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THE RELATIONSHIP BETWEEN FIRM PERFORMANCE AND BOARD CHARACTERISTICS IN CHINA

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Abstract*: This study aims to examine the relationship between various dual board characteristics and the performance of publicly traded companies in China. Specifically, this study investigates the links between factors such as supervisory board presence, board independence, CEO duality, the inclusion of women directors, the frequency of board meetings, and firm performance as measured by Tobin's Q. This investigation is based on data gathered from 1,672 companies listed on both the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) during the year 2018. To analyze these relationships, a multiple regression model is employed. The study's results indicate that frequency of board meetings and CEO duality are positively associated with the firm performance. However, no significant relation is observed between the inclusion of women directors and firm performance. Additionally, the study finds that the presence of a supervisory board and board independence do not exhibit any noteworthy associations with firm performance. These findings contribute valuable empirical insights into the connections between the internal corporate governance structure and the performance of firms in the Chinese context. Ultimately, the results of this study may offer valuable guidance for policymakers and corporate managers in China regarding effective corporate governance practices.*

Keywords*: Corporate Governance, Board Characteristics, Ownership Structure, Firm Performance, China*

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Introduction

In contemporary times, the dimensions and scale of publicly traded companies in China have consistently expanded alongside the ongoing growth of the nation's capitalist economy. Nevertheless, these listed companies face numerous challenges in terms of their economic performance. These challenges encompass corporate governance (CG) issues, such as the separation of ownership and management, conflicts of interest between major and minor shareholders, an imbalanced ownership structure, unclear roles of directors, the prevalence of non-independent directors, and the limited effectiveness of supervisory boards.

In China, the establishment of both a supervisory board and a board of directors (BoD) is mandated when implementing CG codes for listed firms. The supervisory board assumes the responsibility of overseeing both the BoD and the company's management. In principle, this dual governance structure is designed to enhance the oversight of company management by external stakeholders. As an emerging market economy with the world's second-largest GDP, Chinese listed companies operate within a distinctive environment when compared to U.S. public firms and other Western developed countries (Shao, 2019). Notably, there are significant differences in external governance mechanisms, influenced by the unique external environment and regulatory legal system. Currently, China's capital market remains underdeveloped, and its performance is influenced by external factors such as product markets, the professional manager market, and the legal environment.

The majority of listed companies in China are state-owned enterprises, primarily controlled by central and local governments, with limited ownership by individuals or institutional investors (Hu et al., 2010; Liu et al., 2015). Consequently, ownership of Chinese listed firms is highly concentrated, primarily in the hands of controlling shareholders (Molnar et al., 2017). This concentration gives rise to principal-principal issues and conflicts of interest between small and medium shareholders and controlling shareholders in China (Hu et al., 2010). Controlling shareholders often employ tactics like borrowing from the company, tunneling, or asset transfers to divert substantial funds away from the company, significantly harming the interests of minority shareholders.

Effective corporate governance, especially in terms of internal governance, can mitigate agency costs related to internal monitoring and management, facilitating efficient decision-making and execution and ultimately enhancing corporate performance. Thus, corporate governance, as a pivotal element for performance improvement, is growing increasingly vital, especially concerning the enhancement of medium and long-term corporate performance, in line with the desire to create enduring value for shareholders and stakeholders alike.

This study is driven by the fundamental distinctions between the Chinese corporate governance model and the Anglo-Saxon model. China's external CG mechanisms still lag behind those of Western developed nations (e.g., the U.S., UK, and Australia), characterized by a weaker legal system and an immature capital market (Guo et al., 2013). CG practices in China are shaped by unique economic conditions and governance culture. These practices exhibit significant deficiencies, including the absence of a clear "true" owner, substantial agency costs, the dominance of controlling shareholders, 'tunneling behaviors,' dysfunction of internal monitoring mechanisms, and limited enforcement of market regulations (Lin et al., 2006).

Consequently, there is considerable practical importance in examining the relationships between dual board structures and firm performance. This study aims to offer insights and

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recommendations for enhancing internal governance in Chinese listed companies. To achieve this, the study investigates the connections between dual board characteristics and firm performance.

The remainder of this paper are organized as follows: the next section formulates hypotheses, followed by a description of the research methodology and a discussion of the empirical findings, concluding with a summary in the final section.

