



温州肯恩大学
WENZHOU-KEAN UNIVERSITY

Corporate governance and firm performance

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by

YU Linzhen

1025960

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CORPORATE GOVERNANCE AND FIRM PERFORMANCE

ABSTRACT

This paper analyzes whether good corporate governance leads to better firm performance in China. Throughout, this study uses a dataset of 2856 publicly listed firms from 2003 to 2008 provided by the Chinese Stock Market and Accounting Research (CSMAR). Ownership concentration, CEO duality, board size, percentage of independent directors in board and director's average educational qualification are used as corporate governance indicators, and ROA, ROE, PE, Tobin's Q are firm performance indicators. The result shows both ownership concentration and CEO duality are strongly negatively related to firm performance. Board size and percentage of independent board ratio are positively associated with firm performance. Directors' educational level is moderately positively associated with firm performance.

Keywords: China; Corporate Governance; Firm performance; Ownership concentration; CEO duality; Board size; Board composition

JEL Classifications: L25, M40, G30

I. INTRODUCTION

This paper examines the interrelation between corporate governance and company performance. Research on corporate governance has been one of the most prolific in the past two decades. Corporate governance attracts considerable interest due to the close relationship with firm performance. Corporate governance means using a set of regulations and policies to reduce the risk of improper operation. The preliminary study of Jensen and Meckling (1976) considers corporate governance as the appropriate separation of the ownership and control, mitigation of the interest conflict between the principal and agent, proper governance structures, and incentive and effective board arrangement. More recent evidence reveals there is a strong relationship between corporate governance and firm performance (Ehikioya 2009; Pomb and Gutiérrez 2011; Darmadi 2013).

However, there is still much disagreement surrounding the correlation between individual measures of corporate governance and firm performance. For instance, some empirical and theoretical studies find ownership concentration is positively related to firm performance because higher ownership concentration leads to more significant incentives to monitor corporate governance (Kapopoulos and Lazaretou 2007; Hanousek et al. 2007; Ehikioya 2009). Conversely, some researchers argue that ownership concentration is negatively related to firm performance because if ownership is concentrated in a limited number of shareholders, failure of separating the property from management will adversely affect firm value (Hermalin and Weisbach 1991; Chen et al. 2005; Morck et al. 1998). Besides, past research on the relationship between board size and firm performance produce inconclusive results. Some studies claim that increasing board size will lead to decreasing

firm performance because of free-rider problems, coordination problems (Ujunwa 2012; Guest 2009; Cheng et al. 2007; Mak and Kusnadi 2005). However, other studies claim that board of larger size can better monitor top management, provide expertise and outside information, reduce CEO's domination, and therefore contributes to better profitability (Goodstein 1994; Singh and Harianto 1989; Pearce and Zahra 1992). Besides, few studies on the relationship between corporate governance and firm performance have focused on developing countries like China.

Based on the data of 2856 publicly listed firms in China from 2003 to 2018, this paper shows there is a strong positive relationship between corporate governance and firm performance. Controlling some firm-specific variables, we find strongly significant evidence that both CEO duality and ownership concentration are negatively related to ROA. Besides, board size is found significantly and positively related to ROA, but it is negatively related to ROE. The result also suggests independent board ratio is positively associated with both ROA and Tobin's Q. In addition, moderately significant evidence is found that the director's educational qualification level is positively related to ROA.

Several contributions are made to the literature. First, this research confirms previous results (Hermalin and Weisbach 1991; Chen et al. 2005; Morck et al. 1998) that higher ownership concentration will negatively affect firms' performance. Second, in this research, board size is positively related to ROA but negatively associated with ROE, indicating different performance measures can lead to varying results in the relationship between corporate governance and firm performance.

This paper is divided into five parts: Section 2 provides a review of the literature on

corporate governance and firm performance. The methodology is outlined in Section 3. In the fourth section, the empirical result is described. At last, some conclusions are drawn in the final part.

