11-2023

Construction of ESG evaluation index system of state-owned listed companies: Analysis based on the perspective of comprehensive corporate value

Yiping SUN
Singapore Management University, yiping.sun.2017@ckdba.smu.edu.sg

CONSTRUCTION OF ESG EVALUATION INDEX SYSTEM OF STATE-OWNED LISTED COMPANIES-ANALYSIS BASED ON THE PERSPECTIVE OF COMPREHENSIVE CORPORATE VALUE

SUN YIPING

SINGAPORE MANAGEMENT UNIVERSITY

2023

Construction of ESG Evaluation Index System of State-owned Listed Companies-Analysis Based on the Perspective of Comprehensive Corporate Value

Sun Yiping

Submitted to Lee Kong Chian School of Business in partial fulfilment of the requirements for the Degree of Doctor of Business Administration

Dissertation Committee

Geng Xuesong (Chair)
Professor of Strategic Management
Singapore Management University

Liao Jianwen (Co-Supervisor)
Professor of Management Practice
Singapore Management University

Chen Xia
Professor of Accounting
Singapore Management University

Singapore Management University
2023

I hereby declare that this DBA dissertation is my original work and it has been written by me in its entirety. I have duly acknowledged all the sources of information which have been used in this DBA dissertation.

This DBA dissertation has also not been submitted for any degree in any university previously.

Sun Yiping

30 November 2023

Construction of ESG Evaluation Index System of State-owned Listed Companies-Analysis Based on the Perspective of Comprehensive Corporate Value

Sun Yiping

Abstract

In this paper, I explore the applicability of environmental, social, and governance (ESG) evaluation systems to Chinese state-owned enterprises (SOEs). I assess these ESG evaluation systems in terms of the overall value of Chinese SOEs and point out that these enterprises do not have their own evaluation system. Establishing an ESG system for Chinese SOEs can encourage them to disclose quantifiable indicators, thus objectively demonstrating their comprehensive ESG performance and helping to enhance their overall value. I examine the current ESG evaluation systems in detail and find that there are many problems in applying the main international evaluation systems to domestic enterprises. First, in terms of current rating agencies, various areas require improvement, such as transparency in disclosing the benchmarks of specific assessment methods and assumptions, standardising the evaluation process, and inconsistencies in the rating results from different agencies for the same enterprise. Second, international ESG evaluation systems lack localised indicators and have a relatively low correlation with China's central policies. They do not consider the characteristics of Chinese SOEs or clearly incorporate the mandatory ESG requirements set by the government, such as

the “dual carbon” goals (carbon peaking and carbon neutrality), rural revitalisation, or common prosperity. To establish an ESG system for Chinese SOEs, I take non-SOEs as a reference in this study. Assuming that the established model will mainly be used to evaluate Chinese SOEs, I use corporate social responsibility (CSR) reporting data from the database of GoldenBee Research to conduct a textual analysis of the CSR or ESG reports of Chinese SOEs and non-SOEs, and identify several factors that may have a major impact on the ESG evaluations of these enterprises. I find that there are differences in the ESG concerns of Chinese SOEs and non-SOEs, which leads to differences in enterprise performance. Therefore, I propose that for SOEs with different systems from those in the West, a more consistent model is required to reflect the correlation between a specific combination of indicators and overall business performance. Finally, I interview Chinese entrepreneurs from both SOEs and non-SOEs to discuss the initial results and explore through empirical verification whether the ESG concerns identified earlier are the key concerns for Chinese SOEs and non-SOEs. I ultimately identify the primary factors influencing the ESG performance of Chinese SOEs. Based on this, I establish an ESG evaluation system for Chinese SOEs, which can be applied in their ESG management and practice.

Keywords: Chinese state-owned enterprises, ESG evaluation system, enterprise comprehensive value

Contents

Acknowledgement

The teachers from SMU and CKGSB have taught me much about enterprise management in the Doctor of Business Administration (DBA) programme. With their encouragement, support, and guidance, along with that of my schoolmates, I became more confident in my research and writing and embarked on a journey of academic research. My supervisors Professor Geng Xuesong, Professor Liao Jianwen, and Professor Chen Xia gave me extensive guidance and suggestions while I was writing this dissertation, which broadened my research thinking and helped me continuously improve the paper and finally complete it. I would like to express my heartfelt thanks to these professors for their support! I would also like to express my gratitude to my interviewees for participating and completing the questionnaire, which enriched the practical perspective of this paper and helped achieve an agreement between theory and practice. In addition to my teachers and schoolmates, I want to thank my family for their encouragement and support!

Chapter 1 Introduction

1.1 Research Background

Environmental pollution and climate deterioration have become global problems and the resulting public health issues have led to increased unemployment, poverty, and hunger, and thus global economic development has been severely affected. In this context, the environmental, social, and governance (ESG) development philosophy has attracted much attention, and its timely and active implementation has become a central issue (Su, 2022a). The ESG philosophy was first proposed by the United Nations (UN) Global Compact in 2004 and gradually developed into an investment concept and enterprise evaluation standard, focusing on ESG performance (Pan et al., unknown). The ESG philosophy is in line with the current demand for sustainable development in society as a whole, and it has been increasingly adopted by governments, enterprises, and capital markets. ESG factors have become important benchmarks for measuring the overall quality, business risks, and business opportunities of enterprises (Fang, 2023).

China's economy is transforming from high-speed to high-quality development. ESG research and promotion has become a vital approach in the high-quality development of China's economy and in implementing the new development philosophy of innovative, coordinated, green, open, and shared growth, and thus can help to achieve sustainable development (Ma & Liu, 2022). In March 2022, the Assets

Supervision and Administration Commission of the State Council (SASAC) established the Bureau of Social Responsibility to offer guidance to SOEs, in terms of practising the ESG philosophy and actively adapting to and further developing international rules and standards (Wang, 2023). The SASAC issued the *Work Plan for Improving the Quality of Listed Companies Controlled by Central Enterprises* in May, proposing that central enterprises should coordinate efforts to help listed companies further improve their ESG working mechanisms, enhance their ESG performance, actively participate in the establishment of an ESG system with Chinese characteristics, and play a leading and exemplary role in the capital market (Zhao, 2022). The mounting downward pressure on the economy in the post-pandemic era has led to a growing backlash against globalisation. European and American countries continue to increase their regulatory efforts to crack down on companies' disclosure of false and misleading ESG information. The "green barriers" are becoming larger and the thresholds for international trade, investment operations, overseas listings, and other economic attempts by developing countries continue to increase, with a corresponding increase in the risks of noncompliance for companies attempting to go global (Zhou, 2021). Therefore, ESG can be regarded as a common language Chinese enterprises can speak when integrating into the international economic circulation (Liu, 2022a), and the only way to accelerate China's construction of world-class enterprises. In addition, the implementation of the "dual carbon" goals and the strengthening of supervision by the government and regulators of listed companies mean that green transition has become

an important focus in enterprise development, and ESG the route that Chinese enterprises must take in their transformation (Zhou, 2020). These enterprises are accelerating the formulation of ESG-based business strategies to achieve faster green transitions, thus enhancing their value, competitiveness, and sustainability (Wang, 2022).

The world is undergoing changes of a scale unseen in a century, with increasingly intense competition among nations. Chinese SOEs must both improve their efficiency and become better, larger, and stronger, and also consider national strategies and social interests by shouldering more social responsibility (Hong, 2016). In 2021, the SASAC incorporated ESG into its key initiatives for promoting the fulfilment of corporate social responsibility (CSR). This requires central and local SOEs to play a central role in the establishment of an ESG system (Geng et al., unknown). Therefore, the focus of this study is on accelerating the establishment of an ESG evaluation indicator system for Chinese SOEs that can effectively promote their green transition, ensure their high-quality development, and maximise their roles as the "national team" and "main force."

1.1.1 Importance of ESG Work in Chinese SOEs

First, enterprises face both risks and opportunities in ESG activities, which may affect their sustainability. ESG has become an inevitable and important topic from both the macro perspective of sustainable human development and the micro perspective of

enterprise value enhancement, and is becoming a new benchmark of excellence for enterprises (Liu, 2020). However, although ESG is essential for good corporate governance and high-quality development, enterprises may encounter risks. For example, uncertainties remain about the overall impact of the outbreak of COVID-19 on the market, and climate change issues have brought significant risks to global business development, affecting the normal business operations of enterprises. Sustainable ESG development and formulating comprehensive and thoughtful strategies can help enterprises reduce such risks and maintain their strength and competitiveness in an adverse business environment (Gao, 2023). Some studies have suggested that the higher an enterprise's ESG score, the lower its unsystematic risk and the higher the excess return of its portfolio, indicating that investment strategies based on ESG are conducive to risk avoidance (Ma, 2019). Enterprises can also take advantage of many opportunities. The "dual carbon" goals can quantify and illustrate the environmental responsibilities of all enterprises, not only those in the energy sector or those with high levels of energy consumption. Society can then gain a new understanding of the external impact of enterprise operations and a new standard for evaluating enterprise value (Yue, 2022). Investors are increasingly incorporating ESG factors into their corporate investment decision-making frameworks, to help determine whether an enterprise can be considered "good," and financial indicators are no longer the sole criterion (Cao, 2022). The ESG performance of enterprises is thus increasingly valued. Chinese SOEs, as the mainstay of the national economy, are integrating the

ESG development philosophy into their corporate operational management systems and strengthening their ESG management and information disclosure, which will help them find their own sustainability path, enhance their levels of governance, and strengthen their sustainability capabilities (Xing, 2022).

Second, ESG is increasingly important as a factor affecting the value, in addition to the investment and financing, of Chinese SOEs. ESG information disclosure improves corporate information transparency and reduces the information asymmetry between enterprises and creditors, thus reducing their financing costs and enhancing their value. Improved ESG information disclosure will also draw more attention, increasing the likelihood of attracting outstanding employees and thus improving enterprise value (Wang, 2022). Sustainability factors such as the environment and society increasingly have an impact in the financial capital market (Geng et al., unknown). Enterprises that demonstrate excellent ESG performance will gain more trust from investors. Those that meet the criteria for green bonds and loans can obtain low-interest financing, due to this improvement in their credit quality, through methods such as interest subsidies (Qian & Zhu, 2021). Investors tend to give higher valuations to enterprises committed to sustainable development and lower valuations to those with environmental and social problems (Xu et al., 2016). By the end of April 2022, 1,072 ESG products were available in China, with a total net value of RMB1.8 trillion. Of the 961 ESG-related publicly offered fund products, the value of the themed fund products that had explicitly included the ESG philosophy in their investment strategies amounted

to RMB266.4 billion. The huge demand for international sustainable investment has broadened the green financial market in China. Developing green finance and practising the concept of responsible investment have become spontaneous choices for an increasing number of local governments and market entities (Zhang, unknown).

