

The Impact of Board Composition of Listed Companies on Corporate Performance

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Abstract: As a core component of the corporate governance structure, the board of directors is crucial to whether a company can make correct decisions, achieve effective risk management, and create value in a complex and ever-changing market environment. This paper takes A-share listed companies from 2012 to 2022 as research samples and conducts an empirical analysis on board composition. It is found that the diversification of the characteristics of board composition in listed companies is conducive to improving corporate performance, among which the diversification of age groups and financial backgrounds of the board have the most significant positive impact on corporate performance. The research findings of this paper provide theoretical and empirical evidence for optimizing board composition and enhancing the performance of listed companies.

Keywords: Listed Companies; Board Composition; Corporate Performance.

1. Introduction

As a core component of the corporate governance structure, the board of directors is not only responsible for formulating the company's strategic direction and supervising the implementation of decisions by the management, but also directly influences the company's operational decisions and resource allocation through the professional backgrounds, decision-making styles, and behavioral patterns of its members. Therefore, whether the board composition is optimized is crucial to a company's ability to make correct decisions, achieve effective risk management, and create value in a complex and ever-changing market environment. Meanwhile, as the cornerstone of the capital market, the rationality, professionalism, and independence of the board composition of listed companies have attracted widespread attention from investors, regulatory authorities, and the academic community. Thus, exploring the impact of board composition of listed companies on corporate performance not only holds significant theoretical value but also has prominent practical significance.

Specifically, this paper takes A-share listed companies from 2012 to 2022 as research samples, conducts an empirical analysis on the board composition, and uncovers the inherent relationship between board composition and corporate performance. It aims to provide a theoretical basis and practical guidance for listed companies to improve their governance structures and enhance governance efficiency.

2. Literature Review

The Company Law stipulates that the board of directors is elected by the shareholders' meeting and accountable to it. The shareholders' meeting acts as the principal of the directors, while the directors are agents entrusted to manage the company's affairs. Jensen (1976) [1] views the principal-agent relationship as a contractual one. Due to the separation of operational and decision-making powers in enterprises, only when top management teams achieve greater interest alignment can corporate performance be improved. In terms of previous scholarly research, theoretical studies on the

impact of top management team characteristics on corporate performance can be traced back to the 1980s. Hambrick and Mason (1984) [2] first proposed the upper echelons theory, arguing that the personal preferences and characteristics of top management team members influence enterprises' strategic choices at various stages. With the deepening of research, the revised upper echelons theory emphasizes the impact of psychological variables such as cognitive level and values on executives' behaviors, and proposes replacing demographic variables with psychological variables (e.g., cognition and behavioral tendencies) to represent a series of theoretical constructs.

Many scholars have discussed and verified the impact of top management team characteristics on corporate development and growth from various perspectives, as these characteristics affect all aspects of corporate operations. Wu Dejun and Huang Dandan (2013) [3], starting from environmental performance, found through an analysis of corporate social responsibility reports that executives' gender and long-term compensation are positively correlated with environmental performance. From the perspective of corporate innovation behaviors, Yang Xuan and Luo Fei (2016) [4] discovered that there is a non-linear "U-shaped" relationship between the average age of executives and corporate innovation behaviors in listed companies on the SME Board. Lu Xin et al. (2017) [5], in their research on the impact on investment efficiency, concluded that the average age and average tenure of the top management team are positively correlated with investment efficiency.

There have also been many in-depth studies on the impact of individual characteristics and preferences of members of corporate management teams on corporate performance, with varying perspectives. From the perspective of age characteristics, Zhu Mingqi and Zhang Fuxiang (2018) [6] found that the older the average age of the top management team, the more conducive it is to increasing R&D investment and, at the same time, to improving corporate performance. In terms of gender structure, Yan Yonghai (2014) [7] found that greater gender diversity in the board of directors can, to a certain extent, promote corporate performance. However, other scholars have drawn different conclusions regarding

gender composition. Li Jinglin and Yang Zhen (2019) [8] found that increasing the proportion of female members leads to a decrease in investment in innovative industries, thereby reducing corporate innovation performance. This is because women generally have a risk-averse psychology, so they reduce investment activities to control operational risks. Regarding educational background characteristics, Wen Fang and Hu Yuming (2009) [9], as well as Zhang Junrui et al. (2010) [10], conducted sample studies using data from different periods and types of enterprises. They found that educational level is positively correlated with corporate performance, and the educational level of members has a significant positive impact on R&D investment, among other aspects. Ke Jianglin (2006) [11], however, found that top management teams with greater differences in educational backgrounds are more likely to have disagreements during the decision-making process, and such disagreements among team members regarding the company's strategic direction and decisions will be more pronounced.