II. LITERATURE REVIEW

Corporate governance is one of the most commonly investigated topics in business researches because it is broadly disputed about whether it is correlated with firm performance. Almost all the body of literature begins the study of corporate governance from agency problems. In general terms, agency problems can be defined as the conflict between principal and agent. In the literature, further explanations are given: when the ownership and control don't coincide, conflicts might happen between the controllers and the owners. Both parties (the principal and the agent) are utility maximizers, so the agent may not always behave in the best interest of the principal, according to Adam Smith (1776) and Jensen and Meckling (1976). Also, a considerable amount of literature seems to intimately capture the core meaning of agency theory when defining corporate governance. In the paper of Ehikioya (2009), Shleifer and Vishny (1997), Corporate governance refers to the mechanisms which protect the primary interests of the shareholders, the ways to assure the return on investments of suppliers of finance. Good corporate governance helps a company to attract investment, raise funds and improve the welfare of all stakeholders, including shareholders, employees, the Board of Directors, creditors, regulators, and the whole economy (Ehikioya 2009; Sami et al. 2011). Therefore, it is reasonable to believe, the core of corporate governance is to solve or mediate the agency problems. Then, many theoretical and empirical studies have proved

solving agency problems can improve companies' performance status. For instance, one piece of literature about agency theory finds that the increase of agency problems will lead to a worsening of firm performance (Miller Breton 2006). At this point, it can be deduced that corporate governance might be correlated with firm performance. In the groundbreaking paper of 1976, Jensen and Meckling (1976) explain the relationship between corporate governance and firm performance by the agency cost theory: good corporate governance is correlated with better performance due to lower agency costs. This indicates the inability to appropriately get perfect governance systems to monitor the controllers will damage the value and operating performance of the companies.

First, in corporate governance study, there is a critical element, Board. According to the agency theory mentioned above, agency problem refers to the conflict between owners and controllers. The arising of agency problems will damage corporate performance. In the company, there is an institution to mitigate the conflicts between agents and principals. That is the Board of Directors. Board refers to the institution which represents and maximizes the interests of shareholders and is charged with hiring, firing, monitoring and compensating the management of the company (Dennis and McConnell 2003). Based on this idea, the proper functionality of the board may help to decrease the agency cost and improve firm performance. In McIntyre's (2007) analysis of corporate governance, he also claims that Boards' role is to prevent the happening of defalcation, malfeasance, self-dealing and many company failures are attributed to the Board's ineffectiveness when executing these functions.

A lot of factors can contribute to ineffectiveness. Among those, one of the most

significant factors is CEO duality. CEO duality means the chief executive officer is also the president of the Board. In agency theory, separation of ownership and control is essential in corporate governance. This is also supported by Fama and Jensen (1983) that separation of decision and risk-bearing functions is vital to corporate because it contributes to specialization and risk-bearing in solving the agency problems. Also, Fama and Jensen (1983) claim that the existing of dual leadership structure (the CEO duality) signals the absence of the separation of ownership and control. Thus, it can be deduced that if a company has a CEO duality problem, there are more possibilities that this company will have a lower performance. An increasing number of studies have found that CEO duality affects the firm performance. Many empirical studies find that CEO duality is significantly and negatively correlated with firm Performance (Sami et al. 2011; Chen et al. 2005; Ujunwa 2012; Ehikioya 2009; Peng 2004).

Another factor, outside independent directors may contribute to the effectiveness of the Board in corporate governance study. The outside director refers to the member of the Board, who is neither an employee nor shareholder of this company. According to Byrd and Hickman (1992), the independent directors contribute expertise and objectivity in evaluating and monitoring the behaviors of the management. Because they have no direct benefits in this company, they are more likely to provide unbiased suggestions than inside directors, which are the executives or the shareholders who have more than ten percent voting power. In a piece of empirical research, Byrd and Hickman (1992) find that the Boards with at least fifty percent of independent outside directors can block more unprofitable acquisition than other Boards. In Kaplan and Minton's (1994) research, they find increase appointment of outside

directors who are previous employees of banks or nonfinancial corporations increase the firm performance. More recent studies reveal that the proportion of independent directors in a Board is positively correlated with the firm performance in corporate governance (Pomb and Gutiérrez 2011; Kouki and Guizani 2015).

