

Research on the Influence of Corporate Governance Structure on Corporate Financial Performance

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Abstract. With the deepening of economic globalization, the topic of corporate governance has become a hot topic. Good corporate governance has a significant role in balancing the interests of all parties within the enterprise, and then improving the financial performance of enterprises. This paper studies the corporate governance data and financial data of a total of 4813 listed companies in China disclosed in the annual report of the listed companies and CSMAR database from 2015 to 2021 for seven consecutive years. The principal component analysis method is used to construct the corporate governance index, and the OLS multiple regression model is used to analyze the impact of corporate governance structure on corporate financial performance from three dimensions: ownership structure, board characteristics and management incentives. The study finds that ownership concentration, executive incentive and number of executives are significantly positively correlated with corporate financial performance. the board size and the proportion of independent directors are significantly negatively correlated with corporate financial performance; the nature of equity, equity balance, and the proportion of female directors are not significantly correlated with corporate financial performance. The research results help investors to understand the development law and future trend of corporate financial performance through corporate governance structure, which is of great significance for enterprises to improve corporate governance structure and enhance financial performance. At the level of theoretical development, the conclusions of this study promote the academic research process in related fields.

Keywords: corporate governance; financial performance; multiple regression model

1. Introduction

With the deepening of economic globalization, conflicts of interest among modern enterprises are gradually exposed in the same industry and even among different industries, and the related topics of corporate governance have also entered the vision of scholars in the field of enterprise management. The famous scholar Tricker once predicted that in the future of enterprise development, people will certainly realize the importance of corporate governance. In the 21st century, the issue of corporate governance will become a hot topic in the field of enterprise management. In today's China, with the continuous progress of reform and opening up, the corporate system of Chinese enterprises has been further improved. Shareholders are gradually separated from corporate management and replaced by management. This form of power replacement, although to some extent, improves the efficiency of enterprise management, but inevitably also led to the principal-agent problem.

The principal-agent problem is that the agent violates the principle and makes the behavior that only to meet its own utility maximization and may cause damage to the interests of the enterprise principal. There are two forms, moral hazard and adverse selection. The concrete manifestation of moral hazard is the agent's behavior, there is no problem in the legal level, only in the moral level of the client's interests are damaged. Another form of adverse selection is the early and late opportunistic behavior caused by information asymmetry widely existing between agents and clients.

In order to protect corporate interests and avoid conflicts between executives and minority shareholders, the importance of corporate governance has become increasingly prominent in large interest groups. Corporate governance is mainly to make the company's operation and decision-making more effective, and constantly aiming at the problems existing in the company's operation, take improvement measures to promote the efficiency and fairness of enterprise management, in order to balance the advantages and disadvantages, safeguard the rights and interests of various

stakeholders within the company. The contradiction between shareholders and management can be properly solved through corporate governance, which can not only maintain the profitability of enterprises, but also protect the interests of shareholders.

In the field of corporate governance, 'landscape cement' has long been famous. China Shanshui Cement Group Co., Ltd., a large national enterprise supported by the local government, completed its IPO in Hong Kong in 2008. Zhang Caikui was Chairman of Landscape Investment Co., Ltd., the largest shareholder of landscape cement. Zhang Chairman used Zhang's trust institutions to hold landscape investment shares. The total shares of only one person were as high as 81.74 %, while the shares of the other seven senior managers of landscape investment were only 18.26 %.

In 2013, two share repurchase documents were released through landscape investment. Zhang Caikui withdrew the other 7 shareholders and a total of 3939 original employees, only Zhang Caikui was left. In 2014, the Hong Kong High Court accepted the joint prosecution of 2095 former landscape employees against Zhang, which requested the dissolution of Zhang's trust relationship. In 2015, the High Court of Hong Kong made a final judgment. As a result, the total number of landscape shares and equity of employees originally held by Zhang Daizhang was custodial by the third-party agency "Ernst & Young Accounting Firm". The total proportion of landscape shares held by Zhang Daizhang was as high as 45.63 %. The proportion of Zhang's actual control of landscape cement rapidly dropped to 36.11 %, and its control of landscape cement, including Landscape Investment Co., Ltd., faces a huge crisis.

Due to the gradual reduction of control in all aspects, Zhang Caikui began his plan to introduce external assistance. In 2014, a total of 563.1 million shares were allocated to China's construction materials distribution stocks, followed by HK \$ 905 million to rapidly increase its stake in the secondary market. On the other hand, in the case of unexpected events in 2015, without notifying the original shareholders in advance, Tianrui Group quickly launched a large number of cargo sweeps in the secondary market, and bought 951 million shares of landscape investment with a total of HK \$ 6.2 billion. In one move, it surpassed Zhang Caikui, the director, and became the largest shareholder at that time. At the same time, landscape investment, as the second largest shareholder, split seriously, forming a group of former directors Zhang Caikui, Zhang Bin father and son, the other group led by six former landscape executives and more than 2,000 employees of the two factions of confrontation.

Tianrui Group as the largest shareholder, has three times proposed to convene a general meeting of shareholders, Zhang Caikui father and son repeatedly blocked invalid, even if submitted to the court company's liquidation petition, also unable to return to heaven. The shareholders' meeting of Shanshui Cement was finally held in Hong Kong on schedule in December 2015. At the meeting, it was decided that all the original board of directors would leave, and the new directors were elected by Li Liufa, the then director of Tianrui Group. This change marks that after several board meetings, Tianrui Group actually obtained the complete control of the board of directors of landscape cement, and Zhang Caikui's father and son who had long been in charge of landscape cement for 26 years were forced to withdraw.

But the dispute over landscape cement has not ended after the meeting. After December 7, the new board of directors began to take over the landscape cement plants all over the country, but Zhang Caikui and other people strongly hinder, by detaining the company's important relevant documents, such as enterprise seal, books and other ways, directly lead to the daily bidding and procurement of the factory can not be normal. The new leadership initially tried to seek the support of the local government, but asking for internal disputes involving mountains and rivers, the local government could not help but advise companies to seek judicial intervention. In terms of the Bureau of Industry and Commerce, the board of directors also encountered obstacles that could not make changes to shareholders. Conflicts between the two sides continued. At this time, the landscape cement crisis was in full swing.

Through the analysis of the 2012-2016 annual reports of listed companies in landscape cement, it can be clearly reflected that the profitability indicators of landscape cement enterprises show a serious downward trend during this period. The decline was particularly obvious between 2014 and 2015,

indicating that the profitability of the company was in a state of gradual decline during this period, and the operating conditions were not good. Despite a slow rebound in 2016, it is far less than the prewar state of control struggle.

Throughout the equity merger and acquisition events of the whole landscape cement spanning several years, it can reflect some new trends and new problems in the corporate governance structure of many similar listed companies. Listed companies have two-sided characteristics, on the one hand, as a public company, can enjoy more convenient financing channels than other enterprises ; on the other hand, it is more likely to attract risky, lustful outside investors.

From the analysis of corporate governance structure, before the dispute of landscape cement enterprises, the original equity structure dispersion is too high, although the management at that time quickly aware of the possible problems, but the formulation of the response is hurried and unfair, this measure is the direct cause of a series of subsequent internal problems, coupled with the overall value of the landscape cement market was seriously underestimated, directly induced a large number of external investors rush into. Under the competition mechanism of the free market and the corporate governance structure, all listed companies should take into account the common interests of minority shareholders, corporate management, other minority shareholders and even relevant creditors, so as to avoid the occurrence of principal-agent problem.