Literature Review and Hypothesis Development

Corporate Governance in China

In China, corporate governance (CG) serves as a mechanism for overseeing and balancing the interests of owners, primarily shareholders, and operators. It is characterized by an internal CG structure that comprises shareholder meetings, a supervisory board, a Board of Directors (BoD), and management. Remarkably, the highest authority within a company, the shareholder meetings, is equivalent to the BoD in other nations. This equivalence allows major shareholders in China to exercise significant control over the operational activities of firms (Molnar et al., 2017).

The company law of China, enacted and enforced in 1993, introduced the dual board structure, consisting of the BoD and the supervisory board (Shao, 2019). This law explicitly mandates that a limited company should establish shareholder meetings, the BoD, and the supervisory board. These two parallel entities, the BoD and the supervisory board, operate under the umbrella of shareholder meetings (Hu et al., 2010; Song et al., 2019), designed to protect the interests of small shareholders in Chinese listed firms (Hu et al., 2010). Consequently, China's dual CG system diverges significantly from Western countries like the U.S. and the U.K.

The supervisory board serves as a statutory and permanent supervisory body within a company. Its role is to oversee and ensure that the BoD and management comply with legal requirements in carrying out their duties and to scrutinize the company's financial activities (CSRC, 2002). Notably, supervisory board members are required to include both shareholders and employee representatives (Song et al., 2019), with at least one-third of the members being employees' representatives (Shao, 2019). This composition inherently limits the independence of the supervisory board (Hu et al., 2010). In 2005, new company laws required listed firms to strengthen the supervisory board's responsibilities.

As the primary core of internal governance mechanisms, the BoD holds the authority entrusted by shareholders to safeguard the firm's interests and enhance the level of CG (Hu et al., 2010; Jiang & Kim, 2015; Alodat et al., 2022). Under China's current legal framework, the BoD is granted the power to make strategic decisions and is responsible for appointing and monitoring management. Additionally, listed companies are mandated to establish a BoD, elected during shareholder meetings (Company law of China, 1994). The BoD must consist of five to nineteen members and convene at least twice a year, with meetings convened by the chairman (Company law of China, 2016; CSRC, 2018). Consequently, the BoD is generally regarded as the most crucial internal CG mechanism for ensuring the healthy development of CG in China (Liu & Fong, 2010).

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Board Characteristics and Firm Performance

Supervisory Board and Firm Performance

Limited studies have explored the effectiveness of the supervisory board system in China. Yao and Lu (2010) discovered that when the independence of the supervisory board weakens, it fails to fulfill its original supervisory role and may become a complicit participant. Song et al. (2019) have pointed out that the supervisory board is often subject to manipulation and may even support collusion to control or deceive investors. Their research suggests that the supervisory board in China lacks independence, resulting in low supervisory efficiency that can ultimately harm a company's performance.

In line with agency theory, the supervisory board should effectively control operational risks by overseeing a company's activities to maximize its value and performance (Song et al., 2019). Adams and Ferreira (2009) demonstrated that the dual board structure can enhance corporate performance through more effective monitoring. Nevertheless, the supervisory board system is frequently criticized for being merely ceremonial and non-functional. Due to the high concentration of ownership, China's supervisory board may even become a servant of major shareholders and managers.

Shao (2019) suggests that the supervisory board is positively associated with firm performance. However, Hu et al. (2010) have documented that the supervisory board negatively impacts firm performance due to ownership concentration obstacles. Yao and Lu (2010) and Song et al. (2019) also conclude that the lack of supervisory board independence and low supervisory efficiency negatively affect a company's performance. Consequently, hypothesis 1 is proposed based on the aforementioned analysis:

H1: Supervisory board is negatively associated with firm performance.

Board Independence and Firm Performance

In the realm of agency theory, the presence of independent directors serves a crucial role in monitoring and curbing opportunistic behaviors exhibited by management and insider trading. In China, where enterprise ownership structures tend to be concentrated and the institutional environment is relatively weak, the government appoints independent directors to combat insider trading and safeguard the interests of investors. Consequently, these directors must maintain their independence, which also underscores the independence of the Board of Directors (BoD).