Third, good corporate governance manifests its qualifications (expertise and experiences) of Boards and managers. Educational qualifications can somehow show the intelligence of people because higher education and skills are related to open-mindedness, capacity for information processing and tolerance to changes (Hambrick and Mason 1984). Therefore, in corporate governance, the educational background of directors and top executives may have some correlation with the companies' performance. Several studies, for example, Darmadi (2013), Golec (1996), Kong and Zhang (2014), have found that the education level of the Boards is positively correlated with firm performance.

Forth, many pieces of corporate governance research are centered on the idea of whether the firm is concentratedly owned or dispersed owned affects its performance. In the literature of Ehikioya (2009), she claims that highly concentratedly owned companies tend to create more pressure to force the management to maximize the shareholders' interests. It is because, in concentratedly owned companies, the decision-making right is held in the hand of the biggest shareholder, which can increase decision-making efficiency. Secondly, because the companies' performance can profoundly affect this biggest shareholder, which motivates him to involve in company affairs, resulting in better functioning of the Board. Empirical research of Claessens and Djankov (1999); Kapopoulos and Lazaretou (2007); Hanousel et al. (2007) find ownership concentration is positively related to corporates' financial performance. On

the other hand, Hermalin and Weisbach (1991); Chen et al. (2005); Morck et al. (1998); McConnell and Servaes (1990) argue that managerial ownership concentration is negatively related with firm performance, because an insider shareholder has incentives to adopt the investment policies for his own benefit, let alone other outside shareholders' interest. Also, in Stulz's (1988) empirical research, he finds the possibility of getting premium from takeover decreases when the managerial equity ownership increases. Third, high ownership concentration can also contribute to benefit conflicts between large, small and minority shareholders because when large shareholders control firms, the company governance policies may be controlled by substantial shareholders and may even result in expropriation of minority shareholders. As a result, all the concentration-led problems will cause lower market valuation. (Arosa et al. 2010; Francis et al. 2005; Miller et al. 2007)

At last, the size of the Board is assumed to affect firm performance in corporate governance studies. Many pieces of literature claim that a bigger board may negatively affect firm performance because of "coordination costs and free-rider issues" (Guest 2009). The oversized board might have problems in arranging board meetings, low-efficiency of communication and decision-making and even free-rider problems arises because some directors don't contribute efforts in corporate governance for the size of the board is too big (Jensen 1993; Guest 2009; Lipton and Lorsch 1992). A number of empirical studies have also found out that the board size has a negative correlation with firm performance (Ujunwa 2012; Guest 2009; Cheng et al. 2007; Mak and kusnadi 2005). However, a lot of research also argues board size has a positive relationship with firm performance. According to Goodstein (1994), larger boards can provide a pool of diverse expertise and resources, enhance the

ability to link with the outside environment. Also, Singh and Harianto (1989) and Pearce and Zahra (1992) claims that larger boards can improve corporate governance by reducing the CEO's domination. Bonn (2004) summarized that board size might be either positively or negatively related to firm performance, and the correlation direction depends on the pre-existing board size. If the board is already extensive, increasing board size will decrease firm performance. Conversely, if the board size is small, increasing board size will positively affect firm performance.

Based on the literature above, the hypothesis of this paper is corporate governance is positively and significantly related to firm performance.

III. RESEARCH DESIGN AND METHODOLOGY

The panel data regression model is applied to this research. Panel data regression observes the study subjects over time in a cross-section. This gives more efficient estimates in regression analysis because it can mitigate omitted variable bias and helps to take into account the heterogeneity of firms that varies across individuals but don't change across time (Ehikioya 2009).

