top10_trade		Dir_mting (logarithm)		Holder_mting (logarithm)	
Independent variables	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value	Coeff	p-value
Intercept	-0.7486	0.01	-0.2838	0.72	-0.5048	0.01	2.2278	0.00	-0.5495	0.14
Num_dir (logarithm)	0.7971	0.01								
Ratio_indir									0.3542	0.01
F_chair (dummy)			1.9047	0.02						
F_CEO (dummy)	0.0547	0.02								
Dir_mting (logarithm)									0.5795	0.01
Holder_mting (logarithm)							0.3206	0.00		
Top10_total			9.3482	0.01	0.0993	0.01	-0.1659	0.01		
Top10_trade			-2.2767	0.05					-0.0585	0.78
Ratio_state			3.1359	0.01	-0.0171	0.02			-0.0329	0.40
Total_share (logarithm)	0.0100	0.21			0.0583	0.01				
Total_holder (logarithm)	-0.0101	0.13			-0.0578	0.01	-0.0292	0.00	-0.0437	0.00
Return_asset	0.3978	0.07	5.9802	0.01			-1.1090	0.00	0.1733	0.80
Util_indtry (dummy)			-0.9767	0.05						
Cong_indry (dummy)	-0.0267	0.04								
Manu_indtry (dummy)					0.0033	0.39	-0.1074	0.01	0.0983	0.01
Adj R-Square	0.4876		0.7508		0.2307		0.0414		0.0267	
Observation	1975		1975		1975		1975		1975	

Table 9. Results of 2SLS regression analyses

Return_asset is annual net profit divided by the average book value of assets at the beginning and end of year. Return_sale is annual net profit divided by the value of sale in the year. Num_dir is the number of directors. Ratio_indir is the ratio of number of independent directors to number of total directors. Age_dir is average age of directors. CEO_chair is a dummy of duality of CEO and chairman. F_chair is a dummy of female chairman. F_CEO is a dummy of female CEO. F_dir is a dummy of female director presence. Dir_mting is the frequency of board meetings. Holder_mting is the frequency of shareholder general meetings. Ratio_rep is the ratio of shares owned by the shareholders participated in the shareholder general meetings to the total shares outstanding. Top10_total is the ratio of shares held by the top ten total shareholders to the total shares outstanding. Top10_total2 is the square of Top10_total. Top10_trade is the ratio of tradable shares held by the top ten tradable shareholders to the total tradable shares. Ratio_state is the ratio of state-owned shares to total shares outstanding. Ratio_state2 is the square of Ratio_state. Total_share (million) is total number of shares outstanding. Total_holder (thousand) is the total number of shareholders. Util_indtry is the industry of utility. Prop_indry is the industry of property. Cong_indry is the industry of conglomeration. Manu_indtry is the industry of manufacture. Comm_indry is the industry of commerce. The word "logarithm" in the brackets means the value of the variable is in logarithm form. The word "dummy" in the brackets means the value being one if the statement is affirmed and zero otherwise. When a p-value is smaller than 0.01, it is represented as 0.01.