A comprehensive empirical analysis conducted by Liu et al. (2015) provided extensive insights into the relationship between board independence and firm performance. Their results supported the notion that robust internal governance, including an independent BoD, can effectively mitigate agency problems, including those involving major shareholders, ultimately leading to improved performance. In contrast, Hu et al. (2010) evaluated the independent and interdependent effects of China's internal governance mechanisms on enhancing a firm's value over a three-year period from 2003 to 2005. Their findings suggested that the governance role of the BoD did not exhibit effectiveness in maximizing the company's value. Similarly, Shao (2019) discovered no significant association between independent directors and firm performance. This finding aligns in part with evidence from Molnar et al. (2017), who revealed that, once endogeneity is controlled, an increase in independent directors does not necessarily

enhance corporate performance overall. However, it did lead to improved company profitability when the independent directors system was introduced.

In contrast, Vo and Nguyen (2014) offered evidence suggesting that board independence has divergent impacts on firm performance, based on data from listed companies in Vietnam. This divergence arises from a lack of complementarity and collaboration between executives and the BoD. Larger boards often include independent members who are also major shareholders, impeding their ability to grasp the company's situation. Consequently, hypothesis 2 is formulated based on the preceding analysis:

H2: Board independence is negatively associated with firm performance.

CEO Duality and Firm Performance

The structuring and organization of leadership roles for CEOs are pivotal determinants of corporate governance (CG) effectiveness (Syriopoulos & Tsatsaronis, 2012). To maximize CG effectiveness, the roles of chairman and CEO should be distinct to avoid conflicting responsibilities. The CEO's primary role is to establish and execute the company's strategic objectives, oversee operational activities, and enhance overall profitability. Conversely, the chairman assesses management performance and ensures the BoD functions effectively, including the appointment of the CEO (Weir et al., 2002).

Stewardship theory supports CEO duality, contending that it can strengthen singular leadership without compromising independence from management and oversight roles. In contrast, agency theory favors CEO separation, positing that CEO duality might reduce the BoD's effectiveness in supervising management (Syriopoulos & Tsatsaronis, 2012). In practice, many Chinese listed firms adopt a leadership structure in which the CEO and chair are not entirely separate. This approach can enhance the BoD's supervision of managers, reducing the cost of supervision and resolving information asymmetry issues between the chairman and CEO. Consequently, this can enhance operational performance and maximize shareholder benefits. Empirical research by Leng and Mansor (2005), Abid and Ahmed (2015), and Bansal and Sharma (2016) has shown that CEO duality is significantly positively correlated with firm performance.

However, Jensen (1993) emphasized that a company's leadership structure characterized by CEO duality may result in the absence of an independent leader within the BoD. This could impair the effective exercise of key BoD functions, affecting the BoD's operational efficiency and future firm performance. Correspondingly, studies by Reddy et al. (2010), Chugh et al. (2011), Amba (2014), Shao (2019), and Mubeen et al. (2021) have reported a negative association between CEO duality and firm performance. CEO duality can generate additional agency costs and hinder performance. Accordingly, hypothesis 3 is derived from the analysis presented above:

H3: CEO duality is positively associated with firm performance.

Women Directors and Firm Performance

According to agency theory, female directors serve multiple roles as monitors, executives, and advisors within the board, contributing to the enhancement of firm performance. With societal progress, the proportion of accomplished female executives within companies has steadily increased, with women now occupying board seats in modern corporations.

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In general, a diverse board, including individuals from various backgrounds, including gender diversity, can enhance collective decision-making by accommodating professionals from different fields. The inclusion of women directors can mitigate overconfidence among male directors, bolstering vigilance and promoting error avoidance in collective decision-making. This diversity infuses boards with innovative energy, thereby enhancing overall team efficiency and CG levels. The addition of female directors can enhance board operations, ultimately boosting overall company efficiency and preserving competitive advantages. As a result, gender diversity, a facet of board diversity, assumes paramount importance in the competitive landscape of listed companies.

Empirical research by Liu et al. (2014) found that the presence of female directors was significantly positively correlated with firm performance, particularly in companies with legal-person owners. This finding is corroborated by Darko and Uzonwanne (2016) and Duru et al. (2016). However, Darmadi (2011) and Ahmad et al. (2020) discovered a contrasting relationship between gender diversity on the BoD (as measured by the Blau index and the Shannon index) and firm performance. Additionally, Shukeri et al. (2012) found no significant association between female directors on the BoD and firm performance, suggesting that changes in the number of women directors do not necessarily translate into shifts in corporate performance levels. Consequently, hypothesis 4 is formulated based on the analysis presented above:

H4: Women directors are positively associated with firm performance.