Synthesizing previous studies on how the characteristics of team members affect performance, scholars have not reached a consensus on the relationship between top management team characteristics and corporate performance. Most existing research findings focus on GEM-listed companies in emerging markets to explore the relationship between top management team characteristics and corporate performance, while there are relatively few studies on main board listed companies. This paper attempts to construct an overall diversity index of board members' characteristics to comprehensively examine the impact of the diversity of board composition on corporate performance.

3. Research Design

3.1. Sample Selection and Data Processing

Considering data availability and completeness, this paper takes A-share listed companies in China as the research sample, with the observation period set from 2012 to 2022. To ensure the uniformity and reliability of the data, companies were manually screened and excluded, including ST companies with abnormal financial data, financial and insurance companies, and those with incomplete data during the selected period. Ultimately, 1,353 observations from 123 companies were obtained for testing in the empirical model. Most of the data used in this paper were sourced from the CSMAR database and Wind database, and the main empirical research tools employed were Excel and Stata.

3.2. Variable Definition

3.2.1. Explained Variable

Return on Assets (ROA) is a key indicator for measuring the profitability of listed companies. It is closely related to a

company's profitability and asset management efficiency, and reflects a company's efficiency in generating net profits using its assets. The higher the ROA, the stronger the company's profitability and the higher the returns from investments. In practical application, ROA can be used to evaluate a company's profitability, compare the operational efficiency of companies in the same industry, measure a company's growth potential, and assess the performance of management.

This paper selects Return on Assets (ROA) as the proxy variable for measuring the corporate performance of listed companies, so as to determine corporate performance by measuring a company's profitability.

3.2.2. Explanatory Variable

Previous studies on top management team characteristics have mostly focused on age, educational background, gender, and functional background. Therefore, this paper selects age, gender, board members' concurrent positions in other enterprises, educational background, financial background, overseas background, and academic background as indicators for constructing the overall diversity of board members' characteristics, with each indicator summed up with equal weights. Among these, educational background, financial background, overseas background, and academic background are constructed with reference to the Blau index, which avoids an excessive proportion caused by an overrepresentation of a certain group under the same characteristic. The classification criteria for each type of background are based on the definitions in the CSMAR database. The formula for the Blau index is expressed as:

$$Blau = 1 - \sum P_i^2$$

P_i^2 represents the proportion of members in the i -th category among the total number of board members of the enterprise. The value of Blau ranges between 0 and 1: the closer the value is to 1, the higher the degree of diversity of the board composition in terms of this characteristic; the closer the value is to 0, the lower the degree of diversity of the board composition in terms of this characteristic.

Each indicator is summed up with equal weights to obtain the overall diversity composition index:

$$Board = Age + Gender + Dnumber + Degree + Oversea + Aca + Fin$$

3.2.3. Control Variable

Drawing on previous studies, the following firm-level control variables are selected: firm age (Bage), firm market capitalization (Cap), asset-liability ratio (Lev), ownership structure (Share), and management expense ratio (Mer).

Detailed definitions of each variable are shown in Table 1:

Table 1. Definitions of Variable Indicators

Variable Type	Variable Name		Variable Symbol	Description
Explained Variable	Return on Assets		ROA	Net profit / average total assets
Explanatory Variable	Characteristics of Board Members	Age	Age	Standard deviation of ages of board members
		Gender	Gender	Proportion of female board members
		Board Members' Concurrent Positions in Other Enterprises	Dnumber	Average number of concurrent positions held by board members in other enterprises
		Educational Background	Degree	1 = Secondary technical school or below;
				2 = Junior college;
				3 = Bachelor's degree;
				4 = Master's degree;
				5 = Doctoral degree;
				6 = Others (academic qualifications published in other forms, such as honorary doctorate, correspondence education, etc.);
				7 = MBA/EMBA
		Overseas Background	Oversea	1 = Overseas work experience;
				2 = Overseas study experience;
				3 = No overseas background
		Academic Background	Aca	1 = Teaching in colleges/universities;
				2 = Working in research institutions;
				3 = Engaged in research in associations;
4 = No academic research background				
Financial Background	Fin	1 = Regulatory authorities;		
		2 = Policy banks;		
		3 = Commercial banks;		
		4 = Insurance companies;		
		5 = Securities companies;		
		6 = Fund management companies;		
		7 = Securities registration and clearing companies;		
		8 = Futures companies;		
		9 = Investment banks;		
		10 = Trust companies;		
		11 = Investment management companies;		
		99 = No financial background		
Control Variable	Firm Age		Bage	Natural logarithm of firm establishment years
	Market Capitalization		Cap	Natural logarithm of firm market capitalization
	Asset-Liability Ratio		Lev	Total assets / total liabilities
	Ownership Structure		Share	Shareholding ratio of the largest shareholder
	Management Expense Ratio		Mer	Management expenses / operating income

4. Analysis of the Relationship between Board Composition of Listed Companies and Corporate Performance

4.1. Descriptive Statistics

After collecting and processing the data, Stata software was used for data analysis. First, a preliminary data observation was conducted through descriptive statistical analysis, with the results as shown in Table 2.