	Panel 1			Panel 2		
Endogenous variable	Ratio_indir, Ratio_rep, Top10_trade			Ratio_indir, Ratio_rep, Top10_trade		
Dependent variable	Return_asset			Return_sale		
Independent variable	Coefficient	t-value	p-value	Coefficient	t-value	p-value
Intercept	-0.3851	-5.12	0.01	-0.7396	-2.95	0.01
Board composition						
Num_dir (logarithm)	0.0037	0.54	0.59	0.0185	0.89	0.37
Ratio_indir	0.0799	3.04	0.01	0.1996	2.45	0.01
Age_dir (logarithm)	0.0352	1.98	0.05	-0.0179	-0.33	0.74
CEO_chair (dummy)	-0.0011	-0.23	0.81	-0.0169	-1.15	0.25
F_chair (dummy)	0.0034	0.44	0.66	-0.0005	-0.02	0.98
F_CEO (dummy)	0.0107	1.35	0.18	0.0096	0.39	0.70
F_dir (dummy)	0.0034	0.44	0.66	0.0065	0.71	0.48
Board activities						
Dir_mting (logarithm)	-0.0184	-4.44	0.01	-0.0367	-2.85	0.01
Holder_mting (logarithm)	0.0075	2.44	0.02	0.0151	1.80	0.07
Ratio_rep	0.0018	5.61	0.01	0.0034	3.30	0.01
Ownership concentration						
Top10_total	-0.0456	-0.59	0.55	-0.1793	-0.75	0.45
Top10_total2	0.0308	0.45	0.66	0.2216	1.05	0.30
Ratio_state	-0.0469	-2.26	0.02	-0.0366	-1.87	0.06
Ratio_state2	0.0807	2.55	0.01	0.0866	1.96	0.05
Top10_trade	0.1195	6.81	0.01	0.1369	2.01	0.04
Others						
Total_share (logarithm)	0.0171	5.83	0.01	0.0490	5.28	0.01
Total_holder (logarithm)	-0.0151	-5.7	0.01	-0.0320	-4.03	0.01
Util_indtry (dummy)	-0.0012	-0.17	0.87	0.0497	2.14	0.03
Cong_indry (dummy)	-0.0004	-0.06	0.95	0.0144	0.62	0.53
Manu_indtry (dummy)	-0.0088	-1.37	0.17	-0.0272	-1.36	0.17
Comm_indry (dummy)	-0.0003	-0.03	0.98	-0.0057	-0.22	0.82
Adj R-Square		0.1674			0.1176	
Observation		1975			1795	

Conclusions

This study focuses on the relationship between board composition, board activity, ownership concentration and firm performance for Chinese listed firms during 2003-2004 after China's entry into the WTO and adoption of vigorous new corporate governance legislation. This paper differs from prior research on China' s corporate finance because we have conducted parallel and comprehensive analyses on the impact on firm value of board composition, board activity and ownership concentration. We applied ANOVA with interactive analyses, OLS and 2SLS modelling in dealing with endogenous problems. The reliability of this research is supported by consistent evidence from the different analyses.

Our empirical findings indicated that independent directors enhanced firm performance. A possible explanation is that in an immature market, the role of outside directors is more significant than that in a developed market. However, we also found that the board size and gender diversity do not affect firm value. This result suggested that the inclusion of female directors on boards in Chinese firms may only be "window dressing", giving the pretence of diversity and democracy.

Secondly, we found that the frequency of board meetings is negatively associated with firm value, while the frequency of general shareholder meetings is positively associated with firm value. We argue that frequent board meetings imply internal problems or inefficient decision making. In contrast, frequent general shareholder meetings display both confidence on the firm's management and an acceptance of broad suggestions.

Furthermore, we found that both state ownership and total share ownership concentration results in an asymmetric U (V) shape of firm performance. We argued that for certain levels of ownership concentration of total share or state shares, the interests of large shareholders may not be well aligned with the interests of the firm. On the other hand, we found that tradable share ownership concentration has a linear relationship with firm value. Since large tradable shareholders have no power to manipulate the firm in their own interests, the increase of tradable share ownership concentration only mitigates free ride problem and thus increases the firm's value.

Importantly, our results also suggested that companies with the high levels of both state and total share ownership concentration have greater firm values than those with only one concentration. Similarly, companies with high levels of both total share ownership concentration and tradable ownership concentration have greater firm values than companies with only one concentration. Interestingly, these companies also have greater firm values than companies with high levels of both total share and state ownership concentration. Thus, we argue that floating non-tradable shares would be a strategy to improve firm and the whole market performance.

