



The Impact of Board Characteristics on Corporate Performance: Evidence from Chinese A-share Market

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Abstract. The purpose of this paper is to investigate the impact of board characteristics on corporate performance within China's A-share market. Drawing upon agency theory and resource dependence theory, this study posits four hypotheses - namely, board size(B_SIZE), board compensation(B_COMP), gender diversity(G_DIV) and financial background(F_BKGD) - as potential determinants of corporate performance. The study included all publicly listed companies in the A-share market in 2022, excluding financial institutions and ST companies, as the research subjects for conducting an Ordinary Least Squares (OLS) regression analysis. The regression results indicate a advantageous correlation between board compensation and corporate performance, as well as a positive impact of gender diversity on corporate performance. However, contrary to our initial prediction, a detrimental effect on corporate performance is observed from having a financial background. Furthermore, the influence of board size is found to be statistically insignificant, suggesting a potential quadratic relationship with the independent variables. These findings carry significant implications for Chinese market investors in assessing company performance and for listed companies to enhance their board structure optimization.

Keywords: corporate performance, board characteristics, OLS, board size, board compensation, gender diversity, financial background

1 Introduction

Since the official launch of China's Science and Technology Innovation Board (STAR Market) in 2019, the A-share market has been undergoing a profound transformation until the full implementation of a comprehensive registration-based reform in 2023. Given the heightened uncertainty in the business environment and associated risks, predicting and effectively managing the specific and intangible factors that impact corporate performance is becoming progressively challenging yet crucial [1]. In terms of factors influencing company performance evaluation and selecting exceptional investment opportunities, emerging approaches such as focusing on corporate board characteristics are gaining increasing recognition.

Corporate governance refers to the operational framework of an organization, which is guided and supervised by the board of directors, regulatory bodies, and senior

management. The board of directors serves as a pivotal and effective internal mechanism within corporate governance. According to Pucheta-Martínez et al., the board of directors assumes two fundamental roles in the day-to-day operations of a company: representing shareholders in overseeing executive management and providing valuable business resources and evaluations [2]. In their supervisory capacity, the board of directors dedicates their time and resources towards monitoring corporate performance as well as managerial conduct.

When it comes to the A-share market in China, relevant laws stipulate that Chinese companies must have senior management, a supervisory board, and a board of directors. These entities bear the responsibility for daily operations and strategic decision-making while being accountable to shareholders with an aim to maximize stock value. Given the substantial influence wielded by boards on corporate affairs, investigating board characteristics' impact on corporate performance emerges as a highly valuable pursuit within academic research. Therefore, this paper will undertake a comprehensive investigation in this domain.

2 Literature Review

2.1 Theoretical Background

Since Jensen and Meckling's original establishment of agency theory, extensive research has been undertaken to investigate the potential effects of board characteristics on corporate performance. due to the prevalent separation of ownership and control in companies. According to agency theory, shareholders' primary objective is to maximize the company's stock value and achieve optimal corporate performance. Consequently, they delegate management responsibilities to agents who are perceived as rational, individualistic, risk-averse, and effort-averse individuals [3]. The attributes exhibited by these agents significantly impact corporate performance. It can be asserted that this paper's research content is firmly grounded in agency theory.

Additionally, resource dependence theory proposed by Pfeffer and Salancik provides an alternative viewpoint on the connection between boards and company performance. As per the principles of resource dependence theory, the board's significance lies in its ability to bolster company performance through the reduction of reliance on external factors and uncertainties [4]. This ultimately leads to a reduction in transaction costs, thereby facilitating their long-term survival.

Based on the two aforementioned theoretical frameworks, this paper intends to investigate the intricate association between the character traits of board and corporate performance within China's A-share market. Drawing upon pertinent scholarly literature, this paper has identified four distinct attributes as hypotheses that potentially exert an influence on firm performance.

2.2 Hypotheses

Board Size. The first potential influencing factor is board size. Fodio and Oba emphasize that the board of directors plays a pivotal role in shaping the company's decision-making process, since the vast majority of the company's significant strategic decisions are formulated through deliberations by the board of directors [5]. In general, a larger board of directors has the potential to facilitate more rational decision-making processes; however, it may also give rise to concerns regarding reduced efficiency. Consequently, there is reason to believe that the performance of company is strongly correlated with the population of the board. Accordingly, this study opts for the board size as the initial feasible factor.

