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Director Team Heterogeneity and Private Enterprises' Social Responsibility: The Moderating Role of Institutional Environment

XU Deling

Doctor of Management

Supervisors:
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PhD WANG Bingjie, Associate Professor,
University of Electronic Science and Technology of China

October, 2023

Marketing, Operations and General Management Department

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Declaration

I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that to the best of my knowledge it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: *XU Deling* 徐德岭   Date: 2024.1.16

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Abstract

Taking A-share listed private enterprises in China's Shanghai and Shenzhen stock markets as sample, this thesis adopted multiple regression method and studied (1) the relation between director team heterogeneity and Corporate Social Responsibility (CSR); (2) the moderation of the institutional environment on the relation between director team heterogeneity and CSR.

Through the empirical analysis, this research has found the heterogeneity of director team's gender, tenure, political status, value, and age influences positively the CSR; founding chairman influence CSR negatively.

In addition, institutional environment negatively reinforces the negative relation between director team's value heterogeneity and CSR; a negative weakening effect on the positive relations between tenure heterogeneity, political status heterogeneity and CSR; a positive weakening effect on the negative relations between age heterogeneity, founding chairman and CSR. Lastly, the results also show that value heterogeneity has positive weakening effects on the negative relations between age heterogeneity, education heterogeneity, and founding chairman and CSR.

Keywords: Director team heterogeneity; Institutional environment; Corporate social responsibility; Private enterprises
JEL: M14, L25

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Resumo

Com base na lista de empresas "A" listadas nos mercados de valores de Shanghai e Shenzhen da República Popular da China criou-se a amostra para o estudo de relações entre a heterogeneidade da direção de topo e a responsabilidade empresarial da empresa (RSE), e ainda, o efeito de moderação da envolvente institucional nessa relação. Adotou-se para este estudo o método de regressão múltipla.

O estudo empírico levado a cabo mostrou que a heterogeneidade no género, no mandato e no estatuto político dos membros da direção superior tem um efeito positivo nas políticas de responsabilidade social da empresa. Por outro lado, a heterogeneidade na idade, nos valores e na capacidade de influência do presidente-fundador da empresa tem um efeito negativo.

O estudo também mostrou que a envolvente institucional tem um efeito que reforça a influência negativa entre a heterogeneidade de valores dos membros diretivos e a RSE; a envolvente institucional tem um efeito suavizante na relação positiva entre a heterogeneidade no mandato e no estatuto político da direção de topo e a RSE, bem como, um efeito suavizante na relação negativa entre a heterogeneidade na idade e na influência do presidente – fundador e a RSE. A heterogeneidade nos valores tem um efeito suavizante na relação negativa entre a heterogeneidade na idade, educação e na influência do presidente-fundador e as ações de RSE.

Palavras-chave: Heterogeneidade na direção superior; Envolvente institucional; Responsabilidade social da empresa; Empresas privadas

JEL: M14, L25

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摘要

以中国沪深A股民营上市公司为样本，运用多元回归方法，研究了（1）董事团队差异性与企业社会责任关系；（2）制度环境对董事团队差异性与企业社会责任关系调节作用。

实证表明：董事团队性别、任期、政治地位差异性和价值观、年龄差异性；创始董事长分别显著正向和显著负向影响企业社会责任。

制度环境对董事团队价值观差异性；任期、政治地位差异性；年龄差异性、创始董事长；与企业社会责任负向、正向和负向关系，分别有显著负向强化；负向弱化；正向弱化的调节作用。价值观差异性对年龄、学历差异性和创始董事长与企业社会责任负向关系分别有显著正向弱化作用。

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Acknowledgements

First of all, I would like to express my deepest thanks to professor Álvaro Rosa and professor Wang Bingjie for their dedication and guidance to this doctoral thesis. From the topic selection, research framework and research method to the data collection, data processing and thesis revision, all these work is the crystallization with my supervisors' efforts. It still benefits me that processor Álvaro Rosa vividly explained the "what" and "how" of the research problem by analogy of the cooking process of a cuisine. It still recalls to me that professor Wang Bingjie led the students to conduct the research in the enterprises, gave the directions and encouragement when I met the confusions during the thesis writing. The two professors are the experts in CSR. This doctoral thesis cannot be done without their erudite and versatility, profound skills, rigorous academic pursuits, wisdom and humility, openness and inclusiveness.

In this lifetime, having the opportunity of accessing the doctoral education is a great fortune. As my studies approaching the completion, I would like to express my deepest respect to the leaders and teachers of the DoM project team.

During my doctoral study, I would especially thank Professor Xiao Wen, the Chinese director of the DoM program, and Professor Virginia Trigo, the Portugal director of the DoM program for their sincere personality, academic achievement and helping spirit. They put their efforts in pushing the DoM project to a new height.

During my doctoral study, I would thank Professor Zeng Yong, President of University of Electronic Science and Technology of China, Professor Ma Yongkai, Dean of School of Economics and Management, Professor Li Ping, Vice Dean of School of Economics and Management, Professor Li Qiang, Professor Zhao Weidong, Professor Ma Jie, and Professor Deng Jianping of Xiamen National Accounting Institute; Professor Nelson António, Professor Elizabeth Reis, Professor Rui Vinhas da Silva and Professor Pedro Inácio of ISCTE-Instituto Universitário de Lisboa; Dr. Sun Ping, Teacher Chen Yang, and Teacher Gao Xiaoli from the DoM project team. They are both teachers and friends for the classmates. They are exemplary, virtuous, and knowledgeable. They are responsible, dedicated and wholehearted. They are highly trusted and loved by the students.

During my doctoral study, I would thank my classmates in the DoM 2019. We learn from each other, help each other, and encourage each other. We make progress together and become

each other's motive of moving ahead.

During my doctoral study, I would also thank my family for their understanding, care and support.

致谢

首先，衷心感谢导师Álvaro Rosa教授和王冰洁教授对博士论文的精心指导。从论文的选题、框架结构、研究方法、数据采集与处理、文稿审阅，都凝结了导师的大量心血。Álvaro Rosa教授通过厨师烹饪菜品的过程深入浅出地指导论文研究问题"what"与"how"的区别，至今依然获益匪浅；王冰洁教授亲自带领并指导学生到企业进行调研，在论文遇到困惑时给与及时点拨与热情鼓励，现在依然历历在目。两位导师都是研究企业社会责任的专家，博学多才、功力深厚、治学严谨、睿智谦逊、豁达包容，使博士论文方能顺利完成。

人生一世能够获取博士层次高等教育的机会，是为幸事。在学业即将完成之际，向DoM项目组的各位领导、各位老师致以深深的敬意。

在博士学习期间，特别感谢DoM项目组中方主任肖文教授和葡方主任Virginia Trigo教授，她们待人真诚、学术精湛、助人成才，集毕生精力将DoM项目推向事业高峰。

在博士学习期间，还要特别感谢电子科技大学校长曾勇教授、经济与管理学院院长马永开教授、副院长李平教授、李强教授、赵卫东教授、马捷教授、厦门国家会计学院邓建平教授；里斯本大学学院的Nelson António教授、Elizabeth Reis教授、Rui Vinhas da Silva教授、Pedro Inácio教授；DoM项目组孙平博士、陈阳老师、高小丽老师。他（她）们为人师表、品德高尚、学识渊博、教学典范，成为同学们的良师益友。DoM项目组老师们以高度的责任感，兢兢业业，精心组织为同学们竭诚服务，受到同学们的高度信任和热爱。

在博士学习期间，还要感谢DoM 2019级博士班的同学们，大家互相学习、互相帮助、互相激励、共同进步，成为努力攀登的动力。

在博士学习期间，还要感谢我的家人给予的理解、关怀和大力支持。

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Chapter 1: Introduction

1.1 Research background

1.1.1 Practical background

1.1.1.1 Call for CSR practice

In recent years, with the frequent occurrence of a series of events such as "Enron", "Melamine Contaminated Milk Powder", and "Longevity Vaccine Incident", corporate social responsibility (CSR) has gradually evolved into a hot spot of widespread concern. Meanwhile, the call for CSR practice has been increasingly louder. Some countries and international organizations have formulated laws and regulations to regulate and guide corporations to practice social responsibility and satisfy the needs and requirements of the stakeholders while pursuing their interests.

The business community recognizes the importance of social responsibility practice both for itself and for the society. When the pandemic started in 2020 and swept across the world rapidly, many corporations, including a large number of private companies, donated money and medical supplies and provided free services and jobs to help the medical institutions and people dedicated to the fight against the pandemic, which is a demonstration of their great enthusiasm in social responsibility practice and care for the society. The director team in the director board of these corporations has constituted a pivotal part in the fulfillment of the CSR.

1.1.1.2 The importance of director team heterogeneity (diversity) to CSR

In China, company's major strategic decisions are made by the company's director team, which includes the strategic decision-making of CSR. However, what kind of differentiated characteristics should the company's director team have to make the right choice, and to adapt to the expectations and concerns of all parties in the society CSR, has become the focus of the company and society.

For example, members in the director team who have overseas experience tend to support CSR. Female members, more caring and compassionate, will support and be committed to CSR. Members with political background are also supporters of CSR and members with altruistic values will be more socially responsible. Obviously, a director team with diversity or

heterogeneity can pool more information and resources, which is more conducive to the strategic decision-making of the team.

1.1.1.3 Management dilemmas

Although enterprises' willingness of sharing CSR is increasing, they also face the confusions. The confusions faced by the companies is that the director team heterogeneity is conducive to the CSR strategic decision-making. Meanwhile, the disagreement of opinions may cause contradictions and even conflicts. What kind of the director team heterogeneity should an enterprise have to positively impact the strategic decision-making of CSR has become a management dilemma for enterprises, especially for private enterprises.

1.1.1.4 The attention, regulation and guidance of the laws and regulations on CSR

As the social opinion in various countries and regions in the world calls for CSR commitment and CSR attracts widespread attention, many countries and regions as well as international institutions and organizations attach great importance to this issue and develop regulations, agreements and policy standards to advocate corporations to assume social responsibility. In 1997, Social Accountability International (SAI) developed SA 8000 for the protection of the rights, working environment and conditions of workers (Beifanglei, 2018). In 2000, the initiated "United Nations Global Compact" listed ten principles (United Nations Global Compact, 2000). In 2010, ISO 26000 adopted advocates corporations to undertake CSR.

Chinese government proposed the CSR commitment in the Company Law in 2006 for the first time. *The Code of Corporate Governance for Listed Companies* emphasized that listed companies should respect legitimate rights of stakeholders and give weight to and actively fulfill CSR (China Securities Regulatory Commission, 2018).

International organizations and the Chinese government have established a series of agreements, regulations and standards that regulate and guide corporations to practice CSR. In order to report their own social responsibility status, enterprises have issued more and more social responsibility reports, and it grew from 493 in 2012 to 4893 in 2023 (Yao, 2014; F. Y. Zhang, 2023).

1.1.2 Theoretical background

1.1.2.1 CSR Theory

CSR has always been of interest to the academic circle. When J. M. Clark (1916) raised the issue of CSR, he stated that personal responsibility is giving way to social responsibility, only

when we are unitedly accountable for the entire society can personal responsibility be expanded. Sheldon (1924) argued that industrial management must be governed by certain principles inherent in the service motive to the community. Bowen (1953) defined CSR as a company's decision-making that is beneficial to social value based on social benefits, and the obligation to perform corresponding actions. J. M. Clark (1916), Frangul and Friedman (1979), and Sheldon (1924) have conducted studies and meaningful discussions on the meaning of CSR from different perspectives. Carroll (1991) constructed a model that included economic, legal, ethical and conscious responsibility. Elkington (1998) coined the triple bottom line that integrated economic, social and environmental bottom lines and provided a basis for evaluating CSR. Igalens and Gond (2005) summarized the methods for CSR evaluation based on the annual CSR report, results of questionnaire, environmental pollution index, reputation indicators and data from third-party professional institutions. The preliminary studies were not clear about the definition of the beneficiary of CSR. With the combination of CSR and stakeholder theories, the beneficiary was further clarified and the practicability that has been troubled the society were enhanced.

1.1.2.2 Stakeholder Theory

As the studies on CSR deepened, the interrelation between corporations and stakeholders became a new focus. The emergence of stakeholder theory in the 20th century provided stronger theoretical support for the better study of CSR. Freeman (1984) stated that the stakeholders of a company are those individuals or organizations that either influence or are influenced by the accomplishment of the company's objectives. Stakeholders include the employees, customers, suppliers, shareholders, banks, environmentalists, government, and other organizations that can help or hurt the company. Siegfried and Blair (1997) pointed out that creditors are the residue claimant. Donaldson and Preston (1995) believed that creditors, management, and employees also bear a part of the risk. Clarkson (1995) held the opinion that stakeholders cover all groups that bear the risk of the activities of corporations. Fonseca et al. (2012) examined in detail the influences of social responsibility programs on stakeholder satisfaction and the results uncovered a positive moderate correlation with a significance at 1% level (two-tailed test), which further complemented the stakeholder theory. Objectively speaking, the stakeholder theory does not explore what characteristics of the director team can better make a strategic choice that can fully gratify stakeholder interests and CSR with a sense of responsibility for the company. CSR theory and stakeholder theory, if combined with the upper echelon theory and the Institutional Theory, would explain the CSR and its practice better and more accurate.

1.1.2.3 Upper Echelons Theory

Under the context of economic integration and intensified market competition, corporations are forced to shift from personal to team-based decision-making (Delgado Piña et al., 2008). However, the decision-making responsibility of the team has historically fallen on the shoulders of the TMT. Therefore, Hambrick and Mason (1984) proffered the upper echelons theory. This theory states, the TMT includes all senior management. The demographic characteristics of these individuals, i.e., gender, age, education, career, tenure, can manifest the values, cognition and preferences of senior management and to a certain extent, the process of cognition, communication and collaboration, and even process of conflict and contradiction. Second, their demographic characteristics, functions and the environment are likely to influence the choice of business strategy of enterprises and their business performance directly. The heterogeneity in characteristics properly explains the dimension of a group (S. E. Jackson, 1992). The upper echelons theory laid pivotal theoretical basis for the studies on director team heterogeneity. The three-level model of individual, organizational, and institutional research created by Aguinis and Glavas (2012) indicates new approaches and directions of cross-level research on CSR.

However, most of the studies based on upper echelon theory focus on the CEO team, which ignores the background of emerging market economies in developing countries like China. In countries like China, the responsibility for strategic CSR decisions rests with the director team. As pointed out by Hambrick and Mason (1984), the study ignored board members, which is similar to the "director team". Therefore, the director team, especially the director team heterogeneity, still need to be studied and there is a gap, which has independent theoretical significance and practical value.

Some scholars study the correlation between the director board and CSR from the perspective of the director board and have reached some achievements. However, it should be noted that there are relations and distinctions between a director team and the board of directors. They are different in at least three aspects: definition, level and characteristics. (1) According to Robbins' study on team, a team is a formal group evolves two or more individuals. They interact, interdepend possess specific goals and united by rules (Robbins & Coulter, 2017); a team is an interdependent social system (Hackman & Oldham, 1975). With reference to the above definition of team, this thesis primarily defines the director team as a formal group of two or more interacting, interdependent directors united according to the association articles and company or enterprise rules to achieve the goals and visions of the company or enterprise. The board of directors (BofD) is a management institution established concerning national laws

and company regulatins (Kuaifawu, 2022). (2) BofD is a pivotal organizational body of the company or enterprise, while the director team is only one of the crucial teams within the BofD and its affiliated bodies. BofD is at a higher level than the director team. (3) The characteristics (For example, including the organization of the BofD) of the BofD are broader than the director team.

In addition, findings on the nexus between the TMT heterogeneity and CSR are inconsistent. One of the reasons is that the definitions of TMT are different. Therefore, this thesis advocates that the TMT can be defined in a broad and narrow sense. This thesis considers director team as part of the broader TMT. Therefore, it is still one of the hot topics to investigate the director team heterogeneity, especially the degree or state of heterogeneity that is good for CSR decision-making and CSR practice.

1.1.2.4 Institutional Theory

The stakeholder theory has contributed to clarifying audiences of CSR, and it has a positive significance in helping companies realize the interests of stakeholders and mutual interaction through CSR behaviors. However, it is difficult to explain the interaction between external environment and stakeholders. North (1990) introduced institutions into economic research and found the role of institutions and institutional change in the economy. New institutional economics uses Institutional Theory to study CSR (Berman et al., 1999; Campbell, 2007). It states that the state is a critical factor that influences social responsibility and analyzes the relations between strong state regulation, collective self-regulation of industries, supervision by NGOs and other organizations, regulated institutional environment and the better CSR practice. It helps to understand the mechanisms underlying CSR practice. However, in developing countries like China, the development of the legal system is not yet perfect, and social self-discipline organizations are not well-developed. Thus, studying the impact of institutional environment on Chinese enterprises' decision-making and fulfilling social responsibilities is meaningful.

1.2 Research problem

As analyzed above, the factual background of CSR and CSR theory, stakeholder theory, upper echelon theory, Institutional Theory and other related theories provide important theoretical support and research space for this thesis. The main basis for the research space of this thesis is: First, the lack of research on the director team heterogeneity. There is little research on

director team heterogeneity in the existing literature. Most scholars study the TMT heterogeneity from the angle of the manager team headed by the chief executive officer (hereinafter referred to as CEO), or the mixing of the manager team headed by CEO with directors and other TMT members, and study the heterogeneity (differences) of TMT and its interrelation with CSR or corporate performance, and ignore the director team. However, in China, it is precisely the director team that makes CSR decisions. Therefore, there is still a need and space for research on director team, especially director team heterogeneity.

Secondly, there lacks research on the relation between director team heterogeneity and CSR. Due to the lack of research on director team heterogeneity, the research on the connection between director team heterogeneity and CSR is also lacking. However, in China, as one of the prerequisite factors affecting CSR, the research on the nexus between director team heterogeneity and CSR is necessary and realistic for both academic and business circles.

Third, there lacks research on the influence of institutional environment on director team heterogeneity and CSR. The findings in the existing literature on the influences of institutional environment on the relation between director team heterogeneity and CSR are rarely seen. In fact, such influences should be looked at in depth research in China, the largest developing country. China is a developing market economy country where the system of laws and regulations, self-regulatory organizations of industries, and supervision of public opinion need to be improved; therefore, from the perspective of the development process, studying how institutional environment influences the nexus between director team heterogeneity and CSR in developing countries may help to reveal the characteristics of the mechanism by which institutional environment influences corporate behavior in developing countries like China.

According to the research background, management dilemmas, the following research problem is raised and analyzed: Under the influence of the institutional environment, the director team heterogeneity can not only promote CSR, but also lead to conflicts and negatively affect CSR. Therefore, the relationship between the director team heterogeneity and CSR is still unclear.

1.3 Research questions

1.3.1 Research questions

Therefore, research questions: Under the influence and function of the institutional environment, what kind of characteristics of the director team heterogeneity can affect the social

responsibility of private enterprises, and will promote enterprises in fulfilling their social responsibility.

Therefore, the following two questions need to be addressed:

(1) What factors of the director team heterogeneity affect the social responsibility of private enterprises?

(2) Whether the interrelations between director team heterogeneity and CSR are affected by institutional environment?

Figure 1.1 exhibited the research model.
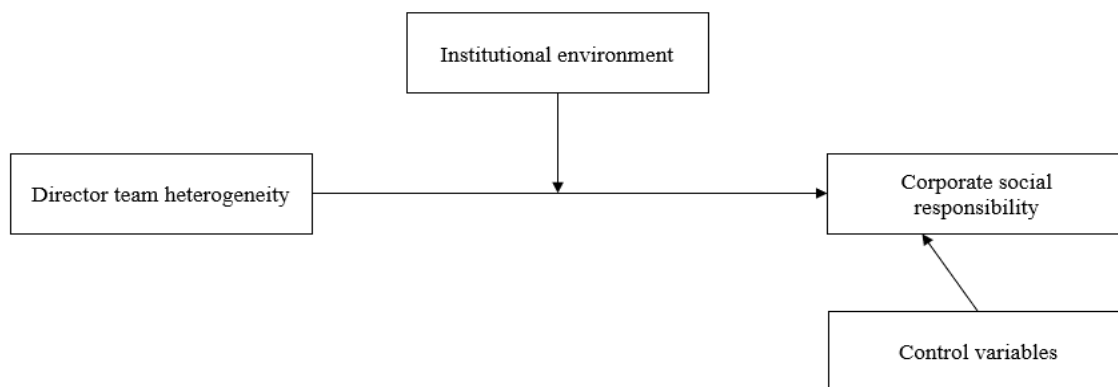
Figure 1.1 Research model

1.3.2 Research urgency

In China, the largest developing country the imperfect evolvement of the market economy and institutional environment have caused corporate social irresponsibility that harms the interests of stakeholders and the environment while pursuing the interests of shareholders. Although the number of CSR reports published is increasing, the level and quality of CSR is not satisfactory. According to the data analysis of the *Blue Book of Corporate Social Responsibility (2022)* released by the Chinese Academy of Social Sciences in recent years, the CSR indices of Chinese corporations are at a low level. The top 300 corporations score 36.4 points, still at an initial stage. Private companies score a lower 33.4 points. 124 corporations are still "onlookers" (Meng, 2022).

The term of private company has been recognized and widely used in China, but there is not a uniform definition in China at present. According to the categorization of listed companies in China's Wind Financial Database, companies ultimately controlled by an individual, are private companies, and this definition is recognized in this thesis. As of July 21, 2023, the real-time statistics of total listed private companies in Shanghai and Shenzhen included in the database was 3,324. The private companies are large in number, financially strong and

influential in China so they are crucial players who play a crucial irreplaceable role in China's socialist market economy. They are a powerful force for the realization of CSR commitment and CSR practice in China.

Therefore, exploration of the antecedent variables that drive CSR practice, such as the impact of director team heterogeneity on CSR; the impact of institutional environment on director team heterogeneity and CSR is forming a vital issue that urgently necessitates being addressed in promoting Chinese private enterprises to fulfill their social responsibilities at this stage.

1.4 Research significance

1.4.1 Theoretical significance

Firstly, the theory of TMT characteristics may be further improved. Most of the previous research results have studied its interrelation with CSR from the perspective of the characteristics of the executive team or the mixed executive team of directors and managers. This thesis studies its nexus with CSR from the perspective of the difference characteristics of the director team responsible for CSR strategic decision-making, it assists to comprehend and supplement the independent precursor role and theoretical value of the heterogeneity characteristics of the director team.

Secondly, the cross-level research theory is further improved. Most of the previous individual, organizational, and institutional researches are conducted from the perspective of executive management, but this thesis uses cross-level research to study the interrelation between director team heterogeneity and CSR and the regulatory role of institutional environment, which helps to explore and supplement the cross-level research on director team heterogeneity and CSR and institutional environment.

Thirdly, the Institutional Theory is further improved. The introduction of institutional environment into the study of director team heterogeneity and CSR will help to examine the regulatory role of institutional environment between director team heterogeneity and CSR and its working mechanism, thus complementing and improving the Institutional Theory.

1.4.2 Factual significance

Firstly, the research helps companies to understand and grasp the positive effects of the director team heterogeneity. Through the analysis of the characteristics of the director team

heterogeneity and CSR, it assists companies to understand the different characteristics and combinations of the director team's age, gender, education, tenure, and values, and combinations of several characteristics and the inner mechanism of how to influence CSR through the director team, and help companies to find the antecedents and motives of the director team so as to enhance the scientificity of strategic decision-making as well as corporate performance in fulfilling CSR. Moreover, this research can help the enterprises to configure highly efficient director team to meet the demands of CSR decisions. Meanwhile, this research can help the enterprises to configure highly efficient director team to meet the demands of CSR decisions.

Secondly, the research helps companies understand the intrinsic mechanism of the director team heterogeneity and CSR. It can enable enterprises to correctly grasp the realization path of fulfilling CSR, save and allocate resources, and achieve coordinated development with society.

Thirdly, it helps companies, government and other stakeholders understand the regulatory role of the institutional environment. The working mechanism revealed through cross-level analysis can help companies, government and other stakeholders to adapt and cooperate with the regulation of the institutional environment, and to promote and monitor the CSR fulfillment.

1.5. Research objectives and content

1.5.1 Research objectives

Through analysis of the director team heterogeneity that drives the CSR practice of private companies in China and the working mechanisms between the director team heterogeneity and CSR and the institutional environment, this thesis seeks theoretical explanations of and realization paths for CSR fulfillment by private companies to maximize the interests of shareholders and stakeholders.

1.5.2 Research content

Upon the aforementioned research problem and objectives, the content of this thesis unfolds six chapters for research.

Chapter 1 is the introduction. According to the factual and theoretical background of the CSR decision-making and CSR practice of Chinese companies, the research problem of this thesis and its theoretical and practical significance are proposed; then, according to the research problem and objectives, the research content are determined. The research methods and the

technical roadmap are introduced. The possible innovation of this thesis is made clear, followed by a summary.

Chapter 2 is literature review. First, the definitions and boundaries of key concepts involved in this thesis, such as CSR, director team and its director team heterogeneity, and institutional environment, are determined in order to clarify the object and scope of this research. Secondly, this chapter assorts and reviews the main views and conclusions related to the director team heterogeneity, CSR, institutional environment and other important variables, economic relations, research methods and representative views and findings, and grasps the past research results and cutting-edge information to obtain reference for relevant results. Third, these findings are then reviewed to find research gaps related to the research problem and propose the research gap.

Chapter 3 is the analysis of the mechanism of director team heterogeneity, institutional environment and CSR. This thesis analyzes the antecedent variable of director team heterogeneity and external institutional environment that influence CSR decision-making and CSR practice. The influences of the director team heterogeneity on CSR and the influences of institutional environment on director team heterogeneity and CSR are analyzed, followed by a summary.

Chapter 4 is an empirical study of director team heterogeneity and CSR. The theoretical analysis and hypothesis about the nexus between director team heterogeneity and CSR are introduced. The second part covers sampling, data source, variable definition, models, empirical test and robust test. This thesis studies the relationship between director team heterogeneity and CSR using variables such as gender, age, tenure, education, political status, founding chairman, and values of the director team. The chapter ends with a summary.

Chapter 5 is an empirical study on the modulatory role of institutional environment between director team heterogeneity and CSR. Firstly, conduct a theoretical analysis and research hypothesis on the modulatory effect of institutional environment on director team heterogeneity and CSR, and the interaction of the main factors of director team heterogeneity on director team heterogeneity and CSR. Secondly, conduct sample selection, data sources, variable definitions, research models, empirical testing, and robustness testing. Finally, there is a summary of this chapter.

Chapter 6 is the conclusions, recommendations and prospects. The research findings are summarized to explain the theoretical and practical values of this thesis, give suggestions and recommendations on improving the CSR decisions and fulfillment from the perspective of the team, enterprise and institution, and put forward the limitations and shortcomings. The possible

spaces and problems for further research are discussed and recommendations are given. Figure 1.2 presents the framework of the research content.
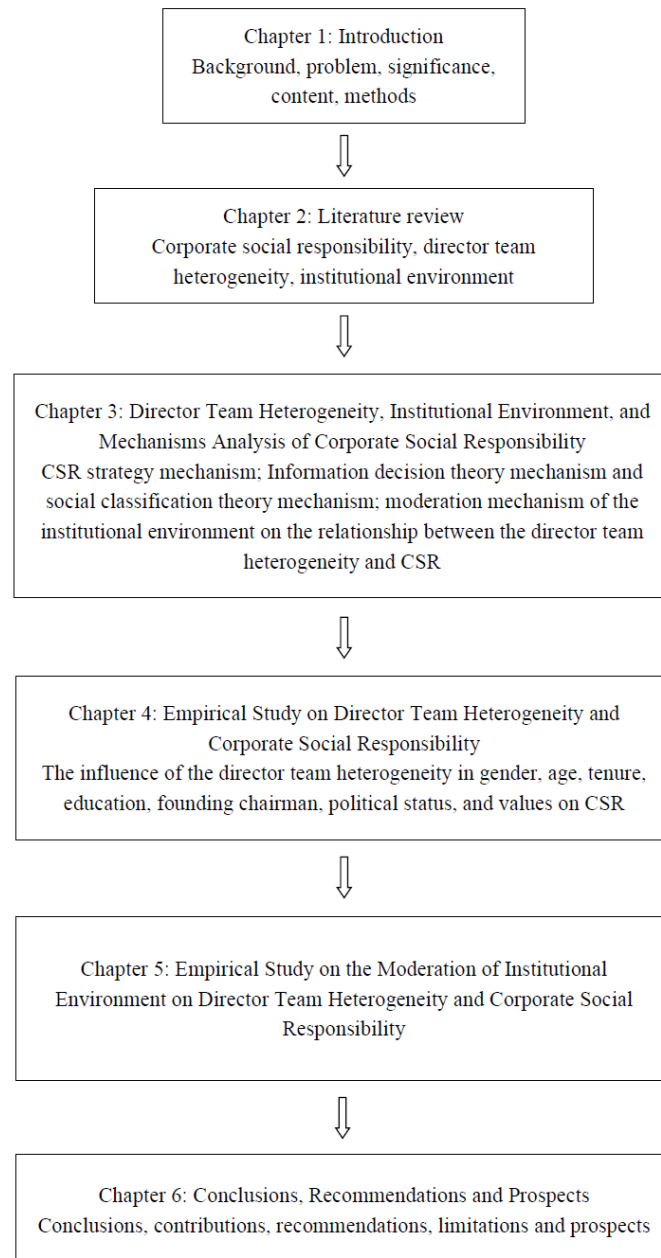
Figure 1.2 Framework of the research content

1.6 Research methods and technical roadmap

1.6.1 Research methods

1.6.1.1 Literature research

Based on the management dilemma and management problems of Chinese private companies,

the research problem and research model are proposed after review of domestic and foreign research findings and literature. Relevant theoretical and empirical research findings such as CSR theory, upper echelon theory, stakeholder theory and Institutional Theory are drawn upon as the theoretical basis of this research to explore the problems and directions of further research.

1.6.1.2 Empirical research

The multiple regression quantitative analysis method is adopted for the empirical study of director team heterogeneity and CSR in Chinese private companies. It includes proposition, hypothesis and model building and involves collection of indicators and data related to director team heterogeneity, CSR, and institutional environment of private companies. These data are input into a statistical software for regression analysis and tests. This thesis uses Stata and other software for data processing.

This research employs private listed companies of A share in Shanghai Stock Exchange and Shenzhen Stock Exchange in the last 3 years or more as the sample. The data was mainly retrieved from the financial reports of companies in 3 years or more, China Stock Market & Accounting Research Database (CSMAR) and the Wind database. The data of dependent variable CSR was collected from the environment sub-index of the Chindice ESG Index of Sino-Securities Index Information Service (Shanghai) Co. Ltd. Indices and data of independent variables and control variable were from the financial reports of companies, China Stock Market & Accounting Research Database (CSMAR), the Wind database and relevant websites. The independent variables of director team heterogeneity include gender, age, tenure, education, founding chairman, political status, and values (J. J. Zhang & Zhang, 2016) and these variables were measured with the Herfindal-Hirschman index or coefficient of variation. Control variables: Company size, net profit margin of total assets, percentage of independent directors and proportion of fixed assets were measured using financial reports. Heterogeneity in values was measured with the global cultural model (X. Y. Zhao et al., 2015) and the Euclidean metric. The moderator variable of institutional environment was measured with the marketization index from the Marketization Index of China's Province compiled by X. L. Wang et al. (2021).

1.6.2 Technical roadmap

Considering the research contents and research methods, the technical roadmap is exhibited in Figure 1.3.
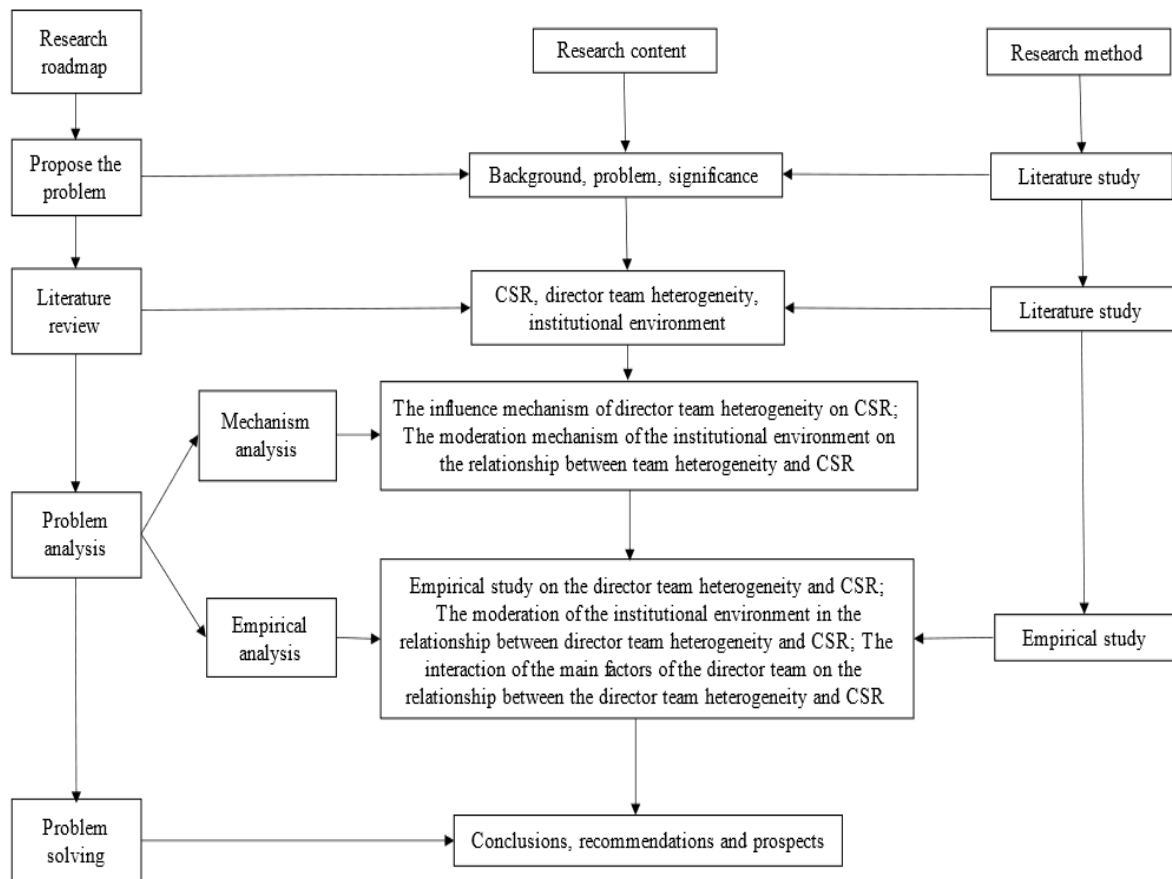
Figure 1.3 Technical roadmap

1.7 Innovations

The possible innovations studied in this thesis are mainly:

First, the novelty of the research perspective. Currently, most research in home and abroad studied on the TMT heterogeneity and CSR mostly study the nexus with CSR from the perspective of executive teams' characteristics or the mixed executive team of directors and managers, and this article combines the Chinese scenario, regarding the director team as an independent research object, studying the nexus with CSR from the perspective of the characteristics of the director team with the responsibility of CSR strategic decision-making is conducive to revealing and supplementing the role and theoretical value of independent precursor factors of the director team characteristics, to provide literature supplement and expansion for the research on the TMT heterogeneity and CSR.