Reference

1. Agrawal, A. and C.R. Knoeber, 1996, "Firm performance and mechanisms to control agency problems between managers and shareholders", *Journal of Financial and Quantitative Analysis*, 31, pp. 377-397.
2. Bai, C., Q. Liu and F.M. Song, 2002, "Value of corporate control: evidence from China's distressed firms", Working paper, Hong Kong University.
3. Bai, C., Q. Liu, J. Lu and F.M. Song, J. Zhang, 2004, "Corporate governance and market valuation in China", *Journal of Comparative Economics*, 32, pp. 599-611.
4. Barnhart, S.W. and S. Rosenstein, 1998, "Board composition, managerial ownership, and firm performance: an empirical analysis", *Financial Review*, 33, pp. 1-16.
5. Baysinger, B. and H. Butler, 1985, "Corporate governance and the board of directors: performance effects of changes in board composition", *Journal of Law, Economics and Organization*, 1, pp. 101-124.
6. Berle, A. and G. Means, 1932, The Modern Corporation and Private Property, Harcourt, Brace, & World, New York.
7. Bhagat, S. and R.H. Jefferis, Jr, 2002, "The econometrics of corporate governance studies", Massachusetts Institute of Technology.
8. Cater. D.A., B.J. Simkins and W.G. Simpson, 2003, "Corporate governance, board diversity and firm value", *The Financial Review*, 38, pp. 33-53.
9. Change, E.C. and S.M.L. Wong, 2003, "Managerial discretion and firm performance in China's listed firms", Faculty of Business and Economics, The University of Hong Kong.
10. Chen, G., M. Firth, D. N. Gao and O. M. Rui, 2006, "Corporate performance and CEO compensation in China", *Journal of Corporate Finance*, 12, pp. 693-714.
11. Chen, Y. M. and S.C. Gong, 2000, "Ownership structure and corporate performance – some Chinese evidence", *Advances in Pacific Basin Financial Markets*, 6, pp. 177-193.
12. Cheng, S., 2008, "Board size and the variability of corporate performance", *Journal of Financial Economics*, 87, pp. 157-176.
13. Claessens, S., S. Djankov, S. and G. Pohl, 1997, "Ownership and corporate governance: evidence from the Czech Republic", Washington, DC: World Bank.
14. Dahya, J. and J.J. McConnell, 2005, "Outside directors and corporate board decision," *Journal of Corporate Finance*, 11, pp. 37-60.
15. Dahya, J., Y Karbhari, J.Z. Xiao and M. Yang, 2003, "The Usefulness of the Supervisory Board Report in China", *Corporate Governance*, 11, pp. 308-321.
16. Demestz, H. and K. Lehn, 1985, "The Structure of Corporate Ownership: Causes and Consequences", *Journal of Political Economy,* 93, pp. 1155-77.
17. Denis, D.J. and A. Sarin, 1999, "Ownership and board structures in publicly treaded corporations". *Journal of Financial Economics*, 52, pp. 187-223.