In the past many studies, the vast majority of only from a single dimension of corporate governance structure to explore the impact of corporate financial performance factors, so it can not systematically measure the main problems of enterprises. In fact, for an enterprise, the various dimensions of corporate governance structure are not completely isolated, but have mutual influence. If we only consider the impact of a single-dimensional corporate governance structure on corporate financial performance, it is difficult to explain the contradiction between corporate governance and financial performance, nor can we fundamentally consider the degree of its impact. Therefore, this study expects to measure the influence of different factors in each dimension of corporate governance structure through multi-dimensional relationship system, and comprehensively consider corporate financial performance. In the research process, this study uses mixed OLS data to construct a regression model of the impact of corporate governance structure on corporate financial performance, and verifies the influencing factors of corporate financial performance in multiple dimensions, in order to make marginal contributions to the relevant academic fields of corporate governance.

From a realistic perspective, this study mainly discusses the impact of the three dimensions of corporate governance structure on corporate financial performance. Starting from the research results, it puts forward feasible paths and suggestions for improving corporate governance structure, and steadily improves the internal governance structure of the company. By strengthening the corporate governance structure, consolidate the development basis of listed companies. Through the analysis of the relationship between corporate governance structure and corporate financial performance, this study puts forward constructive suggestions on both management and shareholders. For the management, it can better make decisions on related affairs of company management and prevent possible risks ; for shareholders, it is of great practical significance to further realize communication with management and reduce the occurrence of principal-agent problems.

2. Literature review

2.1 Definition and Measurement of Corporate Governance

Corporate governance is a derivative product of modern enterprises. With the modernization of enterprises, the definition of corporate governance is gradually clear. Wu Jinglian, Lin Yifu, Li Weian, Zhang Weiying and Zhu Changchun have made clear definitions of corporate governance.

Wu Jinglian proposed that corporate governance structure is actually formed by the three together an organizational structure, the three are the company ' s owners, the company ' s board of directors and internal senior management (management). The process of corporate governance structure optimization is actually the process of clarifying the respective functions and rights and obligations

of the three (shareholders, board of directors and management), which are inseparable and mutually restricted. When expounding the significance of economic market environment, Lin Yifu involved the concept of corporate governance. Lin Yifu believes that each enterprise has internal governance structure, and this structure refers to the company owners (shareholders) of the enterprise operation management and financial performance supervision process. At the same time, Lin Yifu also pointed out that under realistic conditions, the definition of corporate governance structure actually refers to the internal management structure or control structure of the company.

Based on Wu Jinglian 's and Lin Yifu 's viewpoints, this study measures corporate governance from three dimensions : ownership structure, board characteristics and management incentives. There are eight indicators, including whether the nature of equity is state-owned (OP), the shareholding ratio of the largest shareholder (Ownership), the ratio of the shareholding ratio of the largest shareholder to the shareholding ratio of the second largest shareholder (ERR), the number of the board of directors (SizeD), the ratio of the number of independent directors to the number of the board of directors (LnD), the ratio of the number of female directors to the number of the board of directors (PFD), the total compensation of the top three senior managers (Wage), and the number of senior managers (NE).

2.2 Definition and Measurement of Financial Performance

Compared with corporate governance, the academic definition of financial performance is more uniform, generally believe that financial performance refers to the final business performance after the implementation of the strategy. Financial performance can objectively and comprehensively reflect the performance results such as enterprise cost control, enterprise asset operation, and allocation of capital sources, including the return on equity of shareholders.

Tobin Q value is obtained from the present value of the company 's market value than the company 's replacement cost, which can better reflect the present value of enterprise market value and future growth potential. If Tobin Q value is greater than 1, it shows that the company 's replacement cost is less than the present value of the company 's market value, such enterprises can create positive value for the society ; when the Tobin Q value is less than 1, it shows that enterprises cannot make good use of social resources, such enterprises may not create any value for society. However, due to the incomplete coverage of China 's capital market liquidity and the continuous issuance of new shares or distribution stocks, the capital cost is difficult to calculate, so the Tobin Q value cannot accurately measure the financial performance of enterprises.

In addition, some scholars use economic value added (EVA) and sales (profit) growth rate to replace the traditional indicators, such as equity returns, return on total assets and earnings per share. With the increasing number of enterprises using economic value added (EVA) to evaluate the profitability of enterprises, the net income of capital and the value-added status of capital of each enterprise have become more comprehensive. However, the calculation method of EVA index remains to be discussed, and the data are difficult to obtain, which is rarely used in empirical research.

The vast majority of scholars choose comprehensive financial indicators to systematically measure the financial performance of enterprises and analyze their management capabilities accordingly. Commonly used comprehensive indicators include enterprise development capacity, profitability and solvency. Among them, the return on assets (ROA) is the most commonly used, which can not only objectively reflect the effect of enterprise operation and management, but also intuitively show the profitability of an enterprise 's total assets and the ability to successfully convert its assets into net profit. Therefore, this study uses the return on assets (ROA) as the explained variable to measure the financial performance of enterprises.

2.3 Relationship between the two

The fundamental of corporate governance is to balance the rights and obligations between corporate owners (shareholders) and corporate managers (management). At the present stage, corporate governance is mostly carried out from the three dimensions of ownership structure, board

characteristics and management incentives. Through reasonable and effective regulatory constraints, a series of contractual arrangements are formed to achieve scientific and reasonable business decisions and value added. This study analyzes corporate governance from three dimensions : ownership structure, board characteristics and management incentives, and selects more mature principal-agent theory and stakeholder theory as the theoretical basis.

Before analyzing the impact of corporate governance structure on corporate financial performance from three dimensions of ownership structure, board characteristics and management incentives, this study analyzes the overall relationship between corporate governance and financial performance by referring to the corporate governance index constructed by Li Weian and Bai Chongen according to the information disclosure of Chinese listed companies. Compared with other corporate governance indicators, the indicators of scholars such as Bai are more comprehensive and more in line with the actual situation of listed companies in China. Therefore, many literatures refer to the indicators of scholars such as Bai when studying corporate governance. Based on the above analysis, this study puts forward the general assumption : corporate governance index has a significant impact on corporate financial performance.

2.3.1 Hypothesis of the influence of ownership structure on corporate financial performance

By reading a large number of literature, this study finds that the current research on the dimension of ownership structure by scholars in China and abroad mainly focuses on the two perspectives of ownership concentration and ownership balance degree. Therefore, the focus of this study is also on the impact of ownership concentration and ownership balance degree on financial performance. In addition, this paper will study the impact of ownership nature on corporate financial performance.

(1) Equity nature

As a socialist country, our market economy environment is different. According to the nature of enterprise equity, enterprises can be divided into state-owned enterprises and non-state-owned enterprises. State-owned enterprises are state-owned enterprises whose management rights are controlled by state-owned assets management institutions. Because of the state-owned property rights, it is easy to cause the management rights are not effectively restricted, and the operation of the whole company lacks the supervision and incentive, which leads to the imbalance of internal talent control. In this case, once the management makes management decisions for private interests, it is easy to damage the country ' s direct interests, make the profitability of enterprises decline, and reduce the financial performance of enterprises.

(2) Ownership concentration

Ownership concentration is an important part of the ownership structure. While reflecting the stability of enterprises, ownership concentration also intuitively shows the equity distribution of an enterprise. According to the size of equity, shareholders of enterprises are usually divided into large shareholders and small and medium-sized shareholders. Because the size of equity is quite different, large shareholders have obvious regulatory control over small and medium-sized shareholders, while small and medium-sized shareholders can only exercise relatively limited power. Financial performance is inseparable from profitability, and the company ' s daily management activities are usually supervised by the company ' s controlling shareholders and major shareholders, so profitability is closely related to the relationship between the company ' s controlling shareholders and some major shareholders. And a large number of small and medium-sized shareholders shareholding ratio is low, the company daily business activities information acquisition is relatively limited, lack of motivation to participate in the daily operation of the company, can not effectively supervise and manage the management. Therefore, the more concentrated equity, the more obvious the supervision effect on executives, the more able to improve corporate financial performance.