By integrating previous empirical research models of Ehikioya (2009); Byrd and Hickman (1992), the following equation can be developed:

$$\text{PERF}_{i,t} = \beta_1 \text{CEODU}_{i,t} + \beta_2 \text{CONCENT}_{i,t} + \beta_3 \text{EDU}_{i,t} + \beta_4 \text{BSIZE}_{i,t} + \beta_5 \text{INDBR}_{i,t} + \beta_6 \text{FLEVAGE}_{i,t} + \beta_7 \text{FSIZE}_{i,t} + \beta_8 \text{FBETA}_{i,t} + \beta_9 \text{INDUST}_{i,t} + \mu_{1i,t}$$

($\text{PERF}_{i,t}$ is a measure of firm performance with the combination of ROA, ROE, PE, Tobin Q for firm i at year t ; $\mu_{1i,t}$ is the error term; CEODU refers to CEO duality, CONCENT

refers to ownership concentration, EDU refers to directors' educational level; BSIZE refers to board size; INDBR refers to the percentage of independent directors in the board; FLEVAGE refers to firm leverage; FBETA refers to firm risk beta; INDUST refers to industry dummy.)

Following the empirical research of Ehikioya (2009), Singh (2009), Kang, and Shivdasani (1995), ROA (return on assets) is chosen as a dependent variable for the measure of firm performance and profitability of a company, and it is calculated as net income divided by assets.

ROE (return on equity), PE (price to earnings ratio), Tobin's Q are alternative performance indicators. Return on equity measures financial performance and equals the ratio of net income to total equity. Besides, the price to earnings ratio measures a company's value and current share price. The current stock price is divided by earnings per share (EPS) to get the PE ratio. Additionally, as a commonly used measure in firm performance, Tobin's Q describes a firm's market valuation and intrinsic effectiveness (Wolfe and Sauaia 2005). It is often calculated by dividing the equity market value by equity book value.

Following Ehikioya (2009), Sami et al. (2011) Chen et al. (2005) Ujunwa (2012) Peng (2004), Darmadi (2013), Golec (1996), Guest (2009), CEO duality, ownership concentration, board size, Directors' educational level, independent director proportion are chosen as measures of corporate governance.

CEO duality addresses the agency problem and measures whether the positions of CEO and chairman are separate (Rechner and Dalton 1991). A CEO dummy variable is applied in this study, and a value of 1 means the chief executive officer also holds the chairman or the vice-chairman of the Board. Otherwise, the dummy variable equals 0. Second, ownership

concentration has been applied in various corporate governance research and is used to identify whether owners of the company can control and influence the management and protect the owners' interests (Gul et al. 2010). The proportion of shares held by the five largest shareholders to total shares is adopted to get ownership concentration in this research. Besides, larger Board size may cause coordination costs and override problems. In this study, Board size is represented by the total of directors in the Board. Additionally, higher educational background tends to equip directors with capabilities to handle highly-skilled jobs and contributes to better corporate operation (Darmadi 2013). In this research, all directors' educational levels are ranked from 1 to 5. 1 indicates the lowest educational level (no degrees) and 5 shows the highest level (doctoral and postdoctoral degrees). Then, the average educational level of directors in each company is computed to denote the overall educational background of each company. At last, independent directors is also an essential measure in corporate governance because they work as a watchdog for governance functioning and play a crucial role in risk management and corporate transparency (Armstrong et al. 2014). In this research, the independent director proportion is used as the organizational governance measure and is obtained by dividing the number of independent directors by the total board members.

Following Ehikioya (2009), Sami et al. (2011), Chen et al. (2005), firm leverage, firm size, firm risk beta, and industry dummy are chosen as the control variables.

Among those, leverage ratios aim to evaluate companies' solvency and capital structure. Firms with high leverage tend to have a higher risk. On the other hand, high leverage can amplify the companies' profitability (Jarrow 2013). Therefore, the leverage ratio is usually

controlled in empirical research. In this research, a ratio of total debts to total assets is applied as the leverage ratio. In addition, the firm size also influences a company's profitability. Hall and Weiss's (1967) empirical research discovers that a larger firm size tends to result in high-profit rates. Therefore, firm size has to be controlled to eliminate its interference in the correlational study between corporate governance and firm performance. The nature logarithm of total assets is adopted in this research to represent the firm size. Moreover, firm beta measures a company's stock volatility. It interferes with the correlation in this research because beta impacts companies' share valuation. Black (1992) reported that low-beta stocks did better than high-beta stocks, and it is often controlled in firm performance research. The standard deviation of return on sales is computed to get the firm beta. At last, industry categories may also affect a company's profitability (Wernerfelt and Montgomery 1988). In this research, industry dummy (1 means it belongs to a particular industry, 0 means it doesn't belong to a specific industry) is introduced as a control variable.