Board Meetings and Firm Performance

One of the factors influencing board activity is the frequency of board meetings. Currently, there is a significant debate among scholars regarding the relationship between board meetings and firm performance. Board meetings can serve as a reflection of the governance effectiveness of the Board of Directors (BoD). According to agency theory, the BoD fulfills its functions of controlling and monitoring managers, as well as formulating and implementing company decisions and strategies, through the conduct of board meetings. These meetings contribute to the enhancement of firm performance, making them a measure of the company's improved performance.

The issue of how many board meetings should be held to optimize company performance is the subject of two opposing viewpoints. Advocates argue that a company's BoD with frequent meetings is better equipped to offer suggestions, supervise, and exert restraint on management. Research conducted by Arora and Sharma (2016) and Fariha et al. (2022) has unveiled a positive association between board meetings and firm performance. Similarly, Ntim and Osei (2011) investigated the impact of board meetings on firm performance using data from South African (SA) listed companies over a five-year period from 2002 to 2007. Their findings revealed a statistically significant and positive relationship between board meetings and firm performance, indicating that frequent board meetings in SA boards tend to lead to higher firm performance. Moreover, their results suggested a significant non-monotonic association between board meetings and firm performance, implying that the frequency of board meetings positively impacts firm performance.

A recent study by Li et al. (2021) examined board characteristics in 121 newly established startup firms operating in the information technology industry listed on China's Growth Enterprise Market (GEM). They identified a relation between board meeting frequency and

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firm performance. Eluyela et al. (2018) also found a positive relationship between the frequency of board meetings and firm performance using data from the Nigeria Stock Exchange (NSE) market. In contrast, Johl et al. (2015), Jensen (1993), and Vafeas (1999) explored the impact of board meetings, viewed through the lens of board diligence, on firm performance. Their findings indicated that board meetings had an inverse effect on firm performance, suggesting that firms may require less frequent board meetings.

Based on the analysis presented above, hypothesis 5 is formulated:

H5: Board meetings are positively related with firm performance

Methodology

In pursuit of the study's objectives, this study employs hypothesis testing to examine the influence of dual Board of Directors (BoD) characteristics, treated as independent variables, on firm performance, the dependent variable. The analysis employs multiple linear regression to investigate the associations between supervisory board, board independence, CEO duality, women directors and board meetings with firm performance, measured using Tobin's Q. The study focuses on A-shares listed companies on the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) in China. To ensure robust analysis, the study incorporates ownership concentration, firm size, firm age, and firm leverage as control variables in the performance regressions, following the approach utilized by Palaniappan (2017) and Shao (2019). The experimental model equation is expressed as follows:

$$FP=\beta_0+\beta_1 SB+\beta_2 BI+\beta_3 CDUL+\beta_4 WD+\beta_5 BM+\beta_6 OC+\beta_7 SIZE+\beta_8 AGE+\beta_9 LEV+\varepsilon$$

Where: FP is firm performance, adopts Tobin's Q. β_0 is a constant number. β_1 *to* β_9 are the regression parameter, and ε is the regression residual.

Measurement of Variables

Dependent Variables

Firm performance is selected as independent variable in this study. Tobin's Q index is applied as the measure of firm performance as the dependent variable. Tobin's Q is defined by Xu et al. (2016), Veklenko, 2016; Ciftci et al. (2019), Shao (2019) to be the ratio of the aggregate of the market value of equity and the market value of total liabilities to total assets, which reflects firm's expected performance (Pletzer et al., 2015; Terjesen et al., 2016). Garg (2007) asserts that Tobin's Q can explicitly and directly measure the added value by the management and seize the value of potential investment opportunities in the future. Pletzer et al. (2015) and Ciftci et al. (2019) stated that the ratio is a reliable measure because it can measure the firm performance according to its growth potential.

If Tobin 's Q (Q>1), it means that the company has a stronger ability to create value by effectively allocating resources (Pletzer et al., 2015), indicating shareholders value is going up because of the worth of company is higher than its book value (Terjesen et al., 2016). Pletzer et al. (2015) highlighted that Tobin's Q is regarded as objective because of this measure does not depend on self-reported data and it also does not exist the bias of accounting conventions.