18. Eisenberg, T., S. Sundgren and M.T. Wells, 1998, "Large board size and decreasing firm value in small firms", *Journal of Financial Economics*, 48, pp. 35-54.
19. Erhardt, N.L., J.D. Werbel and C.B. Shrader, 2003, "Board of director diversity and firm financial performance", *Corporate Governance: An International Review*, 11, pp. 102-111.
20. Fama, E.F. and M.C. Jensen, 1983, "Separation of Ownership and Control", *Journal of Law and Economics*, 26, pp. 301-25.
21. Fan, J. P. H., T. J. Wong and T. Zhang, 2007, "Politically connected CEOs, corporate governance, and post IPO performance of China's newly partially privatized firms", *Journal of Financial Economics*, 84, pp. 330-357.
22. Farrell, K.A. and P.L. Hersch, 2005, "Additions to corporate boards: the effect of gender", *Journal of Corporate Finance*, 11, pp. 85-106.
23. Firth, M., P.M.Y. Fung and O.M. Rui, 2006, "Ownership structure, corporate governance, and fraud: evidence from China", *Journal of Corporate Finance*, 12, pp. 424-448.
24. Gul, F.A, and R. Zhao, 2000, "Corporate governance and performance in Chinese listed companies", City University of Hong Kong.
25. Hermalin, B.E. and M.S. Weisbach, 1988, "The determinants of board composition", *Rand Journal of Economics*, 19, pp. 589-606.
26. Hermalin, B.E. and M.S. Weisbach, 1991, "The effect of board composition and director incentives on fir performance", *Financial Management*, 21, pp. 101-112.
27. Holderness, C., R. Kroszner and D. Sheehan, 1999, "Where the good old days that good? Evolution of managerial stock ownership and corporate governance since the great depression", *Journal of Finance*, 54, pp. 435-69.
28. Hovey, M., L. Li, and T. Naughton, 2003, "The relationship between valuation and ownership of listed firms in China", *Corporate Governance*, 11 (2), pp. 112-122.
29. Jensen, M.C and J.B. Warner, 1988, "The distribution of power among corporate managers, shareholders, and directors", *Journal of Financial Economics*, 25, pp. 291-322.
30. Jensen, M.C., 1993, "The modern industry evolution, exit, and the failure of internal control system", *Journal of Finance*, 48, pp. 831-880.
31. Jensen, M.C., and W. Meckling, 1976, "Theory of the firm: Managerial Behaviour, Agency costs and Ownership Structure", *Journal of Financial Economics,* 3, pp. 305-60.
32. Kato, T. and C. Long, 2005, "CEO turnover, performance, and enterprise performance in China: evidence from new micro data", Department of Economics, Colgate University.
33. Klein, A. 1998, "Firm performance and board committee structure", *Journal of law and economics*, 41, pp. 275-303.
34. Leech, D. and J. Leahy, 1991, "Ownership structure, control type classifications and the performance of large British companies", *The Economic Journal,* 101, pp. 1418-37.
35. Li, H.X., Z.J. Wang and X.I. Deng, 2008, "Ownership, independent directors, agency costs and financial distress: evidence from Chinese listed companies", *Corporate Governance*, 8, pp. 622-636.
36. Linck, J.S., J.M. Netter and T. Yang, 2008, "The determinants of board structure", *Journal of Financial Economics*, 87, pp. 308-328.
37. McEachem, W., 1975, "Managerial control and performance", Lexington, MA: Lexington Books.
38. Millsterin, Ira., 1993, "The evolution of certifying board", *Business Law*, 48, pp. 1485-1497.
39. Morck, R., A. Shleifer and R. Vishny, 1988, "Management ownership and market valuation: An empirical analysis", *Journal of Financial Economics*, 20, pp. 293-316.
40. Mudambi, R. and C. Niclosia, 1998, "Ownership structure and firm performance: evidence from the UK financial services industry", *Applied Financial Economics,* 8, pp. 175-80.
41. Shleifer, A. and R. Vishny, 1986, "Large shareholders and Corporate Control", *Journal of Political Economy,* 94, pp. 461-88.
42. Shleifer, A. and R. Vishny, 1997, "A survey of Corporate Governance", *Journal of Finance,* 52, pp. 737-83.
43. Sun, Q. and H.S. Tong., 2003, "China shares issue privatisation: the extent of its success", *Journal of Financial Economics*, 70, pp. 183-222. `
44. Tian, L., 2002, "Government shareholding and the value of China's modern firms", Working paper, London Business School.
45. Vafeas, N., 1999, "Board meeting frequency and firm performance", *Journal of Financial Economics*, 53, pp. 113 -142.
46. Xu, X. and Y. Wang, 1999, "Ownership structure and corporate governance in Chinese stock companies", *China Economic Review*, 10, pp. 75-98
47. Yermack, D., 1996, "Higher market valuation of companies with a small board of directors," *Journal of Financial Economics*, 40, pp. 185-211.