In the empirical study of Liu Bin and Chen Hong (2017), with the financial data of 28 manufacturing enterprises, it is found that ownership concentration has a significant positive effect on the financial performance of the company. Happy and Liu Haoli (2018) analyzed the data of 205 small and micro enterprises in the study sample over the years, and selected the net asset return (ROE) of these enterprises as the measurement index. The conclusion was also that ownership concentration

was positively correlated with corporate performance. Feng and Hai (2018) studied listed companies in the domestic manufacturing industry, and the data analysis results showed that there was a positive correlation between the two. Contrary to the above conclusions, Ma Hui and Jin Hao (2007) study and analyze the data of listed companies, the results show that ownership concentration has a negative impact on the company ' s financial performance. Qin Yafei, Gao Hongxian and Tian Guoshuang (2019) used the net assets of many enterprises in the research sample as a measure to reflect financial performance, and the results also showed a negative correlation between the two.

(3) Equity balance degree

In most enterprises, the control of the company belongs to several major shareholders. In this case, a number of major shareholders in order to make any one shareholder can not be dictatorship, equity checks and balances came into being. Equity balance is to balance the rights of major shareholders through the rights of major shareholders other than major shareholders, aimed at inhibiting major shareholders to do harm to the interests of the company, and can also form mutual supervision between major shareholders.

About the financial performance of the enterprise is affected by the company ' s equity balance degree, the relevant scholars ' research conclusions are both positive role in promoting, that is, the higher the equity balance degree of the enterprise, the better the financial performance of the company. However, this paper argues that with the increase of equity balance, the controlling shareholder ' s control over the enterprise will decline. The motivation of public participation in corporate management activities and the diligence of controlling shareholders increase with the increase of equity balance. According to the principal-agent theory, weakening the control rights of controlling shareholders can easily lead to the fact that the control rights of the company are actually controlled by the company ' s management, which in turn leads to a series of principal-agent problems, and finally the financial performance of the company declines.

Based on the above analysis, this study proposes hypothesis1 : Ownership structure has a significant impact on corporate financial performance. Specifically, there are three points : equity state-ownedness has a negative correlation with corporate financial performance ; ownership concentration has a positive correlation with corporate financial performance ; equity balance has a negative correlation with corporate financial performance.

2.3.2 Hypothesis of the impact of board characteristics on corporate financial performance

By reading a large number of literature, this study finds that in the study of the impact of board characteristics on corporate financial performance, scholars mainly analyze it from the perspectives of board size and the proportion of independent directors. Therefore, this study also covers the impact of board size and the proportion of independent directors on financial performance. At the same time, the impact of the proportion of new female directors on corporate financial performance in this study aims to achieve the marginal contribution of corporate governance academic research from the dimension of board characteristics.

(4) Board size

Board size is one of the main factors affecting corporate financial performance. From the perspective of the operating efficiency of the board, with the continuous expansion of the board size, the difficulty of coordination and communication between different members increases, resulting in the gradual decline of the overall operating efficiency of the board, and ultimately leading to its decision-making may not be scientific. Therefore, the small scale of the board of directors can theoretically help to unite the originally dispersed members, strengthen the two-way communication between the enterprise management and the board of directors, more accurately convey the wishes of shareholders to the management, improve the supervision ability of the management, and ensure that the interests of the company are always synchronized with the interests of shareholders.

In the study of Zhang, Cheng and Liu (2015), the data of listed companies in Shenzhen and Shanghai from 2007 to 2014 are analyzed. The research data show that the board size has a certain positive effect on the financial performance of the company. Before this, Shao Jing (2012) also through empirical analysis of a number of listed companies to get a positive correlation between the

two conclusions. Contrary to the above results, Pablo et al. (2015) analyzed the financial data of listed companies in their research samples for several consecutive years. The results showed that there was a significant negative correlation between the financial performance of the company and the size of the board of directors. (2020) took the data of several listed companies in the same industry for four consecutive years as the research samples, and also found the conclusion that the two are negatively correlated. In addition, Zhang (2019) selected the data of 54 retail enterprises as samples, conducted factor analysis for each financial indicator, and used comprehensive indicators to measure corporate financial performance. The results showed that the size of the corporate board of directors had no significant correlation with financial performance. Before this, Kamal, Jusoff (2014) through nearly half a year of follow-up study, also concluded that the size of the board of directors and corporate financial performance correlation is low.

(5) Proportion of independent directors

Independent directors are characterized by strong independence and professionalism, which are significantly different from other directors. The so-called independence, namely independent directors in the actual work, is not affected by other shareholders or enterprises, can make independent judgments ; the so-called professionalism, that is, independent directors are very familiar with professional knowledge in the field of laws and regulations and management, can use their professional skills to supervise the decision-making of company executives, and then safeguard the interests of the company and shareholders. The existence of independent directors helps to put forward opinions and suggestions for the company ' s decision-making from the independent position of the third party, and better achieve the goal of mutual benefit and win-win between the company and shareholders.

When studying the impact of the proportion of independent directors of enterprises, Geoffrey and Gavin (2013) found that the proportion of independent directors of enterprises has a positive effect on financial performance. Wang (2018) also showed a positive correlation between the two through empirical research on sample enterprises. Contrary to the above conclusions, Zhang Yanming, Liu Duo and Cheng Zechuan (2015) collected data of ' oil industry ' listed companies in Shenzhen and Shanghai from 2007 to 2014, and used their return on net assets as a measure to obtain the conclusion that there is a negative correlation between the proportion of independent directors and corporate financial performance. Before that, Chen Li (2013) selected the return on assets of different sample enterprises to measure financial performance, and the results were also negatively correlated. In addition, Zhang (2012) selected some listed companies in the “ basic chemicals manufacturing industry ” from 2006 to 2010 as research samples, and the analysis results showed that the proportion of independent directors of enterprises had no significant influence on financial performance. Before that, Black and Bhagat (2002) also studied the correlation between the proportion of independent directors and financial performance, and found that the correlation between the two was not obvious.

(6) The fraction of women directors

In recent years, with the improvement of women 's social status, the proportion of women in the directors of listed companies has also increased. According to Guo Lishuang (2011) ' Introduction to Women Management ', women are different from men in terms of management style and decision-making style. In enterprise management, different management styles can create different working atmospheres, and provide more forms of protection for employees ' psychological needs, thereby promoting the financial performance of enterprises.

Based on the above analysis, this study proposes hypothesis2 : Board characteristics have a significant impact on corporate financial performance. Specific performance lies in three points : the size of the board of directors for corporate financial performance has a negative correlation ; the proportion of independent directors has a positive correlation with corporate financial performance ; the proportion of female directors has a positive correlation with corporate financial performance.

2.3.3 Hypothesis of the impact of management incentives on corporate financial performance

By reading a lot of literature, this study found that domestic and foreign scholars in the management incentive dimension research, mostly concentrated in the perspective of executive

compensation, so the impact of executive compensation level on corporate financial performance is also the focus of this study. In addition, this study also studies the impact of the number of executives on corporate financial performance, aiming to make marginal contributions from the management incentive dimension. In previous studies, most scholars agree that management incentives have a positive impact on corporate financial performance, and this conclusion has basically become an academic consensus in related fields.

(7) Executive incentive

Incentive is an indispensable and important part of enterprise human resource management, which includes not only material incentives based on fixed salary, performance bonus and employee benefits, but also non-material incentives such as job promotion and related job training. For material incentives, performance bonus is positively correlated with the company's profits, so compensation incentives can promote the enthusiasm of executives to improve corporate financial performance to a certain extent, and then promote corporate financial performance. Equity incentive is different from short-term salary incentive, which is a long-term effective incentive for executives. The purpose of equity incentive is to retain people with specific professional skills in enterprises for a long time, achieve long-term strategic cooperation, and then optimize the financial performance of enterprises.