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Independent Variables

Dual board characteristics are selected as the independent variables in this study. Specifically, supervisory board, board independence, CEO duality, women directors and board meetings are used to measure dual board characteristics. This study measures the supervisory board by its size (Hu et al., 2010; Shao, 2019). Board independence is expressed as percentage of independent directors disclosed in annual report to the BoD size (Liu, et al., 2015). The CEO duality sets the dummy variable, when CEO serves as chairman, take 1; otherwise, take 0 (Yan Lam & Kam Lee, 2008; Shao, 2019). Women directors are measured by proportion of women directors in the BoD (Liu et al., 2014). Board meetings are measured by the number of board meetings in one year (Song et al., 2019), because the minutes of the board meetings for the fiscal year are summarized according to the number of times disclosed in the annual report.

Control Variables

To eliminate the interference of other factors that may affect the association between the dual board characteristics and firm performance, ownership concentration, firm size, age and leverage, were selected as control variables (Palaniappan, 2017; Ciftci et al., 2019; Shao, 2019. Therefore, this study measures ownership concentration as the largest five shareholders (Shao, 2019; Ciftci et al., 2019), firm size as the natural log of total assets (Yan Lam & Kam Lee, 2008), measures the firm age with the natural log of number of years of firm listed on the exchange (Liu et al., 2014; Shao, 2019), and measures the financial leverage with the asset-liability ratio (Liu et al., 2015). Table 1 lists definitions of variables applied to the empirical model.

Table 1: Operationalization of Variables

Variables	Abbreviation	Definition
Dependent variables		
Firm performance	FP	Tobin's Q: (Market value of equity + total liabilities) / Total assets (Shao, 2019)
Independent variables		
Supervisory board	SB	The number of supervisory board members (Hu et al., 2010; Shao, 2019)
Board independence	BI	The percentage of independent directors account for BoD (Liu, et al., 2015)
CEO duality	CDUL	1 if CEO and chair are same person; 0 otherwise (Yan Lam & Kam Lee, 2008; Shao, 2019)
Women directors	WD	The proportion of women directors on BoD (Liu et al., 2014)
Board meetings	BM	The number of board meetings in one year (Song et al., 2008)
Control variables		
Ownership concentration	OC	The percentage of Top 5 shareholding (Shao, 2019; Ciftci et al., 2019)
Firm size	SIZE	The natural log of total assets (Yan Lam & Kam Lee, 2008)
Firm age	AGE	The natural log of number of years since firm listing (Liu et al., 2014; Shao, 2019)
Leverage	LEV	Total Liabilities / Total Assets (Liu et al., 2015)

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Sample

In this study, the population is mainly targeted at A-shares listed companies on the Shanghai Stock Exchange (SSE) and Shenzhen Stock Exchange (SZSE) in China for the year 2018. The year 2018 was chosen as the focus of this study because it marks the implementation of the revised Code of Corporate Governance for listed firms by the China Securities Regulatory Commission (CSRC). This revision, building on the 2002 code inspired by the OECD Principles of Corporate Governance, aimed to enhance corporate governance effectiveness, protect investor rights, and promote stable capital market growth in China. There is a total of 1672 listed firms on the SSE and SZSE in China that meet the screening criteria. In this study, the validity of the data is guaranteed as much as possible and the influence of abnormal samples on the conclusions is eliminated as much as possible. Therefore, this study refers to the following criteria in sample selection: (1) select firms issuing A-share, including firms issued both A-shares and H-shares or B-shares; (2) to prevent adverse impact of extreme values on the results, financial companies, and public administration and social organization are excluded.

The samples are all companies from the population with A-shares listed companies from SSE and SZSE in China for the year of 2018 with data window. Thus, this study identified the final 1672 listed companies as sample size from the target population. Table 2 below mainly describes the industry classification of the samples.

Table 2: Summary of Industry Categories of Companies

No	Category	No. of population	Percentage
1	Farming, forestry, animal husbandry and fishery	23	1.37%
2	Mining Industry	38	2.27%
3	Manufacturing Industry	1060	63.39%
4	Production and supply of electric power, gas and water	65	3.89%
5	Construction industry	31	1.85%
6	Traffic, storage and mail business	57	3.41%
7	Information transfer, computer service and software industry	119	7.12%
8	Wholesale and retail trade	103	6.16%
9	Accommodation and food industry	6	0.36%
10	Realty business	81	4.84%
11	Leasehold and business service industry	26	1.56%
12	Scientific research, technical service and geologic examination industry	18	1.08%
13	Education	5	0.30%
14	Sanitation, social security and social welfare industry	9	0.54%
15	Cultural, physical and entertainment industry	20	1.20%
16	Comprehensive	11	0.66%
	Total	1672	100.00%

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Data on firm performance, dual board characteristics and ownership structure in this study are acquired from the database of China Stock Market & Accounting Research (CSMAR) which offers data on the China stock markets and the annual report of listed companies in China. Scholars in this area (Liu et al., 2014; Liu et al., 2015; Molnar et al., 2017) also mainly obtained relevant useful information from this database.