IV. EMPIRICAL RESULTS

The original sample consists of all companies listed on the Stock Exchange of Shanghai (SSE) and Shenzhen (SZSE) from 31 December 2003 to 31 December 2018. After cleaning data, the final sample includes an unbalanced data panel of 2856 firms and 29,266 financial-year observations. All data are obtained from firm annual financial reports in the Chinese Stock Market and Accounting Research (CSMAR) database, constructed by the University of HongKong and GTA Company. The year of 2003 was the first year when the firm ownership concentration measure is available in CSMAR.

Descriptive statistics are presented in the first table. The average degree of ownership concentration is 53.39 percent among the entire sample, with the lowest 0.811 percent and the highest 99.23 percent. The mean for CEO duality is 0.197, which means there are 19.7 percent of firms have CEO duality problem (CEO is also the head of board). The mean for board size is about nine directors, which is consistent with the effective board size of eight to nine recommended by Lipton and Lorsch (1992). Besides, Board independence does not seem very common, because of the average of only 3.275. The average education level of the samples is about 3, which represents the average directors have a bachelor's degree. In addition, the mean for firm risk beta is 1.127. Leverage's firm is 0.55, and the firm size's mean is 22.03. The three control variable's means are all within the normal scope.

Table 1: Descriptive statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
CONCENT	29,266	53.39	15.99	0.811	99.23
CEODU	29,266	0.197	0.398	0	1
BSIZE	29,266	9.061	1.991	3	22
INDB	29,266	3.275	0.714	0	8
INDBR	29,266	0.366	0.055	0	0.8
EDU	29,266	3.26	0.52	1	5
FBETA	29,255	1.127	0.299	-4.928	5.07
FLEVAGE	29,266	0.55	5.256	0.002	877.3
FSIZE	29,266	22.03	1.512	11.35	30.95
ROA	29,266	-0.053	12.55	-2,146	7.696
ROE	29,265	0.035	4.091	-176.4	502
PE	29,266	20.27	88.26	-2,236	3,329
TOBINQ	29,265	0.004	0.072	-7.316	4.113

(Please refer to Appendix for indicator explanation)

Table 2 displays the correlation result of all variables. It shows a positive correlation between ownership concentration and ROA, which is consistent with the outcome of Claessens and Djankov (1999). However, ownership concentration shows a negative relationship with Tobin's Q, which is in line with McConnell and Servaes's (1990) research. The two results are supported by different strings of corporate governance researchers. Supporters of the positive correlation between ownership concentration and firm performance claim that highly decision-making efficiency and more significant incentives for board directors to get involved in company governance in a concentratedly owned company cause better financial performance. Conversely, the opposites claim that a highly concentratedly-owned firm usually have agency problem because the top executives control the ownership, which can damage the firms' operation. Besides, CEO duality is negatively correlated with both ROA and PE, which is consistent with Ehikioya (2009) and Peng (2004). Similar to ownership concentration, the CEO duality problem also reflects the importance of separating management and ownership in agency theory. Third, the result shows a strong positive correlation between board size and PE ratio. However, Tobin's Q shows a negative association with Board size. Both the two different results are shown in different empirical research and are given two different explanations. Studies that support adverse correlation claim the free-rider and communication problems of an extensive board cause worse financial performance. On the contrary, other studies which support positive correlation highlights that a more giant board can contribute to a larger pool of expertise. Forth, a sharply negative correlation between independent board proportion and PE is shown in the table. Interestingly, the directors' education level is negatively correlated with PE ratio.