Kevin JSigler (2011) conducts a joint analysis of CEO compensation and corporate financial performance of 200 enterprises in the United States. The results show that CEO compensation has a significant positive effect on corporate financial performance. In the empirical study of Yi Xiuqin and Liu Wei (2020), the total return on assets (ROA) of sample companies is selected as the index to measure financial performance. The results show that the salary of enterprise executives or the equity incentive of enterprise executives have a significant positive effect on financial performance.

Throughout a large number of existing research at home and abroad, this study found that most of the analysis of the relationship between management incentives and corporate financial performance, the conclusions are positively correlated. However, this study believes that within a certain range, reasonable incentives for the management can indeed improve the company's financial performance. However, if the incentives are excessive, it may cause psychological dissonance among subordinates, resulting in low work efficiency and counterproductive effect. Therefore, in order to improve the financial performance of enterprises, we should formulate appropriate internal incentive mechanism. On the one hand, it can fully mobilize the enthusiasm of management, and on the other hand, it can keep the enthusiasm of subordinates less affected.

(8) Number of executives

Managerial size is closely related to managerial incentives. If the total incentive is fixed, the incentive received by each manager is negatively correlated with the number of executives. On the other hand, with the increase of the number of incentives, the number of managers with high enthusiasm will have a positive impact on the overall management of enterprises. Therefore, this study selects the number of executives as an indicator to explore its relationship with corporate financial performance.

Based on the above analysis, this study proposes hypothesis 3 : management incentives have a significant impact on corporate financial performance. Specific performance lies in two points : executive incentive for corporate financial performance has a positive correlation ; the number of executives has a positive correlation with corporate financial performance.

Through sorting out and summarizing the existing literature, we find that there are some differences in the research on corporate governance and corporate financial performance, and it is difficult to reach an agreement. Throughout the domestic and foreign research, previous scholars mainly analyze the impact of corporate governance structure on corporate financial performance from the three dimensions of ownership structure, board characteristics and management incentives. This study summarizes the previous views, aiming to explore its inherent laws and lay the foundation for further research.

(1) Equity structure dimension. Domestic and foreign scholars' research on the dimension of ownership structure mainly focuses on the degree of ownership concentration and equity balance,

among which the research on ownership concentration is quite different, and the conclusions of positive correlation and negative correlation are widespread. The conclusion of equity balance degree is relatively uniform, most scholars believe that equity balance degree has a positive effect on corporate financial performance. At the same time, social background, economic background and capital market factors will also affect the performance of enterprises.

(2) Board characteristics dimension. Scholars in China and abroad have the most disputes about the impact of board characteristics on corporate financial performance. Most studies have studied the impact of board size and the proportion of independent directors on corporate financial performance from two perspectives. Whether from the perspective of the size of the board of directors or from the perspective of the proportion of independent directors, throughout the research results of previous scholars, three different conclusions of positive correlation, negative correlation or no significant indigenous correlation coexist. In this regard, this study will further refine the indicators, such as the proportion of female directors, to clarify the effect of board characteristics on corporate financial performance.

(3) Management incentive dimension. In the dimension of management incentive, the views of scholars at home and abroad are relatively uniform. It is generally believed that there is a significant positive correlation between management compensation and corporate financial performance. Principal-agent problem is an embodiment of professional manager problem. Starting from the principal-agent problem and the characteristics of management salary system, the more perfect the management salary incentive system, the more outstanding its financial performance. However, this study believes that management incentives have a positive impact on corporate financial performance to a certain extent, and once it exceeds a certain threshold, its impact may decrease or even show a negative growth trend. Therefore, this study adds the number of executives to analyze the impact of different levels of management incentives on corporate financial performance.

Based on the above analysis, this study finds that the existing research at home and abroad focuses more on the impact of a single dimension of corporate governance on corporate financial performance, and there is an interaction between the indicators of modern corporate governance structure that cannot be ignored. If only considering the impact of a specific dimension of corporate governance on corporate financial performance, the research results may deviate from the actual situation, which leads to inaccurate results of the impact of corporate governance structure on corporate financial performance. Accordingly, in order to better study the impact of corporate governance structure on corporate financial performance, this study combines OLS model and more mature theoretical basis, selects three dimensions of corporate governance structure equity structure, board characteristics, management incentives to build a research model, comprehensively and systematically studies the impact of corporate governance structure on corporate financial performance.

3. Variables and Model Design

3.1 Sample description

This study conducts a series of exploratory studies on whether the three dimensions of ownership structure, board characteristics and management incentives in corporate governance structure can affect the financial performance of enterprises. The sample includes a total of 4813 listed companies in China from 2015 to 2021 for seven consecutive years of corporate governance data and financial data from the annual report of listed companies and CSMAR database. In order to enhance the universality of the study, this study preliminarily eliminated the collected data and screened them according to the following screening rules.

(1) In order to make the data reflect the general law of the impact of corporate governance structure on the financial performance of enterprises, this study adopts elimination measures for 275 enterprises with continuous losses, unfinished equity reform or delisting risk, including S enterprises that have not yet completed or completed equity reform, ST enterprises that have lost in two consecutive accounting years, SST enterprises that have lost in two consecutive accounting years and have not

completed equity reform, * ST enterprises that have lost in three consecutive accounting years and have delisting risk, S * ST enterprises that have lost in three consecutive accounting years and have carried out delisting warning or unfinished equity reform, and NST enterprises that have resumed listing after equity reform or reorganization.

(2) Since there is a small amount of missing data in CSMAR database, this study supplements the data after consulting the annual report of listed companies, but there is still a small amount of missing data. In order to prevent these missing data from interfering with the analysis results of the whole model, this study will be used as an explanatory variable of return on assets (ROA), as well as explanatory variables of ownership concentration, ownership nature, equity checks and balances, board size, the proportion of independent directors, the proportion of female directors, executive incentives, the number of executives, and control variables of enterprise size, industry and other indicators there is no disclosure of any index of enterprise data to eliminate.

3.2 Variable Selection and Description

3.2.1 Variable being explained

Compared with economic value added (EVA), the advantage of return on assets (ROA) is that it can comprehensively measure corporate financial performance, so that corporate financial performance can be more systematically reflected. Compared with its sister index of return on equity (ROE), the advantage of return on assets (ROA) is that it can fully reflect the return of all equity and debt funds of the enterprises studied. For listed companies, to a large extent dependent on debt management, so the contribution of creditor ' s rights funds to corporate financial performance into the overall research object is necessary. Second, consider financial leverage. Financial performance is closely related to the mode of industry development. If the industry characteristics belong to the continuous use of high leverage to obtain high returns, the sustainability of high leverage and whether it will have a risk to the enterprise operation are very important for the financial performance of enterprises. Therefore, this study selects return on assets (ROA) (unit %) as the explained variable, detailed in table 2 variable table.

3.2.2 Explanatory variables

This study draws on the method of constructing corporate governance index by Bai et al., and selects eight variables related to corporate governance according to the corporate governance data of 4813 listed companies in China disclosed in the annual report of listed companies and CSMAR database from 2015 to 2021. It includes whether the nature of equity is state-owned (OP), the shareholding ratio of the largest shareholder (Ownership), the ratio of the shareholding ratio of the largest shareholder to the shareholding ratio of the second largest shareholder (ERR), the number of the board of directors (SizeD), the ratio of the number of independent directors to the number of the board of directors (LnD), the ratio of the number of female directors to the number of the board of directors (PFD), the total compensation of the top three senior managers (Wage), and the number of senior managers (NE). In the construction of corporate governance index, this study uses principal component analysis (PCA), after controlling the fixed effect of the year, by looking for the linear combination of the above eight variables, to maximize the description of the change of each variable, the first principal component as an index reflecting the level of corporate governance.