Findings

Descriptive Statistics

Table 3 provides a summary of the descriptive statistics analysis, encompassing the mean, minimum, maximum, and standard deviation values for the variables under examination. The sample companies exhibit strong performance, as indicated by Tobin's Q. The Tobin's Q values span a range primarily between 0.67 and 10.23. There is considerable variability in this variable throughout the sample period, aligning with findings from Shao's (2019) research. The mean value of Tobin's Q stands at 1.65, surpassing 1, which signifies that companies have generated significant wealth for their shareholders. This observation is consistent with Shao's (2019) research.

Furthermore, the number of members on the supervisory board (SB) is predominantly distributed within the range of 1 to 14 members. On average, a supervisory board consists of approximately 4 members, which corresponds with the findings reported by Hu et al. (2010) and Shao (2019). It is worth noting that for some companies, the size of the supervisory board still falls short of the minimum requirements stipulated by the Corporate Governance Guidelines of China for listed companies, which necessitate a minimum of three members on the supervisory board.

Table 3: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
SB	1672	1	14	3.53	1.13
BI	1672	0.14	0.8	0.38	0.06
CDUL	1672	0	1	0.26	0.44
WD	1672	0.06	0.83	0.23	0.13
BM	1672	3	58	10.44	4.54
OC	1672	0.11	0.96	0.52	0.14
SIZE	1672	18.29	28.52	22.58	1.26
AGE	1672	1.09	3.33	2.36	0.66
LEV	1672	0.01	0.98	0.43	0.19
Tobin’s Q	1672	0.67	10.23	1.65	0.97

Note: SB is supervisory, BI is board independence, CDUL is CEO duality, WD is women directors, BM is board meetings, OC is ownership concentration, SIZE is firm size, AGE is firm age, LEV is firm leverage.

The proportion of independent directors (BI) is mainly distributed between 14% to 80%. The average value of its proportion of independent directors is 38%, which basically meets the mandatory requirements of the Chinese CG Code that at least 1/3 directors are independent in a BoD of listed firms, and the result is supported by Hu et al. (2010). However, there are some sample companies whose independent directors are too small and their proportion of independent directors do not meet the minimum requirements of 1/3, indicating that the

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independent director system of listed companies needs further improvement, and board independence needs to be strengthened.

The mean value of dummy variable of CEO duality (CDUL) is 0.26, it is considered that only 26% of the listed company combine the two roles of CEO and chair, and most of listed companies implement the leadership structure of separating two positions of chair and CEO. Nonetheless, the average incidence of CEO duality in China is far below those countries in Anglo-American context because its incidence in Fortune 1,000 firms is far above 50% (Rashid, 2018).

The proportion of women directors (WD) in the BoD is mainly distributed between 6% to 83%, and the average proportion of female directors is 23%, indicating that most listed companies do not have more female directors. Although the current participation of female directors is very low, the percentage of women directors has approximately doubled compared to 12% in Liu et al. (2014). It also indicates that participation of women directors on boardroom in listed companies has experienced an upward trend.

The board meetings (BM) of sample companies occur at least 3 times a year, up to 58 times. Its average annual board meeting frequency is 10.44 times, which implies the BoD effectively enforces the requirements of the company law: The BoD meets at least twice a year (Company Law in China, 2016). The standard deviation is 4.54, and its large value indicates that the board meeting frequency of each company is highly dispersed. The dramatic fluctuations of board meeting frequency may be due to temporary adjustments to the company's business strategy, suggesting the BoD play an active role.

For control variables, the shareholdings of the five largest shareholders (OC) is mainly distributed between 11% to 96%, and the average shareholdings of five largest shareholders is 52%, indicating that 52% of shares are concentrated by handful of the top five shareholders. In addition, the mean of firm size (SIZE) is 22.58 with minimum of 18.29 and maximum of 28.52. The average value of firm age (AGE) is 2.36 with minimum of 1.09 and maximum of 3.33. Leverage (LEV) of firm measured by asset-liability ratio ranges between 0.01 to 0.98 with a mean value of 0.43.