Third, ESG has become an important strategy Chinese SOEs can use to gain a competitive edge. According to the resource-based view, owning and controlling heterogeneous resources can provide enterprises with a competitive advantage (Zhao & Jiang, 2007). Successfully engaging in socially responsible activities can also be a competitive factor (Porter & Linde, 1995). The rational use and allocation of resources to address environmental problems can enable enterprises to develop lasting competitive advantages and create value (Hart & Dowell, 2011). Good ESG performance is conducive to the formation of reputational resources, thus making it easier for Chinese SOEs to gain competitive advantages and create premium brands. These resources may also over the long term become central to the competitiveness of enterprises, by providing them with an advantage in the market and ultimately improving their market performance (Zhang et al., 2021). The costs involved in ESG activities may also affect short-term profits. To reduce the impact on financing and reinvestment, Chinese SOEs will be motivated to explore new technologies and production methods that reduce costs, thus stimulating innovation and enabling them to progress in terms of green product and technology development, organisational management, and other aspects, thereby increasing the efficiency of resource utilisation,

lowering costs, and enhancing financial performance (Su, 2022b).

1.1.2 Good Development Opportunities for Chinese SOEs Through ESG Work

First, the UN's Sustainable Development Goals (SDGs) have become a new benchmark in global business competition, while the status and influence of businesses in economic, social, political, and cultural aspects is increasing, especially that of large-scale enterprises and multinational corporations (Huang & Zhou, 2022). Enterprises can improve their competitiveness through ethical business practices and social responsibility, but they must ensure that their entrepreneurs have distinct and contemporary business philosophies and approaches, and be aware of their responsibilities in terms of economic, environmental, and social development. Thus, they can achieve both corporate growth and sustainable social development (Han, 2019). The SDGs bring new opportunities for market growth and can lead to the creation of new business models, while enhancing enterprises' brand influence. However, failure to act according to the SDGs can seriously affect the operational management of enterprises (Qian, 2020).

Second, the Communist Party of China (CPC) and the Chinese government attach great importance to sustainable development and require Chinese SOEs to actively fulfil their social responsibilities. Since the 18th CPC National Congress, the CPC Central Committee, as personified by Comrade Xi Jinping, has attached great importance to green development, given priority to the construction of ecological civilisation in the overall development of the Party and the state, and continuously

explored a model of sound development featuring improved production, higher living standards, and healthy ecosystems (Yin, 2022). In 2016, the SASAC issued its *Guidelines to State-Owned Enterprises on Better Fulfilling Corporate Social Responsibilities*. These require Chinese SOEs to actively fulfil their responsibilities to their stakeholders, society, and the environment, create maximum economic, social, and environmental value, and promote sustainable development. In March 2022, the SASAC established the Bureau of Social Responsibility to better organise and guide central enterprises, so they can actively fulfil their social responsibilities. The Bureau aims to unswervingly strengthen, optimise, and expand China's state-owned capital and SOEs, accelerate the development of world-class enterprises, and further enhance the role of Chinese SOEs as the backbone of these initiatives (Yin, 2023).

Third, global stock exchanges increasingly endeavour to promote ESG information disclosure. Since the launch of the Sustainable Stock Exchanges initiative, the number of stock exchanges joining the initiative has gradually increased. By the end of 2020, nearly 60 exchanges had issued or committed themselves to formulating ESG disclosure requirements. Various listed regulatory agencies including the Shenzhen United Property and Equity Exchange, the Shanghai Stock Exchange, and the Shenzhen Stock Exchange have issued requirements for listed companies to disclose their ESG guidelines, emphasising the need for "interpretation for non-disclosure" (Fu, 2021). To comply with the trend of environmental protection and the requirements for energy conservation and emissions reduction, the China Securities

Regulatory Commission (CSRC) released a draft for public comments in May 2021 regarding revisions to the content and format of corporate annual reports. A chapter on environmental and social responsibilities was added, requiring all listed companies to actively disclose any punishments and accidents related to environmental protection issues, and encouraging companies to show the public how they fulfil their social responsibilities, such as efforts made to reduce carbon emissions and promote rural revitalisation or common prosperity (Li & Hu, unknown). China's requirements for the disclosure of corporate ESG reports or related information are likely to become as stringent as those of developed countries.

Fourth, Chinese SOEs have attached increasing importance to ESG. In terms of information disclosure, the ESG reports of Chinese SOEs generally comply with the ESG guidelines of local regulatory agencies such as the Shanghai Stock Exchange and the Shenzhen United Property and Equity Exchange, the Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI), the SDGs, and recommendations from industry associations. The information disclosed ranges from nonfinancial and CSR-related to ESG information that reflects sustainable development. This is becoming gradually more diversified, with more indicators and specific content (Du & Mao, 2023). The disclosure formats have gradually become standardised, with a shift from voluntary to mandatory disclosure in key areas, and from disclosure of social responsibility information to the regular publication of ESG or social responsibility reports (Guo, 2022). The information disclosed in ESG reports about stakeholders such

as peers, suppliers, and the media has also increased significantly. In addition, the environmental information disclosed has become more comprehensive and quantifiable (Zhou & Fan, 2022). Chinese SOEs are currently the main bodies issuing social responsibility/ESG reports. According to the CSR data from the Blue Book of GoldenBee Research, among the 1,508 enterprises listed on the Shanghai Stock Exchange, 619 (or 41%) have issued social responsibility/ESG reports, of which 62.5% are Chinese SOEs. In terms of ESG management, the senior management (boards of directors) of enterprises have begun to regard ESG as an important component of new business models and brand building. Since 2018, the number of enterprises with ESG management divisions has continued to grow.

Fifth, Party building has become the driving force in Chinese SOEs' ESG governance. Due to their unique political attributes and social responsibilities, these SOEs have integrated Party building into their corporate governance, which represents a modern characteristic of these companies. They aim to continuously improve their leadership system involving concurrent Party/administrative posts (Chen, 2020b). General Secretary Xi Jinping emphasised the need to integrate Party leadership into every aspect of corporate governance and embed corporate Party organisations in the governance structure of enterprises. The legal status of Party organisations in the corporate legal governance structure must be clarified to ensure the proper organisation, implementation, and deployment of personnel, along with ensuring their awareness of their responsibilities and strict supervision. In September 2018, the CSRC revised and

released the 2012 edition of the *Code of Corporate Governance for Listed Companies*, which newly included Party building to further promote the standardised operation of listed companies, improve corporate governance, and protect the legitimate rights and interests of investors. Party building is a Chinese characteristic, while the concept of ESG governance originates from the West. The two have differences and contradictions in their operation modes and institutional arrangements, but these are nonadversarial. As long as the relationship between the two is well coordinated, the integration of Party building into the governance of Chinese SOEs will generate more benefits than if they function independently (Chen, 2020a).

1.1.3 Challenges Faced by Chinese SOEs in ESG Work

Chinese SOEs currently place a strong emphasis on ESG work. However, they still face high requirements from both internal and external stakeholders and the market environment. With a gradual trend towards standardised and comprehensive ESG information disclosure, they have begun to incorporate ESG management into their management systems. However, there is still significant room for improvement in terms of information disclosure and the establishment of management and evaluation systems.

First, China has no localised ESG evaluation indicator system. The construction of ESG evaluation indicators is the basis for ESG research and application, and although academics and practitioners have reached a preliminary consensus on an ESG measurement framework, opinions differ about the specific content to be addressed in the environmental, social, and governance dimensions (Yuan et al., 2022). The

environmental dimension of ESG is the main focus of the relevant government departments, but the information disclosure framework for ESG indicators and systems lacks an overall design and has significant omissions compared with those in Europe and America (Ren, 2022). Problems will also arise if foreign ESG indicators are introduced into China, as they may not suit the specific context, and may offer more qualitative descriptions than quantitative evaluations and lack uniform evaluation indicators. This can lead to huge differences in the evaluation results and a mismatch between the design of indicator systems and the national situation (You, 2022). The standards corresponding to foreign ESG rating indicators rarely reflect the true social value of Chinese SOEs. For example, so-called international standards do not consider the efforts made by Chinese enterprises in terms of common prosperity, rural revitalisation, and building a beautiful China, and thus foreign rating agencies do not give Chinese SOEs high ESG evaluations. The standards for ESG information disclosure are also becoming more stringent, thus further increasing the requirements for Chinese SOEs. The disclosure of relevant data by Chinese SOEs is also likely to involve highly sensitive issues such as industrial security and commercial confidentiality. Such disclosure may reveal how China's state-owned capital is arranged and the distribution of industrial supply chains, thus having a significant impact on the country's industrial security. In this study, we aim to establish an ESG evaluation indicator system that fully considers ESG practices in China. This will not only help to make the relevant information more comparable but also effectively promote the long-

term development of ESG theory and practice and help to accelerate the harmonious coexistence and sustainable development of the economy, society, environment, and individuals.

Second, China has not issued specific laws and regulations concerning ESG information disclosure, and thus Chinese SOEs lack practical guidelines. Government departments and SOEs have recently focused more attention on ESG development than before, but in terms of information disclosure, no mandatory requirements have been introduced by either the Shanghai or the Shenzhen Stock Exchange, and no ESG information disclosure framework has been established (Huang, 2022). In 2018, the CSRC released its revised *Code of Corporate Governance for Listed Companies*, aiming to establish a basic framework for ESG information disclosure. In 2020, Hong Kong Exchanges and Clearing Limited (HKEx) issued the *Environmental, Social and Governance Reporting Guide*, which included mandatory ESG disclosure requirements, and upgraded the requirements for disclosing social key performance indicators to ensure "interpretation for non-disclosure." In 2022, the Shanghai and Shenzhen Stock Exchanges issued a new edition of the *Rules Governing the Listing of Stocks*, which now includes more explicit requirements for the disclosure of ESG information, including corporate governance, than previous editions. China's ESG information disclosure practices can therefore clearly be characterised as "corporate participation led by the government," and although the requirements for the three elements of ESG are stipulated, the specific indicators are unclear (Xu, 2022). Thus, due to this lack of

content standards and specific guidelines for ESG information disclosure, enterprises typically select evaluation systems that offer them specific benefits when disclosing ESG information, resulting in a lack of comparability in the ESG reports issued (Cao, 2022a). Chinese SOEs thus take different approaches to ESG information disclosure, due to the lack of a unified standard. Some disclose this information in separate ESG reports and others in the social performance and management analysis sections of their corporate annual reports (Wu & Chen, 2022a). The lack of standardisation of ESG information disclosure also results in inconsistent information governance. These various approaches to information disclosure make it difficult for regulatory authorities and investors to effectively evaluate Chinese SOEs' ESG practices, which in turn makes SOEs less inclined to release ESG reports.

Third, regulatory authorities and stakeholders have increasingly strict ESG requirements for Chinese SOEs. The SASAC, CSRC, and other relevant departments have put forward new ESG requirements. On 27 May 2022, the SASAC issued the *Work Plan for Improving the Quality of Listed Companies Controlled by Central Enterprises*. This requires central enterprises to ensure the complete, accurate, and comprehensive implementation of the new development philosophy in listed companies. The plan also emphasises that the ESG mechanism must be improved to enhance the effectiveness of ESG activities and to ensure that these companies take a leading role in the capital market. The plan also encourages more Chinese SOEs to release ESG reports and is aimed at achieving "full coverage," in terms of disclosure through special reports, by

2023 (Liu, 2022). The CSRC issued its *Guidelines for the Investor Relations Management by Listed Companies*, which came into effect on 15 May 2022. This was the first time that the CSRC included ESG information disclosure in its requirements, meaning that ESG will become an important factor in the communication between listed companies and investors. At present, ESG information disclosure by Chinese SOEs is voluntary and driven by policies. However, the formulation of relevant guidelines will inevitably move Chinese disclosure practices closer to the global situation and gradually develop into a mandatory requirement (Yang, 2023). All sectors of society now have expectations regarding the ESG activities of Chinese SOEs, which occupy an important position in the national economy and have a significant influence on the capital market and on public opinion. Thus, not only are investors paying close attention to these ESG activities, but the public is also interested in various operational aspects of these companies. The expectations regarding ESG information disclosure by these enterprises will therefore be higher (Wei & Sun, 2021). The social, economic, and environmental responsibilities of Chinese SOEs mean that they must consider and protect the rights and interests of all stakeholders, but achieving this through a series of institutional arrangements and practices is a major challenge (Zhang, 2014).