Secondly, the novelty of the research level. The study of director team heterogeneity in TMT is neglected in the past research, so there is a gap in the cross-level research. From the perspective of the characteristics of director team heterogeneity, this thesis studies the nexus

between director team heterogeneity and CSR and the regulatory role of institutional environment through the cross-level of team, enterprise and institution, which assists to explore and supplement the cross-level mechanism research between TMT heterogeneity, CSR and institutional environment. Among them, exploring the impact of the interaction between the variables of director team heterogeneity on CSR assists to explain the contradiction of the conclusions between TMT heterogeneity and CSR. It helps developing countries, especially developing market economies as China, to make use of the mechanism of institutional environment, director teams and CSR to serve various stakeholders and achieve sustainable social development.

Third, the new idea of systematic integration of the characteristics of the director team heterogeneity. When studying the nexus between the director team heterogeneity and CSR from the perspective of static characteristics, this thesis systematically integrates the composition characteristics, structural features, and value characteristics of the director team heterogeneity, and studies the influence mechanism of their interaction on CSR. There is a certain novelty.

1.8 Summary

The practical background analysis of this chapter exhibits that enterprises are eager to highlight the impact of the director team heterogeneity on CSR. The theoretical background analysis shows that there lacks research on the director team heterogeneity and CSR as well as the impact of the institutional environment on director team heterogeneity and CSR. The research problem is put forward: Under the influence and function of the institutional environment, what kind of director team heterogeneity characteristics can affect the social responsibility of private enterprises, and will promote enterprises to fulfill its social responsibility. Then the corresponding research model is proposed.

Combined with the research problems and using the research results for reference, this chapter defines the director team, the director team heterogeneity, advocates the concept of broad TMT with team structure; therefore, it provides support for the study of director team heterogeneity and CSR of this thesis.

This chapter analyzes the urgency of research problem. Aiming to improve the theory of TMT characteristics, cross-level research theory, and Institutional Theory; from the perspective of grasping the different characteristics of the director team and its internal mechanism with CSR; grasping the regulatory role of the institutional environment, this chapter analyzes the significance of studying the nexus between the director team heterogeneity and CSR

theoretically and practically. In order to better research problems, this chapter analyzes the research objectives and designs the research content of six chapters in total.

This chapter analyzes literature research and empirical research methods, and introduces sample collection and data sources. The dependent variable, independent variable, control variable, regulating variable and measurement method are defined. From the static perspective, gender, age of independent variables constituted the composition characteristics of director team heterogeneity. Tenure, educational background, founding chairman and political status were used to measure the difference of power distance between chairman and other members of the director team, which constituted the structural characteristics of the director team heterogeneity. The heterogeneity of values constitutes the value characteristics of the director team heterogeneity.

To sum up, this study is likely to be innovative in terms of research perspective (director team), research level (team, enterprise and institutional cross-level), and system integration (system integration of constituent characteristics, structural characteristics and values characteristics).

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Chapter 2: Literature Review

This chapter will further clarify the research topic and the problems to be solved in this thesis by combing and analyzing the related research literature on CSR, director team heterogeneity, and institutional environment. The mechanism of director team heterogeneity and CSR, the influence of institutional environment on director team heterogeneity and CSR, as well as the connotation, boundary definition, influencing factors, research and measurement methods of related variables, thus provide the theoretical support, research space and problems to be solved for this thesis.

2.1 Research on CSR

2.1.1 Concept and connotation of CSR

As the economy accelerates and competition intensifies, and negative events that harm the interests of all parties in society and the environment come to light, CSR has begun to enter people's field of vision. It has also been discovered by academia and has gradually become the focus of research. J. M. Clark (1916) pointed out that individual responsibility is giving way to social responsibility, and that individual responsibility is expanded only when we are unitedly responsible for the entire social environment. The issue of CSR was further clarified by Sheldon (1924). He argued that industrial management must be governed by certain principles inherent in the motives of service to the community. Firstly, the policy conditions and metho ds of industry will contribute to the public welfare; secondly, in this ethical value, management should strive to interpret the highest moral sanctions so that the ideals of social justice can be realized; and thirdly, to take the initiative to raise the general moral standards and social justice concepts in its own field. Company should respect their employees, create convenient working conditions, establish work standards that are conducive to employees' self-development, and supervise power through systems and mechanisms. It is obvious that Sheldon has further refined the scope of CSR, which involves not only the employees , but also the community and public welfare outside the company; not only the material interests and development conditions of employees, but also ethics, morality, social justice and supervision of power. Bowen (1953) believes that CSR is an obligation for companies to make decisions that are beneficial to social

values based on social benefits and to perform corresponding actions. J. M. Clark (1916), Frangul and Friedman (1979), and Sheldon (1924) have studied the concept of CSR from different perspectives. So far, scholars still hold two schools of thought on the concept of CSR. One advocating CSR mainly refers to the responsibility of employees, communities, creditors, consumers, suppliers, government, environment and other parties directly associated with the interests of enterprises on the basis of protecting the interests of shareholders and obtaining certain profits; the other advocates that the responsibilities undertaken by the company can only be to the shareholders of the company. Specific representative views can be found in Table 2.1.

Table 2.1 Definition of corporate social responsibilities

Scholars	Time	Perspectives
Clark	1916	Personal responsibility gives way to social responsibility, and we share responsibility for the social environment (J. M. Clark, 1916).
Sheldon	1924	Industrial management, which must be governed by certain principles inherent in the service motive to the community (Sheldon, 1924).
Bowen	1953	The obligation of a company to make decisions based on social benefits that are beneficial to social values and to carry out corresponding actions (Bowen, 1953).
Friedman	1970	Seeking benefits for shareholders is the CSR (Friedman, 1970). (opponents)
Carroll	1991	CSR should be attentive to the influence of the companies on society (Carroll, 1991).
Clarkson	1995	CSR should focus on stakeholder responsibility and implement it into daily business activities (Clarkson, 1995).
Freeman	1984	Company are stakeholder-related and need to focus on stakeholder interests (Freeman, 1984).
Weder	2017	CSR refers to common sense related discourse between company, organization, and stakeholders (Weder, 2017).

To sum up, there is no consensus in the academic field on the definition of the concept of CSR. Opinions that support and oppose CSR can be categorized as "stakeholder side" and "shareholder side". The key points and differences are mainly focused on the following crucial aspects: first, who is the audience subject of CSR, the shareholders or stakeholders of the company; second, whether the value orientation of CSR is self-interest or altruism; third, whether the human needs of CSR are material or material and spiritual, for example, ethics, morality and values. The three aspects are detailed.

First, who is the audience of CSR, shareholders or stakeholders of the company? This question's essence lays on who are beneficiaries, shareholders or stakeholders? It can be answered from company evolution. Companies at early-stage chased after the interests to satisfy shareholders' demands. Subsequently, market economy and industrialization's mergence speeded the economic society. After entering the prosperity period, companies consecrate the interest maximum, accompanied by expansion, monopoly and incidents that undermined public interest, for instance, harmful counterfeit and shoddy products that invade consumers' interest,

toxic gas and wastewater that pollute the environment, poor working conditions that deteriorate employees' health physically and mentally, noise that interferes community residents' lives, fake accounting data under black box operations. These incidents provoke reverse society responses and companies become stakeholders' focal point. Companies are highly urged to meet stakeholders' demands and fulfill CSR. Surrounded by multi-side pressures, CSR turns into a must trend. At this time, the objective audience of CSR transfer to stakeholders including shareholder. This transition embodies the respect for human and attention on human needs.

Second, whether the value orientation of CSR is self-interest or altruism? This question involves CSR decision makers' value and is essentially a value orientation question. Existing research ascribe CSR to operation needs, law restrictions and public pressure. However, behind these factors are corporate leaders' self-interest orientation. If corporate leaders value altruism, they are proactive to CSR. Their value will drive them to poverty alleviations, volunteer educations, disaster relief donations, energy conservation, emission reduction, and high-quality products and customer service. Thereby, a real meaning CSR is established on altruism value.

Third, whether the human needs of CSR are material or material and spiritual? This question concerns the essence of CSR. Assume CSR can satisfy the needs of stakeholders including shareholders, what would the needs be? Stakeholders are human, and human's needs are various. Material needs come the first, for example, customers' needs on high quality products. Besides materialism, there are emotional satisfaction on equality and respect, values realization, ethics and morality presentation, such as justice and integrity. CSR build on human needs integrates its economic and social attributes.

Based on the above analysis, this thesis defines CSR with reference to the previous research results as: The company takes the value-oriented approach of benefiting stakeholders' demands in its operation and undertakes the social responsibility of stakeholders, including shareholders, in material and spiritual aspects.

2.1.2 Models and dimensions of CSR

According to Pinkston and Carroll (1996), the basic connotation of CSR has been further developed into a multi-faceted examination of the dimensions of CSR. CED model encompassing three circles were unveiled (Committee for Economic Development [CED], 1971). Carroll (1991) proposed another model. The model encompassing four dimensions is exhibited in Figure 2.1.
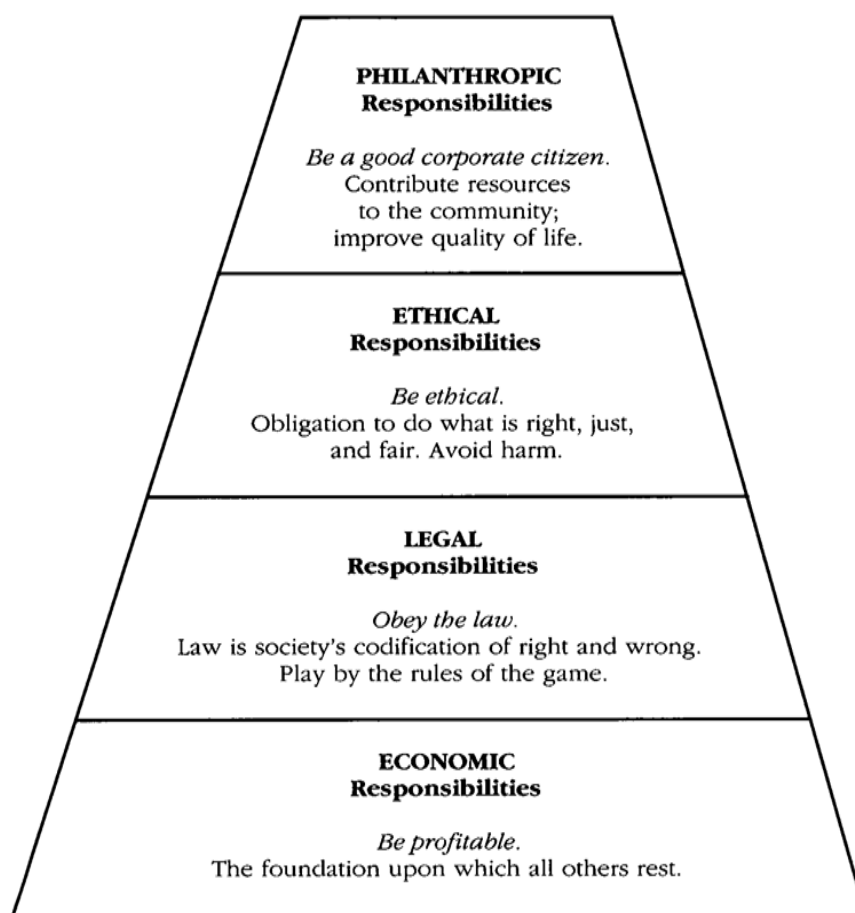
Figure 2.1 The model encompassing four dimensions

Source: Carroll (1991)

In above model, economic responsibility is the most fundamental. One of companies' primary responsibilities is to provide society with the commercial products and services that people need and to generate more profits for shareholders. In fulfilling economic responsibilities, companies must comply with relevant national laws and regulations, adhere to ethical business practices, and assume all legal obligations. Subsequently, enterprises must strictly adhere to social ethics and moral standards. Furthermore, enterprises are expected to shoulder philanthropic and social welfare responsibilities, which represent the highest level of philanthropic duties. Evidently, Carroll's findings on CSR model exhibit a distinct hierarchy and quantifiability. These findings serve as a foundational framework for examining how enterprises can correctly undertake social responsibilities and how to analyze and assess a company's social obligations. This model offers a robust theoretical foundation. In 1994, Elkington (1994) introduced another model known as "triple bottom line" model, characterized by distinct ideological features. Given the rapid economy growth and resource depletion, enterprises, when confronted with economic, social, and environmental issues related to human development, must strive not only to pursue and preserve shareholder interests but also to

adhere to the critically important bottom lines of social responsibility and environmental responsibility. The model emphasizes the necessity of achieving a balance between these three bottom lines. Concurrently, this model provides a more comprehensive framework for further evaluating CSR.

Comparing these three models, certain noteworthy trends emerge. They all focus on similar objectives but adopt distinct approaches to achieve them.

Firstly, all three models place a strong emphasis on enterprises' economic responsibilities. In the CED model, economic responsibility is represented within the inner circle, underscoring the imperative to supply society with necessary products and fulfill employment needs. Furthermore, it stresses the obligation to remit taxes to the country in accordance with the law. Carroll's four-dimensional model also highlights economic responsibility as a fundamental element, emphasizing the production of products and services essential to society and the maximization of profits. Elkington's triple bottom line model espouses a bottom-line approach to economic responsibility, requiring companies to operate in compliance with the law, cater to customers, and generate profits, which are deemed crucial for a company's survival.

Secondly, all three models underscore the significance of corporate environmental responsibility. The central column in the CED model represents the responsibility for changes brought about by corporate economic activities, including social and environmental changes. This encompasses activities like environmental protection and excellent customer service. In the four-dimensional model by Carroll, environmental responsibilities are merged into legal obligations, necessitating that enterprises operate lawfully and adhere to environmental protection laws to protect the environment. Any illegal activities that harm the environment must result in corresponding legal consequences. Elkington's triple bottom line model explicitly outlines the environmental bottom line that must be maintained, prohibiting business operations that endanger the environment crucial for human survival or cross environmental boundaries. Negative environmental impacts should not be externalized.

Thirdly, all three models accentuate CSR. The outer circle in the CED model enumerates the intangible responsibilities that promote societal progress, although some responsibilities may be ambiguous. Carroll's four-dimensional model delineates legal, ethical, and philanthropic responsibilities, with CSR being a component within these three dimensions. Elkington's triple bottom line model mandates that companies embrace social responsibility, responding to stakeholder demands and serving various stakeholders.

Fourthly, all three models emphasize the multidimensional and multi-perspective nature of CSR. These models reflect the multifaceted dimensions and perspectives of social and

economic development, the harmonious coexistence of humanity and nature, and the challenges that demand collective attention. The core aspects encompass economic, environmental, and social responsibilities, which encompass legal, ethical, moral, and philanthropic factors.

Nonetheless, it is important to note that these three models have certain limitations due to historical circumstances. Firstly, they lack dynamism, as they do not promptly adapt to evolving societal responsibilities faced by enterprises. For instance, the models may not account for the transformations in the business landscape brought about by the digital economy and artificial intelligence, resulting in issues such as safety oversight, rights protection, career development, and harmonious relationships. Secondly, the models lack situational adaptability. Although they exhibit a degree of universality regarding corporate social responsibility, they may not adequately consider the contextual differences between developed and developing countries. In summary, these three models offer a solid foundation for the evaluation of CSR, but they should be further refined and adapted to changing circumstances as they are employed.

2.1.3 Evaluation of CSR

As mentioned above, what is the level of company decision making and CSR implementation that better meets the requirements of the CED model, model encompassing four dimensions and the Triple Bottom Line Model? These questions have attracted much attention from scholars, research institutions as well as the business circles. CSR evaluation is based on the consideration and evaluation of the dimensions of CSR based on the theoretical basis of stakeholders. One of the most representative methods is the Reputation Index Method, which evaluates the degree and level of CSR through indicators related to company reputation. Moskow (1972) have used this method to examine the reputation of enterprises through a system of reputation indicators and to evaluate CSR. Preston (1982) evaluated the company's impact on environmental responsibility. This method prevails in its easiness to grasp and use, but it has flaws because it is more subjective than other methods.

Secondly, KLD evaluation method, this is an evaluation method developed by KLD (Kinder, Lydenberg, Domini) to comprehensively evaluate the social responsibility of listed companies in environmental, society, governance and other aspects. In China, the representative samples that have established an evaluation system based on the KLD method is the CSR rating of RKS and the ESG rating of Sino-securities. In addition, Hexun.com and Chinese Academy of Social Sciences have also established CSR evaluation systems.

The rating system of RKS CSR Rating is geared to the international standards and has become a widely recognized CSR rating standard system in China because it not only refers to

ISO26000 but also is integrated with China's context. Considering integrity, content, technology and industry, RKS CSR rating sets 15 first-level indicators and 63 second-level indicators, covering many key areas such as strategy, stakeholders, economic efficiency, environment and development. The rating system of RKS CSR Rating adopts structured expert scoring, and the weights of each dimension are scientific and reasonable, with strong pertinence and applicability. That is why this CSR evaluation system has obvious comparative advantages in China.

Drawing upon international experience and combined with China's reality, Chindice ESG Index has an objective and evidence-based evaluation system and covers Shanghai and Shenzhen Stock Exchange A-shares. Meanwhile, it has the advantages of being forward-looking, timely and accurate, and has passed the IOSCO authentication audited by PwC. At present, Chindice ESG Index includes four levels of indicators: 3 level-1 indicators, 16 level-2 indicators, 44 level-3 indicators and nearly 80 level-4 indicators. Form high to low, Chindice ESG rating is encompasses nine grades from "AAA" to "C". Therefore, Chindice ESG Index is prevailed in China and is accepted by the academia and business circle.

Third, the questionnaire survey method, which is to design a questionnaire survey to the actual situation of the company, and conduct quantitative assessment of CSR. A representative sample is Turker (2008), who proposed an eight-dimensional CSR scale by taking the dimensions of society, employees, customers and government as the entry point. In addition, Öberseder et al. (2013), proposed the CSR measurement scale by taking the dimensions of customers, employees, environment, community, society, shareholders, and suppliers as entry points. The advantages of the above methods have strong applicability, which can be integrated with company situations. However, there are certain difficulties in actual application, especially during the current epidemic period.

Fourth, content analysis. It is an analytical method that quantify qualitative information. CSR is usually quantified via coding and categorizing. CSR quantification collects information through company financial reports, CSR reports and related materials, employs steps of researching problems, sampling, coding, analyzing and result presentation. Through this method, CSR can be measured.

The above methods are often used for CSR measurement. To choose the suitable method necessitates clarifying their competitive advantages and limitations.

Reputation index method: It maintains unified and stable evaluation standard. Differences between companies can be compared, grasped and used. Whereas, it is prominently subjective. The evaluation information can be restricted and the sample are hard to control.

Content analysis: The research process is objective and suitable for large sample. Whereas, variable design has some subjectivity. A designing mistake would lead to poor efficiency and insufficient depth during the CSR measurement.

Questionnaire survey: It prevails in operations as it can combine corporate context and has strongly application, yet questionnaire design is also subjective. It cannot guarantee a scientific sampling and social desirability cannot be avoid during practice.

KLD evaluation: It is employed by professional evaluation institutions during applications and can systematically and scientifically assess CSR. Moreover, it can provide customers with abundant samples. Benefit from its stable measure standards, horizontal and vertical comparisons of CSR can be convenient. Advanced evaluation system and high-quality evaluation quality contribute to empirical research. However, expensive evaluation data by professional evaluation institutions also cost customers high expenses for obtaining data.

Leveraging the above analysis, this thesis employs the CSR evaluation result by the professional institutions to conduct empirical research.

2.1.4 Antecedents influencing CSR decisions and performance and related research models

There are objective reasons and critical predisposing factors for company decision making and CSR performance. Scholars have basically categorized the predisposing factors that influence company decision making and CSR performance into two categories: internal factors and external factors. From the internal standpoint, although there are many internal influencing factors that affect the overall company decision making and its fulfillment of CSR, all kinds of influencing factors ultimately need to be brought together at the highest decision-making level of the entire enterprise, that is, the TMT of the company. The features of the TMT have a definite influence on CSR implementation. In China, because the TMT that undertakes the critical strategic decisions of company is mainly the director team in the board of directors, the internal factors that affect company decision-making and CSR are focused on the director team. For example, Hambrick and Mason (1984) put forward the model of Upper Echelons, which disclosed that the predisposing factors influencing the strategic choice and performance of enterprises include the internal and external predisposing factors of company, as exhibited in Figure 2.2.
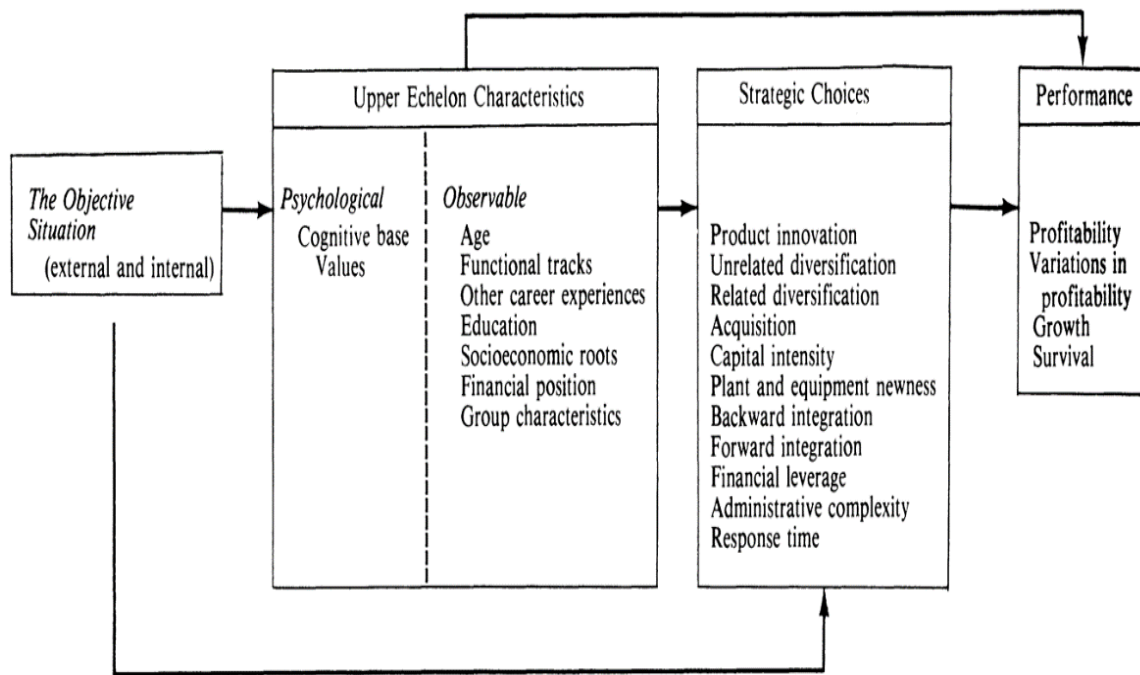
Figure 2.2 An upper echelons perspective of organizations

Source: Hambrick and Mason (1984)

Hambrick (1994) proposed a revised model encompassing four elements: composition, structure, motivation and process. Carpenter et al. (2004) and Gladstein (1984) have proposed a similar research model. As a result, scholar generally study TMT from the perspectives of static features and dynamic processes of executive teams. Static features mainly include compositional /constitutive features and structural features. The compositional features are mainly the demographic features of TMT. Structural features, on the other hand, are the roles among the members of the TMT and their structure. Hambrick & Mason (1984) views demographic features as a feature that reflect to some extent the cognitive ability of the TMT and can influence the decision making of the TMT members and thus the outcome of the decision. Scholars mainly use the demographic characteristics of the TMT; the static composition characteristics of the TMT heterogeneity or diversity study the relationship with CSR decision-making and fulfillment. Research on the nexus between the power structure (such as power distance) or the static structural characteristics of vertical dyads within the TMT and the decision-making and fulfillment of CSR. It thus becomes a pre-factor influencing CSR decision-making and performance. Some scholars, taking Priem et al. (1999) as an example, have questioned the study of the interrelation with CSR through static features of TMT. Furthermore, Reger (1997) have argued the *Black Box* of the decision-making process is not touched. As a result, some scholars have proposed research models that include the decision-making process to study TMT features and strategic decisions and firm performance. For

example, Gladstein (1984)'s research model (see Figure 2.3); Carpenter et al. (2004)'s research model (see Figure 2.4); Gist et al. (1987)'s research model (see Figure 2.5).
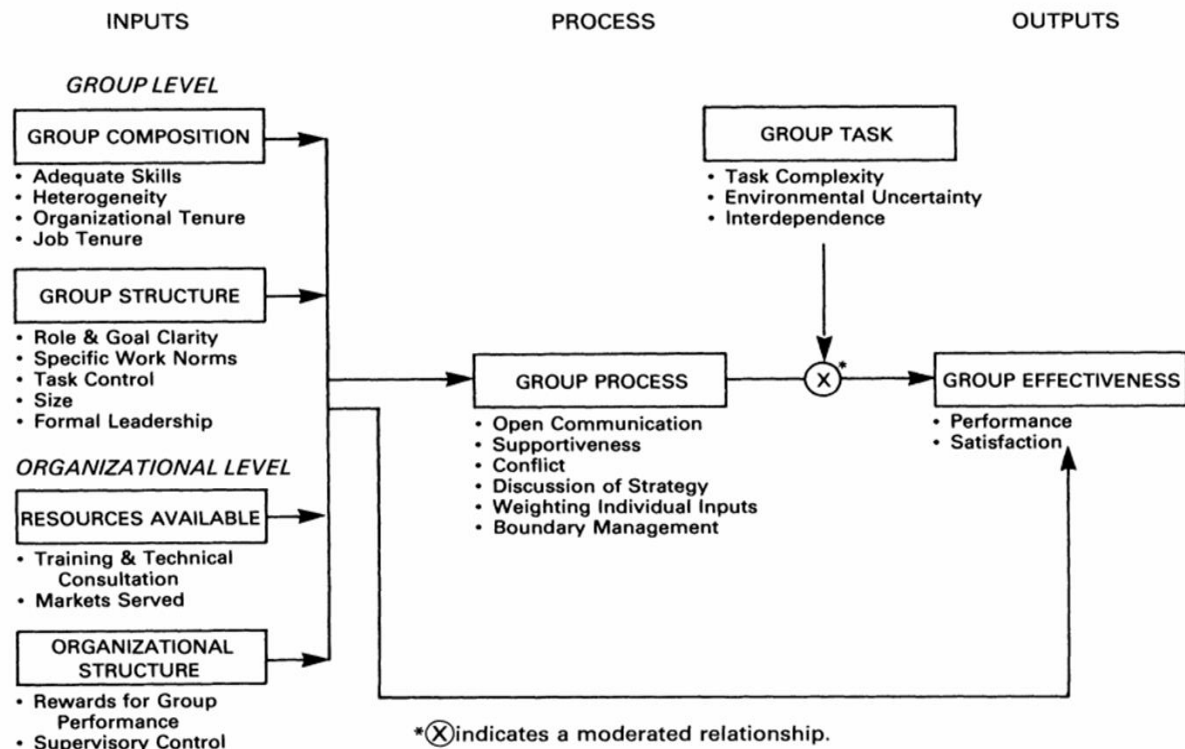
Figure 2.3 General model of group behavior

Source: Gladstein (1984)
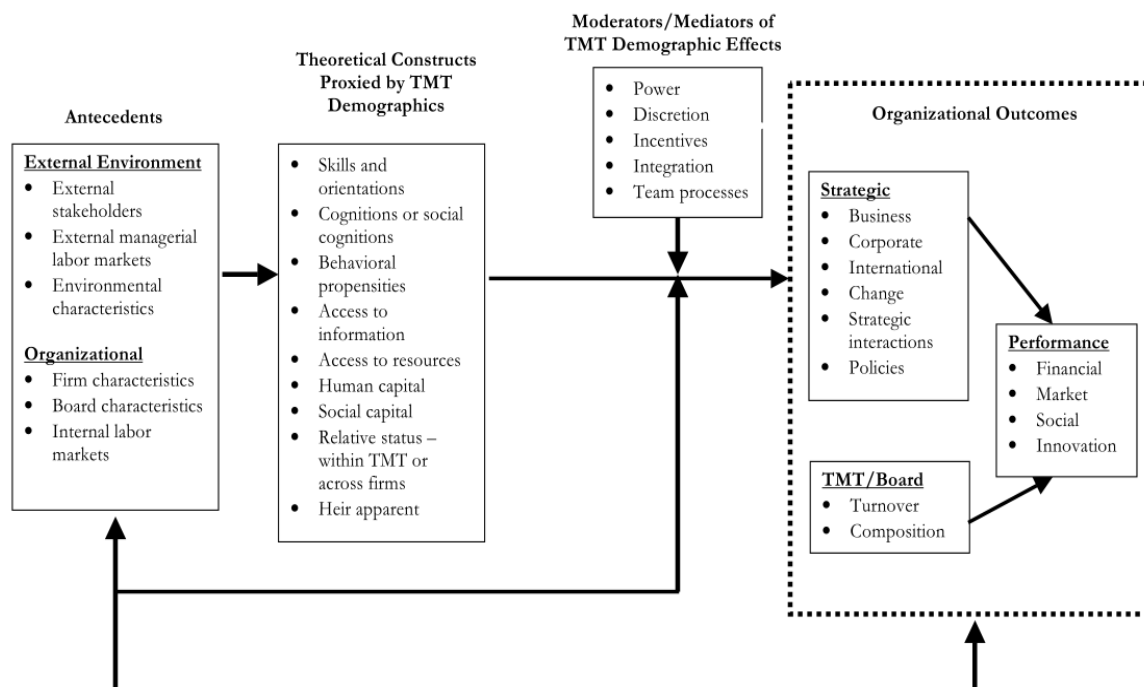
Figure 2.4 Stylized model of the upper echelons perspective

Source: Carpenter et al. (2004)

Heuristic Model of Small Group Interaction
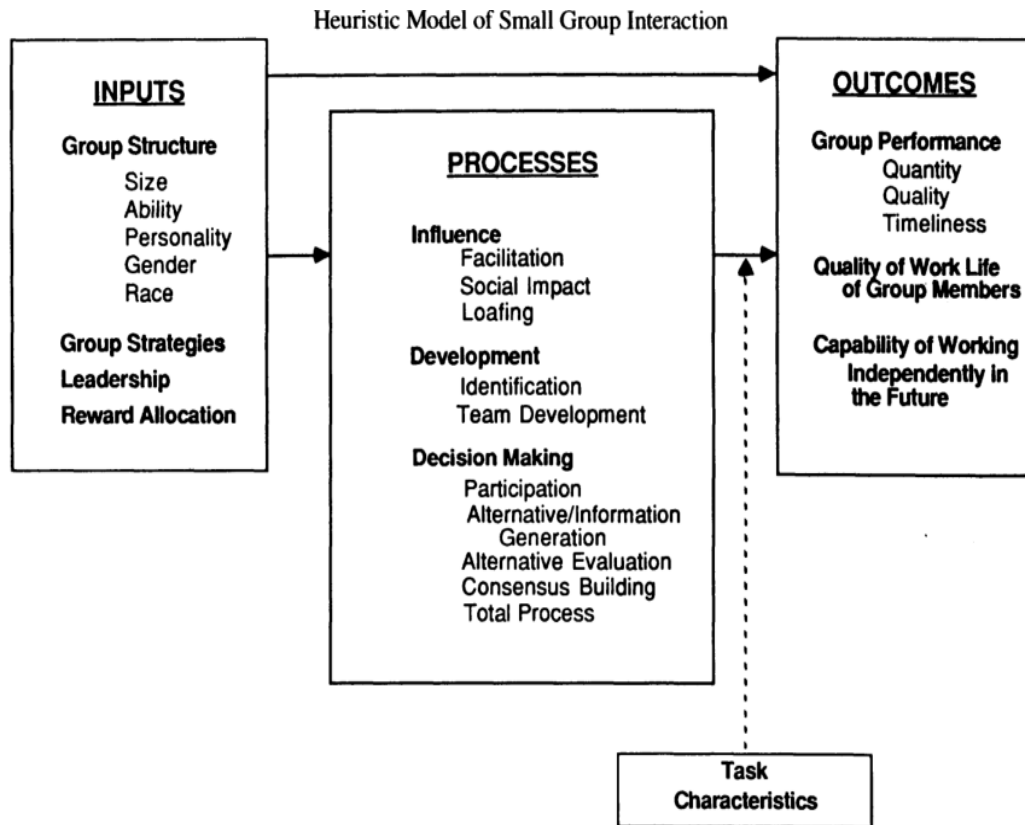
Figure 2.5 Heuristic model of small group interaction

Source: Gist et al. (1987)

Scholars such as S. B. Zhang and Li (2018) assume it still necessary to study the relation between the static characteristics of the TMT and CSR, which can be cut from the perspective of the interaction of the different factors of the TMT, the systematic integration of static characteristics, and the exploration of the adjustment effect of institutional factors, there is still room for further in-depth research. Scholars study the influence of TMT on CSR decision-making from the angle of dynamic process, study the nexus with CSR decision-making through the psychology and behavior of the TMT, and therefore, it also becomes a pre-factor influencing CSR decision-making.

External factors are another critical factor influencing CSR decisions. These factors cover a wider range, including not only economic, political, cultural, technological and other aspects of society, but also include the background of the enterprise's industrial environment. However, the institutional environment plays a central part in this regard. Institutional environment will be discussed later in this thesis.

2.2 Research on the director team heterogeneity

2.2.1 Definition and composition of the director team

2.2.1.1 Definition of the director team

As a pivotal part of TMT, the director team is closely correlated to TMT.

As an academic concept, TMT is related to the Upper Echelons Theory proposed by Hambrick and Mason (1984). The theory emphasizes that the dominant coalition of the organization, in particular its top managers, should become a novel focal point of research (Hambrick & Mason, 1984). The dominant coalition here differs in developing country context and developed country context. One difference is the entity. In developing countries like China, director teams in private companies are decision-making entities because of their corporate strategy functions. Management teams led by managers are rather executors than dominant coalitions. In developed countries, teams led by CEO or chairman are dominant coalitions that make decisions and control companies.

Another difference is the actual control. In developing countries like China, director teams in private companies control more shares and chairmen are large stakeholders. Conversely, general managers have no or limited shares and no actual control. In developed countries, the actual controller can be others instead of chairmen. The dominant coalitions vary with the control. Hence, dominant coalitions in the research are director teams with corporate strategy and major decision functions.

Based on the definition of the director team in 1.1.2.3, in this thesis, further defines the director team as all board members involved in major strategic decisions and task performance of the company. This has led to the interest of many scholars in the study of TMT, but scholars' opinions on the composition of TMT vary.

2.2.1.2 Director team composition

The composition of the director team and the composition of TMT are also interrelated.

Scholars' opinions on the composition of the TMT generally encompasses four categories. For the first category, it is determined by the list of the CEO's TMT (Carmeli et al., 2016; K. D. Clark & Maggitti, 2012; Colbert et al., 2014; Heavey & Simsek, 2017). For the second category, it is determined by the position or compensation of top managers (Cooper et al., 2014; Gupta et al., 2017; Quigley & Hambrick, 2015; Quigley et al., 2019; Ridge & Ingram, 2014). For the third category, it is determined by the list of TMT published in the annual reports of

listed companies (Elron, 1997; Zhou, 2017). For the forth category, it is determined by the managerial set of the board members and top management personnels (Finkelstein & Hambrick, 1990).

Although scholars have different opinions on the composition of TMT, they still follow the basic substance of the organization's dominant coalition, top managers and those who participate in major strategic decisions of enterprises, as proposed by Hambrick and Mason (1984). Therefore, combining the above-mentioned definitions and member construction, this thesis defines the TMT as: all top management personnel involved in major strategic decisions and task fulfillment of the company, including members of the director team headed by the chairman, members of the management team headed by the CEO or general manager, including the general manager, deputy general managers, financial directors, and top management personnel in the company's financial report, including the secretary to the board of directors. This thesis argues that this definition should belong to the broad sense of TMT as it is constituted by director team, manager team and director team secretary. On the other hand, the members of the manager team headed by CEO or general manager, including the TMT defined by general manager, deputy general manager and chief financial officer, should belong to the narrow sense of TMT. Director team is a pivotal part of the TMT, which includes the chairman of the board (some companies have vice chairmen), independent directors and non-independent directors; It also encompasses the chairman of the board (some companies have vice chairmen), executive director and non-executive director; internal directors and external directors.