Pearson Correlation analysis

The Pearson correlation can also be conducted to check multicollinearity problem existing among independent variables. The Pearson correlation among the independent variables with $R \geq 0.8$, which means the presence of multicollinearity problem (Lewis-Beck, Colin & Lewis-Beck, Michael, 2015). Table 4 shows that correlation coefficients of all explanatory variables are not greater than 0.6, hence it can be inferred no multicollinearity problem among the predictor variables.

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Table 4: Pearson Correlations Matrix

Variables		SB	BI	CDUL	WD	BM	OC	SIZE	AGE	LEV
SB	R	1								
	Sig.									
BI	R	-.085**	1							
	Sig.	0.000								
CDUL	R	-.165**	.132**	1						
	Sig.	0.000	0.000							
WD	R	-.129**	.127**	.132**	1					
	Sig.	0.000	0.000	0.000						
BM	R	-0.018	.073**	0.036	0.030	1				
	Sig.	0.451	0.003	0.142	0.224					
OC	R	.093**	0.032	-0.008	-0.046	-0.033	1			
	Sig.	0.000	0.196	0.738	0.062	0.173				
SIZE	R	.280**	-0.019	-.130**	-.138**	.289**	.233**	1		
	Sig.	0.000	0.445	0.000	0.000	0.000	0.000			
AGE	R	.259**	-.054*	-.203**	-.078**	.090**	-.125**	.357**	1	
	Sig.	0.000	0.028	0.000	0.001	0.000	0.000	0.000		
LEV	R	.178**	0.006	-.089**	-.080**	.308**	.068**	.546**	.263**	1
	Sig.	0.000	0.817	0.000	0.001	0.000	0.005	0.000	0.000	

Note: N=1672; **P<0.01; *P<0.05

Regression Analysis

Table 5 displays the association between firm performance and each characteristics of board. The table reveals that the regression coefficient for the supervisory board (SB) is negative but insignificant for Tobin's Q (p>0.05), meaning that supervisory board is insignificantly associated with firm performance. It suggests that supervisory board cannot improve firm performance of listed firms in China, this finding is supported by Hu et al. (2010) but is contrary to Shao (2019). This may be because the independence of supervisory board is impaired, and the supervisory board has failed to perform an effective supervisory role (Song et al., 2019). Although this result accords with the expected direction of this study, H1 is not supported.

Board independence (BI) has t-value of -0.071 and the corresponding p-value of 0.943, which displays that the coefficient of BI is negative but insignificant for Tobin's Q (p>0.05). In other words, independent directors is not associated with firm performance in China. The present finding is compatible with Hu et al. (2010), Molnar et al. (2017), Rashid (2018) and Shao (2019) but not with Liu et al. (2015) and Ciftci et al. (2019). This result may be due to higher ownership concentration decrease independence of independent directors (Hu et al., 2010). This also could be a patently perfunctory response to external pressure from regulatory authorities or stakeholders. That is say, only a minimum proportion of independent directors may be hired by listed Chinese companies to meet regulatory requirements, and their independent directors do not have effective monitoring roles (Liu et al., 2015; Shao, 2019). Hence, this result infers that board independence does not impact on firm performance in China, H2 is not supported.

Table 5: Regression Results

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Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.095	0.464		15.298	0.000***
SB	-0.003	0.02	-0.003	-0.135	0.892
BI	-0.027	0.374	-0.002	-0.071	0.943
CDUL	0.176	0.051	0.079	3.482	0.001***
WD	0.186	0.172	0.024	1.082	0.280
BM	0.013	0.005	0.059	2.492	0.013**
OC	0.952	0.158	0.140	6.013	0.000***
SIZE	-0.253	0.022	-0.329	-11.279	0.000***
AGE	-0.016	0.037	-0.011	-0.438	0.661
LEV	-0.9	0.135	-0.178	-6.674	0.000***
No of obs	1,672				
Prob > F	0.000				
R-squared	0.204				

Notes: ** and *** represents p-value less than 5 percent and 1 percent, respectively.

It is noted that CEO duality (CDUL) has p-value of 0.001 and the corresponding t-value of 3.482, which signifies that CEO duality is positively effect on Tobin's Q (P<0.01) with significance. This result indicates that CEO duality could help increase corporate performance, which is compatible with the study by Palaniappan (2017) but not with Shao (2019). This may be due to the savings of supervision cost and agency cost brought by CEO duality, the absence of inherent conflicts of interests between the two positions, as well as the convenience of communication, which is more conducive to promote development of firms. This finding is also confirming the predication of stewardship theory, which signifies that board leadership structure of combination of two position of CEO and chair may improve firm performance, which is compatible with agency theory (Donaldson & Davis, 1991). Hence, H3 is supported.