Fourth, the investment in and management of ESG activities by Chinese SOEs is inadequate, and although ESG has become a new trend in Chinese SOEs, their public nature means that they must not only meet the requirements of the capital market but also shoulder more social responsibilities. However, the contradiction between long-

term ESG investment and low short-term output results in increased operating costs for these enterprises (Feng & Zhuang, 2022). Stringent environmental regulations will only increase the pressure on Chinese SOEs, because to further address environmental problems they will be required to make significant improvements and enhancements in terms of human and financial resources, technological optimisation, and other aspects. These requirements will inevitably affect enterprise performance (Wang & Li, 2021; Yang, 2015). In addition, Chinese SOEs may still find it difficult to effectively implement policies and ensure efficient governance. In the context of economic structural transformation and reform, these SOEs must ensure that their initiatives are not superficial or perfunctory in the relationship between administrative agencies and enterprise management. Performance evaluation systems must therefore be improved and fully implemented, and Chinese SOEs should avoid choosing quantity over quality to cater to market preferences (Liu et al., 2022). Thus, improving the overall efficiency of ESG governance and enhancing ESG management capabilities is necessary. In addition, the current ESG information disclosed by Chinese SOEs is mainly descriptive, and enterprises often perceive reports as a means of showcasing their environmental protection efforts, climate change responses, and fulfilment of social responsibilities, so they rarely disclose negative events and indicators voluntarily. The quality and depth of the content disclosed by enterprises also vary greatly, making it difficult to compare them. Furthermore, in most Chinese SOEs, only the groups' boards of directors, information disclosure teams, and publicity departments pay attention to disclosed ESG

information. Employees in the relevant departments of the groups' branches and subsidiaries are typically unaware of the importance of ESG, and they believe that their daily business work is not directly related to ESG activities. When required to disclose information in accordance with compliance requirements, they may only perfunctorily perform such tasks. This has led to problems such as low levels of accuracy and credibility regarding the information disclosed (Zhang, 2022).

Chapter 2 Literature Review

2.1 Overview of Research Into Current Enterprise ESG Evaluation Systems

The increase in ESG asset management overseas has led to the rapid establishment of numerous ESG rating agencies. According to some statistics, although incomplete, over 600 rating agencies have been established worldwide. ESG evaluation systems vary greatly in terms of their characteristics, rating objectives, rating frameworks and methods, scoring mechanisms, results, and even products and services. In this paper, we focus on the main ESG evaluation systems, including MSCI ESG Ratings, the HSI ESG Index, FTSE Russell's ESG Ratings, and Wind ESG Rating (Kuang, 2023).

2.1.1 MSCI ESG Ratings

MSCI Inc. began researching ESG in 1988 and the first ESG index, the MSCI KLD 400 Social Index, was released in 1990. MSCI first implemented ESG ratings for enterprises from the perspective of substantial value-at-risk evaluations of the ESG industry in 1999, and time series data have been available since 2007. MSCI ESG Ratings mainly consider environmental, social, and corporate governance aspects, covering 10 topics and 37 core indicators. MSCI rates enterprises according to their exposure to ESG risks and how well they manage such risks relative to their peers. The ESG Ratings range from leader (AAA, AA), to average (A, BBB, BB), to laggard (B, CCC; Zhou, 2019).

MSCI ESG Ratings focus on risks, opportunities, and disputes in enterprises and quantitatively measure their levels of ESG management. In the early stage of assessing enterprises' exposure to and management of ESG risks, ESG data are primarily collected through publicly available information. While corporate disclosure is an important input into the MSCI model, alternative data are also gathered from the media, academia, nongovernmental organisations (NGOs), and regulatory and government sources to supplement corporate disclosure. MSCI aims to measure enterprises' financial risks from and resilience to major ESG issues from medium- and long-term perspectives, while paying close attention to international sustainability trends and promptly releasing relevant products as a response. In general, MSCI ESG Ratings represent an important indicator for global enterprises and the most widely used evaluation system today (Liu & Yu, 2021).

The standard rating management system created through the MSCI ESG rating process mainly involves indicator selection, weight allocation, data collection, indicator scoring, key issue scoring, and result output.

1) Indicator selection: Based on the three categories, the 10 themes, and the 35 corresponding core issues under the indicator system, the MSCI ESG rating process involves selecting the respective core issues of 11 industries and 158 subindustries, which are annually updated (MSCI, 2023).

2) Weight allocation: MSCI determines the weights of the economic and social

core issues based on two judgement criteria. First, the core issues are categorised according to their levels of impact (i.e., high, medium, or low), such as carbon emission intensity, and compare them with the average levels in an industry and its subindustries. Second, the time course of substantial risks or opportunities is considered. By dividing the timelines into short term and long term and combining the magnitude of the industry impact, MSCI specifies that the weight of core issues defined as “high impact” and “short term” will be 3 times that of those defined as “low impact” and “long term.” Each social- or economic-related core issue accounts for 5% to 30% of the total weight. MSCI then defines corporate governance core issues in Category G as “high impact” and “long term,” and those related to business conduct as “medium impact” and “long term” when allocating weights. The total weight of all industries in terms of governance is not less than 33% (MSCI, 2023).

3) Data collection: MSCI obtains enterprises’ disclosed data, macro data, and news data in the media through public channels (MSCI, 2023).

4)Indicator and key issue scoring: The MSCI ESG rating model for enterprise scoring under Categories E and S primarily focuses on the two dimensions of exposure and management. Management-based scoring considers controversial events, and the indicators are divided into risks and opportunities. Category G involves a punitive deduction of points (MSCI, 2023).

5) Result output: The weighted average method is then used to calculate the

initial score for enterprises, which is then adjusted within the industry to obtain the final score and rating result. The obtained score and corresponding rating result (CCC–AAA) are thus relative and subject to real-time changes (MSCI, 2023).

When evaluating the ESG performance of enterprises in different industries, MSCI ESG Ratings assign different weights based on the level and duration of the impact, thereby revealing the variations in ESG indicators of enterprises in specific industries. To some extent, this approach ensures fairness. By comparing an enterprise's weighted score for all indicators with that of similar enterprises in the industry, MSCI can obtain the enterprise's final ESG rating, which ensures industry comparability. The nature of the rating method means that the results are relative rather than absolute. MSCI ESG Ratings thus primarily serve as a reference for external ESG investors when making their investment decisions. For the evaluated enterprise, the result can only reflect management deficiencies through the disclosure of any issues, and to improve its management, the enterprise must then take further appropriate measures (Liu & Yu, 2021).

Table 1

Core Issues for MSCI ESG Ratings (MSCI, 2023)1

Category	Theme	Core issues	
Environmental	Climate change	Carbon emissions	Product carbon footprint

		Environmental impacts on finance	Vulnerability to climate change
	Natural capital	Pressure on water resources	Biodiversity and land use
		Procurement of raw materials	
	Contaminants and waste	Hazardous emissions and waste	Packaging materials and waste
		E-waste	
	Environmental opportunities	Opportunities in clean technologies	Opportunities in green buildings
		Opportunities in renewable energy	
Social	Human capital	Employee management	Health and safety
		Human resources development	Supply chain labour standards
	Product liability	Product safety and quality	Responsible investment
		Privacy and data security	Consumer financial protection
		Chemical safety	Population health

			risks
	Stakeholders' opposition	Controversial procurement	Community relations
	Social opportunities	Practice of communication services	Practice of financial services
		Practice of medical and health services	Opportunities in nutrition and health
Governance	Corporate governance	Ownership and control	Board of directors
		Remuneration	Accounting
	Business conduct	Business ethics	Tax transparency

2.1.2 The HSI ESG Index

The increase in ESG investments in global markets prompted Hang Seng Indexes Company to launch its Hang Seng Corporate Sustainability Index Series in July 2010. In May 2019, the company launched its Hang Seng Index (HSI) ESG Index and Hang Seng China Enterprises ESG Index to provide more benchmarks for investors interested in ESG. Following its traditional index preparation methods, the company takes ESG performance as the criterion for constituent stock selection or weight

allocation and has introduced a range of ESG-themed index products. The company commissioned the Hong Kong Quality Assurance Agency (HKQAA) to conduct ESG ratings for candidate enterprises (Green Finance Research Group of Industrial and Commercial Bank of China Limited et al., 2017).

HKQAA Sustainability Rating and Research (HKQAA SRR) is the fundamental methodology behind the HSI ESG Index. HKQAA SRR was launched specifically for the Hang Seng Corporate Sustainability Index in 2014, with the aim of providing international investors with a reference for the sustainable management performance of enterprises from mainland China and Hong Kong, promoting the sustainability of the investment market, and enhancing corporate sustainability and disclosure quality. The characteristics of HKQAA SRR ratings are mainly reflected through the addition of a rating adjustment framework based on country/industry risks and the adherence to accountability principles outside of the main evaluation process. The aim is to provide a more multidimensional assessment of the capabilities of the target enterprises for future sustainability (Green Finance Research Group of Industrial and Commercial Bank of China Limited et al., 2017).

HKQAA uses a fact-based scoring methodology to rate enterprises' ability to manage their sustainability performance and risks. HKQAA SRR aims to rate the maturity of enterprises and risks related to corporate sustainability according to the ISO 26000 Guidance on social responsibility, GRI Standards, and other international standards (Green Finance Research Group of Industrial and Commercial Bank of China

Limited et al., 2017).