Table 2 Pairwise correlations

Variables	ROA	ROE	PE	TOBINQ	CONCENT	CEODU	BSIZE	INDR	EDU	BETA	FLEVAGE
ROA	1.000										
ROE	-0.003	1.000									
PE	0.002	0.001	1.000								
TOBINQ	0.001	0.259***	0.001	1.000							
CONCENT	0.010*	0.003	0.005	-0.013**	1.000						
CEODU	-0.012**	-0.003	-0.018***	0.002	-0.010*	1.000					
BSIZE	0.001	-0.000	0.027***	-0.016***	0.065***	-0.162***	1.000				
INDR	0.003	-0.004	-0.058***	0.009	0.015**	0.101***	-0.364***	1.000			
EDU	-0.000	0.005	-0.067***	0.002	0.053***	-0.017***	0.092***	0.080***	1.000		
BETA	0.016***	0.016***	-0.084***	0.004	-0.044***	0.041***	-0.054***	0.028***	0.020***	1.000	
FLEVAGE	-0.981***	0.003	-0.002	-0.006	-0.017***	0.007	0.001	-0.002	0.003	-0.029***	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

(Please refer to Appendix for indicator explanation)

Table 3 presents the results of regression analysis with return on assets (ROA), return on equity (ROE), price to earnings ratio (PE) and Tobin's Q as the dependent variables separately. Using ROA as a measure of firm performance, the result shows CEO duality is significantly and negatively related to firm performance, respectively ($p < 0.01$). The result of CEO duality matches earlier findings in the empirical research of Chen et al. (2005), Sami et al. (2011) and Peng (2004) and supporting the idea that separation of ownership and control can improve a firm's performance. However, the striking result is that ownership concentration negatively and significantly affects firms' performance, which is barely distinguishable from Ehikioya (2009) and Morck (1998), who claim that ownership concentration is positively related to firm performance. Nonetheless, this lends to support previous findings in the literature of Dennis and McConnell (2003), who state that concentrated ownership by a company's controllers (management) may raise the costly agency problem. In other words, higher equity ownership can provide managers with more freedom to pursue their own interests, which may damage the whole company's benefits. Besides, Board Size is significantly and negatively related to firm performance, respectively with the p-value less than 0.05 using the ROE model. However, using ROE as an independent variable, Board size is negatively and significantly associated with firm performance, in contrast with the empirical results of Ujunwa (2012), Guest (2009), and Cheng et al. (2007). In addition, Independent Board Ratio is significantly correlated with performance indicators of both ROA and Tobin's Q, confirming the findings in the literature of Kouki and Guizani (2015). Moreover, directors' average educational level is positively related to firm performance using ROA, in a good agreement of Darmadi (2013) and Golec (1996). As a

result, based on the statistics, the hypothesis that corporate governance is positively and significantly related to firm performance is accepted.

Table 3: Regression analysis

VARIABLES	(1) ROA	(2) ROE	(3) PE	(4) TOBINQ
CONCENT	-0.005*** (-4.137)	0.000 (0.229)	-0.011 (-0.312)	-0.000 (-0.835)
CEODU	-0.123*** (-2.604)	-0.008 (-0.198)	1.820 (1.507)	-0.001 (-0.821)
BSIZE	0.013** (2.400)	-0.017** (-2.222)	-0.182 (-0.573)	0.000 (0.370)
INDBR	0.696** (2.256)	-0.533 (-1.395)	2.736 (0.254)	0.011** (2.021)
EDU	0.095* (1.875)	0.030 (0.592)	-0.263 (-0.290)	0.001 (1.124)
BETA	-0.525*** (-4.348)	0.261* (1.887)	-5.279*** (-2.589)	-0.001 (-0.280)
FLEVAGE	-2.345*** (-21.250)	0.003*** (8.161)	-0.162*** (-3.571)	-0.000 (-1.061)
FSIZE	-0.054 (-0.938)	0.041*** (2.599)	-2.741*** (-6.814)	-0.002*** (-3.285)
Constant	2.694** (2.446)	-0.554 (-0.941)	152.264*** (13.825)	0.042*** (3.002)
Observations	29,255	29,254	29,255	29,254
R-squared	0.962	0.001	0.134	0.003
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(Please refer to appendix for indicator explanations)

V. CONCLUSION

This paper analyzed the relationship between corporate governance and firm performance based on 2856 firms listed on the Stock Exchange of Shanghai (SSE) and Shenzhen (SZSE) from 31 December 2003 to 31 December 2018.