The results indicate that the Return on Assets (ROA) has a

minimum value of -1.068, a maximum value of 0.257, and a mean value of 0.037, suggesting significant differences in ROA among sample enterprises and distinct variations in performance levels across different firms. The standard deviation of the diversity of board members' characteristics is relatively large, indicating notable differences in board composition among different companies. The relatively large standard deviation of age reflects significant variations in the ages of directors among listed enterprises. Regarding the number of concurrent positions held by board members in other enterprises, the maximum is 19, the minimum is 0, with a mean of 1.721 and a standard deviation of 1.65—showing relatively larger differences compared to other indicators,

which implies disparities in directors' concurrent positions across companies. Additionally, the relatively large standard

deviation of market capitalization indicates differences in scale among listed enterprises.

Table 2. Descriptive Statistics Results

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Roa	1353	0.037	0.055	-1.068	0.257
Board	1353	1.520	0.465	0.471	5.134
Age	1353	7.331	2.450	1.581	16.061
Gender	1353	0.123	0.118	0.000	0.571
Dnumber	1353	1.721	1.650	0.000	19.000
Degree	1353	0.517	0.203	0.000	0.826
Ovesea	1353	0.206	0.210	-0.049	0.667
Aca	1353	0.478	0.191	0.000	0.747
Fin	1353	0.266	0.238	0.000	0.857
Bage	1353	2.690	0.418	0.693	3.664
Cap	1353	5.603	1.530	2.731	10.306
Lev	1353	0.462	0.187	0.057	1.003
Share	1353	0.444	0.161	0.064	0.886
Mer	1353	0.068	0.061	0.002	0.878

4.2. Overall Regression Analysis

To avoid multicollinearity, this study conducted a Variance Inflation Factor (VIF) test. Regression analysis was performed only after confirming that there was no multicollinearity issue. Table 3 shows that the mean value of the variance inflation factor (VIF) of the variables is 1.25, indicating that there is no collinearity among the variables.

Table 3. Variance Inflation Factor Test Results

Variable	VIF	1/VIF
Cap	1.66	0.602
Lev	1.50	0.666
Share	1.23	0.810
Bage	1.14	0.875
Mer	1.12	0.893
Board	1.06	0.947
Mean VIF	1.29	

The results of the Hausman test, as shown in Table 4, indicate that there are systematic differences between the estimated coefficients of the random effects model and those of the fixed effects model. Since the P-value (0.0002) is less than the significance level of 0.05, it is considered more appropriate to use the fixed effects model for regression analysis.

Table 4. Hausman Test Results

	Fixed	Random	Difference	S.E.
Board	0.0096787	0.0062015	0.0034773	0.0025181
Bage	0.0233608	0.0080529	-0.0153079	0.0044922
Cap	0.0208993	0.0099848	0.0109145	0.0028917
Lev	0.1890419	0.1583823	-0.0306596	0.0109586
Share	0.0226069	0.0097763	0.0128306	0.0165771
Mer	0.3008726	0.2535412	-0.0473314	0.0237306
Prob>chi2=0.0002				

A benchmark regression analysis was conducted on the model, with results as shown in Table 5. The regression results indicate that the independent variable—the diversity index of board members' characteristics—is significant at the 5% level, and a coefficient greater than 0 suggests that there is a positive relationship between the overall diversity of board members' characteristics and corporate performance. A diverse board composition provides enterprises with more professional skills and social experience, enabling them to enhance their information acquisition capabilities and strategic vision in the operation process. Such diversity effectively promotes the return on corporate assets and improves corporate performance.

Table 5. Overall Regression Results

Variable	ROA
Board	0.010** (0.031)
Bage	-0.023*** (0.000)
Cap	0.021*** (0.000)
Lev	-0.189*** (0.000)
Share	0.023 (0.029)
Mer	-0.301*** (0.000)
Cons	0.066** (0.011)
N	1353
R2	0.139

Note: Standard errors are in parentheses, ***p<0.01, **<0.05, *<0.1

4.3. Robustness Test

4.3.1. Exclusion of Special Samples

During the Robustness Test, considering that the sudden outbreak of the COVID-19 pandemic during 2020-2021 caused significant volatility in the global economy and financial markets, and exerted a notable impact on the operations and performance of Chinese listed companies, removing data from this period can help us eliminate the interference of these special factors, thereby more accurately evaluating the relationship between the financial background characteristics of board members and corporate performance.