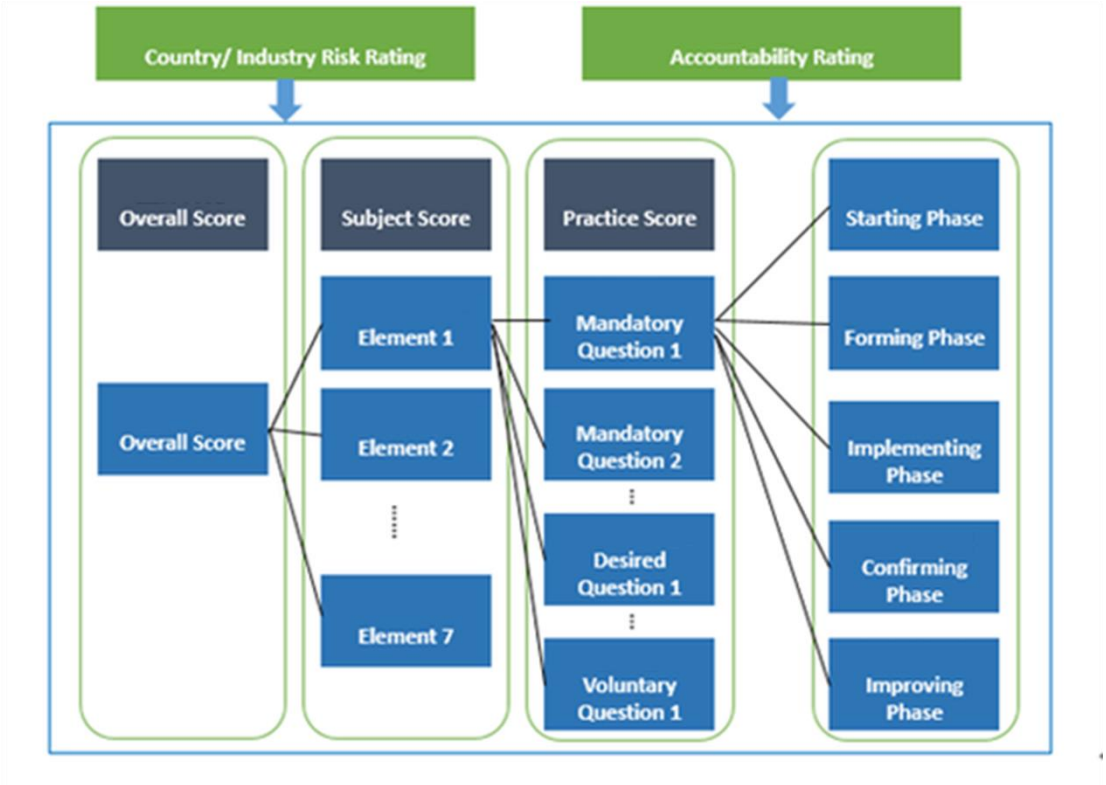
HKQAA SRR acts as a bridge between ISO 26000 and ESG, and thus enables the capital market, which is familiar with ESG, to accept the concept of social responsibility, and provides enterprises with feasible pathways for implementing socially responsible initiatives and nonfinancial risk management. To ensure objective scoring, the assessor determines the maturity of the management system and associated risk levels based on the available evidence of implementation. Supported by ISO 26000, HKQAA SRR produces ESG rating indices through a structured and quantitative approach. This assessment model strictly follows the foundational management logic of the ISO high-level framework, applying the "plan–do–check–act" cycle as a four-stage management method for measuring enterprises' maturity in their social responsibility practices. It also continuously monitors brand image and reputation management through a media observation mechanism (Green Finance Research Group of Industrial and Commercial Bank of China Limited et al., 2017).

HKQAA first conducts research based on information obtained from various online sources, including enterprises' public websites, annual reports, and sustainability reports, along with any related media coverage. After completing the initial assessment, HKQAA sends prefilled questionnaires to individual enterprises for review, response, and confirmation. The final scores and ratings are based on the results of preliminary assessments, company feedback, accountability ratings, country/industry risk ratings, and Media Watch (MW) ratings (HKQAA's ongoing monitoring mechanism that

identifies media commentaries and other publicly available information that may have a damaging effect on companies' reputation or core business; Green Finance Research Group of Industrial and Commercial Bank of China Limited et al., 2017).

Figure 1

***HKQAA SRR Process Flow*1**



Note. The HKQAA SRR's assessment process flow contains four parts: Overall Score, subject Score, Practice Score and Phase stage.

The HKQAA SRR's assessment process flow diagram shows that although ESG ratings may be biased, as they lack local indicators for companies in mainland China, they improve the objectivity of ESG ratings through the system of grading companies' performance in terms of implementation, by obtaining substantial information with supporting evidence from companies through questionnaires, and by adjusting the risks

posed to the sustainable operation of companies from the macro perspective of the state and the industry. Chinese rating agencies can thus learn from HKQAA's questionnaire survey and rating result feedback mechanisms. They can also replace one-way information transmission with two-way communication, invite more companies to help improve the ESG rating system, and thus promote the all-round development of the ESG concept in China (Green Finance Research Group of Industrial and Commercial Bank of China Limited et al., 2017).

Table 2

Core Issues of the HSI ESG Index

2

<table>
<tr><th>Category</th><th>Theme</th><th colspan="2">Core issues</th></tr>
<tr><td rowspan="2">Environmental</td><td rowspan="2">Environmental</td><td>Land use and biodiversity</td><td>Spills and sewage</td></tr>
<tr><td colspan="2">Operation toxic or nontoxic waste impact of products and services</td></tr>
<tr><td rowspan="7">Social</td><td>Human rights</td><td>Freedom of expression and censorship</td><td>Human rights abuses and others</td></tr>
<tr><td rowspan="2">Labour practices</td><td>Labour–management relations</td><td>Employee health and safety</td></tr>
<tr><td colspan="2">Supply chain – child labour/forced labour</td></tr>
<tr><td>Fair operating practices</td><td>Anticompetitive practices</td><td>Bribery and corruption</td></tr>
<tr><td rowspan="2">Consumer issues</td><td>Marketing and advertising</td><td>Production quality and safety</td></tr>
<tr><td colspan="2">Customer relations</td></tr>
<tr><td>Community involvement and development</td><td colspan="2">Adverse impact on local communities</td></tr>
</table>

Governance	Corporate governance	Business ethics	Controversial investments

2.1.3 FTSE Russell's ESG Rating

FTSE Russell is a wholly owned subsidiary of the London Stock Exchange Group and a founding signatory and member of the UN-backed Principles for Responsible Investment. The company has more than 20 years of experience as a third-party ESG rating agency. FTSE Russell covers thousands of listed companies worldwide and correlates ESG ratings with FTSE indices to provide investors with flexible, data-driven ESG tools to help them better manage ESG risks and implement ESG investment strategies. Its evaluation system measures the overall quality of an enterprise's management of ESG issues in terms of 14 themes under the three categories of Environmental, Social, and Governance. The model contains over 300 indicators, with 19 to 35 indicators in each theme, and an average of 125 indicators are applied to each company (Sun, 2021).

The system is divided into three levels. The first includes the three categories of Environmental, Social, and Governance and the second includes the 14 themes, which are used to measure the overall quality of a company's management of ESG issues, reflecting the 17 UN SDGs. The third level includes over 300 independent indicators. Thus, each theme contains 19 to 35 indicators from over 300 in total, and an average of 125 indicators are applied per company (Sun, 2021).

Table 3

Core Issues of the FTSE Russell ESG Rating

3

Category	Theme	Core issues	
Environmental	Biodiversity	Policy or commitment to address biodiversity issues	Disclosure of biodiverse habitats within or adjacent to business operations
		Disclosure of Biodiversity Action Plan (BAP) audits	
	Climate change	Policy or commitment statement to respond to the impact of climate change	Policy or commitment statement to address energy use
		Climate change identification	
	Pollution and resources	Policy or commitment statement to address pollution	Disclosure of 3 years of water (effluent) discharged
		Total costs of environmental fines and penalties during the financial year	
	Supply chain (Env)	Supplier/procurement policy or commitment statement to address energy use	Policy or commitment to reducing water use
		Due diligence on suppliers' environmental issues	
		Financial quantification of costs associated with water-related risks	Annual water consumption in water-stressed regions
Social	Customer responsibility	Measures to address the negative impact of products	Responsible marketing
	Health and safety	Policy or commitment statement on health and safety	Risk assessment carried out regarding health and safety
		Board oversight of health and safety	Lost-time incident rate

	Human rights and community	International human rights protection	Policy addresses children's rights
		Human rights impact assessment and mitigation	
	Labour standards	Provisions on equal pay for equal work	Company's policies on labour standards
		Company's approaches to addressing bullying and/or harassment	Full-time staff voluntary turnover rates
	Supply chain (Social)	Policy on suppliers	Long-term investment philosophy
		Provision of guidance or training on ESG information disclosure	
Corporate governance	Anti-corruption	Policy or commitment statement against bribery	Anticorruption policy training
		Internal dissemination of anti-corruption policies	
	Corporate governance	Separate Nonexecutive Chair and CEO	Number of board directors
	Risk management	Board oversight of ESG risks	Penalties and settlement terms for ESG issues
	Tax transparency	Policy or commitment statement regarding tax transparency or tax liability	Tax compliance and fairness
		Global corporation tax disclosure	

FTSE Russell's ESG evaluation system has the following features:

1) Exposure-weighted average applied. The ESG rating is calculated using an exposure-weighted average applied according to each company's unique circumstances,

with the most important ESG indicators for a company given the highest weight.

2) Complete ESG rating feedback and correction procedures. As FTSE Russell only uses public information for its ESG ratings, companies can visit a web-based research platform (SID) on which they have approximately 4 weeks to review and provide feedback. Sustainable investment data analysts then review this feedback to determine whether to change their ESG ratings.

3) Objective and effective external supervision. The ESG data model of FTSE Russell is overseen by an independent external committee of experts from investment institutions, companies, NGOs, trade unions, and academia.

4) Dual data model rating. FTSE Russell simultaneously conducts ESG ratings using two data models. In addition to its own ESG rating system, it defines and measures a company's revenue generated from green products via the FTSE Russell Green Revenues Low Carbon Economy data model.

The FTSE Russell ESG evaluation system process is as follows:

1) Preliminary assessment. First, any ESG theme that has potential risks for the company is identified, then the company is assessed according to theme indicators and a score is calculated for each applicable ESG theme. The score per category is then calculated according to the theme score. A preliminary score is then calculated through the exposure-weighted average of the category scores.

2) Feedback from the company. The company can access the SID web-based

research platform and has approximately 4 weeks to review and provide feedback on the preliminary assessment.

3) Integrate and obtain the final rating. The FTSE's sustainable investment data analysts will review the company's feedback and determine if the rating should be changed. After a comprehensive assessment of ESG performance across all samples, the company will be given an ESG rating score from 0 to 5 (to one decimal place).

FTSE Russell identifies and calculates a company's green revenue, which is used as supplementary evidence for its ESG rating and as a basis for its environmental category score. Investors can then consider this measure when designing, constructing, and analysing portfolios or indices. This differentiates its ESG rating system from others. The data model assesses the green transformation of products and services in the company's income structure, as FTSE Russell is concerned about the investment reference value of listed companies' ESG performance. Its numerical rating (0–5 points) can support fine-grained comparisons between companies and make it easier to apply ESG rating quantification in investment strategies. FTSE Russell's ESG ratings also focus on the latest cutting-edge issues and great importance is attached to changes in global sustainability.

2.1.4 Wind ESG Rating

In June 2021, Wind drew on its 20 years of data processing and analysis experience to build a local characteristic indicator system aligned with other

mainstream international ESG systems. This fully considered China's capital market development, regulatory policies, and the ESG practices of listed companies. It then launched its Wind ESG Rating, which covers the constituent stocks of the CSI 800 Index. In February 2022, it achieved full coverage of all A-share stocks. The Wind ESG Rating system provides investors with more comprehensive and complete ESG information, and as an ESG data provider in the Chinese market, Wind facilitates the country's sustainable investment development. The Wind ESG Rating system incorporates more than 300 specific indicators under 27 themes in Environmental, Social, and Governance categories. It also assesses controversial events based on news, public opinion, regulatory punishment, and legal proceedings, among others, to reflect a company's ESG management ability and response to major emerging risks.