Board Compensation. The second potential influencing factor is board compensation. High remuneration can serve as a powerful motivator, incentivizing board members to effectively fulfill their responsibilities and drive company performance. Simultaneously, generous compensation packages have the ability to attract highly skilled professionals who possess exceptional expertise and strategic vision, thereby contributing greater value and fostering innovation within the organization. Almarayeh's research highlights that incentive pay significantly enhances corporate performance, further emphasizing the importance of board compensation as a key influencing factor [6].

Gender Diversity. The third potential influencing factor is gender diversity. This topic has garnered significant attention in recent years. In general, a board of directors with a higher representation of women tends to foster an inclusive and open environment, thereby facilitating more rational and well-informed governance decisions. Furthermore, Solimene et al.'s research highlights the increasing educational attainment among female directors, including advanced degrees like postgraduate studies [7]. Consequently, they are widely regarded as highly professional and experienced individuals when it comes to making crucial decisions within boards of directors.

Financial Background. The last potential influencing factor is financial background. Board members with a financial background are widely believed to exert a significantly positive influence on a company's performance. They typically possess the ability to make superior financial decisions, engage in more effective risk management, and contribute more proficiently to the strategic planning of the organization. If board members possess prior experience in financial institutions, there is a strong indication that they will offer significant assistance in the company's growth. Hence, a financial background has been selected as the ultimate criterion.

3 Methodology

3.1 Sample

The initial sample comprises all Chinese A-share listed companies, excluding financial institutions and ST companies, amounting to a total of 5,274 entities. Additionally, it encompasses the basic information of 95,912 company directors, supervisors, and executives associated with these firms in 2022. After excluding 1% of companies with outliers both before and after removal, as well as eliminating board of directors' information containing missing data, a total of 3,548 companies along with their corresponding boards are ultimately retained. All the data is sourced from the CSMAR database, specifically extracted from the annual reports of these listed companies as of December 31, 2022, and before conducting regression analysis, it is standardized using Min-Max normalization to eliminate the influence of dimensionality on the regression outcomes.

3.2 Variables

Dependent Variables. According to previous research conducted by Bathula and Pucheta-Martínez, Tobin Q, ROE, and ROA are widely recognized as the three predominant indicators employed for evaluating corporate performance [8]. In this paper, ROA is specifically selected as the independent variable for assessing corporate performance. The return on assets (ROA) measures the management's proficiency in generating profits by efficiently utilizing the company's resources. ROA is directly linked to the effectiveness of management in leveraging the company's assets, which ultimately belong to shareholders. Moreover, Carter has emphasized that ROA holds significant importance in elucidating a firm's value [9]. Therefore, the return on assets (ROA) can be regarded as a robust independent variable that effectively reflects corporate performance.

Control Variables. The leverage ratio of a company can be regarded as a crucial control variable, exerting significant influence on its financial risk. A higher leverage ratio usually amplifies the company's exposure to debt pressure and leads to an unstable capital structure, thereby adversely impacting corporate performance. Tsuruta and Vieira's research findings suggest a negative correlation between the leverage ratio and firm performance [10] [11]. This study has opted to utilize the comprehensive leverage coefficient (DTL) as a measure of company leverage ratio, which serves as the first control variable.

Another crucial control variable is market expectations, which can serve as a driving force for management teams to actively pursue performance objectives. Moreover, in the case of publicly listed companies, favorable market expectations facilitate easier access to financial support, bolster reputation, and foster business expansion, thereby exerting a positive influence on corporate performance. According to Danielson and Frankel's research findings, the price-to-book (P/B) ratio effectively reflects market

expectations regarding a company 12]. Henceforth, this study selects the P/B ratio as the second control variable.

Explanatory Variables. According to the analysis presented in the hypotheses section, this study encompasses four independent variables: board size (B_SIZE), board compensation (B_COMP), gender diversity (G_DIV), and financial background (F_BKGD). “Board size” refers to the numerical composition of members serving on the board; “board compensation” denotes the average remuneration received by these members; whereas “gender diversity” signifies the proportion of women within the composition of the board.