After removing the data from 2020-2021, the regression results presented in Table 6 show that the coefficient of the diversity index of board members' characteristics is positive and remains significant. It can thus be concluded that the conclusion is robust.

Table 6. Exclusion of Samples from Specific Years

Variable	ROA	ROA*
Board	0.010** (0.031)	0.009* (0.076)
Bage	-0.023*** (0.000)	-0.019** (0.011)
Cap	0.021*** (0.000)	0.014*** (0.001)
Lev	-0.189*** (0.000)	-0.183*** (0.000)
Share	0.023** (0.029)	0.022 (0.363)
Mer	-0.301*** (0.000)	-0.260*** (0.000)
Cons	0.066** (0.011)	0.088*** (0.004)
N	1353	1107
R2	0.139	0.112

Note: Standard errors are in parentheses, ***p<0.01, **<0.05, *<0.1

4.3.2. Replacement of the Explained Variable

Table 7. Replacement of the Explained Variable

Variable	ROA	ROA*
Board	0.010** (0.031)	0.992** (0.024)
Bage	-0.023*** (0.000)	-3.066*** (0.000)
Cap	0.021*** (0.000)	2.495*** (0.000)
Lev	-0.189*** (0.000)	-15.005*** (0.000)
Share	0.023** (0.029)	2.772 (0.188)
Mer	-0.301*** (0.000)	-29.024*** (0.000)
Cons	0.066** (0.011)	5.387** (0.034)
N	1353	1353
R2	0.139	0.123

Note: Standard errors are in parentheses, ***p<0.01, **<0.05, *<0.1

To ensure the robustness and reliability of the previous regression results, we choose to use ROE (Return on Equity) as the explained variable to replace the original ROA (Return on Assets), thereby providing a different perspective to

evaluate corporate performance levels. The regression results, as shown in Table 7, indicate that after replacing the explained variable, the positive promotional effect of the diversity index of board members' characteristics on corporate performance remains unchanged. This confirms that the regression results and conclusions of this paper are relatively reliable.

5. Conclusions, Recommendations and Prospects

5.1. Research Conclusions

This paper conducts an empirical study on the comprehensive characteristics of board members (in terms of board composition) and the performance of listed companies by establishing a connection between the diversity index of board members' characteristics and the performance level of listed companies. The results show that the diversity of the compositional characteristics of board members in listed companies is conducive to improving the company's performance level.

Additionally, the reliability of the above conclusions can be verified through the Robustness Test. Based on these conclusions and viewpoints, effective measures can be taken to improve the board structure, thereby enhancing the own performance of Chinese listed companies.

5.2. Research Recommendations

First, rationally arrange the organization of listed companies' boards of directors. Given the positive effect of the overall characteristic diversity of board members on corporate performance, when selecting and assigning roles to board members, it is necessary to ensure that they possess professional skills and knowledge relevant to the company's business. On this basis, emphasis should be placed on the diversity of members' characteristics to build a diversified board. Focus should be laid on constructing a board structure with a multi-level age composition and diverse integration of financial backgrounds. Regular board meetings should be held to ensure sufficient communication among members, who can share information and insights, so as to better play a complementary role in business decision-making and responding to internal and external risks. This will help companies better "seize opportunities in the development stage, optimize growth in the growth stage, stabilize capabilities in the mature stage, and pursue transformation in the recession stage."

Second, balance the professionalism and backgrounds of board members. In view of the non-linear relationship between the diversity of most single characteristics of board members and performance, listed companies should establish a scientific evaluation and incentive mechanism for board members, objectively assess their contributions, and promptly track and monitor the alignment between industry trends and the capabilities of board members. They should not blindly strive to expand the diversity of board composition. Instead, in terms of factors such as gender, educational background, and functional background, they should align with the most urgent development needs of the enterprise and industry at the current stage, and balance the professionalism and backgrounds of board members. By establishing a multi-level talent pool for the enterprise, the company can maximize the advantages of its human resources, thereby facilitating adjustments to the board composition and providing reserve support for improving corporate performance.

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5.3. Future Prospects

First, as fiduciaries of shareholders, directors are responsible for managing and supervising the company's operations. A rational board structure can ensure that the board's decisions align with the best interests of shareholders and effectively protect shareholders' rights and interests. Additionally, obtaining more and more accurate measurements of board structure characteristics can better rationally guarantee the company's stable operation and healthy growth.

For future research, focus can be placed on samples of listed companies in different industries to verify the more direct and obvious effects and mechanisms of board composition in specific industries. This will provide guidance for the establishment, management, and operation of boards of directors across various industries.

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