The director team composition also worth probing into, because it manifests director team members' interrelationships, which can be hierarchical and nonhierarchical. Nonhierarchical interrelationships embody directors' voting rights. Each director has 1 vote, which is equal and nonhierarchical in vote rights. This is obviously distinct from the director team hierarchy. The director team members are at unequal levels of power and influence, which consequently forms a hierarchy. The hierarchy sequence can be set by system. Company regulations endow chairman with dependent decisive power on company affairs. Consequently, other directors' power largely lag behind the chairman. Meanwhile, this is legitimate, shaping a formal and explicit hierarchical structure.

Moreover, this hierarchy sequence also emerges in informal contexts. Individual resources confer different levels of influence to director team members. Founding chairman may possess the company's controlling interest and have lagger contributions. Thereby, founding chairman prevails in their influence than other directors. This influences manifest in capability, prestige, social impact and others. In this case, an informal implicit hierarchical structure constituted.

Hierarchical and nonhierarchical interrelationship in the director team unveil the essence of the director team composition. Concerning this interrelationship, what characteristics does the director team heterogeneity have and what how would them influence CSR decisions remain explorations.

2.2.2 Heterogeneity of the director team

The heterogeneity between the director team and TMT are also interrelated.

The demographic features of TMT have been regarded as a basis for cognition and values that are thought to reflect the cognitive abilities of TMT and influence their behavior, so they are valued by people (Crossland & Hambrick, 2007). The features of TMT are explored mainly in terms of their heterogeneity, or in terms of diversity. Most scholars agree that the heterogeneity/diversity of TMT are the different features of TMT members as reflected in their demographic features (Weeks, 1966). Finkelstein and Hambrick (1990) considered the heterogeneity of TMT as the degree of differentiation among the members in terms of basic demographic features such as gender, age, occupation, and cognitive beliefs, values, and experiences.

Combined with the above-mentioned scholars' research, this thesis recognizes the definition of the heterogeneity of TMT proposed by Finkelstein and Hambrick (1990), and defines the heterogeneity of the director team as the difference between the members of the director team in the basic demographic features such as gender, age, occupation, cognitive beliefs, values, and experiences.

2.2.3 Classification of the director team heterogeneity

As a pivotal part of TMT, the classification of the director team heterogeneity is also related to the classification of TMT heterogeneity.

Due to the various economic, political, cultural and social conditions in different countries and regions, the classification of the heterogeneity of the TMT also varies, and the representative samples are: First, it is classified according to the level of appearance. Race, nationality, age, gender are classified as easily observable TMT features (S. E. Jackson, 1992); Personality, attitudes, values are classified as deep-level TMT features.

Secondly, it is classified according to the nature of different relationships. C. Jackson and Bundgard (2002) classified age, gender, and race as interpersonal-related features of the TMT heterogeneity; and years of experience, education, and so on as task-related features of TMT

heterogeneity.

Third, it is classified according to trait nature. Zanutto et al. (2010) classified educational background, experience, professional knowledge as the information-related heterogeneity features of the TMT; race, gender, nationality are classified as social-related heterogeneity features of the TMT; team members' different views on work tasks are classified as value-related heterogeneity features of the TMT.

Each of the above-mentioned representative categories of heterogeneity of TMT has its own reasonable components and merits. Comparatively, the division and relation of surface-features and deep-features worth more attention.

Research on TMT heterogeneity highlights surface features such as gender and age. For deep features like values and cognition that are hard to measure, studies rarely appear. Practically, both surface and deep features drive TMT decision-making. Moreover, deep features are essential inner of surface ones.

Firstly, TMT heterogeneity's deep features influence decision-making. TMT theory states, TMT's deep features encompass cognition and values, which are limited rational. Swept by external information and restricted by insights, TMTs receive information selectively. Managers' cognition formed via perception leads to strategic selection, thereby achieving managers' decision-making. Consequently, values and cognition decide human decisions.

Secondly, TMT heterogeneity's deep features constitute the inner of surface features. TMT theory posits, TMT's surface features encompass gender, age and other factors. Surface features partly reflect TMT cognition, affect TMT's strategic decisions. Meanwhile, they are restricted by deep features. For example, if TMT's values prefer stakeholders, its corporate decisions support CSR, which downplays heterogeneities in gender and age and demonstrates a strong correlation and decisive influence of deep features on deep ones.

In general, this thesis recognizes the basic method of classifying the heterogeneity of the TMT at the surface level and at the deep level. This thesis believes that the features of heterogeneity of the director team encompasses surface-level features and deep-level features concerning the regularity and principle of reflecting the cognitive ability of TMT. The surface-level features include gender, race, age, education, profession, career experience, tenure, social capital. The deep-level features mainly refer to personality, values and other deeper psychological features reflecting cognitive ability, and this division is based on whether it can further reflect the cognitive ability of the director team.

2.2.4 The impact of the director team heterogeneity on CSR

How director team heterogeneity influences CSR is also interrelated to the effect of TMT heterogeneity on CSR.

The cognitive ability and values of the TMT impact the company strategic decisions significantly. According to the upper echelons theory, the cognitive ability and values of the TMT are closely related to demographic features (Fraser & Greene, 2006), which can be reflected by the features of the TMT. In particular, the heterogeneity of the TMT (Hambrick et al., 1996), significantly takes effect on company decision making and the assumption and implementation of CSR.

Director team heterogeneity (diversity) has a pivotal impact on CSR. The basic reason is: based on the desire and care of the stakeholders, director team heterogeneity can bring more diversified information and resources compared with director team homogeneity, which could present different opinions and selections from different levels and endow the advantage of improving the decision-making (Carpenter & Fredrickson, 2001) In this way, the CSR strategy selection can be benefited and the corporate performance and social performance can be balanced (F. Wang et al., 2020).

For example, the diversity of demographic features of the TMT has led to a significant improvement in decision quality (Hambrick et al., 1996; Henderson et al., 2006). Attitudes toward interest in CSR vary by age, with older members being more conservative (Chown, 1960), more risk-averse (Bantel & Jackson, 1989), and more concerned with finances and position. TMT members' education level can influence their values (Hambrick & Mason, 1984) and decision-making ability (Wiersema & Bantel, 1992). Across gender of the TMT members, women are more concerned and engaged in CSR (Bernardi et al., 2009; Boulouta, 2012). Luo and Cho (2019a), based on 4763 research data of 732 companies in China, a positive connection was found between the proportion of female managers in TMT and CSR scores. The heterogeneity of the TMT unearths a positive connection with CSR (De Hoogh & Den Hartog, 2008). At the same time, longer tenure lengths promote the performance of CSR in TMT (Finkelstein & Hambrick, 1990). The compensation of TMT also has positive and negative impacts on CSR (Mahoney & Thorn, 2006; McGuire et al., 2003). Views from scholars such as Greening and Johnson (1997), D. W. Li and Wu (2017), and Q. Wang et al. (2020) vary on the definition of the scope of the TMT and the features of the heterogeneity of the TMT, and have different empirical results on the positive and negative effects of TMT features on CSR. The above findings can help to understand the predisposing factors, that is, the nexus between

the heterogeneity features of director teams and CSR.

2.2.4.1 The influence of director team heterogeneity on company strategic decisions and performance

The impact of director team heterogeneity on enterprise strategic decision-making and performance is correlated with the impact of TMT heterogeneity on enterprise strategic decision-making and performance.

The heterogeneity of the TMT has a significant correlation and impact on decision making and performance outcomes of company strategy (Bantel & Jackson, 1989; Boone et al., 2004; De Hoogh & Den Hartog, 2008; Di Giuli & Kostovetsky, 2014; Hambrick et al., 1996; Hambrick et al., 2005; Kilduff, et al., 2000; Krishnan, 2005; Preston, 1982; Yang & Wang, 2014). At the same time, we can see that there are positive and negative effects (Boone et al., 2004) or even no association (West & Schwenk, 1996) for the impact of this correlation. In addition, institutional environment and industrial environment situational factors also have a role in influencing this relationship. The positive effect of TMT heterogeneity on company strategic decisions and performance can be examined from a multidimensional perspective.

First, the heterogeneity of age. Since age differences can bring together different information and resources accumulated by members of TMT in company with different experiences at different ages, it can promote the improvement and enhancement of the quality of their decisions (Brammer & Millington, 2005). The study by Y. Xu et al. (2018) suggests that in deterring company financial fraud, it is significant to be attentive to board age and CEO-board orientation age differences.

Second, the heterogeneity of gender. With regard to gender heterogeneity, most scholars believe that when men and women treat ecological and humanistic care, women are more inclined to pay attention to and invest in ecological and humanistic care, so they pay more attention to CSR and demonstrate their willingness to assume responsibility. Therefore, in general, with the percentage of female executives become higher in terms of gender heterogeneity, the more likely they are to demand CSR (Boulouta, 2012), and there is a relatively strong consensus that gender heterogeneity and CSR are positively and strongly correlated and may directly affect the financial performance of the company. Hoobler et al. (2016) unearthed that women's leadership position affects overall company performance. Xie et al. (2020) examined the impact of board gender diversity on companies' environmental strategies and financial performance. Showing that women on the board help to promote proactive environmental strategies. Research conducted by Ali and Konrad (2017) using

lagging surveys and archived data demonstrated a positive correlation between TMT with gender heterogeneity and the DEM system.

Third, the heterogeneity of nationality. As the variability of executive members of different nationalities brings different cultural backgrounds, it facilitates the cross-fertilization and borrowing of different cultures, which promote the firm performance. Bocquet et al. (2019) conducted a survey on 1348 SMEs from Luxembourg. The results showed that nationality diversity triggers technological innovation.

Fourth, the heterogeneity of tenure. Due to the heterogeneity of the tenure of the members of the TMT, the accumulation and identification of experience and information makes the information sources appear diverse, and thus can propose a variety of options for strategic decisions, which can lead to strategic decisions taking into account multiple considerations and optimizing the decision options, and at the same time, the higher the heterogeneity of the tenure, the stronger the firm's strategic adaptation to external resilience, and better able to adapt and resist risks. W. S. Lee and Moon (2016) investigated the strategic risk-taking behavior of CEOs of 15 U.S. airlines by making full use of observable information. The results uncovered that CEO tenure and education heterogeneity had a significant impact on strategic risk-taking of airlines.

Fifth, the heterogeneity of education. The heterogeneity of academic level indicates that team members have different levels of accumulated knowledge and can provide multiple sources of information from different perspectives and levels, which equally serve to promote strategic decision-making and performance. Additionally, the heterogeneity in educational attainment also facilitates team communication and program complementarity. C. J. Lee et al. (2018) used data from 45 listed companies in Taiwan, China, between 2005 and 2014, and conducted a regression analysis to find that educational diversity can influence corporate misconduct, drawing the implication that diversity in educational background of directors can prevent corporate misconduct. Bantel and Jackson (1989) studied the correlation between the social composition and innovation of the TMT in a company. The situation of 199 banks was sampled. The average age of the management team in the company, the average tenure of the company, educational level, age, tenure, educational background and function of the heterogeneous background were investigated. The research results uncover that banks with strong innovation capabilities are managed by well-educated diversified teams.

Sixth, the heterogeneity of major. The differences in the majors and related professional skills of the TMT members make it possible to rationalize the structure and dynamics of the professional skills of the TMT members and to propose diverse and multi-perspective strategic

alternatives from the perspective of the professions and their skills, which can expand the options and complementarities of strategic solutions due to the diversity of information sources, and thus better adapt to the dynamic changes in the market (Carpenter, 2002), .

Seventh, the heterogeneity of career experience. A TMT composed of executives with different career experiences can facilitate the team's access to accumulated experience and information sources from different industries and positions, which is conducive to the systematic consideration of different perspectives in strategic decision-making. Hambrick et al. (1996) examined the influence of career experience on firm competition and performance and demonstrated the positive effect of career experience. C. J. Lee et al. (2018) using panel statistics of 45 Chinese listed companies in Taiwan between 2005 and 2014, a regression analysis can find that empirical diversity of board characteristics can protect against corporate misconduct. Slater and Dixon-Fowler (2008) found if the CEO had been assigned abroad, the CSP is higher and is regulated by the CEO's functional background.

Eighth, value heterogeneity. The heterogeneity of values is manifested by differences in beliefs, attitudes, and interests among some members of the TMT. Jehn et al. (1997) have conducted a more detailed category analysis of values heterogeneity. Milliken and Martins (1996) have pointed out that differences in team values can present diverse cognitive information resources and improve the quality of strategic decisions. Waldman et al. (2006) investigated 561 companies in 15 countries to demonstrate how the cultural dimensions predict the social responsibility values of TMT members. Gupta et al. (2017) found that ideology predicted CSR progress.

Ninth, the heterogeneity of social capital. The higher the social capital heterogeneity of the TMT, the more social relationship resources become advantageous resources, the more the accumulation of social relationship resources, the more information and funding can be obtained from multiple sources, thus gaining competitive advantage and benefits, especially the executives with positions such as NPC representatives, have high concern for the environment and stakeholders, and are generally more invested in CSR. Barroso-Castro et al. (2015) examined the influence of board social capital on firm performance. Internal social capital can attenuate the negative effects of excess social capital external to the board. Ali and Konrad (2017) tested this in 248 small and medium-sized organizations via investigation and filed data. The findings partially supported that the equality management DEM system is positively correlated to performance.

The negative influence of TMT heterogeneity on corporate strategic decisions and performance can also be examined from a multidimensional perspective.

First, The heterogeneity of age. Some scholars have also found in their studies that age heterogeneity can easily lead to cognitive differences due to the different perspectives of members of different age groups in considering problems and focusing on different views of current and long-term interests, which can easily lead to conflicts, destroy the harmonious atmosphere of the team, make the cooperation mechanism unbalanced, and have negative effects on strategic decisions and performance (S. E. Jackson et al., 1991).

Second, the heterogeneity of gender. Compared with men, women are considered to be conservative and less innovative, with no significant promotion or negative impact on innovative strategic options. Bocquet et al. (2019) conducted a sample survey of 1348 small and medium-sized enterprises from Luxembourg and unfolded that among these two variables, only the nationality heterogeneity could trigger technological innovation. Bøhren and Strøm (2007) found that the diversity brought by larger director team scale, more gender combination and more employee director was negatively related to the performance.

Third, the heterogeneity of tenure. Faced with a complex and changing environment, the heterogeneity of tenure rises to a certain level and the gap of heterogeneity makes it difficult to fit the contradictions between team members and misses the opportunity to make scientific decisions. Carpenter (2002) have found that due to the internationalization of executives and corporate operations, the heterogeneity in responsibilities and tenure among executive teams plays a role, and high heterogeneity in tenure also has a negative influence on companies for a high level of corporate internationalization. T. Lee et al. (2020) found that tenure heterogeneity negatively affects firm performance based on data from CSR reports of listed firms in Taiwan, China.

Fourth, the heterogeneity of education. The heterogeneity in educational attainment of TMT members can reflect the different levels of knowledge and cognition among members, and when this heterogeneity of opinion on strategic decisions increases, it can increase the conflict level and adversely affect corporate performance (Knight et al., 1999). T. Lee et al. (2020) found that TMT educational background heterogeneity decreased firm performance based on data from CSR reports of firms in Taiwan, China, and that greenhouse gases emission strategies mediate this relationship.

Fifth, the heterogeneity of major. As all members of the company's TMT have different knowledge and professional background, they certainly see things differently and from different perspectives, once to a certain extent, it will cause cognitive deficits and be prone to conflicts. A study by Chinese scholars D. W. Li and Wu (2017) found that a high level of government intervention directly contributes to a high level of professional differentiation in the team, which

has a negative but not significant impact on CSR.

Sixth, the heterogeneity of values. Some scholars have argued through research that the heterogeneity of values of TMT, at a certain level, can negatively affect corporate strategic decisions and performance. Olthuis and van den Oever (2020) tested the hypothesis by using fixed effects OLS regressions, demonstrating a negative correlation between board ideological diversity and CSR performance, showing that high ideological diversity leads to lower CSR performance.

Seventh, the heterogeneity of social capital. Chinese scholars D. W. Li and Wu (2017) found through research analysis that in an "institutional environment" with high government intervention in the economy, the effect of heterogeneity of social capital on the actual level of CSR performance would be weakened.

2.2.4.2 The influence of director team heterogeneity on CSR

The impact of director team heterogeneity on CSR is related to the impact of TMT heterogeneity on CSR.

The influence of TMT heterogeneity on corporate strategy decisions and performance extends to CSR. This is because CSR itself belongs to the category of corporate strategy.

Currently, scholars' studies on the positive and negative influence of director team (TMT) heterogeneity on CSR are exhibited in Table 2.2 and Table 2.3.

Table 2.2 The positive influence of director team (TMT) heterogeneity on CSR

Features of heterogeneity	Author (Date)	Perspectives
Gender	McGuinness et al. (2017)	Women leaders are of the same importance with men in bringing change in CSR.
	Kumar and Paraskevas (2018)	SCM-experienced executives have a higher representation of women in the positive environmental agenda.
	Saeed et al. (2021)	Gender parity and less corruption can alleviate the influence of the industries, which belongs to the TMT gender heterogeneity.
	Elmagrhi et al. (2019)	Investigating 383 listed A-shares from 2011 to 2015, the study found the proportion of female directors promote the overall corporate environmental performance.
	Lin et al. (2016)	Implementation of CSR is associated with gender differences in top management. The study affirms that female representation facilitates corporate and business sustainability initiatives.
	Quintana-García et al. (2017)	Based on a sample of Spanish hotels, evidence is provided that gender heterogeneity in TMT has elevated CSR implementation in the hotel industry.
Age	Elmagrhi et al. (2019)	The study found that the age of female directors facilitated the corporate environmental performance.

Education	Huang (2013)	The study aims to investigate the interrelation between CEO features and CSR. The sample adopts the major ranking agencies from 2005 to 2010. There were 661 companies in the sample, yielding 392 observations. The results indicate that consistency in CSR ranking as a measure of CSR performance is associated with the professional education of CEOs. Moreover, CEO tenure and gender also affect CSR performance.
Tenure	D. W. Li and Wu (2017)	The TMT with higher heterogeneity of tenure is conducive to the implementation of CSR.
	Huang (2013)	The study focuses on the interrelation between CEO features and CSR. The results indicate that CSR will be directly affected by CEO tenure.
Social capital	Barroso-Castro et al. (2015)	The interrelation between board social capital and firm performance is examined by sampling 103 listed companies. It is shown that internal social capital can attenuate the negative effects of excess external social capital on the board of directors.
Values	Hong (2020)	The positive interrelation between CEO humility and CSR was verified across 85 companies.
	Waldman et al. (2006)	Data from 561 companies in 15 countries demonstrate that cultural dimensions can positively predict CSR values of TMT members.
	Miska et al. (2016)	A fuzzy qualitative comparative analysis is conducted on 29 of the most influential global companies in China. The study exhibits that multicultural experience of TMT is associated with CSR integration.
	Ertuna et al. (2019)	The study focuses on how sustainability and CSR discussions and practices arise in multinational corporations' partnerships with local hotels in developing countries. The study revealed that family values determined corporate sustainability strategies.

Table 2.3 The negative influence of director team (TMT) heterogeneity on CSR

Features of heterogeneity	Author (Date)	Perspectives
Age	Liu et al. (2018)	The interrelation between age heterogeneity of TMT and CSR is explored, and the results unfold that there is an inverse U-shaped interrelation between TMT age heterogeneity and CSR.
	Prudêncio et al. (2021)	The interrelation between the age heterogeneity of TMT and CSR was studied. The sample encompassed 194 annual observations of Brazilian companies. The results unfold that age heterogeneity of board members negatively influences CSR practices.
Education	T. Lee et al. (2020)	Employ data from CSR reports of companies in Taiwan, China, TMT educational background heterogeneity was found to negatively impact corporate performance, and greenhouse gases emission strategies mediated this interrelation.
Tenure	T. Lee et al. (2020)	Employ data from CSR reports of companies in Taiwan, China, TMT tenure heterogeneity was found to negatively impact corporate performance, and greenhouse gases emission strategies mediated this interrelation.
Remuneration	Hart et al. (2015)	Investigated the correlation between the remuneration gap

		of the TMT and the social performance of the firm, and found that the social performance of low remuneration gap firms would be higher than that of high remuneration gap firms.
Social capital	Dahms et al. (2021)	The association of TMT National Diversity (TMTND) with the CSR of foreign-owned subsidiaries was examined. After asymmetric analysis, it was found that TMTND detrimental to high performance outcomes.
Values	Olthuis and van den Oever (2020)	The negative interrelation between board ideological diversity and CSR performance was demonstrated through the use of fixed effects OLS regression.
	Sajko et al. (2020)	It is believed that CEO greed is negatively related to CSR because greedy CEO are more likely to neglect CSR investments in the pursuit of personal wealth.

The interrelation between the characteristic variables of the difference of the TMT and the company's strategic choice, performance and CSR presents both positive and negative influences, which has caused great confusion among scholars. At the theoretical level, it has been theorized that increased heterogeneity of the TMT provides the team with access to diverse and rich information and resources, which allows the team to make decisions with a wide and selective view and coverage, thus facilitating the decision making of high quality strategic solutions (Amason & Sapienza, 1997; Simons et al., 1999). Information decision theory uses the diversity of sources of information as an entry point to predict decision performance. Thus, it is believed that arguments among members of the TMT with different views can also complement each other and facilitate information processing and decision making. The Resource-Based View (RBV) argues that the competitive advantage of a company comes from the heterogeneity of its resources, and that the heterogeneity of the TMT is a resource that allows the company to have multiple options for decision making.

However, another type of theory such as Social Classification Theory or Social Categorization Theory and other similar theories suggest that individuals pursue the need to belong in order to gain social identification with the group to which they belong (Goldberg et al., 2010; Hogg & Terry, 2000). Glassner and Tajfel (1985) have found that team heterogeneity can subdivide teams into different sub-groups and trigger exclusion of other groups, thus increasing the likelihood of conflict. This is one explanation for the interrelation between heterogeneity of the TMT and the negative impact of CSR. Scholars try to solve problems through various channels. At the same time, the influence of heterogeneity of the TMT on enterprises and organizations may be directly regulated by a series of factors such as institutional environment, industry characteristics, internal situations of organizations and their influence on corporate governance structure.

This research argues that the inconsistency between the findings of the two theories on the

heterogeneity of the TMT and CSR has its practical and theoretical background. From a practical view, there are complex factors affecting the relation between TMT and CSR, and the same economic phenomenon may change with the change of conditions. What we need to study and grasp is the question of "degree", that is, under what conditions this degree is appropriate. From a theoretical view, each of the two theories summarizes the operational mechanism of the interrelation between heterogeneity of the TMT and CSR. In fact, when the "degree" of the impact of TMT heterogeneity on CSR is at a certain point, it is also the balance point where the two mechanisms explained by the two theories come into play. Therefore, the explanations of the two theories are united of opposites at this equilibrium point. The question is where this equilibrium point is and what is the mechanism of its operation. This is one of the questions that need to be discussed in this thesis.

S. B. Zhang and Li (2018) have suggested in the research literature to further examine TMT heterogeneity and its effects; systematically integrate the static features of TMT and explore the interactions between team composition and structure and their effects; and strengthen deeper diversity studies such as the values of TMT and focus on the modulatory role of the institutional environment. This thesis recognizes the recommendations of the above scholars and will further examine the interrelation between director team heterogeneity and CSR to seek the mechanism of its operation.

The director team is a pivotal part of the executive team. For this reason, the director team heterogeneity has also been endowed with the static characteristics of the executive team. This static characteristic can be expressed as a systematic integration of compositional, structural, and value characteristics.

Firstly, the compositional characteristics of the director team heterogeneity are demographic differences reflected in the cross-sectional relationship comparisons between members within the director team. For example, the director team's gender heterogeneity and age heterogeneity.

Secondly, the structural characteristics of the director team heterogeneity is the difference in power distance reflected in the vertical relationship comparison between members within the director team. For example, the heterogeneities in terms of the tenure, education, political status and founding chairman.

Thirdly, the values characteristic of the director team is the difference in values reflected in the comparisons between members within the director team. For example, the values heterogeneity between the chairman and the manager of the director team.

Under the perspective of systematic theory, the static characteristics of director team

heterogeneity including the compositional, structural, and value characteristics can either be independent subsystems or be systematically integrated into a total system, that is the static characteristics of director team heterogeneity. After the system integration, exploring the correlation between director team heterogeneity and CSR can make the research systematic and holistic.

The nexus between director team heterogeneity and CSR can be influenced by both internal and external factors of the enterprises.

From the internal perspective of the enterprises, when one of the static characteristics of the director team heterogeneity, i.e., one of the compositional, structural, and values characteristics, influences CSR, the influence process is also affected by the interaction of this characteristic and other characteristics of the director team heterogeneity. In particular, the interaction effect of values heterogeneity with other surface factors on the influence of director team heterogeneity on CSR is worth exploring, because it can validate the nexus between values heterogeneity, which is a deep heterogeneity factor, and other surface heterogeneities. Therefore, exploring the interaction effects of the main factors of director team heterogeneity, i.e., compositional characteristics, structural characteristics, and values characteristics, on the nexus between director team heterogeneity and CSR can bring the significance both theoretically and practically.

From the external perspective of the enterprises, the nexus between director team heterogeneity and CSR will also be affected by the external environment of the enterprise, which can involve aspects such as politics, economy and culture, among which the institutional environment based on laws and regulations is critical. The regulative pillar, normative pillar, and cognitive pillar of the institutional environment will have a moderating effect on the nexus between director team heterogeneity and CSR. This moderating effect have different characteristics in different country scenarios, especially in developing countries like China, where the economy is not developed enough and the laws and regulations are not perfect enough. Therefore, it is of positive significance for developing countries to delve into the nexus between director team heterogeneity and CSR from different perspectives of the teams, the enterprises, and the systems, and to explore the characteristics and operating mechanism of the moderation of institutional environment on director team heterogeneity and CSR.

2.3 Research on institutional environment

2.3.1 Concept of institutional environment

Institutional environment takes Institutional Theory as its theoretical basis. The main systems and schools of thought that have emerged in the course of their development are: institutional economics, represented by North, and organizational sociology, represented by Scott. North (1990) in his *Institutions, Institutional Change and Economic Performance* explicitly argues that institutions themselves are the rules of the game in a society, and they are constraints set to maintain social relations among people. The institution is mainly composed of formal rules and informal rules as well as their implementation characteristics. Formal rules include national laws and regulations, contracts and so on. Informal rules include values, ethics, morality, customs and so on. Scott (1987) argues that the institution should be the regulations and clauses that individuals or social organizations need to follow and can get legal support created by various detailed rules and conditions.

Drawing on and synthesizing the views of scholars, this thesis defines the institutional environment as a series of rules to maintain and restrict the social relations of people and organizations in order to obtain legitimacy, including formal rules such as laws, regulations and contracts involving economic, political and social aspects. The institutional environment also includes informal rules such as values, ethics, morality, customs, and norms.

2.3.2 The main ideas of Institutional Theory

North (1990) in his *Institutions, Institutional Change and Economic Performance* clarified that the economic environment greatly influences the performance of economic organizations, by comparing the institutional factors that analyze the economic performance of underdeveloped and developed countries, he showed that the cost of transactions is higher in underdeveloped countries than in developed countries when they engage in transactions. The most critical reason is the imperfect development of the institutional environment, which is regarded as a crucial institutional factor for the low economic performance of underdeveloped countries. North brings the institution into the social and economic system, and then becomes the external environment that affects the business behavior of enterprises.

The main components of institutions in organizational sociology theory include laws and regulations, values, ethics, customs and practices, as well as symbolic systems, cognitive models and moral templates that provide a framework of meaning for human action (Hall &

Taylor, 1996).

There are two critical influential theoretical points: first, DiMaggio and Powell (1983) propose three mechanisms by which the institutional environment influences organizations. The first mechanism is the Coercive Mechanism. It is the pressure of coercion by state regulations. Laws are mandatory and failure to comply with them will result in punishment. For example, if a company does not comply with environmental protection laws, it will be punished, and the company will be pressured by the law to strengthen its environmental technology to fulfill the requirements of the law. The demand of stakeholders for CSR is met.

The second mechanism is the imitation mechanism. It means to imitate the successful practices of peers. For example, when a company is unsure about the uncertainty of the external, imitating the behavior of a successful company becomes an optional model and a feasible way to reduce risk. In the competition, enterprises can imitate the successful experience and corporate paradigm of their peers.

The third mechanism is the mechanism of social norms. It is the rules and standards of behavior shared by members of society, and if firms fail to align themselves with social institutional norms, they may be marginalized by their peers or suffer losses (Ingram & Silverman, 2002). Thus, the norms of the social system can also serve to regulate the behavior of firms.

The second, the three-system model of institutions proposed by Scott. Scott (1987) proposed a three-system model of institutions, including Regulative Pillar; Normative Pillar; and Cognitive Pillar. The Regulative Pillar is mandatory and belongs to the institutional system of the state and the corresponding guarantee mechanism, which restrains the behavior of enterprises through the rewards and punishments of mandatory institutions; the Normative Pillar are standards of conduct that influence business behavior through the pressure of industry norms and imitation mechanisms of industry ethics. Cognitive Pillar refers to the beliefs and values inherent in an organization. They are used to influence and regulate corporate behavior through the basic concepts of society. For example, based on society's expectations of CSR, companies voluntarily contribute to poverty alleviation, disaster relief and environmental protection out of their own perceived CSR values.

Combining the definitions and main viewpoints of the two schools in the above-mentioned Institutional Theory, we find that there are both similarities and differences. The similarities are mainly as follows: First, they both emphasize the role of laws and regulations and their compulsory restraint on the behavior of enterprises and other organizations. Second, they both emphasize the role of values, ethics, customs and rules of behavior in restraining and guiding

enterprises and other organizations. The difference is mainly that the system of organizational sociology also emphasizes the conscious awareness within the organization based on the above common points. This is of great significance to the decision-making of the director team's CSR, which originates from the cognitive ability of internal values. Therefore, the institutional environment in this thesis agrees with the institutional definition and main viewpoints of organizational sociology.

2.3.3 The influence of institutional environment on CSR

First, the roles of market, legal and governmental factors in the institutional environment are different. The different roles sometimes interfere with CSR behavior (Hoffman, 1999), while a sound institutional environment positively influences and promotes CSR (Brickson, 2007; Campbell, 2006). The most critical of the many factors in the institutional environment is government regulation (Campbell, 2007). Government regulation helps to mitigate the problem between the role of stakeholder interest protection and information asymmetry (Beyer et al., 2010). Improvements in the legal system can advance and magnify the willingness of firms to unveil environmental information. Intense market competition can reduce the intensity of corporate decision making and willingness to be socially responsible (Healy & Palepu, 2001). Institutional inadequacies also affect changes in the way companies take on social responsibility (Dorobantu et al., 2016). The results of empirical studies on the interrelations between institutional environment and CSR vary depending on the dimensions of institutional environment and CSR selected by scholars.

Carnahan et al. (2010) once pointed out that the institutional environment will affect enterprise behavior. In fact, both the regulatory pressure from the government, the pressure from social norms, and the pressure from public opinion and morality will have a pivotal impact on corporate behavior (Cormier et al., 2005; Hanlon, 2011; Zyglidopoulos, 2015). Of course, this influence will also affect CSR.

Second, the impact of institutional environment on CSR is described in the literature. A study by Dorobantu et al. (2016) suggests that institutional environment can affect CSR. He et al. (2016) unfold that adopting ISO 14001 reduces the incidence of government environmental inspections and that the adoption of ISO 14001 has an increasing impact among state-owned enterprises and firms with political connections in the TMT. Campbell (2007) argues that the enforcement of monitoring of institutional norms motivates firms to consider CSR performance. Brammer et al. (2007) find that executives with religious beliefs are more willing to tend to fulfill CSR. DiMaggio and Powell (1983) argue that government regulation can explain CSR

performance. Flammer (2014) study illustrates that more competitive industry brings about higher quality of CSR disclosure. Blacconiere and Patten (1994), Harjoto et al. (2014), and Hoffman (1999) argue that legal pressure can influence CSR behavior. Islam and Deegan (2010) suggest that the media can influence CSR disclosure. Ringov and Zollo (2007) demonstrated that high power distance and masculine culture can negatively influence CSR.

Campbell (2007) argues that CSR disclosure comes from regulatory, normative, and cultural pressures. External pressures and constraints can enhance stakeholder monitoring of socially responsible activities, and firms that adapt to institutional and stakeholder requirements can change their environmental strategies and reporting patterns.

Third, several literatures provide studies on the interrelation between institutional environment moderating CSR and TMT features or its correlates. Shahab et al. (2018) engaged in business strategy and environmental studies suggesting that improved environmental performance tends to strategically reduce the financial and operational distress of firms due to good environment and policy push. Moreover, this interrelation is mainly modulated by TMT gender heterogeneity, foreign exposure, and political ties between the Middle East. Q. Lu et al. (2020) predicted that there is a negative interrelation between female top managers and corporate managers and that marketization facilitate their interrelation. These hypotheses are supported by annual observational data from 17,032 managers of Chinese listed companies. Chatterji and Toffel (2010) found that government regulation positively moderates the interrelation between CSR and corporate performance, and Haniffa and Cooke (2005) concluded that external regulation improves CSR performance. Boulouta and Pitelis (2013) argue that policies can affect the relationship between CSR and national competitiveness.

In fact, the institutional environment, such as regulatory compulsion and governmental attitudes, drives board members to leverage their corporate strategies and fulfill their CSR, and the experience, relationships, and social background of the TMT influence their behavior in response to the external institutional environment (Walls & Paquin, 2015), and the different decisions made in response to different environments are derived from the TMT's perception and understanding of the institutional environment (Delmas & Toffel, 2008). The above findings can help to understand the moderating variable, i.e., the impact of the institutional environment on director team heterogeneity and CSR.

Fourthly, in the study on the influence of institutional environment on the nexus between heterogeneity of TMT and CSR, there are at least two points that are different between China and other countries. One is that the decision-making body of the TMT is different. In most foreign countries, the CEO-led managerial team accounts for strategic decision-making, and

the board of directors is mainly responsible for monitoring implementation. In China, the director team, headed by the chairman, accounts for strategic decision-making, especially in private enterprises. Second, the function of the institutional environment is different. In developed countries, the institutional environment is better and more balanced, while China, as a developing country, is in the transition period, the development of the institutional environment is not perfect. Therefore, the impact of the institutional environment on the heterogeneity of TMT and CSR is different from that of developed countries. The research on the influence of institutional environment on the nexus between TMT heterogeneity and CSR in these Chinese scenarios has crucial theoretical value and practical significance, which is the reason why it has attracted attention both at home and abroad and become one of the research hotspots.

In China, a developing country, the strategic decisions of the director team on the CSR commitment may be affected by the market economy and the corresponding institutional environment of laws and regulations such as the government policies, laws and regulations, services, supervision, rewards and punishments play a regulatory and guiding role during the implement of the CSR. Industry organizations are promoters of the formulation and implementation of social responsibility standards and the regulation and supervision of the CSR fulfillment in the industry. Employees, consumers, investors, creditors, suppliers, communities and the media are irreplaceable participants of social monitoring. The institutional environment of laws and regulations has become a program of social system engineering that regulates and influences CSR practice.