Due to the distinctive characteristics of China's capital market, this study categorizes the subsequent sectors as financial institutions: securities registration and settlement businesses, investment banks, trust companies, insurance companies, securities firms, commercial banks, securities registration authorities, futures companies, investment banks, securities firms, fund management companies, and exchanges. If a member of the board possesses prior experience in any of these aforementioned types of organizations, he/she will be deemed to possess a financial background. The variable "financial background" is determined by dividing the financial expertise of all board members by the overall amount of board members. If this value exceeds one, it indicates that, on average, each board member possesses at least one period of experience working within these financial institutions.

Model. Based on the panel data obtained from the sample, the Ordinary Least Squares (OLS) regression method is employed to empirically examine the hypotheses posited in this paper. The data standardization technique employed is Min-Max normalization, wherein the original data value denoted as X is transformed into X' for regression analysis using the formula: $X' = (X - \text{Min}) / (\text{Max} - \text{Min})$, where Min and Max represent the minimum and maximum values of this variable, respectively. The resultant regression equation is presented in Equation (1).

ROA

$$= \beta_0 + \beta_1 \text{DTL} + \beta_2 \text{P/B} + \beta_3 \text{B_SIZE} + \beta_4 \text{B_COMP} + \beta_5 \text{G_DIV} + \beta_6 \text{F_BKGD} + \varepsilon \quad (1)$$

4 Analysis and Discussion

4.1 Descriptive Analysis

The comprehensive review of the 3548 data points is outlined in Table 1. The average return on assets (ROA) stands at 5.89%, while the average comprehensive leverage is reported as 1.85, and the average price-to-book ratio is calculated to be 2.80. Moreover, the mean board compensation amounts to 517,855 Chinese yuan. The compensation exhibits a significant disparity, ranging from a minimum per capita income of merely 8560 yuan to an astonishing maximum of 5.646667 million yuan per capita. Notably,

there exists a scarcity of executives with financial backgrounds, with an average of merely 0.10 financial institution experiences per person and a minimum value of 0 indicating instances where all executives in listed companies lack financial expertise. However, it should be noted that the maximum value surpasses 1, implying that each executive typically possesses at least one experience working in a financial institution on average. These companies exhibit an average executive count of 19 individuals and boast an average female representation rate reaching 22.46%.

Table 1. Descriptive Summary

Variables	Mean	Std	Minimum	Maximum
ROA	5.89%	0.04	0.13%	26.29%
DTL	1.85	1.54	0.79	16.75
P/B	2.80	1.84	0.45	13.64
B SIZE	19	6.35	8	62
B COMP	517855	391496	8568	5646667
G DIV	22.46%	0.12	0.00%	73.33%
F BKGD	0.10	0.12	0.00	1.24

The correlation matrix presented in Table 2 indicates a maximum correlation value of only 0.15 between independent variables, thereby ensuring that none of the correlations pose any significant concerns regarding multicollinearity issues.

Table 2. Correlation Matrix

Variables	DTL	P/B	B SIZE	B COMP	G DIV	F BKGD
DTL	1.00					
P/B	-0.10	1.00				
B SIZE	-0.03	-0.03	1.00			
B COMP	-0.07	0.06	0.05	1.00		
G DIV	-0.07	0.05	-0.15	-0.04	1.00	
F BKGD	0.00	0.00	0.01	0.07	-0.04	1.00

4.2 Regression Analysis

After applying Min-Max normalization to mitigate the impact of dimensions on data, this study opted for a 95% confidence level to conduct OLS regression analysis. Table 3 below displays the specific regression outcomes.