Table 1. Principal component analysis

	Component		
	1	2	3
OP	-.376	.559	-.386
Ownership	.172	.793	.212
ERR	-.303	.709	.284
SizeD	-.867	-.070	-.120
LnD	.567	.138	.131

PFD	.317	-.136	.694
Wage	.873	.122	-.206
NE	.670	.129	-.469
Extraction method: principal component analysis.			
a. Three components were extracted.			

As shown in Table 1, this study constructs the corporate governance index (CGI). Three principal components are extracted through the linear combination of eight variables, namely, whether the nature of equity is state-owned (OP), the shareholding ratio of the largest shareholder (Ownership), the ratio of the largest shareholder to the shareholding ratio of the second largest shareholder (ERR), the number of the board of directors (SizeD), the ratio of the number of independent directors to the number of the board of directors (LnD), the ratio of the number of female directors to the number of the board of directors (PFD), the total compensation of the top three senior managers (Wage), and the number of senior managers (NE). The first principal component is used as an index reflecting the level of corporate governance, as shown below.

$$\begin{aligned}
 CGI = & -0.376OP + 0.172Ownership \\
 & -0.303ERR - 0.867SizeD + 0.567LnD \\
 & + 0.317PFD + 0.873Wage + 0.670NE
 \end{aligned}
 \tag{1}$$

This study explores the impact of corporate governance structure on corporate financial performance from three dimensions of ownership structure, board characteristics and management incentives. In the dimension of ownership structure, there are three explanatory variables : ownership nature, ownership concentration and ownership balance. In the dimension of board characteristics, there are three explanatory variables : board size, proportion of independent directors and proportion of female directors. Managerial incentive dimension is divided into executive incentive, executive number of two explanatory variables.

(1) Ownership structure dimension

According to previous studies on the dimension of ownership structure in corporate governance, this study reasonably believes that corporate financial performance will be affected by ownership structure, which is embodied in three aspects : ownership nature, ownership concentration and ownership balance. Firstly, this study divides the nature of equity into state-owned enterprises and non-state-owned enterprises. State-owned enterprises are defined as 1, and non-state-owned enterprises are defined as 0. Secondly, this study uses the largest shareholder equity ratio (unit is %) as a measure of ownership concentration. Again, this study uses the ratio of the largest shareholder equity ratio and the second largest shareholder equity ratio to calculate equity balance. The three measurement indicators of the ownership structure dimension are shown in Table 2.

(2) Dimensions of Board Characteristics

According to previous studies on board characteristics in the field of corporate governance, this study reasonably believes that corporate financial performance will be affected by board characteristics, which is embodied in three aspects : board size, proportion of independent directors and proportion of female directors. First of all, this study uses the number of directors of enterprises to define the size of the board of directors. Secondly, this study uses the ratio of the number of independent directors and the number of directors (unit is %) to calculate the proportion of independent directors. Thirdly, this study uses the ratio of the number of female directors to the number of directors (unit : %) to calculate the proportion of female directors. The three measurement indicators of the board characteristic dimension are shown in Table 2.

(3) Management incentive dimension

According to previous studies on the management incentive dimension in the field of corporate governance, this study reasonably believes that corporate financial performance will be affected by management incentive, which is manifested in two aspects : executive incentive and the number of executives. Firstly, this study uses the total compensation of top three executives (taking natural logarithm) to measure executive incentive. Secondly, the number of senior managers to measure the number of executives. Two measurement indicators of management incentive dimension are detailed in table 2 variable table.

3.2.3 Control variable

According to the previous research results in the field of corporate governance, the control variables used in this study are enterprise size and industry. On the one hand, this study refers to the practice of most academic research at this stage, and takes the natural logarithm of the total assets of enterprises to measure the scale of enterprises. Referring to a large number of previous research results, this study believes that there is a positive correlation between the scale of control variables and corporate financial performance. On the other hand, this study divides the sample enterprises into six types : real estate, finance, public utilities, industry, commerce and others, referring to the ' industry classification and company code A table ' stipulated by the state. Therefore, five dummy variables are set up to indicate whether the sample enterprises are real estate, industry, public utilities, finance and commerce enterprises, if so 1, if not 0. The two control variables are detailed in Table 2 variable table. Because of the particularity of the virtual variables of the industry index, the table does not show its correlation.

Table 2. Variable table

Variable properties	classification	Variable name	sign	definition	correlation
variable being explained	financial performance	return on assets	ROA	Return on assets (%)	
	corporate governance index	corporate governance index	CGI	The first principal component extracted based on principal component analysis	+
explanatory variables	ownership structure	equity nature	OP	State enterprises 1, non-state enterprises 0	-
		ownership concentration	Ownership	The proportion of the largest shareholder (%)	+
		equity balance degree	ERR	The ratio of the largest shareholder to the second largest shareholder	-
	board characteristics	board size	SizeD	Number of directors	-
		proportion of independent directors	LnD	Number of independent directors /	+

control variable		the fraction of women directors	PFD	number of directors (%)	+
				Number of female directors / number of directors (%)	
	management incentive	executive incentive	Wage	Natural logarithm of total remuneration of top three executives	+
		Number of executives	NE	Number of executives	+
	size of enterprise	size of enterprise	LnA	Natural logarithm of total assets of enterprises	+
Industry	Industry	Industry	For real estate, industry, utilities, finance, business, if so 1, if not 0		

3.3 Model design

This study uses panel data, divided into the listed companies, each year two dimensions, build OLS multiple regression model. The model selects the return on assets (ROA) as the explained variable, selects the nature of equity, ownership concentration, equity balance degree, board size, the proportion of female directors, the proportion of independent directors, executive incentive, the number of executives as explanatory variables, and selects the size of the enterprise and its industry as the control variable.

$$\begin{aligned}
 ROA = & \alpha_0 + \alpha_1 \cdot OP_{(i,t)} + \alpha_2 \cdot Ownership_{(i,t)} + \alpha_3 \cdot ERR_{(i,t)} + \alpha_4 \cdot SizeD_{(i,t)} \\
 & + \alpha_5 \cdot LnD_{(i,t)} + \alpha_6 \cdot PFD_{(i,t)} + \alpha_7 \cdot Wage_{(i,t)} + \alpha_8 \cdot NE_{(i,t)} \\
 & + \beta_0 \cdot LnA_{(i,t)} + \beta_1 \cdot Industry_{real\ estate} + \beta_2 \cdot Industry_{industry} \\
 & + \beta_3 \cdot Industry_{Public\ utilities} + \beta_4 \cdot Industry_{finance} + \beta_5 \cdot Industry_{Business} + \varepsilon
 \end{aligned} \tag{2}$$

Where ROA represents the return on assets ; OP represents the nature of equity, state-owned enterprises for 1, non-state-owned enterprises for 0 ; Ownership concentration ; ERR is equity balance ; SizeD is board size ; LnD is the proportion of independent directors ; PFD is the proportion of female directors ; Wage is executive incentive ; NE is the number of executives ; LnA is enterprise size ; industry real estate is whether the real estate industry, is 1, not 0 ; industry is whether the industry is an industrial industry, is 1, not 0 ; whether Industry Public utilities are public utilities is 1, not 0 ; industry finance is whether the financial industry, is 1, not 0 ; industry Business is business or not, is 1, not 0.