2.4 Analysis of research methods

2.4.1 Empirical research methods based on quantitative analysis

Qualitative analysis is currently adopted by most scholars, generally collecting data through databases, interviews, questionnaire surveys, field experiments, and then using multiple regression, structural equation or other quantitative research methods to process and test the data to derive the corresponding results. Ertuna et al. (2019) employ empirical method of quantitative analysis shows that family values and family business headquarters shape the company's sustainable development strategy and reflect the logic of local components.

When studying the nexus between demographic variables and team performance, Bell et al. (2011) used the meta-analysis method to re-examined the relationship between population

diversity variables and team performance.

(1) Their study proved that the diversity of functional backgrounds slightly promotes the overall team performance and team creativity and innovation. This relationship is the most prominent in design and product development teams.

(2) For the senior management team, educational background and diversity are associated with team creativity, innovation ability and team performance. Team means that in terms of efficiency of the organization, tenure is associated with team performance.

(3) Moreover, the diversity of race and gender has a slight negative interrelation with team performance. As for the team performance without considering the concept of diversity, age diversity is uncorrelated with team performance.

Bass (2019) studied the TMT team diversity, equality and innovation using the company-level data (SIC 80) of 73 listed companies in the U.S. health service sector from 2013 to 2017.

(1) This research studied the relationship between the two dimensions of the TMT diversity (gender diversity, and salary equality) and corporate innovation, and considered the influence of TMT scale on these relationships.

(2) After multiple regressions, the research results exhibited that: For the interrelation between the first-level (intra-enterprise) variables, the gender diversity and salary equality of TMT within the enterprise are positively correlated. There is also a significant, positive relationship between intra-company sales and intra-company TMT gender diversity and intra-company TMT pay equity. For the relationship between the second-level (inter-enterprise) variables, the gender diversity and R&D expenditure of TMT are negatively related.

(3) However, there is a significant positive correlation between the salary equality and gender heterogeneity of the management level. TMT size and R&D expenditure are negatively related, while the TMT size is positively related to the gender diversity and salary equality of the TMT.

Q. Wang et al. (2020) examined TMT's discrepancy in cognition, addressed its nexus with decision quality and its effect on sustainable development.

(1) They selected Chinese mixed-ownership companies to conduct in-depth interviews, and based on this, they designed a questionnaire. The TMT members of 160 mixed-ownership enterprises in 8 provinces and cities in China were surveyed through questionnaires.

(2) They employed AMOS to conduct CFA. The five factors exhibit more ideal fit index than other model, illustrating good discriminant validity.

(3) Thirdly, their results uncovered: Cognition heterogeneity facilitates decision quality; team fusion encompasses information integration and emotion fusion. These two factors

mediate cognition heterogeneity and decision quality; entrepreneurial spirit amplifies the connections between information integration and decision quality and between emotion fusion and decision quality.

Gupta et al. (2017) have studied the organizational political ideology and CSR using the data of 529 companies from 2002 to 2008.

The research results revealed that organizational ideology is pivotal and acts on CSR, specifically:

(1) Organizational liberalism exerts more impact on distal CSR than proximal CSR.

(2) CSR prevalence in the industry hampers organizational ideology.

(3) Industry peers' adoption degree of the practice decides how organizational liberalism affects three CSR practices.

(4) High human capital intensity enterprises are more inclined to embrace CSR, indicating that the influence of organizational ideology is amplified when human capital is more relied.

(5) CEO tenure modulated the influence of organizational liberalism on comprehensive CSR.

2.4.2 Qualitative research methods

This thesis will collect data from related databases and apply empirical research methods based on quantitative analysis to the research of the subject.

Qualitative research is any research that does not require the use of statistical procedures or other quantitative methods to achieve research results. Qualitative research has advantages in research involving human subjectivity, but it is not easy to be tested. For example, Mattley et al. (1999) use grounded theory for case analysis. Miska et al. (2016) conducted a fuzzy qualitative comparative analysis of 29 China's most influential companies in the world. Studies have shown that multicultural experience of the senior management team is related to global CSR integration and local CSR response.

Calvo and Calvo (2018) employed case study and centered on the employee international transfer of an airline. From the lens of human resources management, CSR strategy is analyzed. This case study validates that CSR strategy concerning employee value aligns enterprises and employees' interest and benefit both sides via contract related cost. From the standpoint of multi-agent theory and resource base, it's found EU hindered employee engagement by increasing the cost of employee turnover.

2.4.3 Q method

This method was first proposed by British scholar William Stephenson in 1935 (Cairns, 2012). This is a method that combines both qualitative and quantitative research, and is currently used in multiple disciplines. Wong et al. (2011) examined the impact of the comprehensive complexity of TMTs and decentralization of decision-making authority on corporate social performance. It is believed that these two factors have improved the TMT's ability to collect and pay attention to the needs of stakeholders, resulting in higher corporate social performance. It is further predicted that decentralization will ease the interrelation between comprehensive complexity and corporate social performance, and make this interrelation stronger under centralized conditions. Using the Q-ranking method to transform complex qualitative observations into quantitative indicators, the comprehensive complexity and dispersion of 61 Fortune 500 companies were checked, and the support for forecasting was found.

2.5 Summary of literature review

As mentioned above, this thesis, after combing and summarization of the previous research findings related to this topic in a more detailed way, has found the achievements that are worthy of reference and research gaps in a preliminary review. A summary is made according to the substantial concepts, the interrelations between the director team heterogeneity, CSR and institutional environment and the research model of the interrelationship between the director team heterogeneity, CSR and institutional environment.

2.5.1 Review of important concepts

First, it is CSR. The main representative points of view in the previous research literature mainly focus on the differences in the beneficiary, value-oriented and people-oriented needs. This thesis holds that the different viewpoints have their historical rationality, which provides beneficial reference and enlightenment for this thesis. However, the divergence of different views has its historical origin and realistic basis, reflecting the evolution from the historical process to the reality. With the development of social economy, the uniqueness of shareholders, egoism and material has been replaced by shareholders and stakeholders, egoism and altruism, material and spirit. Therefore, this thesis basically accepts the view of taking social responsibility for stakeholders, but this view is not clear about value-oriented and people-oriented needs. Therefore, by referring to the reasonable core of previous research findings, this

thesis proposes a definition of CSR that contains clear beneficiary, value-oriented and people-oriented needs.

The second is the director team. Previous research literature uncovers that the definition and composition of TMT is unaligned. More importantly, there lacks independent component of the director team, and therefore, there is a lack of research on the nexus between director team heterogeneity and CSR with the director team as an antecedent factor. The independent component of the director team is not found in the TMT, which is also contrary to the situation that the strategic decisions of Chinese enterprises are mainly undertaken by the director team. Therefore, this thesis puts forward the concept of the TMT in a broad sense, which include the independent component of the director team. Room is left for the research.

The third concept is the institutional environment. The theoretical basis of institutional environment is Institutional Theory. The two schools of Institutional Theory, especially the main viewpoints of organizational sociology, provide crucial theoretical support and reference for this thesis. This thesis agrees that the definition of institution and main viewpoints of organizational sociology are beneficial to the study of the impact of institutional environment on the nexus between director team heterogeneity and CSR in China. However, the Institutional Theory is not clear enough on the impact of the unbalanced development of institutional environment among developing countries. Therefore, it is attentive to consider the actual situation in China when studying the impact of China's institutional environment.

2.5.2 Review of the nexus among the director team heterogeneity, CSR and institutional environment

First, the findings of research on the director team heterogeneity, CSR and corporate performance are inconsistent. Although previous researches have provided valuable information and resources, and scholars have sought explanations and solutions from various aspects such as TMT members, characteristics and samples, no satisfactory answers have been obtained, which provides space for the research. As for the inconsistency of the research conclusions, this thesis thinks that the change of conditions and the change or shift of the balance point of the internal operating mechanism may cause the inconsistency. The operation mechanisms summarized by information decision theory and social categorization theory are reasonable to some extent. However, due to the change of conditions, the two mechanisms collide with each other and the relatively static "equilibrium point" in the game is shifted, so that the research conclusions cannot be unified. Under certain conditions, finding this equilibrium point, explaining its operation mechanism, and grasping the "degree" of the

interrelation between the TMT heterogeneity, especially the director team heterogeneity, and CSR have become one of the questions worth exploring in this thesis.

The second is the impact of institutional environment on the interrelation between the director team heterogeneity and CSR. Institutional theory deeply analyzes the impact of institution as an environmental factor on enterprises or organizations. It also emphasizes the self-awareness of enterprises or organizations, which is of great significance for studying the impact of institutional environment in developing countries like China. However, the Institutional Theory fails to clearly pay attention to the different characteristics of institutional environment in developing countries due to the different decision-making bodies of TMTs and institutional environment, which also leaves room for research.

2.5.3 Review of the research model of the director team, corporate strategic decision-making and corporate performance

Since the characteristics of the director team can, as an antecedent factor, affect the strategic decision-making of CSR, and then affect corporate performance, research on the interrelation between the director team heterogeneity, CSR, and the institutional environment can generally be incorporated into the research model of the TMT, corporate strategic decision-making and corporate performance. Therefore, the past research literature provides different research models of TMT and corporate strategic decision-making and corporate performance. As mentioned earlier, the model of upper echelons theory proposed by Hambrick and Mason (1984) , as exhibited in Figure 2.2 and the later improved model, as exhibited in Figure 2.3, Figure 2.4, Figure 2.5 and other similar improved model provide intuitive and beneficial theoretical and operational support for studying the TMT heterogeneity, CSR, the interrelation between the institutional environment and the operating mechanism, but these models also have limitations or deficiencies.

One is the characteristics of the TMT. In Figure 2.2, the characteristics of the TMT encompass cognitive characteristics that are observable and difficult to observe. Later, scholars used this as a prerequisite to study the interrelation between the characteristics of the TMT and corporate strategic choices and corporate performance, and achieved more research results. In Figure 2.3, the characteristics of the TMT are exempted and replaced with cognitive and behavioral orientation, human capital and characteristics. In Figure 2.4, the characteristics of the team level encompass team composition and team structure, which further illustrates the distinction between the composition and structure of the TMT. In Figure 2.5, the characterization of personality is added to the characteristics of the TMT. Although values were

added to the later research models, in general, the previous research models lacked the impact of the interaction between the characteristics of the TMT on corporate strategic decision-making and corporate performance, paid insufficient attention to psychological indicators such as values and were lack of operability.

Secondly, it is the influence of external environment. The external environment, as an antecedent factor for the systematic study of the TMT, corporate strategic choice and corporate performance, is placed at the front end of the model in Figure 2.2, including external and internal objective environment. In Figure 2.3, the characteristic indicators of external environment and organizational environment are further refined, and the external stakeholders are pointed out. In Figure 2.4, the uncertainty of the environment is put into the moderator variable. In Figure 2.5, when social influence is added to the "process", it can be seen that the position of the external environment develops towards the moderator variable or the process variable, but there are also research models that dilute the environmental influence. Insufficient attention has been paid to the essentialness of the impact of environmental factors, and in particular to the degree of impact of institutional environment in different countries.

The third is the addition of the decision-making process. In the early Figure 2.2, there was no decision-making process, so it was questioned by some scholars. Hambrick (1994) once added the "process" as the main factor to the research model; in Figure 2.3, the relevant indicators of team behavior were put into an intermediary position; in Figure 2.4, indicators such as the team process are put into the intermediary/modulator variables; in Figure 2.5, the indicators of the team's decision-making are placed in the process, in an intermediary position. The addition of the above research model to the team's decision-making process is conducive to the in-depth research, which is very necessary. However, the internal indicators of the "process" are not uniform enough, and the operability is more complicated. Compared with strategic choice and corporate performance, the dynamic process and static characteristics of the TMT are in the antecedent position, and there is a lack of research on their interrelation and the study of the cross-effects of strategic choices and corporate performance.

Fourth, the nexus between strategic choice and performance. In Figure 2.2, strategic choice is placed before performance, and the indicators are specific and easy to operate. In Figure 2.3, strategic choice is actually put into the process of team behavior, before team efficiency. In Figure 2.4, strategic choice is placed in organizational performance, alongside TMT/board of directors, before performance. In Figure 2.5, the output item is the team performance, which can be directly affected by the input item team structure, or the "process" mediator variable, indicating that both the static characteristics and dynamic process of the TMT can affect the

output item team performance. However, the definition of strategic choice and performance indicators is not uniform enough, which affects the consistency of research conclusions.

2.5.4 Summary of research method analysis

The past literature provides multiple regression, structural equation or other quantitative analysis research methods, as well as qualitative research methods and Q research methods, which provide a good reference for the research of this thesis. This thesis will deeply study the research methods of multiple regression, and improve the quality of data processing and the scientific nature of the research through the introduction and reference of hierarchical regression and interactive effects.

To sum up, the previous research literature provides valuable resource support and beneficial reference for this study. Simultaneously, the limitations and shortcomings of the research also provide research space for this thesis, mainly including the research on director team and director team heterogeneity; the systematic integration of the composition, structure and value of the director team heterogeneity, and the impact of their interaction on CSR; the regulatory effect of institutional environment on the nexus between director team heterogeneity and CSR in the cross-level study of team, corporation and institution, especially the regulatory effect of institutional environment on the nexus between director team heterogeneity and CSR in different regions of China, which will be beneficial to the supplement of relevant research literature. It is beneficial for Chinese enterprises and government to make decisions and fulfill CSR.

2.6 Summary

This chapter focuses on combing and reviewing in detail the relevant theories and research literature that are closely related to CSR and stakeholders, TMT heterogeneity, and the institutional environment.

First aspect, it clearly defines or confirms important concepts such as CSR, director team heterogeneity, and institutional environment.

One is the definition of CSR. Drawing on the reasonable core of past research results, a definition of CSR with a clear audience subject, value orientation, and human needs is proposed, which is conducive to the decision-making and evaluation of CSR. At the same time, the main influencing factors of CSR are analyzed.

The second is the director team. Drawing on the reasonable core of previous research results,

and from the perspective of the composition of the TMT, put forward the concept of a generalized TMT that includes the independent composition of the director team, which is conducive to the status of the independent composition of the director team; conducive to the determination of the status of the pre-factors of CSR strategy selection. It is conducive to independent theoretical value and practical significance in the study of the nexus between director team heterogeneity and CSR.

The third is the institutional environment. This thesis recognizes the institutional definition and main points of organizational sociology, especially the conscious cognition within the enterprise or organization, which is of great significance for studying the nexus between the cognitive ability of the director team derived from internal values and CSR.

Second aspect is to conduct a more in-depth review and summary of the main research literature on the interrelationship between the director team heterogeneity, CSR, and the institutional environment.

One is the inconsistency of the conclusions of research between the director team heterogeneity and CSR, corporate performance. It may be the deviation of the "balance point" of the operating mechanism summarized by the information decision theory and the social classification theory. Finding this balance point and revealing its operating mechanism has become one of the issues worth exploring in this thesis.

The second is the impact of the institutional environment on the nexus between the director team heterogeneity and CSR. The impact of the institutional environment on CSR as well as the nexus between the conscious cognition of enterprises and CSR are of great significance to the study of developing countries such as China where the development of the institutional environment is unbalanced.

The third is the research model of the director team and corporate strategic decision-making and corporate performance. Previous research models illustrate that the characteristics of TMT have become the pre factor in the strategic choice of CSR. However, the research model lacks the research on the impact of the interaction between the characteristics of the TMT on corporate strategic decision-making and corporate performance; the lack of emphasis on value characteristics and the lack of systematic integration of static characteristics leave room for the study of this thesis.

Fourth, the institutional environment has become a moderating factor that affects the director team and corporate strategic choices and corporate performance. The institutional environment provides theoretical support for the research on the influence of director team heterogeneity and CSR.

Third aspect is the analysis and reference of research methods. This chapter reviews the multiple regression, structural equation or other quantitative analysis methods in the past literature, as well as qualitative and Q research methods. This thesis will in-depth study of the research methods of multiple regression, through the introduction and reference of hierarchical regression and interactive effects, to improve the scientific nature of the research.

This chapter points out the enlightenment gained from the research of this thesis and the deficiencies in the past research through the above-mentioned combing and review, and puts forward the research space of this thesis. Therefore, it lays a foundation for further analysis of the nexus between director team heterogeneity and CSR; the mechanism and empirical research on the impact of institutional environment on director team heterogeneity and CSR.

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Chapter 3: Analysis of the Mechanism of the Director Team Heterogeneity, Institutional Environment, and CSR

As mentioned above, scholars have divided the discussion on the influencing factors of CSR into two categories: internal and external factors. The influencing factors inside the enterprise focus on the director team; the influencing factors outside the enterprise focus on the institutional environment.

Then, what are the mechanisms by which the director team heterogeneity and the institutional environment affect CSR? Further theoretical analysis and empirical verification are needed. This chapter mainly analyzes the director team heterogeneity and the institutional environment factors that affect the decision-making and implementation of CSR; explores the mechanism of the director team heterogeneity on CSR; analyze the regulatory mechanism of institutional environment on the relation between director team heterogeneity and CSR, so as to provide a theoretical basis for empirical verification.

3.1 Internal and external factors affecting the choice of CSR strategy

Hambrick and Mason (1984), in their upper echelons model, clarified the antecedents that affect enterprises' strategic choice, encompassing internal and external environmental factors of the enterprise. These factors, on the one hand, can affect enterprises' strategic choice through the characteristics of upper echelons; on the other hand, they can also directly affect enterprises' strategic choice. In real life, CSR is embedded in corporate strategic choices. All these have established a theoretical framework for the follow-up research.

3.1.1 Director team heterogeneity factors affecting the choice of CSR strategy

Hambrick and Mason (1984) pointed out that the internal and external environmental factors of an enterprise can influence enterprises' strategic choice through the characteristics of the upper echelons, so that the characteristics of the upper echelons become the focus of attention. Upper echelons characteristics include Psychological: cognitive, values; Observable: age, functional tracks, other career experiences, educational background, socioeconomic roots, financial position, group characteristics. In China, since it is the company's director team that undertakes

the decision-making responsibility of corporate strategy, the characteristics of the director team, especially the differentiated characteristics of the director team, have become the main representative of the differentiated characteristics of the TMT of Chinese listed companies. The different characteristics of the director team selected in this thesis also include psychological and observable aspects. They are mainly the heterogeneity in the values of the director team (value characteristics); gender and age heterogeneity of the director team (composition characteristics); heterogeneity in tenure, educational background, political status, and founding chairman between the chairman and other directors (structural characteristics). Thus, it constitutes a systematic integration of the characteristics of the different composition, structure and values of the director team.

3.1.2 Institutional environmental factors affecting the nexus between the director team heterogeneity and CSR

As mentioned above, the external environmental factors that affect the decision-making and performance of CSR can include various aspects such as economy, politics, culture, technology, and industrial environment. However, it can be the institutional environment that plays a central role. The institutional environment mainly includes three institutional factors: regulation, norm and cognition. The institutional environment can exert an influence on the enterprise through the mandatory restraint of laws and regulations; it can restrain and guide the enterprise through the value concept, ethics, customs, and behavioral norms; the basic concept of the organization's conscious cognition affects and constrains the enterprise's own behavior. In a word, the institutional environment covers the main influencing factors of the external environment on corporate behavior, so it affects the decision-making of the director team on CSR, and affects the nexus between director team heterogeneity and CSR.

3.2 The impact mechanism of the director team heterogeneity on CSR

As mentioned above, the director team heterogeneity is the difference between the members of the director team in terms of gender, age, functional tracks and other basic demographic characteristics, cognitive concept, value concept and experience. Compared with the homogeneity of the director team, the diversity of the director team can obtain rich and diverse information resources, and present a variety of different levels of opinions and options for information discrimination and expression, so it has the advantage of improving the quality of decision-making (Carpenter & Fredrickson, 2001). Furthermore, it will impact the CSR strategy

choice.

On the other hand, the differences of the director team are based on the need of belonging, which will divide the director team into different small groups, which may lead to contradictions and conflicts between the small groups, which is not conducive to the improvement of the director team's CSR strategy decision-making quality.

Existing research results explored the operating mechanism between the director team heterogeneity and CSR from the perspective of CSR strategy, information decision theory and social categorization theory (McLeod et al., 1996).

3.2.1 Mechanism analysis based on CSR strategy

The upper echelons model proposed by Hambrick and Mason (1984) has clarified the characteristics of the TMT, including the differences, and the impact on corporate strategic choices. Later scholars, Thomas and Simerly (1995) for example, extended this corporate strategic choice to CSR . As a pivotal part of the TMT, the director team bears the heavy burden of corporate strategic decision-making in China, including the choice and decision of CSR strategy.

Regarding the CSR strategy, Husted and Allen (2007) gave a more clear definition. They point out that CSR programs designed by executives aiming to create a competitive advantage for their companies trigger a beneficial connection between CSR and financial performance. This strategic CSR is called CSR strategy. The purpose of this CSR strategy is to achieve competitive and social goals through competitive advantage. The question here is what is the operating mechanism between the director team heterogeneity and the CSR strategy? In general, this operation mechanism is: Based on the demands or concerns of stakeholders, the director team provides diversified and multi-level CSR scheme optimization to meet the demands or concerns of stakeholders through the differentiation of the director team, and completes the strategic selection of CSR, so as to realize corporate performance and social performance based on competitive advantage.

First of all, the diversity of the director team is conducive in enhancing the enterprise competitiveness by influencing and choosing CSR as one of the strategies. Due to the differences in the team of directors, by optimizing the CSR plan that meets the interests of employees from multiple perspectives and levels, it can improve the enthusiasm and quality of employees; stimulate innovation consciousness and innovative behavior; reduce costs and improve labor productivity; it helps enhance the enterprise competitiveness.

Secondly, the differences in the team of directors, by influencing and choosing CSR as one

of the strategies, are conducive to enhancing the corporate brand, reputation and corporate image. Due to the differences in the team of directors, through the selection of CSR solutions that meet the customers' interests, suppliers, communities, and environment from multiple perspectives and levels, the satisfaction and loyalty of customers can be obtained; mutual benefit and win-win with suppliers can be achieved; community support and assistance; meet environmental protection standards and green channels; and then gain social recognition and praise, and promote the establishment and promotion of corporate brand, reputation and corporate image.

Third, the diversity of the team of directors, by influencing and choosing CSR as one of the strategies, is conducive to Improve policy incentives. Due to the differences in the team of directors, by optimizing the CSR scheme from multiple angles and levels to meet the government demands and laws, regulations and regulatory measures, it can establish a good image of compliance and law-abiding, which is conducive to obtaining support and preferential policies from the government.

3.2.2 Mechanism analysis based on Information Decision Theory

According to the research of Amason and Sapienza (1997) and Simons et al. (1999), the mechanism analysis of CSR based on the difference of director team based on information decision theory mainly includes the following points:

First of all, the diversity of the director team can enable the team to obtain rich diversified information and resources, and provide diversified cognition, vision and skills for team decision-making, which is conducive to the discrimination, comparison and selection of various schemes, as well as the evaluation, selection and decision-making quality improvement of various schemes.

Second, the diversity of the director team will prompt the team to stimulate different opinions through diverse information and rich resources. Dissenting opinions can be seen as a more valuable resource. Because the discussion, confrontation, and debate on issues between different opinions within the team help to understand each other, learn from each other, and complement each other, it can promote deep cognition of issues and information processing.

Thirdly, the difference of the director team will promote the team to provide diversified scheme choices for enterprises by mastering competitive advantage resources and using the diversity of advantage resources (Barney, 1991). Wernerfelt (1984), a representative scholar of resource-based view (RBV), believes that advantageous resources can bring competitive advantage to enterprises.

3.2.3 Mechanism analysis based on Social Categorization Theory

Among the research of social categorization theory and other similar theories, it is believed that the impact mechanism of director team heterogeneity on CSR mainly includes the following points.

First of all, the diversity of the director team will prompt team members to form different small groups in order to need to belong and gain recognition (Glassner & Tajfel, 1985) which is easy to cause group exclusion or conflict with each other (Rose & Tajfel, 1983). Therefore, a team with high diversity of the director team will have a negative effect of mutual exclusion due to large differences of opinion, which will reduce or even damage the director team's decision-making quality on CSR.

Secondly, the differences of the director team will promote mutual attraction between individuals with similar team members, resulting in conflicts between dissimilar individuals, and it is difficult to unify opinions. This scenario is in line with the views and analysis of Similarity-attraction theory. For example, the more similar the individual characteristics such as gender, age, education, functional tracks, profession, and director team's values, the stronger the attraction between individuals, and the more mutual recognition and appreciation (Botwin et al., 1997; Tesser et al., 1998). Mutual attraction between similar individuals can objectively obtain mutual recognition and communication. However, it will lead to alienation, estrangement and disagreement between dissimilar individuals, making it difficult for the director team to form high-quality decisions on CSR.

Third, the diversity of the director team will strengthen the sense of identity among the members of the small group of the team, and it is difficult to coordinate and bridge the differences between the small groups. According to the viewpoint of social identity theory, similar and mutually attractive team individuals join a small group, there is a sense of identity acquisition (Goldberg et al., 2010) and a clear identity (Hogg, 2020). However, increasing awareness of small groups within the director team and reconciling and unifying different opinions within the team will also lead to a reduction in CSR strategic decision-making quality.

Fourth, differences in the director team will strengthen the "attrition" of similar people and the "quit" of dissimilar people within the team, resulting in the homogeneity of the team. According to the "Attraction-Selection-Attrition" (Attraction-Selection-Attrition, ASA) point of view, the similarity between individual team members and their mutual attraction lead to selection, prompting the emergence of small groups of similar individuals, and then improving the individuals within the small group "attrition" trend. However, individuals with dissimilar

team members tend to be isolated, excluded and "quit" (Holland, 1973). This evolutionary process eventually promotes the overall homogeneity of the team; it eventually leads to the simplification of the director team's CSR strategic decision-making, and the quality of decision-making decreases.

In short, based on the mechanism analysis of information decision-making theory, it explains the director team heterogeneity, expands the sources of information and resources, and brings diversified and multi-level perspectives and scheme choices, so as to enhance the high-quality strategic choice decision-making of the director team on CSR. Meanwhile, based on the mechanism analysis of social categorization theory, it shows that the director team heterogeneity will lead to the contradictions and conflicts of the team and produce negative effects, which reduces the high-quality strategic choice decision-making of the director team on CSR.

In fact, the impact mechanism of director team heterogeneity on CSR is the joint effect of the above two mechanisms on CSR. The result of this joint action can be represented by the following model, see Figure 3.1.
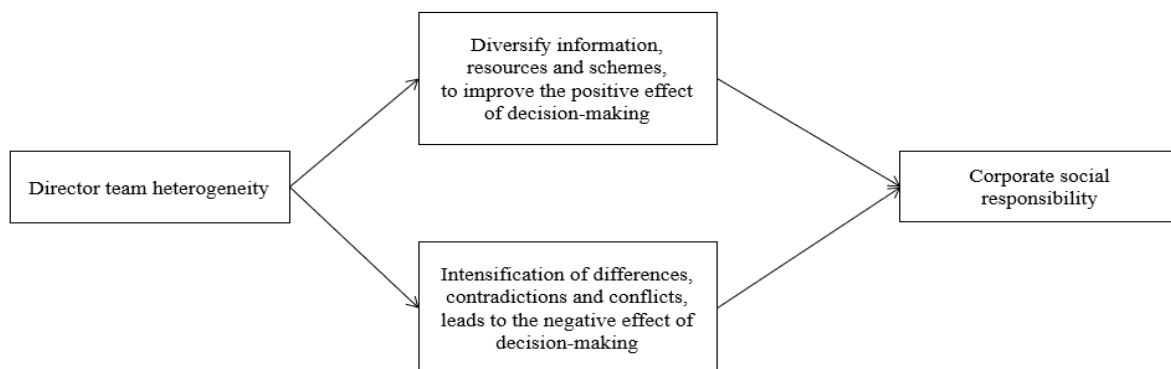
Figure 3.1 Mechanism of the impact of the director team
heterogeneity on CSR

Each node of the impact mechanism of director team heterogeneity on CSR is a relative "balance point" based on the joint action of CSR strategy mechanism, information decision-making theory mechanism and social classification theory mechanism.

3.3 Modulatory mechanism of the institutional environment on director team heterogeneity and CSR

As mentioned earlier, Scott (1987) proposed a three-system model of institutions, including regulative pillar; normative pillar; cognitive pillar. In reality, the three-system model of the

institution, as an important pillar of the institutional environment, can affect the nexus between the director team heterogeneity and CSR, and has the mechanism of regulating the relation between the director team heterogeneity and the CSR.

3.3.1 Modulatory mechanism of the regulative pillar

When the different factors of the director team influence CSR strategic decision-making, they are constrained or restricted by their internal motivation and external regulative pillar. Among them, the regulative pillar constrains or restricts the CSR strategic decision-making by director teams through the compulsion of laws and regulations of the government and legal institutions. Through the reward and punishment mechanism of laws and regulations, the regulative pillar affects the prediction of director teams' CSR decision-making behavior, so as to affect the nexus between the difference of the director team and CSR. Campbell (2007) also pointed out that laws and regulations can have a pivotal impact on CSR. The team of directors will make decisions and fulfill corporate social responsibilities under the pressure of mandatory laws and regulations and legality. Therefore, the regulative pillar will affect or adjust the nexus between director team diversity and CSR.

In developing countries, such as China, the laws and regulations are not perfect, the level of economic development is not developed enough, the understanding of CSR is not sufficient, and the mandatory restraint or adjustment role of the regulative pillar is of great significance.

3.3.2 Modulatory mechanism of normative pillar

The normative pillar is a series of rules, regulations, guidelines and standards of conduct, which influence corporate behavior through the industry norm pressure and imitation mechanism of the industry's ethics, as well as the nexus between the differences in the director team and CSR. This normative pillar does not have the mandatory role of laws and regulations, and mainly through non-governmental organizations, formulate rules and policies, standards and certification, conduct arbitration mediation and supervision (Bluemel, 2005), to influence or restrict the decision-making behavior of CSR.

The industry association is a self-discipline mechanism through the formulation and implementation of rules and standards to regulate and reward and punish the behavior of members, so as to restrain the behavior of enterprises. Industry self-discipline makes companies more willing to abide by the rules and constraints of industry associations to prevent marginalization. This will affect the nexus between the director team heterogeneity and CSR.

The news media has an irreplaceable role in regulating and constraining CSR behavior in today's world. The news media represents the interests of all parties in the society, and by reporting the positive and negative events of CSR, it forms a wide range of social influence and public opinion. Based on the effects of reputation, image and legitimacy, the company caters to social expectations or is forced by social pressure, and takes practical measures of CSR to meet the concerns, expectations and needs of all aspects of society. This shows that the news media supervises, restrains, praises and criticizes corporate behavior, and then adjusts the nexus between the director team heterogeneity and CSR.

3.3.3 Modulatory mechanism of cognitive pillar

Cognitive pillar is the beliefs and values inherent in an organization. Based on the company's perception and understanding of values, ethics, morals, customs, and habits in the institutional environment, when faced with environmental uncertainty, the director team will adopt an imitation model to benchmark against successful companies and make CSR strategic decisions, in order to avoid adverse consequences that may be caused by uncertainty. Therefore, the cognitive pillar will affect or adjust the nexus between the director team heterogeneity and CSR.

In addition, based upon the development, reputation and concept of the enterprise, in the face of the social expectation of CSR, it will take the initiative to take the CSR decision-making behavior conducive to the social expectation from perspective of its own perceived values of CSR, so as to respond to the social expectation. These enterprises take the initiative to undertake CSR, which will also attract the imitation of other enterprises. It can be seen that the cognitive pillar regulates the nexus between the director team heterogeneity and CSR, and can also be based on the director team's cognition and understanding of the inherent beliefs and values of the society.

3.4 Summary

This chapter focuses on three aspects.

The first aspect is the internal and external factors affecting CSR.

First, it is the heterogeneity factor of directors' team that affects the choice of CSR strategy. These factors constitute the systematic integration of the diversity of the director team from three aspects: the composition characteristics, structural characteristics and values characteristics of the diversity of the director team. These characteristics can reflect the cognition and ability of the director team to a certain extent.

Second, it is the institutional environmental factors that affect the nexus between director team diversity and CSR. The institutional environment can restrict and guide the decision-making of the director team on CSR through three factors: regulation, normation and cognition, and affect the nexus between the director team difference and CSR.

The second aspect is the impact mechanism of director team heterogeneity on CSR.

First, it is based on the mechanism analysis of CSR strategy. This is mainly through the diversity of the director team, which can provide diversified and multi-level CSR scheme optimization to meet the demands or concerns of stakeholders, so as to realize the strategic choice of CSR.

The second is the mechanism analysis upon information decision-making theory and social classification theory. Based on the theory of information decision-making, the diversity of directors' team can provide diversified information, resources and schemes, improve the positive effect of decision-making, and is conducive to the strategic choice of high-quality CSR. Simultaneously, based on the theory of social categorization, the differences of directors' team will lead to the intensification of differences, contradictions and conflicts among team members, resulting in negative effects of decision-making, which is not conducive to high-quality CSR strategic choices.

It can be seen that the influence mechanism of director team diversity on CSR is the result of the joint action of CSR strategy mechanism, information decision-making theory mechanism and social classification theory mechanism.

The third aspect is the regulatory mechanism of the institutional environment on director team heterogeneity and CSR.

First, it is the modulatory mechanism of the regulative pillar. This is mainly through the mandatory pressure and legality pressure of laws and regulations, prompting the team of directors to make decisions and fulfill CSR, thereby affecting or regulating the nexus between the differences of the team of directors and CSR.

The second is the regulation mechanism of normative pillar. This is mainly through pressure and imitation mechanism that a series of rules, regulations, norms and behavior standards of industry norms, to affect corporate behavior, and then affect the nexus between the diversity of the director team and CSR.

The third is the modulatory mechanism of cognitive pillar. This is mainly based on the perception and understanding of the values, ethics, morals, customs and habits in the institutional environment, or based on the development, reputation and philosophy of the company, the director team makes strategic decisions on CSR, so that the cognitive pillar affects

or adjust the nexus between the differences of the director team and CSR.

In short, the influence mechanism of director team heterogeneity on CSR is upon the joint effect of CSR strategy mechanism, information decision theory mechanism, social classification theory mechanism, and institutional environment modulatory mechanism. Each node of this result is a relative "balance point".

Chapter 4: Empirical Study on Director Team Heterogeneity and CSR

4.1 Introduction

Upper echelons theory argues that TMT's strategic decisions are of higher quality than individual strategic decisions. TMT's gender, age, tenure, education, and financial status can predict their cognition and values, which are the base and influencer of their strategic decision. Being an important corporate strategy, CSR mechanism can guide the nexus between TMT heterogeneity and CSR.

Chapter 4 aims to conduct empirical analysis and find out: What is the relation between director team heterogeneity and CSR? How do director team's demographic characteristics such as gender, age, tenure, education, political status, founding chairman, and values influence CSR?

This chapter follows the research logic that: Director team, which belongs to the executive team, is of bounded rationality in a complex and changing environment according to the upper echelons theory. Due to different gender, age, tenure, education, political status, founding chairman, and values, directors may perceive and respond differently confronting same strategic issues, which means director team heterogeneity can have different impacts on CSR.

Director team's choice of the CSR strategy is not only guided by the CSR strategic mechanism, but also checked and balanced by the information decision theory and social classification theory. Under the effect of information decision theory, director team's heterogeneity prevails in mastering diverse beliefs and resources, which may then form high-quality options for CSR. However, due to the checks and balances of the social classification theory, director team heterogeneity can lead to disagreements, contradictions, and even conflicts within the team and groups easily, making CSR strategy difficult to achieve and posing a negative impact on CSR.