Wind considers the great differences in ESG risks among industries and refers to authoritative and in-depth industry research. As a result, it selected and weighted substantive ESG themes for 62 subsectors, segmented according to industry characteristics. This enables it to provide investors with a rigorous scientific decision basis. Wind's powerful database covers data sources such as independently disclosed reports from listed companies, governments and regulatory authorities, news media, online public opinion, industry associations, and NGOs, in addition to leading artificial intelligence and big data technology identification systems, to offer investors the most comprehensive and accurate ESG data available.

Table 4

Core Issues in the Wind ESG Rating

4

Category	Theme	Core issues	
Environmental	Environmental management	Environmental management system	Total investment in environmental protection
		Response plan for environmental emergencies	Training on environmental protection
		Proportion of total investment in environmental protection in operating revenue	
	Energy and climate change	Energy management system	Energy management objectives and planning
		Clean energy/renewable energy use	Energy conservation and emission reduction
		Total energy consumption and energy consumption intensity	Climate change management objectives and planning
		Total energy consumption and energy consumption intensity	Identification of and response to climate change risks and opportunities
		Greenhouse gas emissions and emission intensity	
	Water resources	Water resources management system	Total water recycled and reused
		Water source protection	Water recycling and reuse rate
		Measures related to water conservation	Water consumption

			and water use intensity
	Raw materials and waste	Waste management system	Waste disposal
		Waste management objectives and planning	Total amount and intensity of hazardous waste generated
		Total amount and intensity of nonhazardous waste generated	Total amount and intensity of recycled waste
	Exhaust	Exhaust management system	Exhaust management objectives and planning
		Measures to reduce exhaust emissions	Emissions and emission intensity of exhausts
	Effluent	Effluent management system	Measures to reduce effluent emissions
		Effluent management objectives and planning	Emissions and emission intensity of chemical substances
	Biodiversity	Habitat protection	Biodiversity management system
Social	Employment	Antidiscrimination and diversification management system	Employee remuneration and welfare management system
		Anti-child labour and forced labour management system	Democratic management and communication
		Equity incentive and employee stock ownership	Performance feedback and

			appeal
		Employee satisfaction survey	Total number of employees
		Contractors	Number of part-time employees
		Percentage of female employees	Percentage of ethnic minority employees
		Employee turnover rate	Average salary
		Revenue per employee	
	Occupational Safety and Health (OSH)	Antidiscrimination and diversification management system	OSH training
		Employee remuneration and welfare management system	Incidence of occupational diseases
		OSH management system	Work-related deaths
		OSH objectives and planning	Number of work-related deaths per RMB100 million of revenue
		OSH emergency response plan	Work-related injury rate
		OSH management policies and measures	Number of working days lost due to work-related injury
		Number of working days lost due to work-related injury per RMB100 million of revenue	
	Development and training	Development and training management system	Total investment in employee training and average revenue per unit
		Leadership training	Percentage of

			employees trained
		Employee training	Training duration per capita
	R&D and innovation	R&D and innovation management system	Number of software copyrights and number of software copyrights per unit revenue
		Intellectual property protection	Number of R&D employees
		Compliance with the code of ethics in science	Percentage of R&D employees
		Encouragement of R&D and innovation	R&D investment
		High-tech enterprise certification	Percentage of R&D investment in operating revenue
		Total number of valid patents and number of valid patents per unit revenue	
	Supply chain	Supply chain management system	Avoidance of conflicts of use
		Dynamic ESG assessment and exit mechanism for suppliers	ESG assessment access and due diligence for suppliers
		Total number of suppliers	Supplier localisation
	Product quality	Product quality management system	Pharmacovigilance
		Product quality improvement	Product recall rate
		Product recall procedure	
	Sustainable products	Sustainable products management system	Green design

		Responsible marketing	Total installed capacity and installed capacity per unit revenue
		Reduction in the use of toxic and hazardous substances	Total power generation and power generation per unit revenue
		Products that address environmental issues	Equivalent availability factor of power generation plants
		Installed capacity of clean energy and total installed capacity per unit revenue	
	Customer	Customer management system	Customer complaints handling mechanism
		Customer satisfaction improvement	Customer satisfaction
		Number of customer complaints and number of complaints per unit revenue	
	Information security and privacy protection	Information security and privacy protection management system	Data leakage emergency response plan
		Training on ensuring information security and privacy protection	Backup of key information systems and hardware equipment
		Measures to ensure information security and privacy protection	
	Community	Community management system	Investment in community public services

		Support of community development		Community communication
		Proportion of investment in community public services in operating revenue		Number of people assisted
		Number of people assisted per RMB100 million of revenue		Social contribution value per share
		Volunteer service duration		Volunteer service duration per capita
Governance	Corporate governance	ESG governance	ESG governance structure	ESG risk management
			ESG report review	ESG performance linked to executives' remuneration
			ESG-related international organisations or industry organisations	
		Directors and Officers (D&O)	Average tenure of board members	D&O turnover rate
			Whether the CEO of the company serves as the Chairman	Percentage of independent directors
			Age standard deviation of D&O	Percentage of female executives
			Percentage of female directors	Attendance of supervisors
			Number of board meetings	Attendance of board members
			Number of directors attending board meetings with less than 75% of members present	Number of Audit Committee meetings

			Number of Nomination Committee meetings	Risk Management Committee
			Number of Board of Supervisors meetings	
		Equity and shareholders	Connected transactions/conflicts of interest	Total amount of products sold to/purchased from related parties and unit revenue
		Audits	Standard unqualified opinions	Change of accounting firm
			Standard unqualified opinions on internal audit	
	Business ethics	Business continuity	Response to major events	Core supply chain management
			Business continuity analysis and response	
			Anticorruption management system	Reports and complaints
			Training on anticorruption and antibribery policies	Assessment of corruption risk in the company’s operations
			Supervision on anticorruption/antibribery of business partners	
		Antimonopoly and fair competition	Antimonopoly and fair competition management system	Antimonopoly and fair competition risk control

In conclusion, the main ESG evaluation systems worldwide have different priorities and there are many challenges in applying their rating results to China's market. First, various areas need improvement, such as transparency in disclosing the benchmarks of specific assessment methods and assumptions, standardising the evaluation process, and inconsistencies in the rating results from different agencies for the same enterprise. Second, international ESG evaluation systems lack localised indicators and have a relatively low correlation with China's central policies. They do not consider the characteristics of Chinese SOEs or incorporate the clear and mandatory ESG requirements set by the government for enterprises, such as the "dual carbon" goals (carbon peaking and carbon neutrality), rural revitalisation, and common prosperity.

China's ESG evaluation systems remain immature and are not broadly applied. The main ESG rating systems in the country are the Huazheng ESG Rating, CSI ESG Rating, and Harvest ESG Rating. These have distinct characteristics in terms of rating systems, data, and methods, and thus differ greatly in practice. Most studies of ESG evaluation systems in China are based on the capital market and focus on ESG indicators and their applicability in a certain industry, while few comprehensive studies on the construction of ESG evaluation systems in China based on integrated values have been conducted.

2.2 Overview of Research on ESG Evaluation Heterogeneity Between Chinese SOEs and Non-SOEs

2.2.1 Heterogeneity of the ESG Policy Environment

Wang and Yang (2022) argued that there are noticeable differences between Chinese SOEs and non-SOEs in areas such as organisation and management, social responsibility, policy burdens, and executive promotions in China's institutional context. Therefore, the ESG compliance behaviour of Chinese SOEs tends to be driven by policy and is usually mandatory. Non-SOEs that voluntarily take on ESG responsibilities often demonstrate a commitment to sustainable management and are likely to gain public favour (Wang & Yang, 2022).

2.2.2 Heterogeneity in ESG Performance

Ji and Huang (2022) found through a statistical analysis of the ESG performance of listed companies from 2016 to 2020 that Chinese SOEs have better ESG performance than non-SOEs. Yin et al. (2014) conducted a study using empirical data from listed companies in China and found that in terms of property rights structure, listed SOEs offer a higher level of social responsibility information disclosure than private enterprises. In addition, Chen (2022) found that Chinese SOEs outperform non-SOEs in terms of scores on the three dimensions of environment, society, and governance (Chen, 2020c).

2.2.3 Heterogeneity of ESG Effects

The differences in business objectives, social expectations, and invested costs between SOEs and non-SOEs lead to heterogeneity in terms of their promotion of enterprise value through ESG performance (Chen & Xia, 2022).

A study of the impact of ESG scores on the performance of A-share companies listed on the Shanghai and Shenzhen stock exchanges from 2011 to 2019 revealed that the positive effect of ESG on business performance was more significant for Chinese SOEs than for non-SOEs (Lai & Miao, 2022).

However, some researchers have reached an opposite conclusion, showing that ESG performance has less impact on the enterprise value enhancement of Chinese SOEs than on that of non-SOEs. The impact of a company's overall ESG performance and of its three individual aspects on corporate performance has been found to vary depending on the company's ownership structure, namely the positive effect on corporate performance is greater for non-SOEs than for SOEs in China (Li et al., 2021).

2.3 Overview of Research on Current ESG Rating Factors

2.3.1 Environmental Responsibilities

The global population faces environmental challenges such as global warming, desertification, water and soil pollution, scarcity of freshwater resources, ozone depletion and destruction, a sharp decline in forest cover, loss of biodiversity, and acid rain. The COVID-19 pandemic has also had many adverse impacts on the environment,

including the generation and disposal of hazardous and medical waste and the increased use of private vehicles, leading to higher carbon emissions. As poor environmental quality threatens economic development, all market participants, including institutions, investors, and customers, should consider how to achieve sustainable development (Destoumieux-Garzón et al., 2022). ESG reporting has thus become a tool for analysing the sustainable capabilities of companies. The environmental aspect of ESG has received great importance when evaluating the impact of companies' production activities on the natural environment.

The main factors considered in the environmental aspect include companies' dependence on fossil fuels, their management of water and other resources, pollution, climate change, the generation and disposal of hazardous waste, and their carbon footprint. These factors may pose a threat to the long-term financial health and survival of companies. Other factors include climate transition risk management and corporate strategies for the transition to renewable energy. Indicators related to emissions and other outputs (such as waste) can reveal the environmental impact of current business practices, while those concerned with climate strategy examine how companies address environmental challenges. Investors take into consideration environmental development opportunities such as switching to renewable energy, using processes conducive to resource conservation and pollution reduction, and reducing the carbon footprint. Ultimately, the consideration of environmental factors can lead to competitive advantages through eco-friendly products and services (Senadheera et al., 2021).

Su and Chen (2022) considered China's national context and defined ESG in terms of a new development philosophy that companies should uphold. Companies can strive to be innovative, coordinated, green, and open, and practise shared development, to maximise the value of ESG activities to enhance public willingness and behaviour and the performance of public services. Su and Chen (2022) built an ESG evaluation system under this new development philosophy to assess 42 heavily polluting listed manufacturing companies. They divided environmental responsibilities into the three categories of Investment in Environmental Protection, Environmental Protection Process, and Environmental Protection Output. They found that environmental responsibilities had the greatest weight with a value of 0.4202, indicating that the performance of heavily polluting manufacturing companies was more important than other subobjectives in terms of their environmental responsibilities. In addition, as their sample consisted of listed manufacturing companies identified through the key pollutant discharge units announced by China's environmental protection authorities, the companies generated higher social expectations and public concern in terms of environmental protection than other companies.