4. Empirical results and analysis

4.1 Descriptive statistic

Table 3. Descriptive statistic

Variable	Obs	Mean	Std.Dev.	Min	Max
ROA	4813,7	3.38	24.79	-2960.88	744.61
OP	4813,7	0.32	0.47	0.00	1.00
Ownership	4813,7	34.13	15.17	0.29	99.00
ERR	4813,7	7.71	16.01	1.00	550.07
SizeD	4813,7	8.46	1.76	1.00	19.00
LnD	4813,7	37.60	5.70	10.00	100.00
PFD	4813,7	16.12	13.53	0.00	80.00
Wage	4813,7	14.60	0.73	3.96	18.20
NE	4813,7	6.32	2.38	3.00	24.00
LnA	4813,7	22.31	1.55	15.98	31.19
real estate	4813,7	0.05	0.22	0.00	1.00
Industry	4813,7	0.68	0.47	0.00	1.00
Public utilities	4813,7	0.17	0.38	0.00	1.00
finance	4813,7	0.03	0.17	0.00	1.00
business	4813,7	0.05	0.21	0.00	1.00

This study conducts descriptive statistical analysis of the data used to explore whether the three dimensions of corporate governance equity structure, board characteristics and management incentives will affect corporate financial performance, and quantitatively analyze the impact of various variables on corporate financial performance. As shown in Table 3, ROA (return on assets), as an explained variable, can effectively measure corporate financial performance. Its minimum value is – 2960.88 %, the maximum value is 744.61 %, the average value is 3.38 %, and the standard deviation is 24.79 %. It shows that the ROA (Return on Assets) of listed companies in China is generally stable between 20 % and 30 %, and most of the enterprises with negative ROA (Return on Assets) can turn losses into profits within two years, and the overall financial performance shows a good development trend.

4.1.1 Descriptive analysis of equity structure dimension

In the equity structure dimension, this study set OP (equity nature), ownership (ownership concentration), ERR (equity balance) three explanatory variables. Based on previous studies, this study sets OP (equity nature) as a dummy variable, OP = 1 for state-owned enterprises and OP = 0 for non-state-owned enterprises. As table 3 shows, the average OP is 0.32, indicating that there are nearly one third of state-owned enterprises in China 's listed companies, about half of non-state-owned enterprises.

Based on previous studies, this study uses the shareholding ratio of the largest shareholder to represent ownership (ownership concentration). As shown in table 3, the average value of ownership (ownership concentration) is 34.13 %, and the standard deviation is 15.17 %, indicating that the overall level of shareholding ratio of the largest shareholder in China 's listed companies is about one third, that is, there is a veto right. Therefore, nearly half of the largest shareholders can prevent the management from making decisions that damage their own interests to some extent.

Based on previous studies, this study uses the ratio of the shareholding ratio of the largest shareholder to the shareholding ratio of the second largest shareholder to represent ERR (equity balance). As shown in table 3, the average ERR (equity balance degree) is 7.71, and the standard deviation is 16.01, indicating that nearly half of the largest shareholders of listed companies in China have more than 7 times the shareholding ratio of the second largest shareholder. The disparity in

shareholding ratio directly leads to the disparity in corporate control, which in turn leads to the principal-agent problem between large and small shareholders.

4.1.2 Descriptive Analysis of Board Characteristics

In the dimension of board characteristics, this study sets three explanatory variables : SizeD (board size), LnD (proportion of independent directors) and PFD (proportion of female directors). Among them, SizeD (board size) is characterized by the number of directors in the board of directors, as shown in Table 3. The minimum value is 1, the maximum value is 19, the average value is 8.46, and the standard deviation is 1.76. It shows that the board of directors of listed companies in China is small and stable at 7-10 people.

Independent directors have professional scientific judgment, and can put forward diversified solutions for enterprise management. As shown in table 3, the average value of LnD (the proportion of independent directors) is 37.60 %, and the standard deviation is 5.70 %, indicating that the independent directors of listed companies in China account for about 30 % ~ 40 % of all directors of the board of directors, which proves that listed companies in China attach great importance to the role of independent directors in business management.

Female directors have flexible management style, for the enterprise management can put forward humanized scheme. As shown in table 3, the average value of PFD (proportion of female directors) is 16.12 %, and the standard deviation is 13.53 %, indicating that female directors of listed companies in China account for about 3 % ~ 30 % of all directors of the board, which further proves that listed companies in China do not attach importance to the role of female directors in business management.

4.1.3 Descriptive analysis of management incentive dimension

In the management incentive dimension, this study set Wage (executive incentive), NE (executive number) two explanatory variables. Among them, Wage (executive incentive) is characterized by the natural logarithm of the total remuneration of the top three senior managers, as shown in Table 3. The minimum value is 3.96, the maximum value is 18.20, the average value is 14.60, and the standard deviation is 0.73. It shows that the executive incentive system of listed companies in China is relatively uniform, and the overall stability is between 350,000 yuan and 15 million yuan per capita. There may be a certain degree of commercial operation and financial operation behind a few minimum points and maximum points.

For NE (number of executives), as shown in Table 3, the minimum value is 3, the maximum value is 24, the average value is 6.32, and the standard deviation is 2.38. This shows that the overall number of senior managers in listed companies in China is stable between 4 and 9, slightly less than 7 and 10 of SizeD (board size). Decrease in the number of people is bound to lead to increased monopoly of control, while making management decisions more susceptible to their personal feelings or interests, thereby triggering principal-agent problems.

In addition, for the control variables, LnA (firm size) is measured by the natural logarithm of total assets of enterprises, as shown in Table 3, with an average of 22.31 and a standard deviation of 1.55. It shows that the total assets of listed companies in China are stable between 1 billion and 23 billion. As for the industries in which the listed companies are located, 5 % are real estate enterprises, 68 % are industrial enterprises, 17 % are public utilities enterprises, 3 % are financial enterprises, 5 % are commercial enterprises, and the remaining 2 % are enterprises in other industries. High-leverage enterprises such as real estate, finance and commerce account for 13 %.

4.2 Analysis of relationship

Table 4. Analysis of relationship

	ROA	OP	Ownership	ERR	SizeD	LnD	PFD	Wage	NE
ROA		-.228	.223	-.492	-.775	.394	.246	.929	.602
OP	-.106		.181	.307	.324	-.130	-.211	-.180	-.044
Ownership	.113	.186		.398	-.181	.103	.061	.190	.102
ERR	-.096	.250	.353		.387	-.194	-.126	-.475	-.328
SizeD	-.393	.314	-.178	.153		-.603	-.249	-.690	-.385
LnD	.164	-.097	.099	-.057	-.521		.109	.375	.209
PFD	.101	-.198	.048	-.072	-.212	.071		.203	.094
Wage	.471	-.179	.194	-.202	-.703	.308	.171		.629
NE	.309	-.045	.096	-.150	-.384	.178	.066	.652	
Lower-triangular cells report Pearson's correlation coefficients, upper-triangular cells are Spearmans rank correlation.									
p<0.05									

As table 4 shows, whether using Pearson correlation or Spearman correlation, ROA (Return on Assets) has more or less correlation with ownership structure, board characteristics and management incentives in three dimensions of corporate governance structure. According to the consensus in the field of academic research, this study believes that if the absolute value of the correlation coefficient between the two variables is less than 0.5, there is no significant indigenous correlation between the two variables. On the contrary, if the absolute value of the correlation coefficient between the two variables is greater than 0.5, it is considered that there is a significant correlation between the two variables. Therefore, the strongest correlation with ROA is Wage (executive incentive), followed by SizeD (board size) and NE (executive number). In addition, there is a weak correlation between ERR (equity balance) and LnD (proportion of independent directors) and ROA (return on assets). OP (ownership nature), ownership (ownership concentration), PFD (proportion of female directors) three indicators do not exist significant correlation.