This chapter may have the following innovations:

For the first innovation, this chapter takes director team in the executive team as the research object to study their relation with CSR from a new perspective in the Chinese scenario, which is conducive to revealing the effect of director team heterogeneity as the antecedent of

CSR. It is of theoretical value in enriching and expanding the research on executive team heterogeneity and CSR.

For the second innovation, this chapter assembles 3 levels (composition characteristics, structural characteristics, and values characteristics) and 7 dimensions of director team heterogeneity, and explores director team heterogeneity and CSR from perspectives of director team's horizontal heterogeneity, vertical heterogeneity, and values heterogeneity; deep and surface motivation; team and enterprise.

For the third innovation, this chapter may reveal the combined effects of CSR strategy mechanism, information decision theory mechanism and social categorization theory mechanism, forming a balance point between director team heterogeneity and CSR.

4.2 Theoretical analysis and research hypotheses

4.2.1 Director team's values heterogeneity on CSR

According to upper echelons theory, TMT characteristics that influence enterprises' strategic choice can be divided into deep and unobservable psychological characteristics namely cognition and values (Finkelstein et al., 2009) and surface and observable demographic characteristics such as age and tenure (Harrison et al., 2002). Director team's values heterogeneity, as the deep and inner base of demographic characteristics heterogeneity, is the motivation that may directly perceive the stakeholder's claims and influence the CSR choice (Agle et al., 1999; Simons et al., 1999).

Besides, when making strategic choices about CSR, CSR strategy mechanism, information decision-making theory mechanism and social classification theory mechanism may take effect and lead to two situations. In one situation, director team heterogeneity positively impacts CSR thanks to the advantage of information and resource diversity under CSR strategy mechanism and information decision theory mechanism. For example, Waldman et al. (2006) demonstrated that institutional collectivism's cultural dimensions and power distance can predict TMT members' social responsibility values using data from 561 companies in 15 countries. Miska et al. (2016) conducted a fuzzy qualitative comparative analysis of 29 most world influential companies in China and founded multicultural experience of TMT connected to global CSR integration and local CSR response. Ertuna et al. (2019)'s study revealed that family values and family business headquarters shaped corporate sustainability strategies. Hong (2020) verified the positive interrelation between CEO humility and CSR activities taking 85 companies as the

research object.

In the other situation, director team heterogeneity negatively impacts CSR because the checks and balances of social classification theory mechanism can exacerbate the differences, contradictions and conflicts between groups. For example, Olthuis & van den Oever (2020)'s research demonstrated board ideological diversity negatively interrelated with CSR performance, suggesting that high ideological diversity leads to lower CSR performance. Sajko et al. (2020) confirmed the CEO greed negatively interrelated with CSR, as CEOs tend to neglect CSR investment in the pursuit of personal wealth.

In this case, we proposed the following competing research hypotheses:

H1a: Director team's values heterogeneity influence CSR positively.

H1b: Director team's values heterogeneity influence CSR negatively.

4.2.2 Director team's gender heterogeneity on CSR

The gender heterogeneity constitutes a distinctive feature in director team's strategic CSR decisions. Gender heterogeneity manifests in not only biology but also values. Generally, men are adventurous, innovative and effectiveness-driven. In contrast, females are caring, responsible, kind-hearted, compassionate and relationship-driven (Boulouta, 2012; Fernandez-Feijoo et al., 2012; Lewis et al., 2005). Meanwhile, female value ecology and stakeholders' claims (Harjoto et al., 2014), and are willing to invest and fulfill CSR. Guided by the CSR strategy mechanism and information decision-making theory, more female directors in director team will benefit stakeholders, promote CSR (Bernardi et al., 2009; Boulouta, 2012; Luo & Cho, 2019b; Manetti & Toccafondi, 2012) and fasten the implementation of corporate environmental strategies (Elmagrhi et al., 2019; Lin et al., 2016; Saeed et al., 2021; Xie et al., 2020).

In empirical studies, the influence of TMT heterogeneity (including director team heterogeneity) on CSR are different. Zhai and Liu (2015)'s research illustrated that within certain limits, higher-proportion female executives decreases CSR as a result of social classification theory. W. L. Zhu and Deng (2017)'s study demonstrated that excessive power concentration of female executives can negatively impact CSR under abnormal corporate governance. X. D. Wang and Sun (2020)'s study indicated that female executives' inhibition of corporate rule-breaking can negatively affect CSR.

Therefore, we proposed the following competing research hypotheses:

H2a: Director team gender heterogeneity positively affects CSR.

H2b: Director team gender heterogeneity negatively affects CSR.

4.2.3 Director team's age heterogeneity on CSR

The director team's age heterogeneity can reflect their needs and values. Younger directors are material-oriented, adventurous and innovative. Older directors are reputation-oriented, conservative. They care public opinions, concern about the interests of all parties, and are more inclined to assume CSR. Therefore, director team members of different ages have diverse preferences and choices for CSR strategy options under the CSR strategy mechanism, information decision-making theory mechanism, and social classification theory mechanism, which reflect in different effects of director team heterogeneity on CSR. Elmagrhi et al. (2019) found female directors' age positively expedite corporate environmental performance. However, Liu et al. (2018) delved into the nexus between TMT heterogeneity and CSR employing data from Chinese listed companies and found the inverse U-shaped relationship between TMT heterogeneity and CSR. Prudêncio et al. (2021) used observed data from Brazilian companies to study the association between age diversity and CSR in the board and TMT. The results unfolded that board members had a detrimental effect on CSR practices.

In this case, we proposed the following competing research hypotheses:

H3a: Director team age heterogeneity positively affects CSR.

H3b: Director team age heterogeneity negatively affects CSR.

4.2.4 Tenure heterogeneity between the chairman and other directors on CSR

From a longitudinal perspective, tenure heterogeneity between the chairman and other directors is a structural difference, which reflected as a fact that board members with longer tenure have more experience, skills and social resources (Haleblian & Finkelstein, 1993). Director members with longer tenure can better understand and master values, which is the essence of corporate culture. In that case, strategic decisions on CSR can be supported and promoted (Finkelstein & Hambrick, 1990).

Based on CSR strategic mechanism and information decision-making mechanism, increasing the tenure heterogeneity of chairman and other directors can contribute to the input and decision-making of CSR. The reason for this is that board members with different tenure have multidimensional information and resources to support the decision-making of high-quality CSR strategic programs (Boeker, 1997).

The larger the tenure heterogeneity between the chairman and other directors, the stronger the chairman's voice and influence (Finkelstein & Hambrick, 1988). Huang (2013) once explored CEO demographic characteristics and CSR performance. D. W. Li & Wu (2017)'s

research uncovered that TMT with high tenure heterogeneity is conducive to CSR performance.

Tenure heterogeneity can also have negative impact on CSR because social classification theory mechanism can trap communication among board members and in turn increase disagreements, contradictions and conflicts between groups. T. Lee et al. (2020) found that TMT tenure heterogeneity negatively affects enterprises basing on data from CSR reports of listed companies in Taiwan, China. Jehn et al. (1999) found heterogeneity among individuals in executive teams can reduce decision-making efficiency and lead to lower corporate performance.

Therefore, we proposed the following competing research hypothesis:

H4a: Tenure heterogeneity between the chairman and other directors affects CSR positively.

H4b: Tenure heterogeneity between the chairman and other directors affects CSR negatively.

4.2.5 Education heterogeneity between the chairman and other directors on CSR

From a longitudinal perspective, education heterogeneity between the chairman and other directors is a structural difference within the board team. Board members with higher education receive longer years of national education and tend to be rational in values and thinking patterns. They are able to deal with complex situations, concern about the stakeholders' claims, respect environmental protection, and accept the concept of CSR easily. Director members with lower education receive less years of national education, so their values and thinking patterns are not sufficiently shaped. When faced with complex problems, they rely more on their own experience.

On the one hand, based on CSR strategy mechanism and information decision-making theory mechanism, enhancing the education heterogeneity between the chairman and other directors can facilitate the CSR choice and decision making via the advantage of diversified information and resources (Manner, 2010). Huang (2013) studied CEO demographic characteristics and CSR performance and proved the association of CSR performance and CEO education.

On the other hand, limited by the social classification theory mechanism, director team members educated differently are prone to disconnection, disagreement, contradiction and conflict, being detrimental to achieving CSR strategic goals. Using the CSR reports of listed companies in Taiwan, T. Lee et al. (2020) found TMT education heterogeneity decrease corporate performance, and that greenhouse gas emission strategy moderate this nexus.

Consequently, we propose two competing research hypotheses:

H5a: Education heterogeneity between the chairman and other directors affects CSR positively.

H5b: Education heterogeneity between the chairman and other directors affects CSR negatively.

4.2.6 Political status heterogeneity between the chairman and other directors on CSR

The political status of the chairman and other directors as an important resource in China, can not only shape the social status and personal reputation of the board members, but also add value to the enterprises (Peng & Luo, 2000).

The political status heterogeneity between the chairman and other directors reflects their power distance. One the one hand, political status heterogeneity is beneficial for companies to reduce internal conflicts, enhance decision-making efficiency (Krause et al., 2014) and consolidate order. According to CSR strategy and information decision-making theory mechanisms, the political status heterogeneity between the chairman and other directors can be fully utilized to gather more information and resources of directors with different political status to increase CSR perception and promote the achievement of CSR strategy.

On the other hand, limited by social classification theory mechanisms, exaggerating the political status heterogeneity between the chairman and other directors can lead to disagreements, contradictions, mistrust and conflicts between groups of different political status. Moreover, larger political status heterogeneity can increase power distance, which leads to the suppression and harm of different information and resource inputs, thus negatively affecting CSR (Eisenhardt & Bourgeois, 1988; Haleblian & Finkelstein, 1993; Patel & Cooper, 2014).

Therefore, we proposed the following competing research hypotheses:

H6a: Political status heterogeneity between the chairman and other directors positively affects CSR.

H6b: Political status heterogeneity between the chairman and other directors negatively affects CSR.

4.2.7 Founding chairman on CSR

The founding chairman reflects the structural characteristics within the director team, namely whether the current chairman is the founder of the company. If the current chairman is the founding chairman, it not only indicates the current chairman's contribution, positional and non-positional authority, but also indicates more share input, louder voice and higher influence

of the founding chairman than other directors (Finkelstein, 1992).

On the one hand, based on the CSR strategic mechanism and the information decision-making theory mechanism, the diversified advantage of founding chairman and other directors can facilitate the communication and exchange of director team and make high-quality strategic decisions that are beneficial to CSR.

On the other hand, due to the checks and balances of the social classification theory mechanism, the current chairman, as the founding chairman, has higher position authority and non-position authority, voice power and influence than other directors, which will lead to contradictions, distrust and conflicts between the founding chairman and other director groups; or the increase in power distance leads to the inhibition of different information and resource input, which is not conducive to the smooth achievement of CSR.

Thereby, we proposed two competing research hypotheses:

H7a: Founding chairman is conducive to positive influence on CSR.

H7b: Founding chairman is inconducive to positive influence on CSR.

4.3 Sample selection and data source

To evaluate research hypotheses, we select A-share private listed companies in Shanghai and Shenzhen stock exchanges as the initial sample and use the data from the year 2016 to 2018. Considering the lagging effect of director team heterogeneity on CSR and circumventing endogeneity, the dependent variables' data of is from year t+1 and the independent variables and control variables' data is from year t. Meanwhile, to meet the research needs and eliminate the perturbations, we clean the data in advance: (1) Exclude financial and insurance companies. The financial statement structure and financial rules of these companies are different from those of other companies; (2) Exclude ST and *ST companies. These companies have poor operating conditions and abnormal financial data; (3) Exclude companies where the chairman and general manager are the same or where the general manager is not a member of the director team. These companies may interfere the measurement and testing of director team heterogeneity. (4) Exclude companies with obvious missing data or data difficult to obtain. Some missing data are supplemented and input through annual reports of listed companies and the Internet. To avoid the interference of extreme values, the continuous variables is Winsorized by 1%-99%.

In the end, 149 private listed companies with 447 valid sample observations were obtained.

The sample data is gathered from the annual reports and IPO prospectus of A-share private listed companies on the Shanghai and Shenzhen stock exchanges in 2016-2018 as well as the

CSMAR database (China Stock Market & Accounting Research Database), which allows for the retrieval of financial data and executives' personal characteristics information of listed companies. Missing data is retrived from the Wind database, the Internet, the company's website and related websites. As for the dependent variable, the data of CSR is collected from the environment sub-index of the Chindice ESG Index. As for independent variables and control variables, the data is collected from the annual reports and IPO prospectus of A-share private listed companies on the Shanghai and Shenzhen stock exchanges from 2016-2018, CSMAR database, Wind database, the Internet, company websites and related websites.

Stata17 statistical software and Excel are used for data processing.

4.4 Measurement

4.4.1 Dependent variables

The dependent variable in this thesis is CSR. There are two options for CSR proxy variables in the previous literature. One option is using CSR report rating score of Quality rating of Rankins Rating Agency in China or CSR rating score in Hexun.com. The other option is using the ESG rating index of ESG rating agencies. Choosing CSR scores in Rankins CSR Ratings may have the sample selection bias problem. Therefore, we selected the environment sub-index of the Chindice ESG Index of Sino-Securities Index Information Service (Shanghai) Co. Ltd as the CSR proxy variables. At present, Chindice ESG Index includes four levels of indicators: 3 level-1 indicators, 16 level-2 indicators, 44 level-3 indicators and nearly 80 level-4 indicators. Form high to low, Chindice ESG rating encompasses "AAA-C" nine grades. According to the rating, this study assigns a score of 9.5 to 1.5 of each rating from high to low.

4.4.2 Independent variables

This chapter mainly studies the nexus between the director team heterogeneity in private enterprises and CSR. Therefore, director team heterogeneity mainly constitutes the independent variable. Director team heterogeneity encompasses 3 components (composition characteristics, structural characteristics, and values characteristics), which has 7 dimensions.

First of all, the composition characteristics of director team heterogeneity involve gender heterogeneity and age heterogeneity in cross-sectional comparison within the team.

Secondly, the structural characteristics of director team heterogeneity involve heterogeneity between chairman and other directors in terms of tenure, education, political

status, and founding chairman when conducting longitudinal comparison within the team. Meanwhile, the power and influence in terms of tenure, education, political status, and founding chairman corresponds to expert power, founder power, and political power (Finkelstein, 1992; J. J. Zhang & Zhang, 2016).

Third, the values characteristics of director team heterogeneity involve the values heterogeneity of director team.

(1) Gender heterogeneity of director team (GenH)

Gender heterogeneity of director team is the diversity of team members' gender, namely male or female. Gender heterogeneity is a categorical variable, so when measuring team gender, the Herfindal-Hirschman coefficient (Blau coefficient) is adopted. The formula is: $H = 1 - \sum_{i=1}^{n} P_i^2$, where Pi is the proportion of category i members in the team, n is the number of categories, and H values between 0 and 1. Larger H value represents greater team heterogeneity. We coded male=1 and female=0, then we used Herfindal-Hirschman coefficient to calculate the gender heterogeneity.

(2) Age heterogeneity of director team (AgeH)

Director team age variability is the difference in team members' ages (Hambrick et al., 1996; Kilduff et al., 2000; Knight et al., 1999). Age heterogeneity is a continuous variable, hence the variation coefficients are generally used to measure team age heterogeneity (Allison, 1978; Bantel & Jackson, 1989; Boeker, 1997; Keck, 1997; Wiersema & Bantel, 1992, 1993). The calculation formula is $Index = \delta i / \mu i$, among which $Index$ is director team age heterogeneity, δi is the standard deviation of director team's age in class i, and μi is the mean of director team's age in class i, namely the standard deviation divided by the mean. Larger standard deviation coefficients represent greater team age heterogeneity.

(3) Tenure heterogeneity between the chairman and other directors (TenH)

Tenure heterogeneity between the chairman and other directors is the difference between the chairman's tenure and other directors' tenure. Drawing upon the measurement method of J. J. Zhang and Zhang (2016), we measure tenure heterogeneity using the chairman's tenure minus the average of other directors' tenure. The tenure is the number of months from the day when the director took the position to December 31 of the observed year. If the subtraction result is positive, then the chairman has a longer tenure, lager tenure advantage and more experience than other directors (Finkelstein, 1992). Generally, longer tenure brings greater power (Haleblian & Finkelstein, 1993).

(4) Education heterogeneity between the chairman and other directors (EduH)

Education heterogeneity between the chairman and other directors is the difference of

education. Drawing upon the measurement of J. J. Zhang and Zhang (2016), we coded the directors' education firstly: 1 = below college; 2 = college; 3 = bachelor's degree; 4 = master's degree; 5 = doctor's degree. Then, we constructed a dummy variable upon the value of the chairman's education minus the average of the other directors' education, and positive result = 1, otherwise = 0. A positive value indicates higher education of the chairman than the average education of other directors.

(5) Political status heterogeneity of the chairman and other directors (PolH)

Political status heterogeneity between the chairman and other directors is the difference between their political status. In this case, the political status is the difference in political background, which is assessed from the level of the institution where the director serves or has served. For example, if a company director is a deputy to the National People's Congress of the People's Republic of China or a member of the National Committee of the Chinese People's Political Consultative Conference, then the code is 1=central; if a company director has served in a ministry of the State Council of the People's Republic of China or a party representative to the National Congress of the Communist Party of China, then the code is 1=central. Following this coding method, then 1=central; 2=provincial; 3=municipal; 4=county and district level; 5=other (township and below); 6=no political background. If a company director serves or has served in more than one tier of the organization, the highest tier is taken for coding. We used the code of the chairman to minus the average code of other directors and the natural logarithm is taken after the translation method (M. Lu & Chen, 2004; J. L. Zhu & Li, 2015). If the chairman has a smaller value of political background than the average of other directors' political background, it indicates higher political influence or prestige of the chairman than other directors. Therefore, this variable is a reverse variable.

(6) Founding chairman (Fcha)

For listed companies, their founding chairman is the first chairman during its IPO. The comparison between the founding chairman and other directors who are not the founding chairman is actually a vertical differentiation of power and influence between the chairman and other directors. According to the previous research, founding chairman (founder) having greater influence and power than other directors who are not the founding chairman can bring long-term and far-reaching impact on the strategy formulation, business management, and corporate culture of listed companies (Eisenhardt & Schoonhoven, 1990; Finkelstein, 1992). Drawing from the research method of J. J. Zhang and Zhang (2016), we manually compiles the founding chairmen (founders) by reviewing the IPO prospectus of the listed companies. If the company has multiple founders, the one with the most equity is taken; if the equity is the same, the one

ranked first is taken. Ultimately, we constructed a dummy variable, where the chairman is the founding chairman (founder) of the company = 1; otherwise = 0.

(7) Value heterogeneity of director team (ValH)

Value heterogeneity of director team is the difference between the chairman's values and the average values of other directors. In this thesis, the difference between the chairman's values and general manager's values (who is also a director) is used as a proxy reckoning the availability and representativeness of the data. The existing literature shows that the chairman and the general manager (who is also a director) are the most basic and important structural configuration of a Chinese listed company's board of directors, because the chairman of the board is the legal representative of the company and is responsible for making decisions on company strategy and crucial issues according to the company law and related laws. The general manager, on the other hand, has operational responsibility for the company's strategy realization and business management. The chairman and the general manager (who is also a director) are the most critical power structure in the director team. Therefore, the value difference between the chairman and the general manager (who is also a director) can nearly represent the value heterogeneity of the director team, which could influence the companies' strategic decision orientation and the business goal achievement. The value heterogeneity of the director team is calculated by taking the percentage of the difference between the ratings of chairman's values and managing director's values. It is based on the GLOBE culture model and Schwartz values (for the robustness test), which is measured by Euclidean distance. The formula is: $Dif = \sqrt{\sum_{i=1}^{9}(V_{i1} - V_{i2})^2}$.

First of all, the GLOBE culture model and The Schwartz values derives from *Global Leadership and Organizational Behavioral Effectiveness* (GLOBE culture model), which is cited in X. Y. Zhao et al. (2015)'s study. The GLOBE cultural model and Schwartz cultural values were both used to study cultural values related to work and management in different geographic areas of China during the same period (X. Y. Zhao et al., 2015). The GLOBE culture model encompasses 9 dimensions for examining cultural values related to work and management in different geographic areas, they are: uncertainty avoidance, future orientation, power distance, societal collectivism, in-group collectivism, humane orientation, performance orientation, gender egalitarian, and assertiveness (F. M. Wang et al., 2019). The Schwartz values encompasses 7 dimensions for examining cultural values related to work and management in different geographic areas of China (X. Y. Zhao et al., 2015), they are: egalitarianism, harmony, intellectual autonomy, effective autonomy, mastery, hierarchy and

embeddedness (X. Y. Zhao et al., 2015) .

Secondly, the Euclidean distance formula is used to measure the percentage difference between the chairman's values and the general manager, where V_{i1} represents the score obtained by the chairman's ancestral place on dimension 1 (uncertainty avoidance); V_{i2} represents the score obtained by the general manager's ancestral place on dimension 1 (uncertainty avoidance). The difference between the scores of the chairman and the general manager's ancestral place on the 9 dimensions is squared, summed and square rooted to obtain the percentage of the difference between the scores of chairman value and general manager value. Table 4.1 presented the cultural characteristics of the provinces, autonomous regions and municipalities of China (F. M. Wang et al., 2019; X. Y. Zhao et al., 2015). X. Y. Zhao et al. (2015) listed the scores of the 9 dimensions of 31 provinces, autonomous regions and municipalities in China based on the GLOBE culture model. According to the findings of their study, Hong Kong and Macau in China belong to urban culture, while Taiwan in China belongs to maritime culture. Therefore, the score of Hongkong and Macao is represented by the score of Shanghai, which also belongs to urban culture. The score of Taiwan is represented by the score of Fujian province, which also belongs to maritime culture. In the end, the rating scores of all 34 provinces and regions are listed. Table 4.2 also presents the cultural characteristics of the provinces, autonomous regions and municipalities of China measured by Schwartz values. The measurement of the percentage of the difference between the scores of chairman value and general manager value is the same as in the GLOBE culture model.

Table 4.1 The cultural characteristics of provinces, autonomous regions and municipalities in China (GLOBE culture)

Provinces, autonomous regions and municipalities	uncertainty avoidance	future orientation	power distance	societal collectivism	humane orientation	performance orientation	in-group collectivism	gender egalitarian	assertiveness
Anhui	4.41	4.32	4.49	4.78	4.36	4.75	5.09	3.37	4.30
Beijing	4.29	4.17	4.91	4.59	4.31	4.60	5.05	3.44	4.27
Fujian	4.31	4.24	4.52	4.77	4.37	4.64	5.24	3.46	4.25
Gansu	4.27	4.20	4.63	4.61	4.27	4.60	5.15	3.51	4.02
Guangdong	4.37	4.37	4.42	4.72	4.51	4.60	5.05	3.61	4.15
Guangxi	4.30	4.35	4.45	4.75	4.25	4.67	4.99	3.66	4.17
Guizhou	4.15	4.23	4.46	4.72	4.40	4.86	5.05	3.60	4.41
Hainan	4.15	4.21	4.52	4.66	4.21	4.69	5.16	3.68	4.12
Hebei	4.22	4.22	4.64	4.61	4.25	4.67	5.07	3.46	4.08
Henan	4.38	4.23	4.70	4.73	4.41	4.70	5.16	3.40	4.12
Heilongjiang	4.38	4.22	4.52	4.59	4.38	4.65	5.00	3.49	4.01
Hubei	4.46	4.21	4.51	4.71	4.47	4.88	5.01	3.37	4.16
Hunan	4.31	4.39	4.66	4.72	4.34	4.91	5.13	3.40	4.12
Jinlin	4.43	4.26	4.60	4.73	4.56	4.78	5.21	3.45	4.35
Jiangsu	4.56	4.17	4.56	4.83	4.23	4.60	5.23	3.67	4.22
Jiangxi	4.36	4.34	4.74	4.78	4.35	4.89	5.14	3.46	3.90
Liaoning	4.17	4.17	4.57	4.61	4.35	4.53	5.01	3.45	4.05
Neimenggu	4.32	4.09	4.90	4.66	4.37	4.64	5.36	3.34	4.21
Ningxia	4.54	4.37	4.34	4.82	4.39	4.87	5.17	3.63	4.30
Qinghai	4.17	4.12	4.72	4.41	4.12	4.49	5.27	3.69	4.03
Shandong	4.43	4.25	4.68	4.73	4.35	4.61	5.11	3.48	4.10
Shanxi	4.30	4.25	4.57	4.70	4.24	4.76	5.16	3.47	4.20
Shan'anxi	4.30	4.07	4.73	4.58	4.27	4.51	5.05	3.55	4.07
Shanghai	4.43	4.26	4.54	4.48	4.26	4.51	4.83	3.72	4.20
Sichuan	4.20	4.04	4.81	4.70	4.27	4.42	5.10	3.46	3.96
Tianjin	4.36	4.22	4.64	4.82	4.37	4.77	5.25	3.47	4.21
Tibet	4.42	4.01	4.35	4.50	4.26	4.65	4.64	3.53	4.34
Xinjiang	4.41	4.23	4.34	4.87	4.36	4.77	5.06	3.53	4.19
Yunnan	4.26	4.11	4.54	4.59	4.26	4.73	5.22	3.57	4.12
Zhejiang	4.42	4.23	4.89	4.65	4.31	4.69	5.26	3.51	4.00

Chongqing	4.27	4.20	4.65	4.74	4.33	4.78	5.15	3.73	4.24

Note: The measure of GLOBE culture adopts 7-likert scale.

Table 4.2 The cultural characteristics of provinces, autonomous regions and municipalities in China (Schwartz values)

Provinces, autonomous regions and municipalities	Egalitarianism	Harmony	Intellectual autonomy	Effective autonomy	Mastery	Hierarchy	Embeddedness
Anhui	4.65	4.58	4.47	4.53	4.54	3.66	4.15
Beijing	4.86	4.79	4.64	4.81	4.55	3.86	4.28
Fujian	4.90	4.69	4.49	4.77	4.53	3.61	4.32
Gansu	4.68	4.60	4.37	4.27	4.38	3.53	4.13
Guangdong	4.83	4.67	4.55	4.62	4.52	3.70	4.33
Guangxi	4.62	4.64	4.59	4.59	4.47	3.56	4.22
Guizhou	4.64	4.51	4.35	4.38	4.46	3.49	4.22
Hainan	4.63	4.41	4.54	4.65	4.33	3.36	4.11
Hebei	4.69	4.60	4.49	4.55	4.58	3.71	4.16
Henan	4.71	4.64	4.39	4.47	4.55	3.67	4.24
Heilongjiang	4.69	4.69	4.52	4.65	4.74	3.92	4.26
Hubei	4.67	4.50	4.37	4.56	4.43	3.51	4.17
Hunan	4.64	4.53	4.46	4.52	4.47	3.52	4.10
Jilin	4.95	4.83	4.68	4.88	4.72	3.88	4.34
Jiangsu	4.75	4.72	4.45	4.50	4.37	3.54	4.32
Jiangxi	4.66	4.46	4.44	4.52	4.51	3.60	4.09
Liaoning	4.74	4.65	4.57	4.72	4.68	3.78	4.19
Neimenggu	4.63	4.67	4.45	4.55	4.48	3.74	4.20
Ningxia	4.80	4.65	4.52	4.56	4.55	3.48	4.31
Qinghai	4.83	4.63	4.47	4.42	4.37	3.43	4.21
Shandong	4.67	4.51	4.38	4.45	4.47	3.58	4.11
Shanxi	4.78	4.53	4.37	4.54	4.55	3.66	4.24
Shan'anxi	4.82	4.63	4.44	4.59	4.48	3.59	4.27
Shanghai	4.39	4.37	4.18	4.44	4.28	3.72	4.10
Sichuan	4.66	4.50	4.52	4.54	4.48	3.65	4.06
Tianjin	4.81	4.69	4.55	4.74	4.53	3.53	4.18
Xizang	4.15	4.12	3.86	4.06	3.95	3.41	4.04
Xinjiang	4.77	4.72	4.57	4.56	4.56	3.66	4.31

Yunnan	4.68	4.52	4.46	4.54	4.45	3.63	4.17
Zhejiang	4.73	4.50	4.47	4.74	4.62	3.87	4.16
Chongqing	4.71	4.66	4.63	4.70	4.53	3.59	4.15

Note: The measure of Schwartz values adopts 6-likert scale.

Thirdly, to calculate the percentage difference between the chairman's values and the general managers' necessitates the information of their ancestral place. The ancestral places of the chairmen and the general managers are partly from CSMAR database and WIND database. Since the CSRC (China Security Regulation Committee) does not require listed companies to report the ancestral place of the directors, only 30% of the ancestral place information can be obtained from the above-mentioned databases. For the missing data on the ancestral place, we search the news report and company websites via the Internet using the keywords such as the company's security name, the name of the chairman and the general manager, ancestral place, place of birth, hometown, and personal growth experience. If the ancestral place is still missing after the searching, it is substituted with the place of birth.

4.4.3 Control variables

The nexus between director team heterogeneity and CSR is explored in this research. In fact, including the director team heterogeneity that influences CSR, there may be other factors influence CSR. To better explore the nexus between director team heterogeneity and CSR, it is necessary to control the factors that may impact on CSR. Therefore, we set control variables to better observe and evaluate the influence of director team heterogeneity on CSR. Thereby, the following control variables are selected referring to relevant literature.

(1) Company size (Size)

The company size is directly related to the resources it controls and uses. Larger scale not only influences the characteristics of the TMT and organizational output (Miller, 1991), but also assumes more CSR using their resources based on social concerns, corporate reputation, and long-term development (Trotman & Bradley, 1981), and in turn affects the relation between director team heterogeneity and CSR. Therefore, company size is set as a control variable. D. S. Li and Wang (2019), this research selects total year-end asset to measure company size. The natural logarithm of the total year-end asset is used in order to eliminate the adverse effects of oversized raw data and better facilitate regression analysis.

(2) Net profit margin on total assets (ROA)

Net profit margin on total assets is the ratio of net profit to average total asset. It is also known as return on assets (ROA). ROA is a critical indicator of a company's profitability. Enterprises with stronger profitability can provide more resource to fulfill CSR and affect director team member's willingness to undertake CSR, which in turn affects director team heterogeneity and CSR. Referring to Z. G. Zhang et al. (2018), we selected ROA as a control variable and the natural logarithm is taken on this basis.

(3) Proportion of independent directors (Indep)

Independent directors as a part of the company's director team, are critical in representing stakeholders in the company's CSR strategy decisions. The proportion of independent directors relates to CSR fulfillment (Z. Chen & Xu, 2011). Meanwhile, it can affect the director team heterogeneity's structure, which may influence the nexus between director team heterogeneity and CSR. Therefore, the proportion of independent directors is selected as a control variable in this study. With reference to Dai (2021), we measure the proportion of independent directors using the proportion of independent directors in board of directors after taking the natural logarithm.

(4) Proportion of fixed assets (Fixed)

The proportion of fixed assets is the ratio of fixed assets to total assets. On one hand, the fixed assets proportion is the material basis for enterprise operation, performance improvement and high-quality development. On the other hand, the proportion of fixed assets is also critical to environmental protection investment, which will affect the investment in environmental protection projects, and thus affect the fulfillment of CSR and the disclosure of environmental accounting information. Drawing upon the research method of Shao and Wu (2019), we selected the proportion of fixed assets as a control variable and measured with net fixed assets/total assets.

(5) Industry (Industry)

Industry is a dummy variable. According to the Industry Classification Guidelines for Listed Companies of the China Securities Regulatory Commission, listed companies are classified by industries. Due to the diversified characteristics of industries, enterprises in different industries fulfill their CSR in different characteristics and degrees. As a result, enterprises from different industries affect CSR differently, so industries should be controlled. This thesis refers to the research method of Z. G. Zhang et al. (2018) and classify industries according to the Industry Classification Guidelines, in which the manufacturing industry (Class C) is divided into subclasses of industries.

(6) Year (Year)

Year is a dummy variable. The fulfillment of CSR by listed companies is affected by annual fluctuations of domestic and international economic factors. Therefore, year should be controlled. This research draws upon the research method of D. S. Li and Wang (2019) and sets 2 dummy variables (2017 and 2018) with 2016 as the reference year. Table 4.3 exhibits the variable definitions.

Table 4.3 Definitions of the variables

Variable type	Variable name	Variable symbol	Variable definitions	References
Dependent variable	CSR	CSR	The ESG (E) rating of Sino-securities is assigned a score of "9.5" to "1.5" in descending order.	B. Wang and Yang (2022) Yuan and Li (2021)
Independent variables	Gender heterogeneity	GenH	Male="1", female="0", as measured by Herfindal-Hirschman Index: $H=1-\sum_{i=1}^{n} P_i^2$.	D. S. Li and Wang (2019)
	Age heterogeneity	AgeH	Measured using the coefficient of variation (standard deviation/mean): $Index=\delta i/\mu i$	Z. G. Zhang et al. (2018)
	Heterogeneity in tenure between the board chairman and other directors	TenH	Chairman tenure value minus other director tenure average. Tenure: The director holds office until December 31 of the observation year, unit: month.	J. J. Zhang and Zhang (2016)
	Heterogeneity in education between the board chairman and other directors	EduH	1=below junior college; 2=junior college; 3= undergraduate; 4=master; 5=doctor. The educational value of the chairman minus the average educational value of other directors. The difference is positive=1, otherwise =0.	J. J. Zhang and Zhang (2016)
	Heterogeneity in political status between the board chairman and other directors	PolH	The value of the chairman's political status minus the average value of other directors' political status, and Natural logarithm is used.	J. J. Zhang and Zhang (2016)
	Founding Chairman	Fcha	Construct a dummy variable: the chairman is the founding chairman of the company (founder)=1; otherwise=0.	Hu (2020); Zhong et al. (2022)
	Value heterogeneity	ValH	Take percentage of difference between the value score of the chairman and the value score of the general manager. Based on the GLOBE culture model, measured with Euclidean distance. Formula: $Dif=\sqrt{\sum_{i=1}^{9}(V_{i1}-V_{i2})^2}$	X. Y. Zhao et al. (2015)；F. M. Wang et al. (2019)
Moderator variable	Institutional environment	Market	Marketization Indices of Each Province in the "Marketization Index of China's provinces: Neri report 2021"	X. L. Wang et al. (2021)

Control variables	Company size	Size	Natural logarithm of total assets at the end of the year	D. S. Li and Wang (2019)
	Percentage of independent directors	Indep	Natural logarithm of number of independent directors/number of board of directors	Dai (2021)
	Net profit margin of total assets	ROA	Natural logarithm of net profit/average total assets	Z. G. Zhang et al.(2018)
	Proportion of fixed assets	Fixed	Net fixed assets/total assets	Shao and Wu (2019)
	Industry	Industry	Dummy variables, if they belong to a certain industry, take 1, otherwise take 0	Z. G. Zhang et al.(2018)
	Year	Year	Taking 2016 as the reference system, set 2 dummy variables (2017, 2018), the company is in this year, take 1, otherwise take 0.	D. S. Li and Wang (2019)

Note: The industry is according to the 2012 industry classification of the China Securities Regulatory Commission.

4.5 Model construction

Based on the research hypotheses, the following regression model 4.1 is constructed to test the influence of director team heterogeneity on CSR.