In addition to responding to the development goals of reaching peak carbon emissions before 2030 and carbon neutrality before 2060, Chinese companies must focus on the disclosure of carbon data indicators, which are also important within broader national goals. Many companies are required to disclose carbon data and participate in carbon markets, so it is also common to disclose carbon data indicators.

Han (2022) proposed that the disclosure of carbon data should be both qualitative and quantitative. In addition to the current GRI requirements, indicator disclosure should be optimised according to China's actual situation. First, this involves quantitative disclosure of the calibre of carbon accounting, carbon emissions, and carbon intensity; second, it requires quantitative and qualitative disclosure of when the goal is to be achieved, annual emission reduction targets, target completion, and carbon reduction measures taken; and third, it involves quantitative disclosure of carbon quotas, carbon trading volume, and transaction amounts.

Since 2002, a series of reporting frameworks and standards for ESG-related environmental information disclosure by companies have been implemented. For example, the Carbon Disclosure Project issued 2002 questionnaires focusing on climate change, forests, and water security. The GRI has also issued several updated editions of its guidelines that contain relevant indicators to measure environmental impacts across multiple sectors. The Sustainability Accounting Standards Board identified standards in 2011 that constitute material industry-specific information. The International Integrated Reporting Council drew on standards in 2012 to identify areas of integrated accounting for nonfinancial information related to environmental and governance activities. The Task Force on Climate-Related Financial Disclosures (TCFD) provided guidance for reporting on climate, energy, waste, and water management by companies in 2015. In addition, the guidelines of the Climate Disclosure Standards Board focus on the management of environmental policies, strategies, and objectives, including risks

and opportunities aligned with the TCFD framework (Boffo et al., 2020).

Stock exchanges are also increasingly involved in providing environmental reporting guidance to companies. The World Federation of Exchanges published its ESG reporting guidance in 2018 and exchanges in other regions have since provided guidance in this regard for listed issuers. In 2019, NASDAQ issued its ESG Reporting Guide 2.0 for listed companies in 30 categories with 55 corresponding indicators, 17 of which are under the environmental category. This provides the companies with clear benchmarking and reporting priorities. On 25 July 2022, Shenzhen Securities Information Co., Ltd., a wholly-owned subsidiary of the Shenzhen Stock Exchange, officially launched its CNI ESG Ratings Methodology and released ESG indices, and the Top ESG Indices of the Shenzhen Stock Exchange core indices (i.e., the Shenzhen Component Index, the ChiNext Index, and the Shenzhen 100 Index) were compiled based on the rating methodology. Under the three pillars of Environmental, Social, and Governance, it developed 15 themes, 32 domains, and more than 200 indicators. The Environmental (E) pillar comprehensively evaluates companies from the three aspects of risk exposure, management effectiveness, and potential opportunities, incorporating five themes and 11 domains. Theme 5, Environmental Opportunities, consists of Green Business and Green Finance and reflects companies' choices in the context of environmental regulation and their ability to seize potential opportunities for future economic transformation.

The disclosure of environmentally relevant factors is therefore critical for

companies when developing new products and services to meet the requirements of sustainable development, long-term economic returns, and climate transition. In addition, as many public sector institutions, from the central bank to financial regulators, consider how climate risk and environmental resilience can be incorporated into their decision-making, Chinese SOEs should actively disclose information relevant to environmental indicators and meet, or even exceed, ESG standards.

2.3.2 Employee Responsibilities

Chinese SOEs, private companies, or joint-stock companies all have the same goal of maximising profits. All of their efforts, manpower, and resources are used to achieve this goal. All companies strive to encourage employees to be proactive and creative in maximising profits through their human resource management (Cui & Chang, 2012).

Society is developing and changing, and the intensity of competition among companies is increasing. Human resources are at the core of such competition, and the levels of human resource quality and management determine the future of companies. In his book *Human Resource Management: Gaining a Competitive Advantage*, Professor Raymond A. Noe (2018), an expert in the field, regards human resource management as the key to the successful operation of companies and emphasises how it can help them gain a competitive edge (Noe et al., 2006). All companies must constantly strengthen their human resource management and development, so they can occupy an advantageous position in the increasingly competitive market and avoid

being replaced. Effective employee training and career planning are critical to human resource management. Companies should enhance employees' vocational skills, help them establish correct professional values, and tap their potential, thus improving their work quality and efficiency and promoting their career development (He, 2015).

Human resources are the most precious resources companies hold and thus play a decisive role in their development. To give full play to the value and role of human resources, they must be managed effectively. Companies should therefore implement a people-oriented management mode, which regards people as the first and foremost factor in business activities. This management philosophy considers employees, rather than customers, as the "Gods" of companies. Jones (2023) found that involving employees in organisational decision-making can help stimulate their knowledge sharing, thus helping companies become smarter. By meeting the various needs of employees (e.g., in terms of working environment, salary, and respect), their work efficiency and creativity will be greatly improved, and they will then be able to contribute more to the company's development (Chen, 2019).

From a result-oriented perspective, Gaudencio et al. (2021) revealed that companies' turnover intention (TI) is negatively correlated with managers implementing CSR practices, that is, the greater the attention paid to employee responsibilities, the lower the TI. This responds to the need to understand the mechanism underlying the relationship between CSR and workers' organisational outcomes.

Wang and Xu (2016) noted that if companies fulfil their social responsibility to employees, they can create value throughout the business life cycle, while Ma Ling et al. colleagues (2020) found that companies and employees differ in their focus in terms of relationship construction. Employees may think that companies should assume economic, legal, and other lower-level social responsibilities and therefore their psychological and behavioural responses will be weak and their engagement will not be greatly affected. However, higher-level social responsibilities undertaken by companies, such as ethical behaviour and philanthropy, will enhance employees' sense of pride and identity in the organisation. Their personal interests can then be better combined with organisational interests, which strengthens their social exchange relationship with the organisation, thus promoting their engagement.

In summary, the growth of the national economy is inseparable from the development of companies, which in turn cannot be separated from the realisation of talent value. Companies must therefore focus on human resource management in their ESG information disclosure, that is, they should disclose more information about managing entrepreneurs and knowledge-based employees. By tapping into the potential of the talent they hold, companies can maximise their profits and achieve their production and operational objectives.

2.3.3 Supply Chain Responsibilities

In terms of legislative practices for sustainable development in Europe, human

rights due diligence in supply chains has become a mandatory, instead of a voluntary, requirement. Some European countries have introduced legal provisions related to responsible business conduct and due diligence. The UK was the first country in the world to legislate against human rights abuses in supply chains through the Anti-Modern Slavery Act. According to Section 54 of the Act, any relevant organisation must prepare a transparency report setting out the steps it has taken during the financial year to ensure that slavery and human trafficking do not occur in any part of its supply chain or business. The UK government may further establish mechanisms related to economic sanctions, holding senior executives accountable, and prohibiting companies violating the regulations from entering into contracts with the government. France adopted the Corporate Duty of Vigilance Law, its first legislation regarding companies' obligations to human rights and environmental due diligence, in March 2017. Under this Law, companies with 5,000 employees or above in France or 10,000 or above worldwide are obliged to identify and prevent human rights and environmental risks in their business activities (including those of their subsidiaries and suppliers). The German Bundestag passed the Supply Chain Due Diligence Act on 11 June 2021, which urges companies to fulfil their obligations to supply chain human rights and environmental due diligence (Yin et al., 2006).

Supply chain management (SCM) is an important dimension of ESG risk management. The supply chain is critical to a company's sustainable performance. Strengthening companies' ESG management of supply chains is thus not only

imperative in the macro context of rising global ESG risks but can also create longer-term value for companies, investors, and society. For example, companies can enhance their external financing capabilities, reduce information asymmetry, and promote the construction of sustainable financial systems.

SCM can help to integrate and optimise the business efficiency of suppliers, manufacturers, and retailers so that goods can be produced and sold in the right quantity, place, and time, and with the appropriate quality and cost (Li, 2018).

The application of SCM is based on the notion of enterprise resource planning. Data generated through a company's manufacturing process, inventory system, and suppliers are combined to identify the various influencing factors in the product construction process from a unified perspective. The supply chain is a business cycle system on which enterprises depend for survival and is the most important factor in their e-commerce management. Supply chains have been found to consume up to 25% of a company's operating costs (Li, 2018).

Kim (2009) argued that the supply chain can integrate functions within companies, allow more effective cooperation with suppliers, customers, and other supply chain participants, and enhance the competitiveness of other supply chain participants.

Supply chain concentration is an important research perspective when examining SCM. Tang (2009) was one of the first scholars in China to propose concepts

relevant to SCM. He focused on listed companies in China's manufacturing industry from 2005 to 2007 and found that the economic performance of those with lower supplier and customer concentrations was better than others, and the relationship between supplier concentration and companies' economic performance formed an inverted U-shape. Customer concentration was negatively correlated in a positive U-shape. Kim (2017) found that customer concentration in supply chain concentration can negatively affect companies' return on assets. Lanier Jr. et al. (2010) simplified the supply chain relationship as "supplier–seller–buyer" and demonstrated the customer concentration in the supply chain concentration through the proportion of sales to the top five customers. Through empirical tests, they confirmed that a concentrated supply chain can lead to significant improvement in financial performance. Zhuang et al. (2015) studied the relationship between the supply chain concentration, capital operation, and operating performance of manufacturing companies in China and found that higher supplier concentration had a positive effect on companies' turnover rate, while higher customer concentration and timeliness of accounts receivable/payable were conducive to improving their market performance.

Effective SCM can improve core competitiveness by reducing the information asymmetry between listed companies and the outside world, enhancing cooperation between companies and other members of the chain, and efficiently integrating and allocating resources among those within the chain. The notion of green SCM is based on sustainable development and involves the implementation of environmental

protection initiatives and the use of resources to achieve coordinated economic and environmental development. Thus, it can effectively meet the developmental needs of modern companies (Liao & Tan, 2021).

Actively implementing green SCM can help companies obtain a first-mover advantage, effectively enhance their overall competitiveness, and help them develop innovative business models. In terms of company operations, Miroshnychenko et al. (2017) argued that internal green practices (e.g., pollution prevention and green SCM) are the main drivers of companies' financial performance, and that green SCM also plays a positive role in their environmental and operational performance. Xu and Zhang (2020) calculated the total factor operational efficiency of companies demonstrating national green SCM and considered its dynamic changes. They concluded that technological progress was the main contributor to their increasing total factor operational efficiency and that green SCM helped companies improve their green image and obtain a good reputation among their consumers, thus promoting positive market responses. With government support, they will achieve returns and experience significant improvement in value.

Thus, in general, research has indicated that the supply chain is a key factor affecting the ESG performance of companies. Therefore, companies should both ensure that they clearly understand the legal provisions related to the supply chain and that no labour- or environment-related risks occur in their own supply chains, to comply with relevant laws and supply chain contracts. Companies must therefore establish due

diligence procedures and have the means to identify such risks.

2.3.4 Community Responsibilities

Chinese SOEs have the important responsibilities of ensuring social stability and achieving social equity. In addition to their economic attributes, these companies have public, political, and other functional roles and offer public services. Chinese SOEs can ensure that they reflect their understanding of "responsibility" rather than "law" by clarifying their moral and ethical standpoints when fulfilling their social responsibilities. However, some activities should be subject to legal regulation. For example, CSR legislation can emphasise improving employees' outlooks, establishing cultural facilities, communicating with employees, participating in social development, integrating into communities, and contributing to society, and help ensure against behaviour such as employee abuse, use of child labour, going against workers' interests, and destruction of the environment. To excel, companies including all Chinese SOEs should not only be responsible and avoid violating moral standards and laws but also act as moral role models that contribute to society (Fan, 2011).