At the same time, there is also a certain degree of weak correlation between explanatory variables. Specifically, there is a weak correlation between ERR (equity balance degree) and OP (equity nature), Ownership (ownership concentration), SizeD (board size), Wage (executive incentive), NE (executive number); there is a weak correlation between SizeD (board size) and OP (equity nature), LnD (proportion of independent directors), Wage (executive incentive) and NE (number of executives); LnD (proportion of independent directors) has a weak correlation with SizeD (board size) and Wage (executive incentive). Since the correlation is not obvious, this study preliminarily believes that the multicollinearity caused by the correlation between explanatory variables can be ignored. For the multicollinearity between explanatory variables and control variables, this study will use the variance expansion factor (VIF) and the Debin-Watson value (DW) in the next part.

4.3 Regression analysis

Based on the above correlation analysis, this study conducts multiple regression analysis on the obtained panel data to explore the correlation between variables. First of all, based on the corporate governance index theory of Bai et al., this study extracts the first principal component through principal component analysis, and conducts multiple regression analysis with the explained variable return on assets (ROA), the control variable firm size (LnA) and the industry (Industry). Secondly, this study sets eight explanatory variables from three dimensions of ownership structure, board characteristics and management incentives, and then makes a further multiple regression analysis. Before the multiple regression analysis, the variance inflation factor (VIF) test was conducted in this

study to screen whether the model had multiple collinearity. The analysis results are shown in Tables 5 to 8.

Table 5. Model 1 Summary

model	R	R-squared	Adjusted Square	R-	The error of standard estimation	DW
1	.426a	.182	.181		7.6028936	1.808

a. Independent variables: (constant), CGI, LnA, real estate, Industry, Public utilities, business.

b. Dependent variables: ROA

Table 6. Model 1 factor

model	Unstandardized coefficient		standardized coefficient	t	significance	VIF
	B	standard error	Beta			
(constant)	-25.755	.693		-37.180	.000	
CGI	.164	.005	.224	29.788	.000	1.546
LnA	.929	.028	.244	32.792	.000	1.523
real estate	-2.153	.445	-.056	-4.842	.000	3.665
Industry	.381	.386	.021	.987	.324	2.509
Public utilities	.122	.400	.005	.306	.760	8.834
finance	-3.457	.488	-.071	-7.078	.000	2.726
business	-.951	.447	-.024	-2.126	.034	3.458

From table 5 and table 6, we can see that the variance expansion factor (VIF) is less than 10 and the Debin-Watson value (DW) of the model is 1.808, which is between 1.5 and 2.5, indicating that there is no multicollinearity between data, and the residual is in line with normal distribution, which proves that there is no autocorrelation between variables. Since both corporate governance data and financial performance data are from listed companies, although the adjusted R-square coefficient is 0.181, according to previous academic practices, this study believes that the fitting situation meets the requirements.

Table 6 shows the results after the data are processed by multiple linear regression with all-entry method. Among them, the regression coefficients of CGI, LnA, Industry and Public utilities are all positive, but only CGI and LnA pass the 95 % confidence level within the significant test, while Industry and Public utilities do not pass the 95 % confidence level within the significant test, indicating that CGI and LnA have a significant positive impact on ROA, while the financial performance of industrial enterprises and public utilities do not change significantly due to the nature of the industry. In addition, the regression coefficients of real estate, finance and business are all negative, and all pass the 95 % confidence level within the test of visibility, indicating that the financial performance of real estate enterprises, financial enterprises and commercial enterprises is significantly lower than that of other industries. In summary, the general assumption is established, corporate governance index has a significant impact on corporate financial performance.

Table 7. Summary of Model 2

model	R	R-squared	Adjusted R-Square	The error of standard estimation	DW
2	.482a	.232	.231	7.3668931	1.880

a. Independent variables: (constant), OP、Ownership、ERR、SizeD、LnD、PFD、Wage、NE、LnA、real estate、Industry、Public utilities、business.

b. Dependent variables: ROA

Table 8. Model 2 coefficient

model	Unstandardized coefficient		standardized coefficient	t	significance	VIF
	B	standard error	Beta			
(constant)	-15.251	.990		- 15.412	.000	
OP	.105	.122	.006	.859	.390	1.337
Ownership	.011	.004	.021	3.113	.002	1.344
ERR	-.002	.004	-.004	-.671	.502	1.286
SizeD	-.394	.031	-.134	- 12.708	.000	3.252
LnD	-.035	.010	-.025	-3.518	.000	1.449
PFD	.006	.004	.010	1.617	.106	1.081
Wage	1.375	.054	.363	25.321	.000	6.022
NE	.057	.022	.021	2.611	.009	1.830
LnA	-.010	.043	-.003	-.222	.824	3.796
real estate	-1.231	.432	-.032	-2.847	.004	3.689
Industry	-.021	.374	-.001	-.055	.956	2.538
Public utilities	-.344	.389	-.015	-.885	.376	8.864
finance	-.268	.485	-.005	-.553	.580	2.860
business	-.960	.435	-.024	-2.206	.027	3.481

From table 7 and table 8, we can see that the variance expansion factor (VIF) is less than 10 and the Debin-Watson value (DW) of the model is 1.880, which is between 1.5 and 2.5, indicating that there is no multicollinearity between data, and the residual is in line with normal distribution, which proves that there is no autocorrelation between variables. Since both corporate governance data and financial performance data are from listed companies, although the adjusted R-square coefficient is 0.231, according to previous academic practices, this study believes that the fitting situation meets the requirements.

Table 8 shows the results after the data are processed by multiple linear regression with all-entry method. Among them, the regression coefficients of OP, Ownership, PFD, Wage and NE were all positive, but only Ownership, Wage and NE passed the significant test within 95 % confidence level, while OP and PFD did not pass the significant test within 95 % confidence level, indicating that Ownership, Wage and NE had significant positive effects on ROA, while OP and PFD had no significant effect on ROA. In addition, the regression coefficients of ERR, SizeD and LnD were all negative, but only SizeD and LnD passed the significant test within 95 % confidence level, while ERR did not pass the significant test within 95 % confidence level, indicating that SizeD and LnD had significant negative effects on ROA, while ERR had no significant effect on ROA. In summary, suppose H1-b, H2-a, H3 holds, suppose H1-a, H1-c, H2-b, H2-c does not hold.

Based on the above data analysis, this study verifies all the research hypotheses, and the verification results are shown in Table 9.

Table 9. Research Hypothesis Validation Table

hypothesis	validation results
General hypothesis : corporate governance index has a significant impact on corporate financial performance	support
Hypothesis 1 : Ownership structure has a significant impact on corporate financial performance	a : State ownership is negatively correlated with corporate financial performance
	b : Ownership concentration has a positive correlation with corporate financial performance
	c : Equity balance degree has a negative correlation with corporate financial performance
Hypothesis 2 : Board characteristics have a significant impact on corporate financial performance	a : Board size has a negative correlation with corporate financial performance
	b : Positive correlation between the proportion of independent directors and corporate financial performance
	c : Positive correlation between the proportion of female directors and corporate financial performance
Hypothesis 3 : Managerial incentives have a significant impact on corporate financial performance	a : Executive incentives have a positive correlation with corporate financial performance
	b : The number of executives has a positive correlation with corporate financial performance

5. Discussion

By consulting the annual report of listed companies and CSMAR database, this study selects a total of 4813 listed companies in China from 2015 to 2021 for seven consecutive years of corporate governance data and financial data as samples. The first principal component is extracted by principal component analysis to construct corporate governance index, and two empirical models are constructed by OLS multiple regression analysis of panel data. Based on the dialogue between the regression analysis results and previous academic research, this study discusses the influence of ownership structure, board characteristics and management incentives on corporate financial performance.