Model 4.1 is exhibited as follows:

$$
\begin{aligned}
\mathbf{CSR_{it+1}} = \\
\boldsymbol{\beta_0 + \beta_1 ValH_{it} + \beta_2 GenH_{it} + \beta_3 AgeH_{it} + \beta_4 TenH_{it} + \beta_5 EduH_{it} +} \\
\boldsymbol{\beta_6 PolH_{it} + \beta_7 Fcha_{it} + \beta_8 Size_{it} + \beta_9 Roa_{it} + \beta_{10} Indep_{it} + \beta_{11} Fixed_{it} +} \\
\boldsymbol{\beta_{12} Industry_{it} + \beta_{13} Year_{it} + \varepsilon_{it}}
\end{aligned}
\tag{4.1}
$$

where: CSR is the dependent variable CSR, i is the listed company, t is the year, CSR adopts the data of year t+1, namely data of 2017-2019. The constant term is β_0, the independent variables are $\beta_1 ValH_{it}$ to $\beta_7 Fcha_{it}$, which adopt the data of year t, i.e. 2016-2018 data. The control variables are $\beta_8 Size_{it}$ to $\beta_{13} Year_{it}$, which adopt the data of year t, namely the data of 2016-2018. ε_{it} is the random error.

4.6 Estimation method

4.6.1 Normality of data

Whether the data is normal may influence the regression and may lead to bias. Therefore, testing the normality of data is essential. This thesis conducted KS test and graphical comparison on all the explained variables, explanatory variables and control variables to test the normality. The results demonstrate that the data lacks normality in ESG environment sub-index of CSR, gender heterogeneity and age heterogeneity of the director team, and proportion of fixed assets. Therefore, the data of the above variables were transformed for normality in this thesis.

4.6.2 Model estimation

This thesis constructed a multiple regression model using unbalanced panel data of A-share listed private companies in Shanghai and Shenzhen stock exchanges in China from 2016-2018. Although panel data is superior in regression analysis, model testing, judgment and selection are still required, which are usually conducted in three methods: mixed effects model, random effects model; and fixed effects model. For the three models, the intercept and slope of the estimation results are the same in the mixed-effects model, while the intercept and slope of the

estimation results are different in the random effects model and the fixed effects model. Moreover, the error term is not correlated with the independent variables in the random effects model, while the error term is correlated with the dependent variables in the fixed effects model. Therefore, the three models are suitable for different research needs.

For the model estimation, Stata17 software was used to test, judge, and select between the mixed effects model, random effects model and fixed effects model. In the pairwise comparisons, the Hausman test suggests the fixed effects model prevails than the mixed effects model ($p<0.05$), the random effects model prevails than the mixed effects model ($p<0.05$), and the fixed effects model prevails than the random effects model ($p<0.05$). In the end, fixed effects model is selected for the testing, judgment and selection of the model. Table 4.4 presents the Hausman test results.

Table 4.4 Hausman specification test

	Coef.
Chi-square test value	28.154
P-value	.005

4.6.3 Collinearity and autocorrelation

(1) Collinearity

Collinearity reflects high degree linear correlation among the explanatory variables in linear regression. Its presence can lead to the bias and instability of regression coefficients as well as the insignificance of explanatory variables, which in turn affects the credibility and stability of regression analysis. Collinearity can be tested and determined using the Variance Inflation Factor (VIF), or Tolerance (TOL) which is the inverse of VIF. VIF greater than 10 or TOL less than 0.10 suggests a strong collinearity problem. To eliminate the interference of the collinearity, we adopted VIF and TOL tests on the main variables via Stata17 software. Table 4.5 exhibit the results.

Table 4.5 Variance inflation factor

	VIF	1/VIF
fcha	1.331	.751
tenh	1.272	.786
size	1.203	.831
fixed	1.181	.847
polh	1.111	.9
ageh	1.086	.921
valh	1.078	.927
genh	1.067	.938
indep	1.051	.952
roa	1.05	.953
eduh	1.022	.978

Mean VIF	1.132	.

The VIF for the main variables in regression model 4.1 has a maximum of 1.331, a minimum of 1.022 and a mean of 1.132, which is close to 1 and significantly less than 10. Meanwhile, the TOL has a maximum of 0.978 and a minimum of 0.751, which is close to 1 and significantly greater than 0.10. Therefore, no serious collinearity exists among the main variables in regression model 4.1.

(2) Autocorrelation

Panel data may be autocorrelated due to the factors such as economic inertia and lags as well as data collation. The autocorrelation of panel data is manifested as intra-group correlation and cross-sectional correlation. Intra-group correlation is the correlation among the random disturbance of the same individual at different timepoints within a group, while cross-sectional correlation is the correlation among the random disturbance of different individuals at the same timepoint. The autocorrelation of panel data can bias the variance and significance. Therefore, it needs to be judged, adjusted and improved. Both long panel and short panel may have autocorrelation. In practice, the autocorrelation of short panels with large N and small T (especially when T=3) is considered to be negligible because of its weak effect. The panel data used in this thesis (N=447, T=3) is a short panel with large N and small T, then it can be regarded as having no autocorrelation (Niu, 2015).

4.6.4 Heteroskedasticity and endogeneity

(1) Heteroskedasticity

The random disturbance variance varies with the explanatory variables, and when the random disturbance variance of individuals is unequal, heteroscedasticity occurs. Heteroscedasticity can invalidate or bias parameter estimates, significance tests, and model predictions. To test the existence of heteroskedasticity, test method such as White test are used. The heteroskedasticity can be revised either using the weighted least squares (WLS) method or adding the robust or cluster option to the Stata regression command during the regression. This thesis revised the heteroskedasticity by adding the heteroskedasticity-robust standard error option to the Stata fixed effects regression command.

(2) Endogeneity

Endogeneity is the correlation between the explanatory variables and random disturbance (error terms) due to factors such as selectivity bias, measurement error, simultaneity, and explanatory variable omitted. Endogeneity can cause regression coefficients fail to achieve unbiased estimation and then lead to biased conclusions. Therefore, the endogeneity problem

is a common and critical issue in regression analysis. Generally, the endogeneity problem is judged by Hausman test. Hausman test firstly uses different estimation for the same research object, then obtain the estimation results of the two regression coefficients, and lastly compare whether the two coefficients are significantly different. Significant difference between the coefficients indicates the existence of endogeneity. As for adjusting or revising the endogeneity, instrumental variable and fixed effects model are commonly used methods. As mentioned earlier, this thesis adopted Hausman test and fixed effects model, which can avoid endogeneity to some extent because by controlling individual effect and timepoint effect, fixed effects model can subsume them into constant terms and make the constant terms random variables. Moreover, the fixed effects model in this chapter uses the data of year t+1 for the dependent variable and the data of year t for the independent and control variables, which can also avoid the endogeneity to some extent.

4.7 Empirical test and analysis

4.7.1 Descriptive statistics

The descriptive statistics of the variables in this study are exhibited in Table 4.6. Among the 447 sample observations, the maximum CSR is 2.739, minimum CSR is 1.225, mean CSR is 1.705, and the standard deviation is 0.428, indicating that the level of CSR proxied by the ESG environment sub-index is still low and requires China's private listed companies to put more efforts and make more improvement in protecting the environment.

In the director team heterogeneity in Table 4.6, we found that: (1) for the director team value heterogeneity, the maximum is 94, minimum is 0, mean is 27.81, and standard deviation is 27.20, indicating large difference of the director team value heterogeneity among enterprises. (2) for the gender heterogeneity and age heterogeneity, the maximums are 0.707 and 0.703, the minimums are 0 and 0, and the means are 0.418 and 0.401. Although the differences between enterprises are obvious, the average heterogeneity is moderate. (3) for the tenure heterogeneity between the chairman and other directors, the minimum of is -56.30, the maximum is 122.8, the mean is 31.13, and the standard deviation is 39.57, indicating that the differences in tenure heterogeneity between the chairman and other directors in companies are large. For the education, political status and founding chairman heterogeneity between the chairman and other directors, their means are 0.414, 1.383, and 0.705, respectively, the standard deviations are 0.493, 0.703, and 0.457, respectively. These results indicate that the education and founding

chairman heterogeneity between the chairman and other directors are moderate, and the political status heterogeneity is obvious.

From the control variable information in Table 4.6, we found that the means of Size, ROA, and Indep after taking the logarithm are 3.114, -3.069, and -1.004, respectively, indicating that the difference between companies is not significant, but there is still room for development. For the proportion of the fixed asset, the minimum is 0.043, maximum is 0.810, mean is 0.394, indicating a significant gap between companies, but mean of the proportion of fixed asset indicates moderate difference.

Table 4.6 Descriptive statistics of main variables

Variable	N	Mean	p50	SD	Min	Max
csr	447	1.705	1.581	0.428	1.225	2.739
valh	447	27.81	33	27.20	0	94
genh	447	0.418	0.444	0.203	0	0.707
ageh	447	0.401	0.412	0.143	0	0.703
tenh	446	31.13	27.42	39.57	-56.30	122.8
eduh	447	0.414	0	0.493	0	1
polh	447	1.383	1.649	0.703	-1.609	2.079
fcha	447	0.705	1	0.457	0	1
size	447	3.114	3.108	0.0510	3.008	3.264
roa	429	-3.069	-2.961	0.877	-6.296	-1.541
indep	447	-1.004	-1.099	0.117	-1.099	-0.693
fixed	447	0.394	0.405	0.156	0.0430	0.810

4.7.2 Correlation analysis

Before the regression analysis, Pearson correlation analysis was conducted, as exhibited in Table 4.7. From Table 4.7, we can notice the correlations between the independent variables, control variables, and the dependent variable CSR have different characteristics before adding new constraints.

Table 4.7 Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) csr	1.000											
(2) valh	-0.269*	1.000										
	(0.000)											
(3) genh	0.182*	-0.013	1.000									
	(0.000)	(0.792)										
(4) ageh	-0.120*	0.139*	0.027	1.000								
	(0.011)	(0.003)	(0.567)									
(5) tenh	-0.025	-0.005	0.030	0.110*	1.000							
	(0.604)	(0.915)	(0.522)	(0.020)								
(6) eduh	0.074	-0.043	0.004	0.012	-0.047	1.000						
	(0.116)	(0.363)	(0.935)	(0.795)	(0.318)							
(7) polh	-0.032	-0.006	-0.080	0.041	-0.151*	0.022	1.000					
	(0.505)	(0.893)	(0.092)	(0.384)	(0.001)	(0.635)						
(8) fcha	-0.126*	0.038	-0.031	0.043	0.377*	-0.053	-0.240*	1.000				
	(0.008)	(0.419)	(0.507)	(0.367)	(0.000)	(0.259)	(0.000)					
(9) size	0.156*	-0.118*	0.091	-0.072	0.194*	-0.032	-0.133*	-0.159*	1.000			
	(0.001)	(0.013)	(0.055)	(0.128)	(0.000)	(0.494)	(0.005)	(0.001)				
(10) roa	0.114*	0.003	0.056	-0.014	-0.017	0.083	0.034	0.092	-0.106*	1.000		
	(0.018)	(0.943)	(0.244)	(0.774)	(0.726)	(0.087)	(0.488)	(0.057)	(0.029)			
(11) indep	0.016	0.004	-0.087	0.045	0.020	0.063	-0.005	0.020	0.015	0.099*	1.000	
	(0.735)	(0.927)	(0.067)	(0.345)	(0.678)	(0.187)	(0.920)	(0.679)	(0.755)	(0.041)		
(12) fixed	0.265*	-0.202*	0.169*	-0.228*	-0.095*	0.017	0.053	-0.028	-0.091	0.086	-0.140*	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.046)	(0.720)	(0.265)	(0.550)	(0.055)	(0.077)	(0.003)	

$p<0.05$

(1) Independent variables. The correlation coefficient of the director team's values heterogeneity is -0.269 (p<0.05), proving hypothesis H1b preliminarily. The correlation coefficient of director team's gender heterogeneity on CSR is 0.182 (p<0.05), giving an initial proof to hypothesis H2a. The correlation coefficient of director team's age heterogeneity on CSR is -0.120 (p<0.05), supporting H3b in the first place. The correlation coefficient of director team's tenure heterogeneity on CSR is -0.025, proving hypothesis H4b preliminary. The correlation coefficient of director team's education heterogeneity between the chairman and other directors on CSR is 0.074, supporting hypothesis H5a. The correlation coefficient of director team's political status heterogeneity between the chairman and other directors on CSR is -0.032. Although the coefficient is negative, the relationship is still positive because this variable is a reverse variable, thus hypothesis H6a is supported in the first place. The correlation coefficient of founding chairman on CSR is -0.126 (p<0.05), supporting hypothesis H7b.

(2) Control variables. The correlation coefficients of company size (Size), ROA (ROA), proportion of independent directors (Indep) and proportion of fixed assets (Fixed) on CSR are 0.156 (p<0.05), 0.114 (p<0.05), 0.016 and 0.265 (p<0.05), respectively, reflecting the positive influences of the above control variables on CSR.

(3) Major variables. The absolute values of independent and control variables' correlation coefficients on the dependent variable CSR are less than 0.3, showcasing a weak correlation. Moreover, the absolute values of the correlation coefficients between all the major variables were less than 0.4, showcasing a weak correlation. Therefore, the collinearity between the variables is weak, which is basically aligned with the VIF test.

The correlation analysis cannot fully uncover the linear causal nexus between the variables. Therefore, regression analysis should be further conducted to verify the specific relationship.

4.7.3 Regression analysis

Considering small collinearity, the regression is performed using Enter Regression Model to test the hypotheses (D. W. Li & Wu, 2017; Yu, 2014). Based on the fixed effects model and combined with control options such as industry, year, heteroskedasticity-robust standard error, this study carried out a regression analysis on director team heterogeneity and CSR using Stata 17.

The regression results are exhibited in Table 4.8. As in Table 4.8, the R-squared is 0.47831, which approaches 0.5, indicating a good model fit, and the F-test is 32.69838, which is acceptable. From Table 4.8, it can be observed that the gender, tenure and political status heterogeneity are positively related to CSR. Meanwhile, the values, age heterogeneity and

founding chairman negatively relate to CSR. The effect of education heterogeneity on CSR is insignificant. Moreover, the control variables including company size, ROA and proportion of fixed assets positively impact CSR. The impact of proportion of independent directors on CSR is insignificant.

Table 4.8 The regression of director team heterogeneity on CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
valh	-.00352	.0007	-5.04	0	-.00489	-.00215	***
genh	.2114	.09579	2.21	.02793	.02305	.39975	**
ageh	-.26675	.12714	-2.10	.03658	-.51675	-.01674	**
tenh	.00101	.00054	1.87	.06209	-.00005	.00206	*
eduh	-.02016	.04352	-0.46	.64357	-.10574	.06543	
polh	-.05091	.02723	-1.87	.06235	-.10446	.00264	*
fcha	-.17496	.05258	-3.33	.00096	-.27836	-.07157	***
size	2.04016	.47057	4.34	.00002	1.11486	2.96547	***
roa	.0532	.02258	2.36	.01899	.0088	.0976	**
indep	.23051	.171	1.35	.17847	-.10573	.56676	
fixed	.55176	.19763	2.79	.00551	.16315	.94038	***
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	
Constant	-4.19241	1.47874	-2.84	.00483	-7.10014	-1.28469	***
Mean dependent var	1.71214		SD dependent var		0.42837		
R-squared	0.47831		Number of obs		428		
F-test	32.69838		Prob > F		0.00000		
Akaike crit. (AIC)	321.43197		Bayesian crit. (BIC)		548.74287		

*** p<.01, ** p<.05, * p<.1 indicates significance at 1%, 5%, 10%.

Values heterogeneity: Director team values heterogeneity negatively affects CSR (β=-0.00352, p<0.01), which validates H1b: Director team values heterogeneity negatively affects CSR. From the perspective of social classification, this result suggests that increasing director team values heterogeneity can lead to communication problem, agreement difficulty and identification conflicts, which could harm the achievement and realization of CSR goals.

Cross-sectional director team heterogeneity: Director team gender heterogeneity positively affects CSR (β=0.2114, p<0.05). From the perspective of information decision-making, this result verifies H2a: Director team's gender heterogeneity positively affects CSR, indicating that with the increasing of the gender heterogeneity in the director team, the information and resources among team members will be diversified, and the collision of views and solutions can be conducive to CSR strategic decision-making and realization. Especially with the increasing proportion women in the director team, women's nature in caring the stakeholder's claims, advocating environmental protection and supporting disaster relief and poverty alleviation can help enhance CSR. Moreover, director team's age heterogeneity negatively impacts CSR (β=-0.26675, p<0.05). From the perspective of social classification, this result verifies H3b: Director team's age heterogeneity negatively affects CSR, indicating that increasing age heterogeneity

of the director team may enlarge the gap between directors of different ages, making it difficult to converge and agree on viewpoints. In this case, enterprises often encounter the dilemma in CSR decision-making, which is not conducive to the consensus on CSR.

Vertical director team heterogeneity: (1) Tenure heterogeneity between the chairman and other directors positively impacts CSR ($\beta=0.00101$, $p<0.1$). From the perspective of information decision-making, this result supports H4a: Tenure heterogeneity between the chairman and other directors positively impacts CSR, indicating that different tenures can bring diversified information, experience and resources, which could accumulate and choose the relatively optimal strategic solutions for CSR. Besides, tenure heterogeneity can establish the expert authority of the chairman, which is conducive to the decision of CSR programs. (2) The political status heterogeneity between the chairman and other directors positively affects CSR ($\beta=-0.05091$, $p<0.1$), and the founding chairman negatively influences CSR ($\beta=-0.17496$, $p<0.01$). From the information decision-making, this result proved H6a: The political status heterogeneity between the chairman and other directors positively influences CSR, indicating that when the political status heterogeneity between the chairman and other directors become bigger and bigger, the advantage and influence of the political status can be fully played to gather more information and resources from different levels, which could increase the perception of CSR, promote CSR achievement, and benefit the improvement of CSR strategy efficiency. From the perspective of social classification, this result verifies H7b: The founding chairman is inconducive to the positive impact on CSR. Although the founding chairman shows contributions to the company, founder power and influence, as the heterogeneity between the founding chairman and other directors become bigger and bigger, the identification and belonging between the chairman and the "small group" of other directors decreases, the disagreements and conflicts increase, the influence of the chairman on other directors decreases. With the weakening cohesion of the director team, it is hard to form a team cohesion and consensus, which is detrimental to the achievement of CSR. Therefore, when the positive effect on CSR brought by the enlarged director team heterogeneity is obviously weaker than the positive effect, the balance point of the two effects is tend to show a negative effect. (3) Education heterogeneity between the chairman and other directors negatively influence CSR, but the effect is insignificant ($\beta=-0.02016$, $p<0.64357$). From the perspective of social classification, these results demonstrate with the enlarged education heterogeneity between the chairman and other directors, on the one hand, the identification and belonging of the chairman and other directors may decrease, leading to dislocated cognition and increased conflicts, which is detrimental to the achievement of CSR. On the other hand, this heterogeneity is not obvious

enough to affect CSR decisions and implementation. Therefore, H5b: Education heterogeneity between the chairman and other directors affects CSR negatively is unsupported.

Control variables: (1) Company size, ROA, and proportion of fixed assets have positive effects on CSR ($\beta=2.04016$, $p<0.00002$; $\beta=0.0532$, $p<0.01899$; $\beta=0.55176$, $p<0.00551$, respectively). These results indicate that larger company size, higher ROA and more proportion of fixed assets are conducive to the decision and realization of CSR strategic goals, which could promote the achievement and development of CSR. (2) The proportion of independent directors positively influences CSR, but it's insignificant ($\beta=0.23051$, $p<0.17847$).

4.8 Robustness test and analysis

To ensure that the findings on director team heterogeneity and CSR are robust, this chapter replaces the measurement methods for some independent variables, specifically: (1) To examine whether the research findings are sensitive to the measurement method of the director team values heterogeneity, given the GLOBE cultural model and Schwartz cultural values measurement data, both were used to study cultural values related to work and management in different regions of China during the same period (F. M. Wang et al., 2019; X. Y. Zhao et al., 2015). Measurement of the director team values heterogeneity in the Independent Variable: Using Schwartz's Cultural Values Measurement Data to Replace the GLOBE Cultural Model Measurement Data of the Main Model; (2) The director team age heterogeneity is measured by the data before normalization transformation; (3) To measure whether the research findings are sensitive to the potential extremes, the tenure heterogeneity between the chairman and other directors is winsorized to 5% to 95% (Jiang, 2009; Xia, 2012; Y. H. Zhao et al., 2023).

Before the robustness test regression, descriptive statistics, correlation analysis, VIF test, and TOL test were first performed, and the results generally align with those of the main model (Among them, the maximum VIF is 1.382, the minimum is 1.022, and the average is 1.15, which is close to 1). Moreover, the Hausman test was also performed, and it should be noted that the p-value of the Hausman test for robustness test is 0.017. Considering the consistency and robustness of the fixed effects model estimation results and the needs of the study, the fixed effects model is still used for the robustness regression, which corresponds with the main model.

This study employs the Enter Regression Model for regression to evaluate the robustness of the regression analysis. As exhibited in Table 4.9, the results of the robustness test align with that of the main model regression (see Table 4.8). Moreover, the model fit in the robustness test is even better than that of the main model as the R-squared of the former is 0.49621 and the R-

squared of the latter is 0.47831. the details are in the following analysis.

Table 4.9 Robustness regression of director team heterogeneity on CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
valh	-.0031	.00085	-3.67	.00028	-.00476	-.00144	***
genh	.20704	.09389	2.21	.02806	.02241	.39166	**
ageh	-.82297	.18449	-4.46	.00001	-1.18575	-.46019	***
tenh	.00123	.00066	1.87	.06212	-.00006	.00251	*
eduh	-.02828	.04314	-0.66	.51253	-.1131	.05655	
polh	-.06098	.02585	-2.36	.01883	-.1118	-.01015	**
fcha	-.16247	.05362	-3.03	.00262	-.26791	-.05703	***
size	1.93506	.44964	4.30	.00002	1.0509	2.81922	***
roa	.05095	.02228	2.29	.02276	.00714	.09476	**
indep	.24158	.16663	1.45	.14796	-.08608	.56924	
fixed	.61496	.19017	3.23	.00133	.24102	.98891	***
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	
Constant	-3.88458	1.40751	-2.76	.00607	-6.65226	-1.1169	***
Mean dependent var	1.71214		SD dependent var		0.42837		
R-squared	0.49621		Number of obs		428		
F-test	53.54684		Prob > F		0.00000		
Akaike crit. (AIC)	306.48726		Bayesian crit. (BIC)		533.79816		

Note: *** p<.01, ** p<.05, * p<.1 indicates significance at 1%, 5%, 10%.

In terms of the values heterogeneity, values heterogeneity negatively impacts CSR (β=-0.0031, p<0.01). The coefficient of the robustness test (β=-0.0031) is smaller than that of the main model (β=-0.00352), while the significances are consistent.

In terms of the cross-sectional director team heterogeneity, on the one hand, director team gender heterogeneity positively affects CSR (β=0.20704, p<0.05). The coefficient of the robustness test (β=0.20704) is smaller than that of the main model (β=0.2114), while the significances are consistent. On the other hand, director team age heterogeneity negatively affects CSR (β=-0.82297, p<0.01). The coefficient of the robustness test (β=-0.82297) is much greater than that of the main model (β=-0.26675), so do the significance.

In terms of the vertical director team heterogeneity: (1) The tenure heterogeneity between the chairman and other directors positively affects CSR (β=0.00123, p<0.1). The coefficient of the robustness test (β=0.00123) is slightly greater than the main model (β=0.00101), while the significances are consistent. (2) The heterogeneity in political status between the chairman and other directors, and the impact of the founding chairman on CSR, are positively and negatively correlated, respectively (β=-0.06098, p<0.05; β=-0.16247, p<0.01). The β=-0.06098 and β=-0.16247 of the robustness test show that the heterogeneity in political status between the chairman and other directors positively affects CSR slightly more strongly than the main model and the strength of the founding chairman's negative impact on CSR is slightly less than that of the main model, with β=-0.05091 and β=-0.17496 in the main model. There is significance

at the 5% and 1% levels, $p<0.05$ and $p<0.01$. The significance is basically the same, and the robustness test is slightly better than that of the main model. (3) Education heterogeneity between the chairman and other directors negatively affects CSR, but the effect is insignificant ($\beta=-0.02828$, $p<0.51253$). The coefficient of the robustness test is slightly higher than the main model ($\beta=-0.02016$). Although the coefficient is still insignificant, it is slightly better than the main model ($p<0.64357$).

In terms of the control variables: (1) Company size, ROA, and the proportion of fixed assets positively impacts on CSR ($\beta=1.93506$, $p<0.00002$; $\beta=0.05095$, $p<0.02276$; $\beta=0.61496$, $p<0.00133$, respectively). Company size, ROA, proportion of fixed asset on CSR positively influence CSR, and the coefficients of company size, ROA are slightly smaller and the proportion of fixed asset on CSR are slightly greater than the main model ($\beta=2.04016$; $\beta=0.0532$; $\beta=0.55176$). While the significances are basically the same, main model ($p<0.00002$, $p<0.01899$, $p<0.00551$). (2) The proportion of independent directors positively impacts CSR, but it is not significant ($\beta=0.24158$, $p<0.14796$). Although both of the effects in robustness regression and main model are insignificant, the coefficient and significance of independent director proportion on CSR are slightly better than the main model ($\beta=0.23051$, $p<0.17847$).

4.9 Findings and discussions

Based on the above regression analyses and robustness tests, we have five findings in terms of director team values heterogeneity, horizontal director team heterogeneity, vertical director team heterogeneity, and control variables.

For the first finding, gender heterogeneity and tenure heterogeneity, political status heterogeneity between the chairman and other directors in the director team significantly and positively influence strategic decisions and implementation of CSR. Director team's values heterogeneity, age heterogeneity, founding chairman significantly and negatively affect the strategic decision and implementation of CSR. Director team's education heterogeneity between the chairman and the other directors have negative effect on CSR, and its proportion of independent director have positive effect on CSR, however, the effects are both insignificant. The company size, ROA, proportion of fixed assets significantly pose positive effects on the strategic decision and implementation of CSR.

For the second finding, the impacts of director team's values heterogeneity, horizontal heterogeneity, and vertical heterogeneity on CSR highlight the multidimensional role of individual psychological thinking and demographic characteristics. However, the core and

foundation of director team heterogeneity is the values heterogeneity, and other heterogeneities all reflect the core element from different perspectives. Among the 7 variables of director team heterogeneity, 6 of them have different significant effects on CSR, which confirms Hambrick's work on how individual values and demographic characteristics influence CSR decisions and implementation (Hambrick & Mason, 1984).

For the third finding, the positive and negative effects of director team's heterogeneity on CSR are joint result of CSR strategy mechanism, information decision-making mechanism and social classification mechanism, and the "relative equilibrium point" of the game of multiple forces. The positive influence of director team heterogeneity on CSR unfolds that the power of information decision mechanism is stronger than that of social classification mechanism, while the negative influence of director team heterogeneity on CSR unfolds that the power of social classification mechanism is stronger than that of information decision-making mechanism.

For the fourth finding, a few variables of director team heterogeneity (e.g., education heterogeneity between the chairman and other directors) have some effect on CSR strategy decisions, but are not significant, suggesting that information decision-making mechanism or social classification mechanism did not reach a strength of checks and balances, and thus the result appears to be relevant but not significant.

For the fifth finding, most control variables show a significant positive effect on CSR, indicating that CSR strategy decision and implementation necessitates the material foundation, which is important.

4.10 Summary

(1) This chapter focuses on the nexus between director team heterogeneity and CSR. Upon the theoretical foundation, research model and operation mechanism, this chapter systematically examined how director team heterogeneity impacts CSR from perspective of composition characteristics, structural characteristics, and value characteristics in seven dimensions. Through theoretical analysis and research hypotheses, CSR was selected as the dependent variable, while the composition characteristics (gender and age heterogeneity), structural characteristics (tenure heterogeneity, education heterogeneity, political status heterogeneity between the chairman and other directors; founding chairman), and values characteristics factors (percentage of the difference between the values of the chairman and the general manager) were selected as independent variables. Moreover, company size, ROA, proportion of independent directors, and proportion of fixed assets, industry and year were selected as

control variables. A fixed effects multiple regression model was constructed on this basis.

(2) The data and models were collected and tested to further explore the nexus between director team heterogeneity and CSR. The A-share private listed companies in China's Shanghai and Shenzhen stock exchanges from 2016-2018 were selected as the initial sample. After the data cleaning, 149 private listed companies with 447 valid sample observations were obtained. The sample data is from the annual reports, IPO prospectus, CSMAR database, Wind database, the Internet, company websites and related websites. On the basis of variable measurements, we conducted the test and control on data normality, model estimation, collinearity, autocorrelation, heteroskedasticity, and endogeneity. After the Hausman test, fixed effects model was used to conduct regression analysis on the relation between director team heterogeneity and CSR. Moreover, robustness test was conducted by replacing the measurement of some independent variables, which verified the stability of the regression results.

(3) This chapter obtains research results of theoretical and practical value through regression analysis and robustness testing. First of all, the gender heterogeneity and the tenure heterogeneity, political status heterogeneity of the chairman and the other directors team positively influence the strategic decision and implementation of CSR, which is generally consistent with previous research. The result exhibits that based on the information decision making mechanism and CSR strategy mechanism, the proportion of female in the director team increases, and female's nature are more conducive to the decision making and implementation of CSR strategy. Theoretically, this finding can improve the TMT theory, CSR theory, stakeholder theory, information decision making theory and social classification theory. Practically, this finding can help the listed companies to construct the director team, improve the corporate governance structure, restructure the director team by improving the individual quality, appointing the directors, and establishing a high-quality director team. Meanwhile, the increase of the tenure heterogeneity between the chairman and other directors is conducive to giving full play to their experience and resources, which could guide the enterprises to make right decision on CSR. The enhancement of the heterogeneity in political status between the chairman and other directors is conducive to utilizing the political advantages and chairman influence and realizing efficient decision-making on CSR strategies.

Secondly, director team's heterogeneity in values, age; founding chairman negatively influence the strategic decisions and implementation of CSR. These results suggest that widening the heterogeneity in director teams can disturb the achievement of strategic CSR decisions. The social classification theory requires the director team members to form common

or similar values. Only by narrowing the values heterogeneity among the director team members, can it be conducive to reaching a consensus on CSR and making the right decisions on CSR. Therefore, director team values heterogeneity is the basis and core of other director team heterogeneity. The enlargement of the horizontal age heterogeneity would lead to contradictions and conflicts due to the generation difference and the perspectives, which makes it hard to reach the consensus on CSR. Founding chairman as the vertical heterogeneity means the power of the founding man, which would enlarge the power distance and bring negative behavior, which is harmful to the harmony and cooperation of the director team as well as the high efficient CSR decision-making of the enterprises.

Thirdly, the significant or insignificant influence of the director team heterogeneity on the decision-making and implementation of CSR is the relative "balance point" of the joint action of information decision-making theory mechanism, social classification theory mechanism, and CSR strategy mechanism.

Fourthly, the director team heterogeneity's effect on CSR requires the support of material base.

Chapter 5: Empirical Study on the Moderation of Institutional Environment on Director Team Heterogeneity and CSR

5.1 Introduction

In Chapter 4, using the data of A-share private listed companies in China's Shanghai and Shenzhen stock exchanges in 2016-2018, we examined the nexus between director team heterogeneity and CSR. Moreover, we analyzed impacts of director team heterogeneity's composition characteristics, structural characteristics and values characteristics on CSR. In the end, we obtained some findings with theoretical and practical significance.

Upper echelons theory argues that enterprises' internal and external environment can influence their strategic decisions including CSR strategic decisions. As mentioned earlier, CSR strategic decision can be influenced by the external environmental factors from the aspects of the economics, politics, culture, technology and industrial environment, while the core external environment factor is the institutional environment, which mainly encompasses regulation, norm and cognition. The enterprises can be influenced, restricted and guided by the institutional environment via laws and regulations, values and ethics, customs and habits, behavioral norms and conscious perceptions. Therefore, the institutional environment, which covers the main external environment influencing factors of enterprise behavior, can affect director teams in CSR decision-making and the nexus between director team heterogeneity and CSR.

Through empirical analysis, this chapter aspires to figure out the relation between institutional environment and CSR, moderation of institutional environment between director team's heterogeneity and CSR meanwhile.

The specific research ideas in this chapter are: As stated by the upper echelons theory, director teams as the TMT, are limitedly rational during the decision-making. The external (internal) environment information they faced will be filtered, perceived and comprehended through limited rationality based on their cognition and values, thus forming their CSR strategic choices. Therefore, it is necessary to further explore how institutional environment as the core at external environment influences director team heterogeneity and CSR and examine how the interactions of the director team heterogeneity as an internal environment influence the nexus between director team heterogeneity and CSR.

In this case, (1) The institutional environment how influences CSR will be examined. (2) Moreover, the interaction terms of the institutional environment and director team's composition characteristics, structural characteristics and values characteristics will be formed to examine how institutional environment influences between the director team heterogeneity on CSR. (3) In addition, how the interactions between the director team values heterogeneity and other heterogeneity factors influence the director team heterogeneity on CSR should also be explored.

This chapter may have two innovations.

For one innovation, this chapter starts from director team heterogeneity, fit the external environment, and through teams, enterprises, systems across levels examination on the nexus between the director team heterogeneity and CSR as well as the moderation of the institutional environment, which can help to explore and complete the mechanism of the director team heterogeneity, CSR and institutional environment. Fit the internal environment, this chapter examines the impact of the interaction between the heterogeneity between the values of the director team and other heterogeneity factors on the nexus between the director team heterogeneity and CSR, and helps to identify the reasons for the inconsistency between the director team heterogeneity and the conclusion of the CSR from the perspective of the interaction effect of the main factors of the director team heterogeneity.

For the other innovation, this chapter offers a solution to developing countries, especially developing market economies such as China, on how to utilize the mechanisms of institutional environment, director team and CSR for the purpose of serving various stakeholders and achieving sustainable development of the society.

5.2 Theoretical analysis and research hypotheses

5.2.1 Relationship between institutional environment and CSR

As an external environmental influence factor of director teams' CSR strategic decision-making, the institutional environment can impact not only their behavior but their CSR. Dorobantu et al. (2016) stated that institutional environment can influence CSR. Moreover, a vigorous institutional environment can advance the fulfillment of CSR (Brickson, 2007; Campbell, 2006). He et al. (2016) conducted a study using both the primary data from a CSR survey on China's manufacturing firms and the secondary longitudinal archival data of Chinese listed firms. Besides reducing the government environmental inspections, adopting ISO 14001 also

effectuates in state-owned enterprises and firms politically connected TMTs. Campbell (2007) argued that the monitoring of institutional norms can motivate companies to consider the fulfillment of CSR. Brammer et al. (2007) found executives with religious beliefs more inclined to fulfill CSR. DiMaggio and Powell (1983) held that government regulation can explain the performance of CSR. Flammer (2014)'s study illustrated that higher industry competition can lead to higher-quality CSR disclosure. Studies conducted by Blacconiere and Patten(1994), Harjoto et al. (2014), and Hoffman (1999) revealed the impact of legal pressures on CSR. Islam and Deegan (2010) pointed out that the media can influence CSR disclosure. Campbell (2007) argued that CSR disclosures are under the pressures of regulations, norms, and culture. External pressures and constraints can increase stakeholders' scrutiny of CSR activities, stimulating the enterprises to change their environmental strategies and reporting patterns to adapt to the institutional and stakeholder requirements. Ringov and Zollo (2007) demonstrated that high power distance and masculine culture will decrease the social and environmental dimensions of CSR. Moreover, incomplete institutions could change the way of CSR (Dorobantu et al., 2016).

Thereby, we proposed two competing research hypotheses:

H1a: The sound institutional environment positively affects CSR.

H1b: The non-sound institutional environment negatively affects CSR.

5.2.2 The moderation of institutional environment on director team heterogeneity and CSR

Q. Lu et al. (2020) studied TMT's gender diversity and CSR and examined the moderation of marketization. The evidence of 17,032 observation data from Chinese listed companies unearthed that female top managers negatively impact CSR and marketization can alleviate this negative relationship. Moreover, the results suggested the same effect of female top manager and corporate performance. Chatterji and Toffel (2010) found that government regulation positively moderates CSR and firm performance. According to Haniffa and Cooke (2005), external regulation can improve CSR performance. Boulouta (2012) held that institutional environment can affect the interrelation between director characteristics and CSR.