The concept of community governance first emerged at the turn of the 19th century. The participating companies were generally small and their economic activities were still marginal, and there was no public awareness of their roles and responsibilities for community development. The group of entrepreneurs who first realised the interdependence between companies and communities became proactively involved in

community welfare through charity work and as community leaders. For instance, Robert Owen built his New Harmony community, George Pullman developed an industrialised community around the notion of "paternalistic benevolence," and Andrew Carnegie donated large sums of money to build public libraries (Heald, 2018).

The separation of ownership and management and the rise of social movements were responses to the real demand for companies to participate in community governance. Companies are often expected to take on corresponding social responsibilities while making profits (Baron, 2013; Bowen et al., 2010). Numerous large corporations have set up company or community funds to help the poor and needy, make charitable donations, or participate in the construction of houses, churches, schools, libraries, and government projects (Schachtschabel, 1958; Wellman, 1979).

By the 1990s, scholars were generally in agreement that companies' community responsibilities should no longer be voluntary, and that companies and communities were no longer independent of each other. Companies can elicit the recognition of communities by participating in community activities, thus obtaining competitive advantages in their operations (Wood & Jones, 1995). In recent years, many companies in urban areas of the US have begun to engage in activities for the public good and that benefit stakeholders in the communities in which they operate. Such engagement can involve company-to-community public welfare donations, the provision of public goods and services, and cooperative development with communities. Companies can also work together with community members to solve problems that

affect social well-being (Bowen et al., 2010).

In conclusion, community engagement is a key component of companies' broader social strategies and an important factor affecting their ESG evaluations. Companies should therefore attach importance to community engagement and plan their resource allocation to meet their social objectives and competitive needs.

2.3.5 Economic Responsibilities

Economic performance can be a measure of a company's ability to realise sustainable development and generate high returns on investment through the efficient use of the resources at its disposal. It can increase its profit margins by improving performance, innovating production processes, retaining loyal and efficient employees, and maintaining a stable supplier base. A company's economic ability is also reflected in the strategy of establishing sustained communication with shareholders and achieving long-term and stable revenue growth by ensuring customer satisfaction. Stakeholders are increasingly recognising that companies' ESG responsibilities are closely linked to their performance and long-term sustainability (Tarmuji et al., 2016).

Kocmanová et al. (2012) pointed out that the first goal of investors is to achieve good financial returns with predetermined risks. Thus, ESG indicators included in investment strategies should focus on risks and opportunities for long-term development and their economic consequences, in conjunction with the specific strategic aims of the companies. ESG indicators of economic performance should

reveal future cash flows, so that stakeholders can determine whether companies can add value and provide sufficient returns on investment.

Financial reporting standards can offer structural support for reporting potential consolidated economic performance, such as the International Financial Reporting Standards, the US Generally Accepted Accounting Principles, and ESG reporting frameworks (such as the GRI Guidance). Total profit, net return on assets, return on assets, sales margin, and return on capital are the most widely accepted indicators of economic capacity. However, there has been an increasing trend towards evaluating a company's economic performance by its capacity to produce value. Thus, economic value added (EVA) is gaining prominence as a business performance metric. EVA is a holistic measure that integrates capital budgeting, performance evaluation, and incentive compensation. EVA is also a comprehensive framework for financial management and incentive-based salary systems (Kocmanová et al., 2012). Thus, economic performance indicators are not necessarily detached from environmental or social values. They play an important role in the system for assessing a company's ESG practices. An ESG report combines economic indicators with social, environmental, and governance aspects, thus enabling investors to evaluate sustainable performance effectively and allowing companies to publish transparent comprehensive reports. This aids businesses in achieving their sustainability goals, leverages the role of ESG indicators in the financial market's investment sector, and offers stakeholders a solid foundation for making more informed investment decisions.

Tarmuji et al. (2016) found that social and governance practices significantly influence corporate economic performance, indicating that businesses can adopt commendable social practices to create long-term value for stakeholders. These include enhancing employment quality, ensuring the health and safety of employees, promoting employee training and development, fostering diversity, upholding human rights, and taking responsibility for the community and for their products. Businesses can also leverage social practices to gain a competitive edge and engage in differentiated competition. This strategy allows them to stand out in their respective fields and drives their economic growth even further. The corporate governance performance of a company also significantly and positively influences its economic performance. A well-designed governance structure offers strong support for senior management, facilitating the seamless integration of economic and governance responsibilities into business operations. Revealing details about a company's ESG practices can motivate its management to enhance governance efficiency, prioritise shareholder interests, and engage in discussions on how to continually improve the company's overall performance.

In conclusion, economic performance serves as a financial indicator in the ESG evaluation framework. It not only reflects a company's current operational status and the dividends its provides to its shareholders but also showcases the efforts made by the company in terms of its ESG responsibilities and the resulting positive impact on its economic health and sustainability.

2.3.6 Governance Responsibilities

The rapid growth of the Chinese stock market has opened up substantial opportunities for the expansion and progress of the economy. However, the stock market boom was not without its setbacks. It was plagued by a relentless succession of negative incidents, including financial fraud and insider trading. Tulhon (date unknown) posited that a company's potential for expansion can be assessed simply in terms of financial data, and more objective assessments of corporate governance are increasingly prioritised by stakeholders.

Effective corporate governance is not only crucial for the efficient allocation of capital but also for maintaining and increasing the level of capital and for establishing a sustainable business in the long term and offers benefits to all stakeholders involved in the company. Kraus et al. (2020) proposed that the main role of corporate governance is to strike a balance between economic, social, and environmental concerns. The governance aspect is primarily concerned with a company's management and decision-making abilities, along with its internal governance structure, which should be designed to safeguard the rights and interests of its stakeholders (Li et al., 2022). Internal corporate governance mechanisms such as boards of directors and audit committees are established to supervise and regulate executive decision-making processes and corporate initiatives that involve social engagement, and thus either directly or indirectly serve the interests of stakeholders. The board of directors is the chief instrument of corporate governance and shoulders the responsibility of supervising

executive actions and ensuring that stakeholder interests are addressed. In its role of overseeing executive conduct, its composition is thus critical. As Appuhami and Tashakor (2017) noted, the audit committee, which operates under the purview of the board of directors, is responsible for the dissemination of both financial and nonfinancial information. This function is crucial to mitigate issues related to information asymmetry between the company, its executives, and stakeholders. The audit committee is also involved in overseeing mandatory and voluntary disclosures, including ESG information.

Extensive empirical research has investigated the influence of boards of directors and audit committees on ESG disclosure. The findings suggest that specific attributes of these boards and committees can significantly enhance the level of ESG disclosure. For instance, Bamahros et al. (2022) used ESG datasets published by Bloomberg, which were compiled from Saudi Arabian companies over the period from 2010 to 2019. Their research highlighted the important role that both the board of directors and audit committees play in steering ESG initiatives. They can also help to enhance the transparency of ESG factors. In their qualitative research, Li et al. (2022) further revealed how, in terms of the governance dimension, the system of checks and balances within corporate internal control enables audit committees, boards of supervisors, and other internal oversight entities to effectively exercise their supervisory duties, and ensures that a balance is struck in ESG disclosure between immediate performance and long-term sustainability, thus enabling companies to more

successfully implement their ESG strategies.

Tamimi and Sebastianelli (2017) explored the degree of ESG information disclosure among companies listed on the S&P 500 index. They discovered a direct correlation between a company's ESG score and the size and gender diversity of its board of directors. Those with larger and more gender-diverse boards of directors typically have higher ESG scores. Companies with a high degree of sustainability generally tend to delegate sustainability-related responsibilities to their boards of directors, often establishing a dedicated sustainability committee within the board. Executive compensation is also likely to be tied to performance indicators such as environmental impact, social contribution, and public perception (including customer satisfaction). This effectively motivates executives to actively engage in socially responsible practices and promote sustainable corporate growth.

Scholars from China and elsewhere generally concur that effective corporate governance significantly contributes to enhancing a company's value. For instance, Kartikasari et al. (2019) examined the corporate governance standards of publicly traded manufacturing companies in Indonesia. They found that effective corporate governance significantly boosts a company's overall value. Ma and Li (2019) analysed companies listed on the Shanghai and Shenzhen stock exchanges between 2015 and 2017 and found that the size of the board of directors, the shareholding percentage of major shareholders, and the shareholding percentage of the board of supervisors have a significant and positive influence on company value. Thus, internal corporate

governance standards are closely and positively correlated with a company's value.

Many domestic corporate governance guidelines have been developed under the ESG evaluation system. For instance, the *Guidelines for Chinese Corporate Social Responsibility Reporting* (CASS-ESG 5.0), issued on 24 July 2022, categorises governance responsibilities into three distinct sections: corporate governance, board of directors' ESG governance, and ESG management. This document offers valuable insights and guidance for businesses aiming to construct scientifically sound and logically structured governance systems. Shenzhen Securities Information Co., Ltd., a wholly-owned subsidiary of the Shenzhen Stock Exchange, has adopted the CNI ESG Ratings Methodology. Within this system, the governance (G) aspect assesses the governance standards of a business from both internal and external viewpoints, encompassing six themes across 12 distinct areas. Theme 14, Information Disclosure, and Theme 15, Governance Anomalies, stand out. Information disclosure emphasises the three key factors of timeliness, truthfulness, and accuracy. Both themes evaluate the quality of corporate information disclosure and legal compliance from the perspective of external supervision. They focus on significant risk exposure incidents in crucial governance areas and aim to identify any effects that may emerge.

In conclusion, Chinese SOEs must proactively enhance their internal corporate governance structures and facilitate better governance performance. Effective corporate governance not only enhances the degree of ESG information disclosure but is also the basis for the development of sustainable long-term strategies. This can then consistently

boost corporate value and generate positive outcomes for stakeholders.

Chapter 3 Research Hypotheses

ESG is a concept that underpins sustainable investment and has been gaining in prominence. It is a key driver for fostering corporate transformations towards greener and more carbon-efficient operations and sustainable development. ESG is not only becoming a crucial aspect in the disclosure of nonfinancial information by businesses but also an important reference point for investment and financing decision-making within the financial sector. ESG can also serve as an important yardstick for evaluating the sustainability and quality of a company's growth. An ESG evaluation system can encourage businesses to adopt ESG measures on a broader scale and to establish internal structures and standards. Such a system can help to develop societal value for ESG, enhancing a company's "soft power" and promoting a sustainable, long-term business approach.

Listed companies and SOEs are increasingly prioritising the disclosure of ESG information, as capital markets and consulting agencies introduce new ESG evaluation systems. However, China's ESG market is still in its infancy, with voluntary ESG information disclosure lacking in both quantity and breadth. The systems currently in place also need further refinement. Thus, expediting the development of a tailored ESG evaluation system for SOEs that reflects Chinese characteristics and aligns with China's goal of reaching peak carbon emissions and achieving carbon neutrality is essential. Many of the current domestic and international ESG evaluation systems only incorporate a few thousand, or in some cases only a few hundred, companies.