The regression results in Table 5 show that women directors (WD) has p-value of 0.280 and the corresponding t-value of 1.082, which means that women directors is not important in this model. This result shows that the coefficient of WD is positive on Tobin's Q (p>0.05) but insignificant. That is say, women directors have no effect on firm performance within the context of China inferring H4 is not supported. This result is compatible with Ciftci et al. (2019) which contrasts with Liu et al. (2014). This may be because women directors do not perform an effective part in monitoring function of the board (Bonn et al., 2004; Liu et al., 2014).

Board meetings (BM) is found to positively and significantly associated with Tobin's Q (P<0.05). This means that increasing board meetings frequency will influence firm performance. The finding is accord with the results of Hu et al. (2010) and Buchdadi at al. (2019) but not with Vafeas (1999). It reveals that board meetings frequency tends to reflect the time and effort invested by board members (Hu et al., 2010). It is found that agency theory is supported that board meetings increase the BoD effectiveness which can play a part in overseeing and controlling activities, and enhance firm performance (Buchdadi et al., 2019). Hence, H5 is supported.

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As for control variables of firm characteristics, the results reveal that ownership concentration is positively associated with firm performance. This result aligns with the research by Shleifer and Vishny (1997), Eluyela et al. (2018). Firm age (AGE) is insignificantly linked with Tobin's Q ($p>0.05$), while firm size (SIZE) and leverage (LEV) are negatively associated with Tobin's Q ($p<0.01$) with 0.01 level significance, inferring small and low leverage companies produce better firm performance. This is because large companies tend to face coordination problems, while smaller companies are able to agree on decisions more quickly. In addition, less leveraged companies provide more free cash flow for new investment opportunities and more leveraged companies have more commitments and covenants, which is a little inconsistent with the agency theory (Ciftci el at., 2019).

Conclusions

The purpose of this study is to examine the relationships between dual BoD characteristics and firm performance of listed companies in China. Therefore, this study conducts a research on the association between dual board characteristics on firm performance using 1672 samples from listed companies in China for 2018. This study focuses on examining the relationship between firm performance and supervisory board, board independence, CEO duality, women directors and board meeting. In terms of board characteristics, the results show that CEO duality, board meetings and firm performance are significantly positively associated. Women directors, board independence and supervisory board are not associated with the firm performance.

This study provides the opportunity to examine these research questions and complements evidence that supports the close association between the internal CG structure and corporate performance of listed firms in China. Furthermore, this study makes several potential contributions to the body of knowledge. Firstly, in general terms, it provides evidence for establishing effective BoD and improving board governance structure in China and a general review of previous related literature of CG. In addition, it is envisaged that the outcomes can contribute to past studies. There is no doubt that the outcome of this study will adds to the improved knowledge of how CG affects corporate performance.

There are still some deficiencies in this study as follows. Firstly, only linear regression was conducted to examine the association between dual board characteristics and corporate performance, without controlling for the effects of endogenous, heterogeneous and synergistic among them. Secondly, the variable selection of dual board characteristics is relatively limited. This study did not select other important characteristics as explanatory variables, such as directors' remuneration, audit committee and managerial ownership. In addition, the indicator selected in this study to represent firm performance cannot completely replace firm performance level, so the conclusions drawn may not apply to all performance indicators. Finally, due to time constraints, this study failed to study the continuous years of data from all listed companies in China, but only selected the latest data of one year for 2018.

Due to the limitations of this study, this study does not conduct in-depth research and analysis of many other important issues of dual board characteristics. This study makes reasonable suggestions for future research on the BoD characteristics and firm performance, which can be improved and further analyzed from the following aspects: Firstly, future studies can be conducted from the perspective of endogenous problems and synergistic effects among dual BoD characteristics and ownership structure. Secondly, future studies can select more indicators to measure the dual BoD characteristics and ownership structure, such as audit committee,

remuneration of directors, managerial ownership. In addition, future research may choose a number of indicators that can better represent firm performance, because there are many factors influencing firm performance. Finally, the consecutive years of the study data can be extended for a few more years to improve the availability and persuasiveness of the results.

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