Institutional environment, the coercive force of regulations and government attitudes, for instance, drives board members to optimize their corporate strategies and fulfill their CSR. In this process, TMT's experiences, relationships, and social backgrounds can influence their response to the external institutional environment (Walls & Paquin, 2015), and different decisions towards different environments also derive from the TMT's perceptions and

understandings of the institutional environment (Delmas & Toffel, 2008).

However, institutional environments can also interfere with CSR (Hoffman, 1999), as intense market competition may trigger a decrease in the willingness of CSR (Healy & Palepu, 2001).

In this case, the following competing hypotheses are proposed:

H2a: Institutional environment aggravates the relation between director team heterogeneity dimensions and CSR.

H2b: Institutional environment alleviates the relation between director team heterogeneity dimensions and CSR.

5.3 Sample selection and data source

This section is the same as Chapter 4, as in 4.3 in Chapter 4.

Combined with the research needs, the institutional environment for moderating variables is added to this chapter. The data of the institutional environment in the moderation and robustness test are from the Market Index, the development index of market intermediary organizations and the legal environment index from the Marketization Index of China's provinces: Neri report 2021 by X. L. Wang et al. (2021).

5.4 Measurement

This thesis selects institutional environment as the moderator (Market). The measurement of institutional environment draws upon the research of X. X. Xu & Li (2018), Yan and Jiang (2019), and Y. H. Zhao et al. (2023). We adopt the Marketization Index in 2016-2018 from the Marketization Index of China's provinces: Neri report 2021 compiled by X. L. Wang et al. (2021) as proxy variable. Meanwhile, the development index of market intermediary organizations and the legal environment index in the marketization index in 2016-2018 are adopted as the proxy variables for the robustness test. The two indexes are rated on a scale of 0-10, among which higher score indicates a better marketization or better advancement of market intermediary organizations and legal environment.

The marketization index in the Marketization Index of China's provinces: Neri report 2021 is the mainstream proxy variable when studying China's institutional environment (X. X. Xu & Li, 2018; Yan and Jiang (2019); Y. H. Zhao et al., 2023). As a system of indexes, the marketization index encompasses: 1 general index of marketization; 5 aspects of indexes (the

relationship between the government and the market; the development of the non-state economy; the development of the product market; the development of the factor market; and the development of market intermediary organizations and the legal environment); 15 sub-indexes; 7 secondary sub-indexes; and 17 basic indexes.

The Marketization Index in the Marketization Index of China's provinces: Neri report 2021 has the following characteristics: It can comprehensively compare the relative marketization and the dynamic trend of each province in China; its evaluation index adopts adundant objective statistical data, which is objective; its evaluation system is inclusive, with comprehensiveness, continuity and comparability; it borrows from the international experience and adopts the method of arithmetic average for calculation and summary, which is clear and sufficient in information. Therefore, the marketization index can comprehensively reflect the scenario and change of China's institutional environment in a manner.

5.5 Model construction

As demonstrated before, the relation between director team heterogeneity and CSR appears to be opposite, suggesting the existence of other factor constraining or influencing this relationship. Among these factors, the institutional environment is considered to be a crucial factor that may moderate the relation in direction and strength.

To explore the moderation effect, we draw upon the research method of Baron and Kenny (1986) and Wen et al. (2005), and examine the moderation of the institutional environment on director team heterogeneity and CSR in two steps (Zhou, 2019).

Step 1: Conduct a regression analysis of director team heterogeneity and institutional environment on CSR; focus on the impact of institutional environment (moderator) on CSR (dependent variable).

Step 2: After the variable centralization, the interaction terms of institutional environment (moderator) and dimensions of director team heterogeneity (independent variable) are added to the regression analysis; focus on the moderation of institutional environment (moderator) on director team heterogeneity (independent variable) and CSR (dependent variable).

To test whether the moderation exists, we can refer to whether regression coefficients of interaction terms are significant. A significant regression coefficient indicates the existence of the moderation effect (X. P. Chen et al., 2008).

Considering the previous analysis, the model is constructed.

(1) To test hypotheses H1a and H1b, the regression model 5.1 is constructed to examine

the effects of institutional environment (moderators) and director team heterogeneity (independent variable) on CSR (dependent variable).

Model 5.1 is exhibited as follows:

$$CSR_{it+1} = \beta_0 + \beta_1 Market_{it} + \beta_2 ValH_{it} + \beta_3 GenH_{it}$$
$$+\beta_4 AgeH_{it} + \beta_5 TenH_{it} + \beta_6 EduH_{it} + \beta_7 PolH_{it}$$
$$+\beta_8 Fcha_{it} + \beta_9 Size_{it} + \beta_{10} Roa_{it} + \beta_{11} Indep_{it}$$
$$+ \beta_{12} Fixed_{it} + \beta_{13} Industry_{it} + \beta_{14} Year_{it} + \varepsilon_{it}$$

(5.1)

where: i is the listed company, t is the year. CSR is the dependent variable and uses the data of the year t+1, i.e. data from 2017-2019; $\beta_1 Market_{it}$ is the moderator; the independent variables $\beta_2 ValH_{it}$ to $\beta_8 Fcha_{it}$ use the data of the year t, i.e., 2016-2018 data; control variables $\beta_9 Size_{it}$ to $\beta_{14} Year_{it}$ use the data of the year t. β_0 is the constant term, ε_{it} is random error term.

(2) To test hypotheses H2a and H2b, the regression model 5.2 is constructed to examine the moderation of institutional environment (moderators) on director team heterogeneity (independent variable) and CSR (dependent variable).

Model 5.2 is exhibited as follows:

$$CSR_{it+1} = \beta_0 + \beta_1 Market_{it} + \beta_2 ValH_{it} + \beta_3 GenH_{it} + \beta_4 AgeH_{it} +$$
$$\beta_5 TenH_{it} + \beta_6 EduH_{it} + \beta_7 PolH_{it} + \beta_8 Fcha_{it} + \beta_9 Market_{it} \times ValH_{it} +$$
$$\beta_{10} Market_{it} \times GenH_{it} + \beta_{11} Market_{it} \times AgeH_{it} + \beta_{12} Market_{it} \times$$
$$TenH_{it} + \beta_{13} Market_{it} \times EduH_{it} + \beta_{14} Market_{it} \times PolH_{it} +$$
$$\beta_{15} Market_{it} \times Fcha_{it} + \beta_{16} Size_{it} + \beta_{17} Roa_{it} + \beta_{18} Indep_{it} +$$
$$\beta_{19} Fixed_{it} + \beta_{20} Industry_{it} + \beta_{21} Year_{it} + \varepsilon_{it}$$

(5.2)

where: i is the listed company, t is the year. The dependent variable CSR uses the data of the year t+1, i.e. data from 2017-2019; $\beta_1 Market_{it}$ is the moderator; $\beta_2 ValH_{it}$ to $\beta_8 Fcha_{it}$ are the independent variables; the interaction terms $\beta_9 Market_{it} \times ValH_{it}$ to $\beta_{15} Market_{it} \times Fcha_{it}$ use the data of the year t, i.e., 2016-2018 data; control variables $\beta_{16} Size_{it}$ to $\beta_{21} Year_{it}$ use the data of the year t, i.e., 2016-2018 data; β_0 is the constant term, ε_{it} is the random error term.

5.6 Estimation method

The estimation method in this chapter including normality of data, model estimation, collinearity, autocorrelation, heteroskedasticity and endogeneity refers to the section 4.6 in Chapter 4. Considering the introduction of the moderators, we adopted VIF and TOL tests on the main variables via Stata17 software to eliminate the interference of the collinearity. The

results are exhibited in Table 5.1.

Table 5.1 Variance inflation factor

	VIF	1/VIF
market * polh	1.454	.688
market * fcha	1.421	.704
fcha	1.41	.709
market * tenh	1.351	.74
tenh	1.344	.744
size	1.341	.746
polh	1.33	.752
valh	1.327	.753
market	1.295	.772
fixed	1.263	.792
market * valh	1.223	.818
market * genh	1.219	.82
genh	1.19	.84
indep	1.154	.866
market * ageh	1.147	.872
ageh	1.138	.879
market * eduh	1.136	.88
eduh	1.077	.928
roa	1.072	.933
Mean VIF	1.258	.

As in Table 5.1, the VIF for the main variables in regression model 5.2 has a maximum of 1.454, a minimum of 1.072 and a mean of 1.258, which is close to 1 and significantly less than 10. Meanwhile, the TOL has a maximum of 0.933 and a minimum of 0.688, which is close to 1 and significantly greater than 0.10. Therefore, in regression model 5.2, there is no significant collinearity among the key variables.

5.7 Empirical test and analysis

5.7.1 Descriptive statistics

Table 5.2 provides the descriptive statistics for the variables. Among the 447 sample observations, maximum CSR is 2.739, minimum CSR is 1.225, mean CSR is 1.705, and standard deviation is 0.428, indicating that the level of CSR proxied by the ESG environment sub-index is still low and requires China's private listed companies to put more efforts and make more improvement in protecting the environment.

In the director team heterogeneity in Table 5.2, we found that: (1) For the director team value heterogeneity, the maximum is 94, the minimum is 0, the mean is 27.81, and the standard deviation is 27.20, demonstrating the difference in the director team value heterogeneity is large among enterprises. (2) For the gender heterogeneity and age heterogeneity, the maximums are

Table 5.2 Descriptive statistics of main variables

Variable	N	Mean	p50	SD	Min	Max
csr	447	1.705	1.581	0.428	1.225	2.739
market	447	374.5	367.1	142.4	9.938	545.3
valh	447	27.81	33	27.20	0	94
genh	447	0.418	0.444	0.203	0	0.707
ageh	447	0.401	0.412	0.143	0	0.703
tenh	446	31.13	27.42	39.57	-56.30	122.8
eduh	447	0.414	0	0.493	0	1
polh	447	1.383	1.649	0.703	-1.609	2.079
fcha	447	0.705	1	0.457	0	1
size	447	3.114	3.108	0.0510	3.008	3.264
roa	429	-3.069	-2.961	0.877	-6.296	-1.541
indep	447	-1.004	-1.099	0.117	-1.099	-0.693
fixed	447	0.394	0.405	0.156	0.0430	0.810

0.707 and 0.703, the minimums are 0 and 0, and the means are 0.418 and 0.401. Although the differences between enterprises are obvious, the average heterogeneity is moderate. (3) for the tenure heterogeneity between the chairman and other directors, the minimum is -56.30, the maximum is 122.8, the mean is 31.13, and the standard deviation is 39.57, demonstrating the differences in tenure heterogeneity between the chairman and other directors in companies are large. For the education, political status and founding chairman heterogeneity between the chairman and other directors, their means are 0.414, 1.383, and 0.705, respectively, the standard deviations are 0.493, 0.703, 0.457, respectively. These results indicate the education and founding chairman heterogeneity between the chairman and other directors are moderate, and the political status heterogeneity is obvious.

From the moderator information in Table 5.2, we can see: The minimum marketization index is 9.938, maximum is 545.3, mean is 374.5, and standard deviation is 142.4, suggesting a significant gap in enterprises' marketization index.

From the control variable information, we can see: After taking logarithmic values, the means of Size (enterprise size), ROA (Return on Asset), and Indep (proportion of independent directors) are 3.114, -3.069, and -1.004, respectively, indicating that the gap between the enterprises is not obvious. Minimum Fixed (fixed asset ratio) is 0.043, maximum Fixed is 0.810, mean Fixed is 0.394, demonstrating a significant gap between individual enterprises, but the mean suggests that the gap is skewed toward the center.

5.7.2 Correlation analysis

Prior to regression analysis, Pearson correlation analysis on main variables was conducted, as shown in Table 5.3. Without adding new constraints, the correlations between the independent variables, control variables, moderator, and dependent variable CSR have differences.

Independent variables: Director team values heterogeneity is negatively correlated to CSR (γ =-0.269, p<0.05). Director team gender heterogeneity is positively correlated to CSR (γ =0.182, p<0.05). Director team age heterogeneity is negatively correlated to CSR (γ =-0.120, p<0.05). Tenure heterogeneity between chairman and other directors is negatively correlated to CSR (γ =-0.025). Director team educational heterogeneity is positively correlated to CSR (γ =0.074).

Although the correlation coefficient of the political status heterogeneity between the chairman and other directors is -0.032, their correlation is still positive because the political status heterogeneity is designed as a reverse variable. The founding chairman is negatively correlated to CSR (γ =-0.126, p<0.05).

Moderator: The marketization index (market) is positively correlated to CSR (γ =0.095, p<0.05),which initially supported H1a: The sound institutional environment positively affects CSR.

Control variables: The company size (Size), ROA (ROA), proportion of independent directors (Indep), and Fixed (proportion of fixed assets) on CSR are positively correlated with CSR, with the correlation coefficient being γ =0.156, p<0.05; γ =0.114, p<0.05; γ =0.016; γ =0.265, p<0.05; respectively. All of the coefficients are positively, reflecting that the above control variables have positive nexus with CSR.

Main variables: The independent, moderating, and control variables' absolute values on the dependent variable CSR are less than 0.3, showcasing a weak correlation. Meanwhile, the absolute values of the correlation coefficients between all the main variables are less than 0.4, also showcasing a weak correlation. Thereby, it can be initially determined the variables' multicollinearity is weak, which is congruent with the previous VIF test results.

Table 5.3 Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) csr	1.000												
(2) market	0.095*	1.000											
	(0.046)												
(3) valh	-0.269*	-0.256*	1.000										
	(0.000)	(0.000)											
(4) genh	0.182*	0.019	-0.013	1.000									
	(0.000)	(0.687)	(0.792)										
(5) ageh	-0.120*	0.093*	0.139*	0.027	1.000								
	(0.011)	(0.049)	(0.003)	(0.567)									
(6) tenh	-0.025	-0.089	-0.005	0.030	0.110*	1.000							
	(0.604)	(0.061)	(0.915)	(0.522)	(0.020)								
(7) eduh	0.074	0.126*	-0.043	0.004	0.012	-0.047	1.000						
	(0.116)	(0.008)	(0.363)	(0.935)	(0.795)	(0.318)							
(8) polh	-0.032	0.129*	-0.006	-0.080	0.041	-0.151*	0.022	1.000					
	(0.505)	(0.006)	(0.893)	(0.092)	(0.384)	(0.001)	(0.635)						
(9) fcha	-0.126*	-0.010	0.038	-0.031	0.043	0.377*	-0.053	-0.240*	1.000				
	(0.008)	(0.834)	(0.419)	(0.507)	(0.367)	(0.000)	(0.259)	(0.000)					
(10) size	0.156*	-0.053	-0.118*	0.091	-0.072	0.194*	-0.032	-0.133*	-0.159*	1.000			
	(0.001)	(0.259)	(0.013)	(0.055)	(0.128)	(0.000)	(0.494)	(0.005)	(0.001)				
(11) roa	0.114*	0.019	0.003	0.056	-0.014	-0.017	0.083	0.034	0.092	-0.106*	1.000		
	(0.018)	(0.696)	(0.943)	(0.244)	(0.774)	(0.726)	(0.087)	(0.488)	(0.057)	(0.029)			
(12) indep	0.016	-0.017	0.004	-0.087	0.045	0.020	0.063	-0.005	0.020	0.015	0.099*	1.000	
	(0.735)	(0.716)	(0.927)	(0.067)	(0.345)	(0.678)	(0.187)	(0.920)	(0.679)	(0.755)	(0.041)		
(13) fixed	0.265*	-0.117*	-0.202*	0.169*	-0.228*	-0.095*	0.017	0.053	-0.028	-0.091	0.086	-0.140*	1.000
	(0.000)	(0.014)	(0.000)	(0.000)	(0.000)	(0.046)	(0.720)	(0.265)	(0.550)	(0.055)	(0.077)	(0.003)	

$p<0.05$

Considering that the correlation coefficients cannot uncover a precise causal relationship, a further regression analysis is required.

5.7.3 Regression analysis

Considering the small collinearity, the regression is performed using Enter Regression Model to examine the hypotheses. Based on the fixed effects model and combined with control options such as industry, year, heteroskedasticity-robust standard error, this chapter carried out a regression analysis on the moderation of institutional environment on director team heterogeneity and CSR using Stata 17. Table 5.4 and Table 5.5 present the regression.

Table 5.4 Regression of institutional environment, director team heterogeneity on CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
market	.00029	.00014	2.01	.04515	.00001	.00057	**
valh	-.0032	.00073	-4.41	.00001	-.00462	-.00177	***
genh	.20372	.09475	2.15	.0322	.0174	.39004	**
ageh	-.29609	.1258	-2.35	.01911	-.54346	-.04873	**
tenh	.00119	.00054	2.21	.0278	.00013	.00225	**
eduh	-.03522	.04431	-0.79	.42718	-.12236	.05191	
polh	-.05784	.02865	-2.02	.04423	-.11419	-.0015	**
fcha	-.18361	.05232	-3.51	.0005	-.28649	-.08074	***
size	2.1208	.47642	4.45	.00001	1.18397	3.05763	***
roa	.05357	.02229	2.40	.01675	.00973	.09741	**
indep	.2427	.17067	1.42	.15585	-.0929	.5783	
fixed	.61443	.20049	3.06	.00234	.22019	1.00867	***
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	
Constant	-4.51351	1.49927	-3.01	.00279	-7.46165	-1.56537	***
Mean dependent var		1.71214		SD dependent var		0.42837	
R-squared		0.48350		Number of obs		428	
F-test		36.15597		Prob > F		0.00000	
Akaike crit. (AIC)		319.15224		Bayesian crit. (BIC)		550.52227	

*** *p<.01*, ** *p<.05*, * *p<.1* indicates significance at 1%, 5%, 10% level or higher, respectively.

Table 5.5 Regression of the moderation of institutional environment on director team heterogeneity and CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
market	.0004	.00015	2.74	.00636	.00011	.00069	***
valh	-.00317	.00081	-3.92	.0001	-.00475	-.00158	***
genh	.16571	.09994	1.66	.09818	-.03083	.36225	*
ageh	-.37332	.11466	-3.26	.00124	-.5988	-.14785	***
tenh	.00087	.00055	1.60	.11102	-.0002	.00195	
eduh	-.06585	.04363	-1.51	.1321	-.15166	.01995	
polh	-.05697	.03339	-1.71	.08883	-.12264	.00869	*
fcha	-.15289	.05331	-2.87	.00438	-.25773	-.04805	***
market * valh	-.07588	.02272	-3.34	.00092	-.12055	-.0312	***
market * genh	.00104	.00069	1.51	.13076	-.00031	.00239	
market * ageh	.04707	.01998	2.36	.01904	.00777	.08636	**

market * tenh	-.00002	0	-3.93	.0001	-.00002	-.00001	***
market * eduh	-.0003	.00031	-0.95	.3438	-.00092	.00032	
market * polh	.00032	.00014	2.27	.02403	.00004	.0006	**
market * fcha	.00082	.00037	2.22	.02679	.0001	.00155	**
size	2.38702	.44567	5.36	0	1.5106	3.26343	***
roa	.05335	.02177	2.45	.01471	.01055	.09615	**
indep	.37971	.16873	2.25	.02502	.04789	.71152	**
fixed	.68102	.19994	3.41	.00073	.28784	1.0742	***
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	
Constant	-4.7277	1.40119	-3.37	.00082	-7.48314	-1.97226	***
Mean dependent var		1.71214		SD dependent var		0.42837	
R-squared		0.52813		Number of obs		428	
F-test		80.89577		Prob > F		0.00000	
Akaike crit. (AIC)		294.47079		Bayesian crit. (BIC)		554.25467	

*** $p<.01$, ** $p<.05$, * $p<.1$ indicates significance at 1%, 5%, 10% level or higher, respectively.

Step 1: The regression analysis of institutional environment and director team heterogeneity on CSR.

Based on H1a, H1b and Model 5.1, we conducted the regression analysis of institutional environment and director team heterogeneity on CSR. As in Table 5.4, the R-squared is 0.48350, indicating a good model fit. The F-test is 36.15597, which is acceptable. We can also observe in Table 5.4 that the institutional environment positively impacts CSR (β=0.00029, p<0.05), validating H1a: The sound institutional environment positively affects CSR, indicating that a vigorous institutional environment can catalyze the fulfillment of CSR via regulations, norms, culture, media, and industry rules. Moreover, director team's gender heterogeneity, tenure heterogeneity, and political status heterogeneity have a positive correlation on CSR. Value heterogeneity, age heterogeneity and founding chairman decrease CSR. The impact of education heterogeneity on CSR is negative but insignificant. Among the control variables, company size (Size), ROA (ROA), the proportion of fixed assets (Fixed) positively affect CSR, and the impact of the proportion of independent directors (Indep) on CSR is positive but negligible.

Step 2: The moderation of the institutional environment on director team heterogeneity and CSR.

Based on the H2a, H2b and Model 5.2, we conducted a regression analysis on the moderation of institutional environment on director team heterogeneity and CSR. Before the regression analysis, the variables are centralized. After that, the interaction terms of institutional environment (i.e., marketization index) and the director team's heterogeneity are generated. Since the interaction terms have significant extreme values, we have them winsorized by 5% to 95% (Jiang, 2009; Xia, 2012). The winsorized interaction terms still have obvious positive and negative volatility, hence the interaction terms are further taken logarithm after processing by

the translation method before the regression analysis (M. Lu & Chen, 2004; J. L. Zhu & Li, 2015) . As exhibited in the Table 5.5, the R-squared is 0.52813, which is greater than 0.5 and 0.48350 in the first-step regression, not only suggesting that the model has a good model fit, but also verifying the existence of the moderating effect. The F-test is 80.89577, which is acceptable. We can observe from the Table 5.5 that the moderator marketization index positively influences CSR, the director team's gender and political status heterogeneity can positively affect CSR, and values, age heterogeneity and founding chairman have negative effect on CSR. The impact of tenure and education heterogeneity on CSR is both positive and negative but insignificant. As for the interaction terms, marketization index*values heterogeneity, marketization index*tenure heterogeneity, marketization index*political status heterogeneity have a negative impact (considering that political status heterogeneity is a reverse variable) on CSR, whereas marketization index*age heterogeneity and marketization index*founding chairman positively impact CSR. As for the control variables, company size (Size), ROA (ROA), proportion of independent directors (Indep), and proportion of the fixed asset (Fixed) positively affect CSR. In the following part, the moderation of the institutional environment on director team heterogeneity and CSR will be further described.

(1) The moderation of the institutional environment on values heterogeneity and CSR

As exhibited in Table 5.5, director team values heterogeneity influences CSR negatively (β=-0.00317, p<0.01), the interaction term (marketization index*values heterogeneity) affects CSR negatively (β=-0.07588, p <0.01), and the institutional environment (marketization index) impacts CSR positively (β=0.0004, p<0.01). The results suggest the institutional environment significantly enhance the relation between director team values heterogeneity and CSR. With the advancement of the institutional environment, the negative impact of director team values heterogeneity on CSR will be strengthened and pronounced, which validate H2a: Institutional environment aggravates the relation between the director team heterogeneity dimensions and CSR.

(2) The moderation of the institutional environment on tenure heterogeneity and CSR

The tenure heterogeneity of the chairman and other directors influences CSR positive (β=0.00087, p<0.11102), the interaction term (marketization index*tenure heterogeneity) affects CSR negatively (β=-0.00002, p<0.01), and the institutional environment (marketization index) impacts CSR positively (β=0.0004, p<0.01). These results demonstrate the positive effect of the tenure heterogeneity between the chairman and other directors on CSR will weaken when the institutional environment improved. Meanwhile, the promotive effect of the institutional environment on CSR has illustrated the substitution relation between the

institutional environment the tenure heterogeneity between the chairman and other directors on CSR. When the institutional environment is inadequate, the positive effect of the tenure heterogeneity between the chairman and other directors would be enhanced. Therefore, H2b is validated: Institutional environment alleviates the relation between the director heterogeneity dimensions and CSR.

(3) The moderation of the institutional environment on political status heterogeneity and CSR

The political status heterogeneity between the chairman and other directors significantly influences CSR (β=-0.05697, p<0.1), hence the influence effect is positive considering that political status is designed as a reverse variable. Similarly, although the coefficient of the interaction term marketization index*political status heterogeneity between the chairman and other directors on CSR is positive (β=0.00032, p<0.05), the moderation effect is negative considering the reverse variable. Moreover, the institutional environment (marketization index) positively affects CSR (β=0.0004, p<0.01). It can be illustrated from these results that as the advancement of the institutional environment, the positive effect of the political status between the chairman and other directors on CSR will weaken, that is, the institutional environment can dampen or weaken the positive impact of political status heterogeneity between the chairman and other directors on CSR. Meanwhile, the contribution of institutional environment to CSR suggests that there is a mutual substitution relationship between the institutional environment and the effect of political status heterogeneity on CSR. In an inadequate institutional environment, the positive effect of political status heterogeneity between the chairman and other directors on CSR is significantly stronger. Hence H2b is verified: Institutional environment alleviates the relation between the director heterogeneity dimensions and CSR.

(4) The moderation of the institutional environment on age heterogeneity and CSR

The director team age heterogeneity negatively influences CSR (β=-0.37332, p<0.01). The interaction term (marketization index*age heterogeneity) positively affects CSR (β=0.04707, p<0.05). The institutional environment positively impacts CSR (β=0.0004, p<0.01). Therefore, it can be shown that as the improvement and enhancement of the institutional environment, the negative impact of director team age heterogeneity on CSR will be alleviated, that is, the negative impact of the director team age heterogeneity on CSR will be decreased when the institutional environment gets better. Therefore, H2b is verified: Institutional environment alleviates the relation between the director heterogeneity dimensions and CSR.

(5) The moderation of the institutional environment on founding chairman and CSR

The founding chairman negatively influences CSR (β=-0.15289, p<0.01). The interaction

term (marketization index*founding chairman) positively affects CSR (β=0.00082, p<0.05). The institutional environment positively impacts CSR (β=0.0004, p<0.01). Therefore, it can be seen that as the improvement and enhancement of the institutional environment, the negative impact of founding chairman on CSR will be alleviated, that is, the negative impact of the founding chairman on CSR will be decreased when the institutional environment gets better. Therefore, H2b is verified: Institutional environment alleviates the relation between director heterogeneity dimensions and CSR.

(6) The moderations of the institutional environment on gender and education heterogeneity and CSR

In the main effect test, the director team gender heterogeneity and institutional environment positively affect CSR significantly (p<0.1, p<0.01). The coefficient of the interaction term (marketization index*gender heterogeneity) on CSR is positive but insignificant. The possible reason may be the insufficient moderation of the institutional environment on director team gender heterogeneity and CSR. Moreover, in the main effect, the negative impact of the education heterogeneity between the chairman and other director on CSR is insignificant, so do the negative impact of the interaction term (marketization index*education heterogeneity) on CSR, indicating that the moderation of the institutional environment on education heterogeneity and CSR is weak. Therefore, H2a and H2b are not supported.

5.8 Robustness test and analysis

To ensure the findings on the modulatory effect of the institutional environment are reliable, this chapter adopt 2 measures during the robustness test. (1) Replace the "marketization index" with an index on the "market intermediary organization development and legal environment" as a proxy for the institutional environment and takes the percentage; (2) Replace the measurement methods of some independent variables: To examine whether the research findings are sensitive to the measurement method of the director team values heterogeneity, measurement of the director team values heterogeneity in the independent variable: Using Schwartz's cultural values measurement data to replace the GLOBE cultural model measurement data of the main model (X. Y. Zhao et al., 2015); the director team age heterogeneity is measured by the data before normalization transformation; to measure whether the research findings are sensitive to the potential extremes, the tenure heterogeneity between the chairman and other directors is winsorized to 5% to 95% (Jiang, 2009; Xia, 2012; Y. H. Zhao et al., 2023).

Before the robustness test regression, descriptive statistics, correlation analysis, VIF test, and TOL test were first performed, and the results were generally congruent with those of the main model (Among them, the maximum VIF is 1.433, minimum VIF is 1.017, the average is 1.196, which is close to 1). Moreover, the Hausman test was also performed, and it should be noted that the p-value of the Hausman test for robustness test is 0.017. Considering the consistency and robustness of the fixed effects model estimation results and the needs of the study, the fixed effects model is still used for the robustness regression, which corresponds with the main model.

This chapter uses the Enter Regression Model for regression to test the robustness of the regression analysis. Table 5.6 and Table 5.7 exhibit the results.

Table 5.6 Robustness regression of institutional environment and director team heterogeneity on CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
market	.00016	.00009	1.72	.08717	-.00002	.00034	*
valh	-.00297	.00086	-3.46	.00061	-.00466	-.00128	***
genh	.19946	.09263	2.15	.03193	.01732	.38159	**
ageh	-.85969	.18292	-4.70	0	-1.21939	-.5	***
tenh	.00141	.00066	2.14	.03306	.00011	.0027	**
eduh	-.03614	.04325	-0.84	.40397	-.12119	.04891	
polh	-.06348	.02639	-2.41	.01664	-.11538	-.01159	**
fcha	-.1711	.05399	-3.17	.00166	-.27727	-.06493	***
size	1.97278	.45319	4.35	.00002	1.08163	2.86394	***
roa	.04936	.02193	2.25	.02498	.00624	.09249	**
indep	.25797	.16808	1.53	.12569	-.07254	.58847	
fixed	.63779	.19073	3.34	.00091	.26275	1.01284	***
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	
Constant	-4.05116	1.42158	-2.85	.00462	-6.84653	-1.25579	***
Mean dependent var		1.71214	SD dependent var			0.42837	
R-squared		0.49997	Number of obs			428	
F-test		56.33418	Prob > F			0.00000	
Akaike crit. (AIC)		305.28075	Bayesian crit. (BIC)			536.65077	

*** p<.01, ** p<.05, * p<.1 indicates significance at 1%, 5%, 10% level or higher, respectively.

Table 5.7 Robustness regression of the moderation of institutional environment on director team heterogeneity and CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
market	.0001586	.000093	1.70	.0892077	-.0000244	.0003416	*
valh	-.0038825	.0008839	-4.39	.0000147	-.0056206	-.0021444	***
genh	.1829913	.0961963	1.90	.0579251	-.006179	.3721616	*
ageh	-.8280272	.1733862	-4.78	2.600e-06	-1.1689917	-.4870627	***
tenh	.0010487	.0006499	1.61	.1074675	-.0002293	.0023266	
eduh	-.04478	.043176	-1.04	.3003542	-.1296856	.0401257	
polh	-.0650281	.0289417	-2.25	.0252474	-.121942	-.0081142	**
fcha	-.1440623	.0556307	-2.59	.0099939	-.2534602	-.0346643	***
market * valh	-.0525107	.0163952	-3.20	.0014809	-.0847519	-.0202695	***
market * genh	.0002833	.000483	0.59	.5579635	-.0006667	.0012332	

market * ageh	.0463019	.0180434	2.57	.0106833	.0108195	.0817844	**
market * tenh	-8.800e-06	3.300e-06	-2.63	.0090192	-.0000154	-2.200e-06	***
market * eduh	-.0002248	.0002078	-1.08	.2800905	-.0006334	.0001839	
market * polh	2.69e-08	1.59e-08	1.69	.0909706	-4.31e-09	5.80e-08	*
market * fcha	.1113689	.0419062	2.66	.0082174	.0289603	.1937776	***
size	2.1365642	.4363334	4.90	1.500e-06	1.2785134	2.9946149	***
roa	.0487992	.0218583	2.23	.0261881	.0058148	.0917837	**
indep	.3511209	.1692131	2.08	.0386865	.0183629	.683879	**
fixed	.6188721	.1911423	3.24	.0013154	.2429903	.9947539	***
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	
Constant	-4.0908064	1.3618206	-3.00	.0028496	-6.7688301	-1.4127828	***
Mean dependent var		1.712139	SD dependent var			0.428372	
R-squared		0.530495	Number of obs			428	
F-test		38.946998	Prob > F			0.000000	
Akaike crit. (AIC)		292.323681	Bayesian crit. (BIC)			552.107566	

*** $p<.01$, ** $p<.05$, * $p<.1$ indicates significance at 1%, 5%, 10% level or higher, respectively.

As in the above two tables, the robustness test results basically align with the main model regression. Moreover, the model fit of robustness test is even better. In Table 5.6, the R-squared is 0.49997, which is better than 0.48350 in Table 5.4. In Table 5.7, R-squared is 0.530495, which is better than 0.52813 in Table 5.5. The regression are detailed below.

Step 1: Regression analysis of institutional environment and director team heterogeneity on CSR.

As in Table 5.6, the institutional environment positively impacts CSR ($\beta=0.00016$, $p<0.1$), which is basically consistent but slightly weaker than in the main model in Table 5.4. The heterogeneities of gender, tenure and political status positively affects CSR, which is congruent with the main model. Values heterogeneity, age heterogeneity and founding chairman negatively affects CSR, which aligned with the main model. The impact of the education heterogeneity on CSR is negative but insignificant, which basically congruent with the main model. The control variables company size (Size), ROA (ROA), proportion of fixed assets (Fixed) positively influences CSR, and the coefficient of the proportion of the independent directors (Indep) on CSR is positive but insignificant, which is congruent with the main model.

Step 2: The moderation of institutional environment on director team heterogeneity and CSR.

Before conducting the robustness regression analysis, this chapter centered the variables and generated the interaction terms of "market intermediary organization development and legal environment" and each variable of director team heterogeneity, and the interaction terms are winsorized and after processing by the translation method taken the logarithm as used as in the main model. As in Table 5.7, the R-squared is 0.530495, which is greater than 0.5 and 0.49997 in the first-step regression, not only suggesting that the model has a good model fit,

but also verifying the existence of the moderating effect. As in Table 5.7, the market intermediary organization development and legal environment (abbreviated as Dev&Lgl Env) positively influences CSR, which is congruent with the main model. The positive impact of director team gender and political status heterogeneity is also aligned with the main model, so do the negative impact of value heterogeneity, age heterogeneity and founding chairman on CSR. The coefficients of tenure heterogeneity and education heterogeneity on CSR are positive and negative, respectively, but they are insignificant, which is congruent with the main model. As for the interaction terms, Dev&Lgl Env*values heterogeneity, Dev&Lgl Env*tenure heterogeneity, and Dev&Lgl Env*political status heterogeneity have negative effects on CSR, which align with the main model. Dev&Lgl Env*age heterogeneity, Dev&Lgl Env*founding chairman, have positive effects on CSR, which are consistent with the main model. Dev&Lgl Env*gender heterogeneity, Dev&Lgl Env*education heterogeneity have positive and negative effects on CSR, although the effects are insignificant, the results align with the main model. As for control variables, company size (Size), ROA (ROA), proportion of independent directors (Indep), proportion of fixed assets (Fixed) positively influences CSR, which is congruent with the main model. In conclusion, the robustness test of the moderation of the institutional environment on director team heterogeneity and CSR is basically aligned with the main model, which verifies the findings in the main model.

5.9 Further study

As mentioned above, this chapter has investigated the moderation of the institutional environment on director team heterogeneity and CSR as an external factor. In fact, as an internal factor, the interaction effects of the director team heterogeneity factors also pose a pivotal impact on this relationship. Therefore, this chapter further explores how the interactions between director team values heterogeneity and other heterogeneity factors influences the nexus between the director team heterogeneity and CSR, which could help to explain the inconsistent conclusions on this relationship.