Table 3. Regression Results

ROA	Coef	Std.Err	t-statistic	P>t	[0.025	0.975]
CONST	0.1728	0.009	19.329	0.000	0.155	0.190
DTL	-0.6786	0.024	-28.056	0.000	-0.726	-0.631
P/B	0.3034	0.017	18.171	0.000	0.271	0.336
B SIZE	0.0187	0.021	0.904	0.366	-0.022	0.059
B COMP	0.4050	0.043	9.319	0.000	0.320	0.490

G_DIV	0.0403	0.019	2.078	0.038	0.002	0.078
F_BKGD	-0.0381	0.019	-2.018	0.044	-0.075	-0.001
R-squared:		0.285		F-statistic:		235.4
Adj. R-squared:		0.284		Prob(F-statistic):		0.000
AIC:		-3991		Durbin-Watson		1.887
BIC:		-3948		Cond. No.		20.3

The OLS regression results indicate that this model displays a 0.285 R-squared value and a 0.284 Adj. R-squared value, demonstrating a moderate level of explanatory power. The Prob (F-statistic) is calculated to be 0.000, indicating a high overall significance of the regression model. Moreover, with a Condition Number below 30 (specifically at 20.3), it suggests that there is no severe multicollinearity present in the model. Furthermore, the outcome of the Durbin-Watson test statistic is 1.887, which is rather near to the optimal value of 2, suggesting minimal autocorrelation within the model's residuals.

The t-test probability values for the analysis of individual variables, G_DIV and B_COMP, are both below 5%, indicating statistical significance. Moreover, the positive coefficients for both variables successfully validate hypotheses regarding board compensation and gender diversity, suggesting that an increase in women's proportion and gender diversity positively impacts company performance. Additionally, due to incentive compensation and elevated salaries attracting talent, there is a highly favourable correlation between compensation for boards and firm performance.

However, the p-value of the t-test for the B_SIZE variable is 0.366, which is much higher than the 0.05 significance level, indicating a lack of statistical significance and negligible impact on the independent variable. Conversely, although the F_BKGD variable demonstrates statistical significance and exerts an influential effect on the independent variable, its coefficient exhibits a negative sign, contradicting hypothesis about financial background and necessitating further investigation.

4.3 Discussion

The results of the OLS regression confirm hypotheses regarding board compensation and gender diversity, but contradict hypotheses about board size and financial background, requiring further analysis. According to hypothesis about board size, a smaller board size may lead to irrational decision-making, while an excessively large board size can result in decreased efficiency; thus, the impact of a moderately sized board size is most accurate for corporate performance assessment purposes.

Therefore, there is a basis for suspecting that the relationship between board population and company performance adheres to a quadratic pattern rather than a simple linear correlation. Consequently, the lack of significance in the OLS results indicates the necessity for further examination utilizing a quadratic model in order to accurately assess their association.

Regarding the financial background, the regression results of OLS indicate that F_BKGD indeed exerts a significant impact on corporate finance, but with a negative sign. This study posits two primary rationales for this phenomenon. Firstly, given the real-time nature of financial policies and continuous advancements in financial

knowledge, it becomes imperative to focus on executives' recent financial positions. Relying on distant periods may lead to outdated and incomplete knowledge, rendering it inadequate to adapt to the latest dynamics of capital markets and adversely affecting company performance. Secondly, it is crucial to direct attention towards specific individuals such as CEOs rather than considering all board members' financial backgrounds since it is CEO that plays pivotal roles in daily decision-making within companies. Averaging out the financial backgrounds across all individuals would yield inaccurate outcomes.

5 Conclusion

This research, conducted within China's A-share market, explores the impact of board characteristics on corporate performance. The research findings suggest that gender diversity positively impacts performance thanks to the free and inclusive atmosphere as well as the advancements in women's education. Moreover, high remuneration motivates company managers to fulfill their obligations diligently and strive for optimized shareholder benefits, therefore having an advantageous effect on company performance.

Meanwhile, given the unique characteristics of China's capital market, this study provides enumeration of financial institutions in China and confirms that board members' previous employment backgrounds in financial institutions have a significant impact on company performance. Finally, the study revealed that the linear correlation between board size and business performance is not statistically significant.

Considering the presence of irrational decision-making in smaller boards and reduced efficiency in larger boards, it is highly probable that the influence of board size upon corporate performance follows a nonlinear pattern. In future investigations, employing a quadratic model would be beneficial for further exploring this relationship.

This study investigates a novel approach to evaluating company performance by examining board characteristics, which holds significant implications for Chinese capital market investors in their assessment of companies. The four aspects proposed in this study, can also serve as guidance for listed companies to improve their board arrangements and optimize overall performance in the circumstance that ownership and management rights are separated.

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