5.1 The influence of ownership structure dimension on corporate financial performance

As Gao Kun (2018) concluded using data from 58 listed financial companies between 2013 and 2017, this study found no significant correlation between equity nature and corporate financial performance. In previous studies, some scholars believe that the low financial performance of state-owned enterprises is mainly due to the imperfect incentive mechanism of internal staff, resulting in high internal governance costs and lower operating efficiency than the market. With the deepening of economic globalization, the continuous development of information technology, the continuous progress of commercial society, the corporate governance structure of state-owned enterprises and non-state-owned enterprises gradually lose more obvious essential difference, so the impact of equity nature on corporate financial performance is not obvious.

Consistent with Liu Bin (2017) using financial data from 28 manufacturing enterprises and happy (2018) using data from 205 small and micro enterprises over the years, this study finds that ownership concentration is positively correlated with corporate financial performance. Ownership concentration represents the control of the largest shareholder for the company. Within a certain range, the higher the ownership concentration, the stronger the control of the largest shareholder, and the higher the attention to corporate affairs. For the consideration of their own interests, the largest shareholder will be more closely monitor the management behavior, making decision-making efficiency significantly improved, agency costs can be reduced. In contrast, Ma Hui and Jin Hao (2007) argue that ownership concentration is negatively correlated with corporate financial performance. This study argues that the difference is due to the fact that business rules 15 years ago are no longer applicable to today 's market environment. On the other hand, Qin Yafei, Gao Hongxian and Tian Guoshuang (2019) used the net assets of many enterprises in the research sample as a measure to reflect the financial performance, and the results also showed a negative correlation between the two. This study believes that the selection of dependent variables has a crucial impact on the final conclusion.

Most previous studies have concluded that the equity balance degree has a positive effect on corporate financial performance. However, this study finds that there is no significant correlation between equity balance degree and corporate financial performance. Equity checks and balances measure the power difference between the largest shareholder and the second largest shareholder. When the power gap is larger, it can give full play to the supervision and management role of shareholders, but it is prone to dictatorship, and large shareholders use their own advantages to infringe on the interests of small and medium shareholders ; when the power gap is smaller, it can effectively prevent the generation of internal interest disputes, but the more the restraint between the two sides, and will reduce the efficiency of the shareholders ' meeting decision-making. The study shows that equity balance degree is positively correlated with corporate financial performance. Scholars in the field make linear correlation analysis between equity balance degree and financial performance, excluding the possible impact of extreme conditions on financial performance, so the conclusion is different from this study. In addition to the shareholding ratio of the largest shareholder and the second largest shareholder, the sum of its shareholding ratio and many other factors will also affect the power difference between shareholders and management. Therefore, this study argues that there is no significant correlation between equity balance and corporate financial performance.

5.2 The Influence of Board Characteristics on Financial Performance

Similar to the conclusions of Pablo et al. (2015), this study finds that the board size is significantly negatively correlated with corporate financial performance. As a bridge of information transmission between shareholders and management, the board of directors shoulders the responsibility of transmitting information and promoting communication between the two sides. Therefore, the efficiency of the board of directors is positively correlated with the financial performance of enterprises. With the expansion of board size, the more interest groups among board members, the more complex factors to be considered in decision-making, which has a negative impact on operational efficiency. Zhang Yanming (2015) through the listed companies in Shenzhen and Shanghai from 2007 to 2014, the company data but found a positive correlation of the opposite conclusion. In addition, Zhang (2019) selected the data of 54 retail enterprises and found that there was no significant correlation. Combined with the regression analysis results of this study, this study believes that there is a weak correlation between the size of the board of directors and corporate financial performance. When choosing a specific region or industry, the weak correlation cannot pass the significant test.

Similar to the conclusion drawn by Zhang (2015) through the data of listed companies in Shenzhen and Shanghai from 2007 to 2014, this study finds that the proportion of independent directors is significantly negatively correlated with corporate financial performance. Independent directors are generally famous scholars in related fields, with professional knowledge of enterprise

management. However, in Chinese listed companies, independent directors are more a formal existence, its role is only to improve the sense of existence of corporate board of directors, rather than substantively promote corporate financial performance. Geoffrey (2013), however, holds the opposite view that the proportion of independent directors has a significant positive correlation with corporate financial performance. This study argues that the reason is that the sample enterprises are mostly foreign enterprises, without considering the actual situation of independent directors in Chinese enterprises, resulting in differences in research conclusions.

The proportion of female directors has not been mentioned in previous studies. This study innovatively studies the correlation between the proportion of female directors and corporate financial performance, and the regression results show that there is no significant correlation between them. Although female and male directors have different styles and trends in decision-making and management, modern enterprises tend to make group decisions and are less affected by individual directors. When the financial performance of enterprises is at a low or high level, the gender ratio of the board of directors has no significant influence on the performance level.

5.3 The impact of management incentive dimension on corporate financial performance

Similar to the conclusion drawn by Kevin JSigler (2011) using the data of 200 companies in the United States and Yi (2020) using the data of domestic enterprises, this study finds that executive incentives are significantly positively correlated with corporate financial performance. Executive incentive and corporate financial performance are not one-way causal relationship, but complement each other in the long-term perspective. The improvement of corporate financial performance in this period is bound to affect the improvement of executive incentive in this period, so as to enhance the enthusiasm of executives and improve the corporate financial performance in the next period. In the long run, the annual salary system combined with business performance has a positive role in promoting financial performance in many modern enterprises. At the same time, executive incentives can also encourage them to actively perform corporate social responsibility, reduce the occurrence of moral hazard, avoid the conflicts of interest between management and shareholders, and thus improve corporate financial performance.

In addition, this study finds that the number of executives is significantly positively correlated with corporate financial performance. Enlarging the number of executives is one of the important means to suppress the principal-agent problem. The less the number of managers, the higher the degree of power monopoly, the easier it is for executives to formulate business management decisions based on personal interests, thus affecting the financial performance of enterprises. The increase in the number of executives makes the information exchange between superiors and subordinates more frequent. At the same time, it forms mutual restraint between executives, avoids the occurrence of ' dominance ', effectively reduces agency costs and risk processing costs, and improves corporate financial performance.

Based on the above conclusions and the regression results of the corporate governance index (CGI) on the return on assets (ROA), this study believes that the ownership structure of the corporate governance structure, the characteristics of the board of directors, and the dimensions of management incentives will more or less affect the financial performance of enterprises. Among them, the ownership concentration, the size of the board of directors, the proportion of independent directors, executive incentives, and the number of executives have relatively significant impacts on the financial performance of enterprises.

6. Conclusion

The financial data of a total of 4813 listed companies in China for seven consecutive years from 2015 to 2021 show that the overall return on assets of listed companies in China is stable between 20 % and 30 %.

The industry data of 4813 listed companies in China from 2015 to 2021 for 7 consecutive years show that the number of real estate enterprises, financial enterprises and commercial enterprises accounts for about 13 % of the total sample, and the return on assets is significantly lower than that of other industries.

There is a weak correlation between equity balance degree and equity nature, equity concentration, board size, executive incentive, executive number ; there is a weak correlation between board size and equity nature, the proportion of independent directors, executive incentive and the number of executives ; there is a weak correlation between the proportion of independent directors and the size of the board of directors and executive incentives.

The corporate governance index extracts the first principal component of the eight indicators of whether the ownership is state-owned or not, the shareholding ratio of the largest shareholder, the shareholding ratio of the largest shareholder to the shareholding ratio of the second largest shareholder, the number of board of directors, the number of independent directors to the number of board of directors, the number of female directors to the number of board of directors, the total remuneration of the top three senior managers and the number of senior managers, which are significantly and positively correlated with corporate financial performance.

Ownership concentration, executive incentive and the number of executives are positively correlated with corporate financial performance ; the board size and the proportion of independent directors are significantly negatively correlated with corporate financial performance ; the nature of equity, equity balance, and the proportion of female directors are not significantly correlated with corporate financial performance.

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