5.9.1 Theoretical analysis and research hypotheses

As stated in upper echelons theory put forth by Hambrick & Mason (1984), the demographic statistics could reflect the characteristics in cognition and values, and further present the logic between objective environment, top management characteristics, strategic choice and performance. Therefore, the cognition and values are not only the deep decisive factor of

demographic characteristics such as gender and age, but the influencing factors of enterprises' strategic choice (including CSR strategy) and performance (Thomas & Simerly, 1995).

The study conducted by Hong (2020) uncovered that the CEO humility was positively connected with CSR. Gupta et al. (2017) found the cognition could predict the advancement of the CSR. Ertuna et al. (2019)'s study that in family enterprises, the family values would form the sustainable development strategy.

There are also different opinions, such as the director team's cognition diversity is negatively related to CSR and performance (Olthuis & van den Oever, 2020), CEO greed is negatively related to CSR (Sajko et al., 2020), high power distance and masculine culture can negatively influence the society and environment dimension of the CSR (Ringov & Zollo, 2007).

Thereby, we proposed two competitive research hypotheses:

H3a: The interaction effects of the director team's values heterogeneity and other heterogeneity factors positively affect director team heterogeneity dimensions and CSR.

H3b: The interaction effects of the director team's values heterogeneity and other heterogeneity factors negatively affect director team heterogeneity dimensions and CSR.

5.9.2 Model construction

According to the H3a and H3b, we construct regression model 5.3 to test the interaction effect of director team's values heterogeneity and other heterogeneity factors on the nexus between the director team heterogeneity and CSR.

Model 5.3 is exhibited as follows:

$$
\begin{aligned}
\mathbf{CSR_{it+1}} =\ & \boldsymbol{\beta_0 + \beta_1 ValH_{it} + \beta_2 GenH_{it} + \beta_3 AgeH_{it} + \beta_4 TenH_{it} + \beta_5 EduH_{it} +} \\
& \boldsymbol{\beta_6 PolH_{it} + \beta_7 Fcha_{it} + \beta_8 ValH_{it} \times GenH_{it} + \beta_9 ValH_{it} \times AgeH_{it} +} \\
& \boldsymbol{\beta_{10} ValH_{it} \times TenH_{it} + \beta_{11} ValH_{it} \times EduH_{it} + \beta_{12} ValH_{it} \times PolH_{it} +} \\
& \boldsymbol{\beta_{13} ValH_{it} \times Fcha_{it} + \beta_{14} Size_{it} + \beta_{15} Roa_{it} + \beta_{16} Indep_{it} +} \\
& \boldsymbol{\beta_{17} Fixed_{it} + \beta_{18} Industry_{it} + \beta_{19} Year_{it} + \varepsilon_{it}}
\end{aligned}
\tag{5.3}
$$

where: i is the listed company, t is the year. The dependent variable CSR uses the data of the year t+1, i.e., data from 2017-2019. $\beta_1 ValH_{it}$ to $\beta_7 Fcha_{it}$ are the independent variables; the interaction terms $\beta_8 ValH_{it} \times GenH_{it}$ to $\beta_{13} ValH_{it} \times Fcha_{it}$ use the data of the year t, i.e., 2016-2018 data; control variables $\beta_{14} Size_{it}$ to $\beta_{19} Year_{it}$ use the data of the year t, i.e., 2016-2018 data; β_0 is the constant term, ε_{it} is the random error term.

5.9.3 Estimation method

The estimation method can refer to the 4.6 in Chapter 4. This section focuses on the interaction effect, so the collinearity test is conducted again to avoid its interference on the regression analysis. The results uncover that VIF has a maximum of 1.952, a minimum of 1.072 and a mean of 1.323, indicating no collinearity.

5.9.4 Empirical test and analysis

Considering the small collinearity, the regression is performed using Enter Regression Model to test the hypotheses. Before the regression analysis, we centralized the variables and set the interacting terms between the director team values heterogeneity and other heterogeneity factors. The interacting terms were winsorized and taken logarithms using the translation method, which is the same as 5.7.3. In the end, the processed interacting terms were included into the regression analysis. As in Table 5.8, the R-squared is 0.51244, which is greater than 0.5 and demonstrates a good model fit. The F-test is 37.18522, which is acceptable. We can also observe in Table 5.8 that director team's heterogeneity in values and age and the founding chairman has a negative effect on CSR. Director team's gender, tenure and political status heterogeneity positively affect CSR. The education heterogeneity is negatively related to CSR, but the coefficient is insignificant.

Table 5.8 The interaction effect of the director team values heterogeneity and other heterogeneity factors on director team heterogeneity and CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
valh	-.00246	.00079	-3.12	.00198	-.00401	-.00091	***
genh	.28292	.10415	2.72	.00691	.07812	.48772	***
ageh	-.5792	.17702	-3.27	.00117	-.92731	-.23109	***
tenh	.00101	.00055	1.83	.06815	-.00008	.0021	*
eduh	-.043	.0445	-0.97	.33459	-.13051	.04451	
polh	-.07322	.02852	-2.57	.01063	-.1293	-.01714	**
fcha	-.18043	.05227	-3.45	.00062	-.28322	-.07764	***
valh * genh	.0049	.02835	0.17	.86283	-.05085	.06065	
valh * ageh	.141	.05484	2.57	.01054	.03315	.24885	**
valh * tenh	.00003	.00002	1.08	.2811	-.00002	.00007	
valh * eduh	.00057	.00025	2.26	.02467	.00007	.00106	**
valh * polh	.00389	.0241	0.16	.87187	-.0435	.05128	
valh * fcha	.00209	.00051	4.08	.00005	.00108	.0031	***
size	1.85275	.47055	3.94	.0001	.92743	2.77807	***
roa	.0501	.02261	2.22	.02733	.00564	.09457	**
indep	.71699	.44655	1.61	.10922	-.16114	1.59511	
fixed	.48621	.19508	2.49	.01313	.1026	.86982	**
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	

Constant	-4.51796	1.44816	-3.12	.00195	-7.36572	-1.6702	***
Mean dependent var		1.71214	SD dependent var			0.42837	
R-squared		0.51244	Number of obs			428	
F-test		37.18522	Prob > F			0.00000	
Akaike crit. (AIC)		304.47443	Bayesian crit. (BIC)			556.14007	

*** p<.01, ** p<.05, * p<.1 indicates significance at 1%, 5%, 10% level, respectively.

The interacting terms (values heterogeneity*age heterogeneity, values heterogeneity*education heterogeneity, values heterogeneity*founding chairman) have a positive relationship with CSR. The interacting terms (values heterogeneity*gender heterogeneity, values heterogeneity*tenure heterogeneity) are positively related to CSR, while the interacting term values heterogeneity*political status is negatively related to CSR, but both the effects are insignificant. As for control variables, company size, ROA and the proportion of the fixed asset are positively related to CSR. The proportion of the independent director is conducive to CSR, but the effect is insignificant. As for the interaction effect of the director team values heterogeneity and other heterogeneity factors on director team heterogeneity and CSR, the analysis is as follows.

(1) The interaction effect of the interacting term (values heterogeneity*age heterogeneity)

As in Table 5.8, director team age heterogeneity influences CSR negatively (β=-0.5792, $p<0.01$), the interaction term (values heterogeneity*age heterogeneity) affects CSR positively (β=0.141, $p<0.05$), and the values heterogeneity impacts CSR negatively (β=-0.00246, $p<0.01$). The results reveal that with the enhancement of the positive effect of the interacting term (values heterogeneity*age heterogeneity) on CSR, the negative effect of the age heterogeneity on CSR is inhibited and become smaller. Therefore, H3a is supported: H3a: The interaction effects of the director team's values heterogeneity and other heterogeneity factors positively affect the dimensions of director team heterogeneity and CSR.

(2) The interaction effect of the interacting term (values heterogeneity*education heterogeneity)

As in Table 5.8, director team education heterogeneity influences CSR negatively (β=-0.043), but the effect is insignificant. The interaction term (values heterogeneity*education heterogeneity) affects CSR positively (β=0.00057, $p<0.05$), and the values heterogeneity impacts CSR negatively (β=-0.00246, $p<0.01$). The results reveal that with the enhancement of the positive effect of the interacting term (values heterogeneity*education heterogeneity) on CSR, the negative effect of the education heterogeneity on CSR is inhibited and become smaller. Therefore, H3a is supported: H3a: The interaction effects of the director team's values heterogeneity and other heterogeneity factors positively affect the director team dimensions and CSR.

(3) The interaction effect of the interacting term (values heterogeneity*founding chairman)

As in Table 5.8, founding chairman influences CSR negatively (β=-0.18043, p<0.01). The interaction term (values heterogeneity*founding chairman) affects CSR positively (β=0.00209, p<0.01), and the values heterogeneity impacts CSR negatively (β=-0.00246, p<0.01). The results reveal that with the enhancement of the positive effect of the interacting term (values heterogeneity*founding chairman) on CSR, the negative effect of the founding chairman on CSR is inhibited and become smaller. Therefore, H3a is supported: H3a: The interaction effects of the director team's values heterogeneity and other heterogeneity factors positively affect director team heterogeneity dimensions and CSR.

(4) The interaction effect of the interacting term (values heterogeneity*gender heterogeneity, values heterogeneity*tenure heterogeneity, values heterogeneity*political status heterogeneity)

Although the director team's heterogeneity in gender, tenure and political status affects CSR positively in the main effect (p<0.01, p<0.1, p<0.05, respectively), the effect of the interacting terms (values heterogeneity*gender heterogeneity, values heterogeneity*tenure heterogeneity, values heterogeneity*political status heterogeneity) on CSR are insignificant. A possible reason for this may be the insufficient effect of the interacting terms. Therefore, H3a and H3b are not verified.

5.9.5 Robustness test and analysis

To ensure the robustness of the conclusions on the interaction effect of the director team values heterogeneity and other heterogeneity factors, this section replace measurements of some independent variables, which is the same with 5.8. The descriptive statistics, correlation analysis are basically the same as the main model. In the robustness test, the maximum of VIF is 1.918, the minimum is 1.076, and the mean is 1.34, indicating no collinearity.

The regression of the robustness test is performed using Enter Regression Model. Before the regression analysis, we centralized the variables. Then, we set the interacting terms between the director team values heterogeneity and other heterogeneity factors after the replacement. The interacting terms were winsorized and taken logarithms using the translation method, which is the same as 5.7.3. In the end, the processed interacting terms were included into the regression analysis. Table 5.9 exhibits the results.

Table 5.9 The robustness regression result of the interaction effect of the director team values heterogeneity and other heterogeneity factors on director team heterogeneity and CSR

csr	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
valh	-.00362	.001	-3.62	.00034	-.00559	-.00165	***
genh	.28592	.11034	2.59	.00995	.06894	.5029	***
ageh	-.95571	.17875	-5.35	0	-1.30722	-.6042	***
tenh	.00122	.0007	1.75	.08119	-.00015	.0026	*
eduh	-.04719	.04809	-0.98	.32712	-.14176	.04738	
polh	-.058	.02621	-2.21	.02749	-.10953	-.00647	**
fcha	-.14159	.05316	-2.66	.00807	-.24612	-.03706	***
valh * genh	.00467	.00458	1.02	.30784	-.00432	.01367	
valh * ageh	.07342	.02193	3.35	.0009	.0303	.11654	***
valh * tenh	.00003	.00003	0.94	.34561	-.00003	.00009	
valh * eduh	.00033	.00011	2.91	.00382	.00011	.00055	***
valh * polh	.00091	.00171	0.53	.59366	-.00245	.00428	
valh * fcha	.00016	.00007	2.36	.01882	.00003	.00028	**
size	1.66798	.4262	3.91	.00011	.82987	2.5061	***
roa	.04197	.02251	1.86	.06304	-.00229	.08624	*
indep	.35463	.42731	0.83	.40713	-.48566	1.19492	
fixed	.59434	.19096	3.11	.002	.21882	.96986	***
industry	yes	yes	yes	yes	yes	yes	
year	yes	yes	yes	yes	yes	yes	
Constant	-3.68882	1.33136	-2.77	.00588	-6.3069	-1.07074	***
Mean dependent var		1.71214	SD dependent var		0.42837		
R-squared		0.52917	Number of obs		428		
F-test		61.56935	Prob > F		0.00000		
Akaike crit. (AIC)		289.53214	Bayesian crit. (BIC)		541.19777		

*** $p<.01$, ** $p<.05$, * $p<.1$ indicates significance at 1%, 5%, 10% level, respectively.

As in Table 5.9, the robustness test result is basically the same as and even better the regression of the main model (in Table 5.8). As in the Table 5.9, the R-squared is 0.52917, which is greater than 0.51244, and the F-test is 61.56935, which is acceptable. The detailed analysis is as follows.

(1) The interaction effect of the interacting term (values heterogeneity*age heterogeneity)

As in Table 5.9, director team age heterogeneity influences CSR negatively (β=-0.95571, $p<0.01$), the interaction term (values heterogeneity*age heterogeneity) affects CSR positively (β=0.07342, $p<0.01$), and the values heterogeneity impacts CSR negatively (β=-0.00362, $p<0.01$). The results reveal that with the enhancement of the positive effect of the interacting term (values heterogeneity*age heterogeneity) on CSR, the negative effect of the age heterogeneity on CSR is inhibited, which is congruent with the conclusions of the main model.

(2) The interaction effect of the interacting term (values heterogeneity*education heterogeneity)

As in Table 5.9, director team education heterogeneity influences CSR negatively (β=-0.04719), but the effect is insignificant. The interaction term (values heterogeneity*education

heterogeneity) affects CSR positively (β=0.00033, p<0.01), and the values heterogeneity impacts CSR negatively (β=-0.00362, p<0.01). The results reveal that with the enhancement of the positive effect of the interacting term (values heterogeneity*education heterogeneity) on CSR, the negative effect of the education heterogeneity on CSR is inhibited, which is congruent with the conclusions of the main model.

(3) The interaction effect of the interacting term (values heterogeneity*founding chairman)

As in Table 5.9, founding chairman influences CSR negatively (β=-0.14159, p<0.01). The interaction term (values heterogeneity*founding chairman) affects CSR positively (β=0.00016, p<0.05), and the values heterogeneity impacts CSR negatively (β=-0.00362, p<0.01). The results reveal: with the enhancement of the positive effect of the interacting term (values heterogeneity*founding chairman) on CSR, the negative effect of the founding chairman on CSR is inhibited, which is congruent with the conclusions of the main model.

(4) The interaction effect of the interacting term (values heterogeneity*gender heterogeneity, values heterogeneity*tenure heterogeneity, values heterogeneity*political status heterogeneity)

Although the director team's heterogeneity in gender, tenure and political status affects CSR positively in the main effect (p<0.01, p<0.1, p<0.05, respectively), the effect of the interacting terms (values heterogeneity*gender heterogeneity, values heterogeneity*tenure heterogeneity, values heterogeneity*political status heterogeneity) on CSR are insignificant, which is congruent with the conclusions of the main model.

5.10 Findings and discussions

From the above regression analysis and robustness test, we can find that: (1) From the perspective of the impact of institutional environment and the director team heterogeneity on CSR, the institutional environment positively influences CSR, suggesting the institutional environment to be a pivotal facilitator between director team heterogeneity and CSR. Specifically, institutional environment can influence director team's strategic orientation and implementation on CSR, demonstrating that a better and more developed institutional environment can be favorable for CSR decision-making, empowerment and implementation. Moreover, the gender heterogeneity among the director team as well as the tenure and political status heterogeneity between the chairman and other directors in the director team positively influence strategic decisions and implementation of CSR. Director team's values heterogeneity, age heterogeneity, and founding chairman negatively affect the strategic decision and

implementation of CSR. Although the director team's education heterogeneity between the chairman and the other directors and proportion of independent director have both negative and positive effect on CSR, the effects are insignificant. The company size, ROA, proportion of fixed assets significantly pose positive effects on the CSR.

(2) From the moderation of the institutional environment on director team heterogeneity and CSR, the institutional environment can negatively enhance the negative relation between the director team's values heterogeneity and CSR. The institutional environment can negatively weaken the positive relationships between tenure heterogeneity, political status heterogeneity and CSR, as for the tenure heterogeneity and political status heterogeneity between the chairman and other directors, they have a mutual substitution relationship with the institutional environment in the influence on CSR. In addition, the institutional environment positively weakens the negative influence of director team's age heterogeneity and founding chairman on CSR. The moderation of institutional environment on the director team's gender heterogeneity and educational heterogeneity between the chairman and other directors on the nexus between CSR is insignificant.

(3) From the perspective of the interaction effect between the director team values heterogeneity and other heterogeneity factors on director team heterogeneity and CSR, firstly, the interaction term (values heterogeneity*age heterogeneity) can positively suppress or weaken the negative impact of age heterogeneity on CSR. Secondly, the interacting term (values heterogeneity*education heterogeneity) can positively suppress or weaken the negative impact of education heterogeneity on CSR. Thirdly, the interacting term (values heterogeneity*founding chairman) can positively suppress or weaken the negative impact of the founding chairman on CSR. Fourthly, the interaction effects of the interacting term (values heterogeneity*gender heterogeneity, values heterogeneity*tenure heterogeneity, values heterogeneity*political status heterogeneity) are not significant.

(4) From the perspective of the influence mechanism, the positive or negative moderation of the institutional environment on director team heterogeneity and CSR, the interaction effect between the director team values heterogeneity and other heterogeneity factors on director team heterogeneity and CSR are the joint result of multiple forces. It is a balance point of the CSR strategy mechanism, the information decision-making mechanism, the social categorization mechanism, and the moderating mechanism of the institutional environment on the nexus between director team heterogeneity and CSR.

(5) The moderation effect of institutional environment on director team heterogeneity and CSR, the interaction effect between the director team values heterogeneity and other

heterogeneity factors on director team heterogeneity and CSR are relevant but insignificant, suggesting that the moderation strength of the institutional environment, the interaction effect between the director team values heterogeneity and other heterogeneity factors on director team heterogeneity and CSR are still insufficient.

(6) The control variables show significant positive effects on CSR, indicating that the moderation of the institutional environment between director team heterogeneity and CSR necessitates abundant material support.

5.11 Summary

(1) This chapter focuses on the moderation of the institutional environment on director team heterogeneity and CSR. Build upon the theoretical analysis, unearthed in two steps, examine the nexus between institutional environment and director team heterogeneity on CSR; the moderating effect of institutional environment on t director team heterogeneity and CSR. This chapter constructed the research model and studied the influence mechanism of the institutional environment on director team heterogeneity and CSR from the levels of team, enterprise and system. Through the theoretical analysis and research hypotheses, CSR is selected as the dependent variable. For the independent variable, composition characteristics (gender and age heterogeneity), structural characteristics (tenure, education, political status heterogeneity and founding chairman between the chairman and other directors), and values characteristics factors (percentage of the difference between the values of the chairman and the general manager) were selected. Moreover, institutional environment was the moderator, and company size, ROA, proportion of independent directors, and proportion of fixed assets, industry and year were the control variables. In the end, a fixed effects multiple regression model was constructed.

(2) To explore the moderation of institutional environment on director team heterogeneity and CSR, the data and model were collected and tested. The A-share private listed companies in China's Shanghai and Shenzhen stock exchanges in 2016-2018 were selected as the initial sample. After the data cleaning, 149 private listed companies with 447 valid sample observations were obtained. The sample data is from the annual reports, IPO prospectus, CSMAR database, Wind database, the Internet, company websites and related websites. On the basis of variable measurements, we conducted the test and control on data normality, model estimation, collinearity, autocorrelation, heteroskedasticity, and endogeneity. After the Hausman test, fixed effects model was used to conduct regression analysis on the moderation of the institutional environment on the nexus between director team heterogeneity and CSR,

the interaction effect between the director team values heterogeneity and other heterogeneity factors on director team heterogeneity and CSR. Moreover, robustness test was carried out by replacing the moderator and the measurement of some independent variables, which verified the stability of the regression results.

(3) This chapter obtains the research results on teams, enterprises and institutions through regression analysis and robustness test, which is of theoretical and practical value. Firstly, the institutional environment demonstrates a conducive influence on CSR. As the external environment of enterprises, institutional environment can not only positively influence and promotes the fulfillment of CSR through regulations, norms, culture, media, and industry rules, but also enhances director teams' awareness in following the demands of stakeholders and undertaking CSR. Theoretically, these research results are conducive to deepening the TMT, CSR, stakeholder, and institutional theories. Practically, these results can benefit the systematic coupling and synergistic optimization of the team, enterprise, and system. More specifically, these results can help to improve the director team construction of the listed company and enhance the corporate governance structure and the institutional environment.

Secondly, there are four moderations of institutional environment on director team heterogeneity (each variable) and CSR: positive weakening, negative weakening and mutual substitution, negative enhancement, and weak moderation. These results have fully demonstrated the diversity and inclusiveness of the moderating effect, which confirms the institutional environment to be an indispensable motivator for director teams' CSR strategic decision-making. Thus, this research can facilitate the TMT theory, CSR theory, stakeholder theory, Institutional Theory as well as the corporate practice.

Thirdly, the interaction of director team heterogeneity's main factors on director team heterogeneity and CSR uncovers the interaction effect between internal factors of the director team heterogeneity. As one of the internal environments of enterprises, it can also affect the nexus between the director team heterogeneity and CSR. They are: the interaction terms (values heterogeneity*age heterogeneity), (values heterogeneity*education heterogeneity), and (values heterogeneity*founding chairman) positively inhibit or weaken age heterogeneity, education heterogeneity, and the negative impact of founding chairman on CSR.

Fourthly, the four moderations of the institutional environment on director team heterogeneity and CSR, the interaction effect of the main factors of director team heterogeneity on director team heterogeneity and CSR are the joint action of the CSR strategy mechanism, the information decision-making mechanism and the social categorization mechanism, and the moderating mechanism of the institutional environment. It is the relative balance point of

multiple forces.

Fifthly, the moderations of institutional environment on director team heterogeneity and CSR necessitates the material support of the enterprises. Meanwhile, the proportion of the independent directors should be matched and fine-tuned according to the law.

Chapter 6: Conclusions, Recommendations and Prospects

6.1 Research conclusions

Leveraging CSR theory, stakeholder theory, upper echelons theory, Institutional Theory, referring to CSR strategy mechanism, information decision-making mechanism, social categorization mechanism, and institutional environment's modulatory mechanism on director team heterogeneity and CSR, this research selected A-share listed private companies in Shanghai and Shenzhen stock market as the sample, using multiple regression methods, and studied director team heterogeneity and CSR, the moderation of institutional environment in this relationship, and the interactive effect of the director team heterogeneity on this relationship from cross-level perspectives of the team, enterprise and institution.

The research conclusions are demonstrated as follows.

(1) Director team heterogeneity and CSR

This research systematically examines director team heterogeneity's effect on CSR from perspectives of compositional, structural, and value characteristics. The research results unfold that: Firstly, director team gender heterogeneity, tenure heterogeneity between chairman and the other directors, and political status heterogeneity positively promote CSR strategic decision-making and implementation. As a horizontal factor, the enhancement of the director team gender heterogeneity, especially augmenting female directors and the utilizing female characteristics, are conducive to the decision-making and implementation of CSR. As a vertical factor reflecting experts' power difference, the enlargement of the director team tenure heterogeneity can utilize the experts' experience and resource advantages and guide the director team to focus on high-quality and high-efficiency decision-making in CSR. Similarly, as a factor that reflects the political power difference, the enhancement of director team's political status heterogeneity can manifest the chairman's political prestige and influence in the achievement of CSR. The compositional and structural characteristics of director team heterogeneity have positive contributions to CSR. Therefore, it is necessary to have attention on the configuration of the above heterogeneity during constructing the director team.

Secondly, director team's value heterogeneity, age heterogeneity and founding chairman hinder the decision-making and implementation of CSR. The exaggeration of director team

value heterogeneity is inconducive to the consensus and decision-making on CSR, hence it is necessary for director teams to shape common or similar values. As a horizontal factor, the enhancement of age heterogeneity unfolds the difference in both generations and perspectives, which is prone to differences and contradictions in director teams. As the vertical factor, the founding chairman reflects the power of the founder, which would widen the power distance between founding chairman and other directors and lead to negative behaviors that are not conducive to the cooperation of the director team and the decision-making on CSR. Therefore, the above negative factors should be avoided when constructing a director team.

Thirdly, the impacts of director team heterogeneity on CSR are the joint action of CSR strategic mechanism, information decision-making theory and social categorization theory mechanism. It is the "balance point" of multiple forces. Therefore, the different research conclusions can be interpreted by the differences in constraints and "balance point" of multiple forces.

Fourthly, as a vertical factor, the education heterogeneity between the chairman and other directors is relevant with CSR but the impact is insignificant. This result suggests that the effect of informational decision-making mechanism or social categorization mechanism has not reached the checks and balances, implying that the education heterogeneity does not yet constitute a significant antecedent to CSR.

(2) The moderation of the institutional environment on director team heterogeneity and CSR

From the cross-level perspectives of teams, enterprises, and institutions, this research systematically examines the moderation of the institutional environment on director team heterogeneity and CSR. The research results demonstrate that: Firstly, institutional environment catalyzes CSR, indicating that institutional environment is a crucial influencing and facilitating factor in the nexus between director team heterogeneity and CSR. A better and more developed institutional environment can be more conducive to CSR decision-making, empowerment and fulfillment, suggesting that governments and stakeholders need to make efforts to improve the institutional environment.

Secondly, institutional environment moderates director team heterogeneity and CSR. The study unearths institutional environment's negative reinforcing effect of on the negative interrelation between director team values heterogeneity and CSR; institutional environment can negative weakening the positive interrelations between tenure heterogeneity, political status heterogeneity and CSR; institutional environment has a mutual substitution relationship with the tenure heterogeneity between the chairman and other directors in the influence on CSR;

institutional environment has a mutual substitution relationship with the political status heterogeneity between the chairman and other directors in terms of the influence on CSR; institutional environment has a significant positive weakening effect on the negative interrelation between director team age heterogeneity and CSR; institutional environment has a significant positive weakening effect on the negative interrelation between founding chairman and CSR; the moderating effects of institutional environment on the nexus between director team gender heterogeneity, education heterogeneity and CSR is insignificant. The above research findings reveal that the institutional environment has four modulatory effects on the nexus between director team heterogeneity (each variable) and CSR. These four moderating effects include: significant negative strengthening effect; significant negative weakening and mutual substitution effect; significant positive weakening effect; and insignificant moderating effect, which manifests that the modulatory effects of the institutional environment is diversified and inclusive and confirms that the institutional environment is an indispensable motivator for director teams to decide on CSR strategies. Thus, it facilitates the TMT theory, CSR theory, stakeholder theory, Institutional Theory, and enterprise practice.

Thirdly, the four modulatory effects of the institutional environment on director team heterogeneity and CSR are the joint action of CSR strategy mechanism, information decision-making mechanism, social categorization mechanism, and moderating mechanism of the institutional environment. It is the "balance point" of multiple forces. Therefore, the different conclusions on the nexus between the director team heterogeneity and CSR is due to the moderation direction and strength of the institutional environment.

(3) The interaction effect of the director team heterogeneity factors on director team heterogeneity and CSR

The research results unfold that: The interactions values heterogeneity*age heterogeneity, values heterogeneity*education heterogeneity, and values heterogeneity*founding chairman are inhibiting or alleviating the negative effect of age heterogeneity, education heterogeneity and founding chairman on CSR. This proves that the values heterogeneity factor is an intrinsically and deep critical factor affecting other factors of the director team heterogeneity.

It is the joint effect and balance point of CSR strategic mechanism, information decision-making mechanism and social classification mechanism. From this, it is identified that the interaction effect of director team heterogeneity's main factors on the nexus between the director team heterogeneity and CSR can also affect the direction and strength of the nexus between the director team heterogeneity (various variables) and CSR, which is one of the reasons for inconsistent research conclusions on director team heterogeneity and CSR.

(4) Control variables and CSR

The control variables have positive effects on CSR, indicating the nexus between director team heterogeneity and CSR and the modulatory effect of institutional environment need material support from companies. Meanwhile, it necessitates matching and increasing the percentage of independent directors in director teams.

6.2 Research contributions

6.2.1 Theoretical contributions

The first contribution is about the novelty of research perspectives. At present, there are rare literature on director team heterogeneity and CSR in the existing research domestically and abroad. Combined with the Chinese scenario, this research takes director team in TMT as an independent research object, and investigates its nexus with CSR. Revealing and supplementing the research on antecedent roles of director teams, this research has expanded the literature on TMT heterogeneity and CSR.

The second contribution is about the novelty of the research level. The previous research has deficiencies in the cross-level research due to the neglect of the director team heterogeneity. From the angle of the director team heterogeneity, this study delves into the nexus between director team heterogeneity and CSR, moderation of institutional environment and interaction of director team heterogeneity factors on director team heterogeneity and CSR from the level of teams, enterprises and institutions. This can help to explore and complement the mechanistic research between director team heterogeneity, CSR and the institutional environment.

The third contribution is about the novelty of systematic integration. When study director team heterogeneity and CSR from the perspective of static characteristics, this research systematically integrates the compositional, structural, and value characteristics of director team heterogeneity. Assembling the three levels and seven dimensions of director team heterogeneity, considering the deep and surface motives, different aspects of the team, enterprise, and system, from the horizontal, vertical and value heterogeneity, this research explores the nexus between director team heterogeneity and CSR, the moderation of institutional environment and interaction of director team heterogeneity factors on director team heterogeneity and CSR, which is a comprehensive and novel approach.

The fourth contribution is about the novelty of mechanism coupling. This research further clarifies that director team heterogeneity's effect on CSR, the moderation of institutional

environment and interaction of director team heterogeneity factors on director team heterogeneity and CSR is the joint action of CSR strategic mechanism, information decision mechanism, social categorization mechanism, and the modulatory mechanism of institutional environment. It is the "balance point" of multiple forces. The reason for the inconsistent conclusions on director team heterogeneity and CSR is the different constraints and "balance point".

6.2.2 Practical implications

For the first implication, this research can help the enterprises to grasp the director team heterogeneity characteristics and build a high-quality director team. The research results on the director team heterogeneity and CSR can help enterprises know better about the director team's heterogeneity characteristics in terms of gender, age, tenure, education, political status, founding chairmen, and values. In this way, enterprises could find the antecedents and motives of the director team and elevate the scientificity of decision making and CSR proactiveness. Meanwhile, this study is conducive for enterprises to configure a high-quality and efficient team of differentiated directors to meet the needs of CSR strategic decision-making.

For the second implication, this research can help the enterprises to clarify the inherent mechanism between director team heterogeneity and CSR, which could encourage enterprises to correctly fulfill the CSR, save and allocate resources, and realize the coordinated development with the society. Meanwhile, it can help to cultivate the CSR cultural atmosphere and enhance the proactive cognition of the director team through the cohesion of CSR values and concepts.

For the third implication, this research can help the enterprises and government to know the moderation of the institutional environment. With the operation mechanism revealed in the cross-level analysis, the government and stakeholders can improve the control, standardization and cognitive system of the institutional environment, perfect the relevant laws, policies and rules. In this way, the government and stakeholders can be encouraged to adapt to and cooperate with the institutional environment, and promote and supervise the fulfillment of the CSR. Meanwhile, it can inspire the developing market economy countries like China to utilize the modulatory role of the institutional environment, serve stakeholders, and realize sustainable and high-quality society development.

6.3 Recommendations

Recommendation 1: Focus on the director team building

As a vital part of the TMT, the director team is responsible for making decisions on the corporate strategies, which is related to the development sustainability and quality of the enterprises. Therefore, emphasizing the composition of the director team heterogeneity greatly benefits the strategic decision-making of CSR.

Firstly, the enterprises should have attention on the gender heterogeneity in the configuration of the director team, increase female directors appropriately, and exert positive influences of female on CSR. Secondly, enterprises should pay attention to configure the tenure heterogeneity between the chairman and other directors, and give full play to the experiences and resources of the expert power, which could pose a positive influence on CSR. Thirdly, enterprises should attach importance to configuring the political status heterogeneity between the chairman and other directors, and increase the positive impact of the chairman's political prestige advantage and influence on CSR. Fourthly, enterprises should circumvent the negative influence of the director team value heterogeneity, age heterogeneity and founding chairman on CSR. The convergence of the director team values should be emphasized, hence the age heterogeneity should not be too big and the power of the founding chairman should not be overly emphasized. Fifthly, pay attention to the interaction effect of the director team heterogeneity factors on the director team heterogeneity and CSR and give a full play of its effect.

Recommendation 2: Focus on the cultivation of CSR values and the decision-making quality

Firstly, enterprises should cultivate the CSR values to lay a conceptual foundation and create a corporate cultural atmosphere for the decision-making and implementation of CSR. Secondly, enterprises should augment CSR strategic decision-making in quality and efficiency, pay attention to cultivation, assessment and appointment of directors, and establish a scientific and standardized management system for CSR strategic decision-making. Thirdly, enterprises should emphasize the director team members' knowledge about relevant laws, industry norms and public opinion supervision, and proactively respond to the reasonable demands of stakeholders. Fourthly, enterprises should enhance the related material input of CSR.

Recommendation 3: Focus on the soundness and influence of the institutional environment

The realization of CSR necessitates a good institutional environment, and the construction and its improvement need the responsibility and commitment of the government and social

organizations. Firstly, the government should formulate and consummate laws and regulations on CSR, strengthen the implementation and supervision, and destroy the rule-breaking behaviors. Moreover, the reward and punishment policies on CSR should be formulated to encourage, commend and publicize the enterprises that comply with the law, so as to form a good culture for the whole society to actively perform CSR. Secondly, the industry associations and intermediary organizations should take the lead in serving, guiding and constraining the industry to rectify malpractices that undermine CSR and encourage enterprises to perform the proactive cognition of CSR. Thirdly, the government should call for the positive attention from social opinion and media supervision. The government departments, suppliers, consumers, enterprise employees, communities, and media should be encouraged to focus on the fulfillment of CSR, the typical positive and negative incidents should be disclosed in a timely manner, and the undesirable tendency of harming the interests of stakeholders should be rectified.

6.4 Limitations and future research

For the first limitation, limited by the pandemic and objective conditions, this research adopted the second-hand data in the value heterogeneity instead of the first-hand data via interviews or questionnaires. In the future research, the data of psychological factors can be obtained through interviews or questionnaire surveys, which is more objective.

For the second limitation, this research only obtained a limited sample with a time span of 3 years due to the difficulty in collecting the data of value heterogeneity. Future studies should have a larger sample size and increase the span of time to make the findings more convincing.

For the third limitation, this research studied director team heterogeneity and CSR, moderation of institutional environment in this relationship, and interaction of the director team heterogeneity factors on the director team heterogeneity and CSR from perspectives of static characteristics instead of dynamic processes. Future research can expand to decision-making processes of director team heterogeneity on CSR and reveal the operation mechanism of the "black box" of the director team heterogeneity on CSR.

For the fourth limitation, this research only examines the moderation of institutional environment on the nexus between director team heterogeneity and CSR and interaction of director team heterogeneity factors on the nexus between the director team heterogeneity and CSR from internal and external factors. However, there are many other internal and external factors that affect director team heterogeneity and CSR, such as investments in CSR programs within the enterprise and industry environment outside the enterprise. In the future, the

moderating, interacting and mediating role of other factors on the director team heterogeneity and CSR can be further investigated.

For the fifth limitation, this study only examined the moderation of the institutional environment on director team heterogeneity and CSR. However, institutional environments' development in different regions of China is not balanced, and thus the moderating effect may be different in different regions. Therefore, future research can further investigate the moderation of institutional environment in different regions.

For the sixth limitation, this research only focused on the director teams in China's private enterprises. In fact, the relation between director team heterogeneity and CSR, modulation of institutional environment in this nexus, and interaction of director team heterogeneity factors on director team heterogeneity and CSR in Chinese state-owned enterprises and foreign-funded enterprises still need to be investigated, and this is the direction for future research at the same time.

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