According to the test results, corporate governance positively affects the company's financial performance. Notably, this result reveals strongly significant evidence that ownership concentration and CEO duality are negatively associated with firm performance, respectively. Both board size and percentage of independent directors in board are significantly positively related to Return on Assets. However, Board Size is negatively and significantly correlated to Return on Equity. In addition, these tests show the moderately significant evidence that directors' educational level is positively related to firm performance.

In evaluating the results of this research, several limitations should be noted. First, because of the difficulty of collecting data on specific types of ownership concentration, this study is unable to separate inside ownership concentration, which means stocks are concentratedly controlled by management, from outside concentration, which means outside investors concentratedly controlled shares. The types of ownership concentration will affect its relationship with firm performance. Second, this study doesn't explain why board size is positively related to ROA but negatively related to ROE. About this, some assumptions are made by other researchers. In a theoretical statement claimed by Bonn (2004), the correlation between board size and firm performance is nonlinear, because the increasing board size will result in increasing firm performance when board size is within a range. Once over that range, board size is negatively related to firm performance. However, Bonn only explains it

theoretically not empirically. Further research can be made to investigate whether board size is nonlinearly associated with firm performance.

The findings of my research have considerable managerial implications. First, the negative relationship between ownership concentration and firm performance implicates that it is essential for the company to have some mechanisms to reduce the possibilities that a few significant shareholders of the company can control the company for their own interests. Second, because CEO duality can negatively influence companies' performance, separating the position of CEO and chairman of the board is essential to protect the interests of shareholders from encroachment by the management. Third, the proportion of independent directors is significantly and positively correlated with firm performance. This result encourages companies to recruit more independent and outside directors to companies for the function of monitoring, providing expertise and increasing the connection with the outside environment. Fourth, because of the result that directors' educational background is positively related to firm performance, it is recommended for the company to put more importance to the education qualifications during recruitment.

At last, further work needs to be done in the future: First, as is shown in the results of correlation analysis, ownership concentration is positively related to ROA, but negatively related to Tobin's Q. Similarly, board size is negatively related to price to earnings ratio, but negatively related to Tobin's Q. Both positive and negative direction of ownership concentration and board size are supported by different researchers. There are a lot of disputes surrounding the relationship between the other corporate governance indicators and firm performance indicators. Therefore, what is the exact direction of these correlations and

whether there are any other conditions influence their correlation are good research topic regarding corporate governance and firm performance. For example, further studies need to address the problem of whether different types of ownership concentration, including outside concentration and inside concentration, can influence the direction of relationship with performance. Also, further research can be carried to verify whether Bonn's (2004) assumption is right or not: Board size is nonlinearly related to performance indicators. Second, our results are encouraging and should be validated by larger sample size.

VI. APPENDIX

Table 4 Variable definitions and measurement

Variables	Definition and measurement
ROA	Return on assets; calculated as the percentage of net income to the total assets.
ROE	Return on equity; calculated as dividing net income by common equity.
PE	Price to earnings ratio, measured as the percentage of the price per share to earnings per share.
TOBINQ	Tobin's Q; measured as the ratio of the total of market value of shareholders' equity and the book value of the firm's debt to the book value of total assets.
CONCENT	Ownership concentration; measured as the percentage of total shares held by the five largest shareholders to total assets.
CEODU	CEO duality dummy; equals 1 if CEO is also the chairman/vice-chairman of the board, otherwise it is 0.
INDB	The number of independent directors in board.
INDBR	The percentage of independent directors to board size.
EDU	The average education level of directors in one year; 1 indicates a certificate from technical secondary school and lever, 2 indicates junior college; 3 indicates bachelor's degree; 4 shows a masters' degree; 5 indicates a doctorate
FBETA	Firm risk beta; calculated as the standard deviation of the return on assets.
FLEVAGE	Firm leverage; measured as dividing the total debts to total assets.
FSIZE	Firm size; calculated as the natural logarithm of total assets.
YEAR	Year dummies; equals 1 if the record is in a particular year, otherwise 0.
INDUSTD	Industry dummies; equal to 1 if the firm belongs to a specific industry, otherwise 0.

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