Considering the total number of Chinese businesses, this coverage remains limited. Most domestic and international ESG evaluation frameworks focus on publicly traded companies and thus may not be relevant for SOEs. In addition, the environmental component falls short in its alignment with the recent stipulations regarding carbon peak and carbon neutrality objectives, the social component does not comprehensively address transparency issues related to social responsibility and sustainable development, and the governance component does not fully consider China's unique corporate governance structure, which includes shareholders' meetings, boards of directors, boards of supervisors, corporate CPC Committees, and management. In addition, international evaluation standards predominantly emphasise quantitative measures, while domestic approaches are often more subjective.

Thus, investigating the relationship between current ESG evaluation systems and corporate performance is of value, and to enhance the relevance of these systems for Chinese SOEs, China's unique national circumstances should be taken into consideration. This approach can inform the development of an ESG evaluation system specifically tailored to Chinese SOEs, thereby significantly enhancing their influence in the ESG sphere. Accordingly, we propose several hypotheses regarding the divergent concerns of current ESG evaluation systems, corporate performance, and different types of businesses.

3.1 Analysis of the Correlation Between the Performance of Current ESG Evaluation Systems and the Business Performance of Enterprises

As the concept of ESG gains acceptance across various sectors of society, scholars have examined and confirmed that a company's ESG performance can influence its overall value, with strong ESG performance leading to an increase in value (Li & Li, 2018; Ren et al., 2021; Zhang et al., 2021). First, CSR can enhance financial performance by boosting a company's reputation among its stakeholders. Customers tend to favour products manufactured by companies with a strong reputation for CSR and to be more satisfied buying products from such businesses (McWilliams & Siegel, 2000). Second, CSR can significantly affect a company's reputation, and (prospective) employees generally prefer to work for companies that demonstrate positive values and ethical standards (Turban & Greening, 1997). Stakeholders such as investors, governments and partners can also gain reputational advantages through CSR activities (Doh et al., 2010). Third, CSR can foster a sense of reciprocity among stakeholders, because by providing them with advantages, they are likely to reciprocate and contribute positively to the company's growth and success. Research has shown that both governments and local communities may reciprocate the efforts of businesses by generating value for them (Henisz et al., 2011). Similarly, partners may respond with an increased commitment to their relationship with the company (Pfajfar et al., 2022).

Four types of relationships between ESG factors and corporate financial performance have been identified: positive, negative, uncorrelated, and nonlinear

relationships. Orlitzky et al. (2003) identified a significant positive correlation between a business's adherence to ESG responsibilities and its financial performance. This correlation was more pronounced when financial performance was quantified using accounting metrics, or when a company's commitment to ESG responsibilities was assessed based on its corporate reputation. Some scholars have also revealed a significant positive correlation between a company's dedication to its ESG responsibilities and its financial performance. Social responsibility initiatives, including philanthropic contributions and a commitment to environmental preservation, have the most substantial influence on financial success (Margolis et al., 2009). Meta-analyses of such studies have also been performed. For example, Margolis and Walsh (2003) analysed 109 studies and found that 54 of them reported a significant positive correlation between a company's adherence to ESG responsibilities and its financial performance. However, 20 of the studies found the relationship to be ambiguous, 28 concluded that the relationship was nonsignificant, and seven studies found a significant negative correlation between the two. Another meta-analysis by Allouche and Laroche (2005), drawing on a dataset of 82 studies, identified a significant positive relationship between a company's adherence to ESG responsibilities and its financial performance. However, the significance of this correlation was heavily influenced by the specific ESG and financial performance metrics. An investigation of the link between a corporation's adherence to ESG responsibilities and its financial risks revealed a notable negative correlation between the two factors (Orlitzky & Benjamin,

2001). Specifically, companies with a strong commitment to their ESG responsibilities were found to have a lower financial risk profile. Frooman (1997) investigated the correlation between CSR and shareholder wealth using a sample of 27 studies focusing on legal infringements and breaches of CSR. The study concluded that both factors had a detrimental impact on shareholder wealth and that the effects were both statistically and economically substantial.

In conclusion, ESG performance appears to be significantly correlated with overall business performance. Thus, we propose the following hypothesis:

Hypothesis 1: There is a positive correlation between performance within the ESG framework and corporate business performance.

3.2 Analysis of Differences in ESG Concerns Between SOEs and Non-SOEs

Institutional theory suggests that the institutional environment of a business can determine the extent to which it achieves sustainability (Holtbrügge & Oberhauser, 2019). The governmental policies, laws, and regulations within an institutional framework put significant pressure on companies to ensure that their actions are lawful. Businesses complying with rules and regulations can enhance their legitimacy, gain support from stakeholders, obtain greater access to resources, and achieve long-term sustainability. Every country in the world has implemented policies and laws regarding sustainable development, requiring businesses to contribute to environmental, ecological, and societal welfare. The implementation of policies chimes with

stakeholders' demands for sustainable development, and businesses that adhere to these policies can avoid the financial costs and damage to their reputation that result from penalties. The adverse impact of institutional distance on M&A performance has been found to be lessened when there is significant knowledge distance (Shen, 2018). Institutional theory also suggests that social responsibility is a contractual duty that a business owes to society. In the context of the institutional environment, the rewards attainable by an organisation are contingent upon whether its processes are suitable and whether it garners external support, rather than solely on its output volume and efficiency (Zhang & Yang, 2012). Institutional support is important as it can significantly boost corporate entrepreneurship and performance (Sun et al., unknown). The study by Yuan (2021), which considered a sample of 11,721 empirical data objects collected from 2,070 manufacturing businesses with publicly traded A-shares on China's Shanghai and Shenzhen stock exchanges from 2005 to 2019, found that the nature of ownership (i.e., SOEs vs. non-SOEs) could mitigate the inverted U-shaped relationship between entrepreneurial orientation and business performance, as the curve was less pronounced among SOEs.

Due to variations in their strategic positioning, appeals, and corporate governance approaches, SOEs and non-SOEs demonstrate different motivations, attitudes, and behaviours towards environmental protection and the fulfilment of social responsibilities (Ren et al., 2021). Compared with non-SOEs, the social responsibilities taken on by Chinese SOEs are more likely to be compulsory and politically driven, with

a broader scope of obligations (Wu & Zhang, 2015). Chinese SOEs and non-SOEs differ in areas such as organisation and management, social responsibility, policy burdens, and executive promotions in China's institutional context. Therefore, the ESG compliance behaviour of Chinese SOEs tends to be driven by policy and is usually mandatory. Non-SOEs that voluntarily take on ESG responsibilities often demonstrate a commitment to sustainable management and are likely to gain public favour (Wang & Yang, 2022). The inherent attributes of Chinese SOEs provide them with advantages and the scale of some of these businesses can be challenging for others to surpass. They can therefore excel in areas such as innovation and environmental protection, and are thus important representatives of China's business sector (Chen, 2020c).

In terms of environmental factors, a significant disparity in access to natural resources is evident between SOEs and non-SOEs. However, a smaller gap is observed with regard to their environmental protection measures. In terms of social factors, non-SOEs lag behind SOEs in China and should further enhance production safety, employee security, product quality, and product safety. In terms of governance, aside from the presence of the Communist Party in China's SOEs, which is an attribute unique to these enterprises, there are no noticeable differences in the corporate governance structures of SOEs and non-SOEs. The impact of a company's overall ESG performance and of the three specific aspects on its performance depends on the company's ownership status, that is, the effects on Chinese non-SOEs are greater than on SOEs (Li et al., 2021). The positive effects of the ESG performance of non-state-

owned, non-polluting, and small-scale businesses on their corporate value are significantly more noticeable (Zhang & Zhao, 2019).

Based on the above analysis, we propose the following hypothesis:

Hypothesis 2: There is a disparity in terms of ESG concerns between SOEs and non-SOEs.

3.3 Analysis of the Correlation Between ESG Performance and Business Performance of SOEs and Non-SOEs Under the Current ESG Evaluation System

The managers of non-SOEs are often also the business owners, unlike in SOEs, and particularly those entirely owned by the state, where the managers are the business operators. They also report to different entities. The hiring and firing of some of the top managers in SOEs is overseen by the SASAC or organisational departments within the CPC. Such differences result in different business philosophies. SOEs prioritise procedural law enforcement and smooth operations, and frequently consider factors such as their social impact. They are therefore likely to invest more heavily in environmental, social, and governance aspects, and are more inclined to disclose relevant information. In contrast, non-SOEs have a greater need to control their costs. The positive effect of the ESG performance of Chinese SOEs on their business performance is more significant than for non-SOEs (Lai & Lin, 2022). Research has also indicated that the ESG performance of Chinese SOEs is less effective in increasing corporate value than that of non-SOEs. ESG performance also plays a more substantial

role in boosting the corporate value of non-SOEs (Xu et al., 2021).

ESG performance has also been found to be inversely related to a company's idiosyncratic risk. Li (2021) examined various aspects such as property rights, business size, and industry features, and found that improvements in ESG performance can significantly reduce idiosyncratic risk in non-state-owned, small-scale, and non-polluting businesses, compared with state-owned, large-scale, and polluting businesses. The positive impact of ESG performance on corporate value is more significant in non-SOEs than in SOEs (Yan, unknown). The various rating agencies have distinct focal points for their ratings according to their values and orientations, and they lack stringent regulatory measures or standardised quantitative indicators to measure their criteria. This often results in highly variable ratings and low market recognition (Li, 2021).

The above analysis indicates that rating agencies independently develop their evaluation systems according to the basic ESG framework. However, most agencies currently adopt the processes and practices of foreign rating agencies. Thus, they are unable to genuinely adapt to the development context of Chinese enterprises. ESG performance affects the corporate value of SOEs and non-SOEs to different degrees. Therefore, the aim of this dissertation is to establish an ESG evaluation system tailored to SOEs and their growth, and thus the following hypothesis is proposed.

Hypothesis 3: Under the current ESG evaluation system, the correlation between ESG performance and business performance differs between SOEs and non-

SOEs.

Chapter 4 Research Methodologies

The approach taken in this study involved a combination of textual analysis and empirical research. First, we conducted a literature review through normative research methods, retrospectively analysed studies of ESG evaluation systems for businesses, and examined the process of constructing a theoretical framework for ESG evaluation systems aimed at Chinese SOEs. Next, we formulated our hypotheses based on the literature review and established theories. We obtained our research sample from the GoldenBee Corporate Social Responsibility Report Database, conducted a textual analysis of CSR or ESG reports, and distributed and collected on-site surveys concerning the ESG practices of Chinese SOEs. In conjunction with the literature review, we identified the critical factors affecting ESG evaluations of Chinese SOEs, constructed an ESG evaluation system tailored to Chinese SOEs, and assessed its applicability to these enterprises.

This dissertation had several objectives. First, by reviewing research on ESG evaluation systems for businesses, we aimed to assess whether these systems are applicable to Chinese SOEs, along with their strengths and weaknesses. Through an analysis of Chinese SOEs' social responsibility or ESG reports, alongside interviews, surveys, and a comprehensive review of relevant documents such as the SASAC's policy documents, we sought to identify the key factors influencing the ESG evaluation of Chinese SOEs. We also explored the correlation between these influencing factors and the ESG performance of Chinese SOEs through empirical testing. Finally, we

determined the primary factors affecting the ESG performance of Chinese SOEs and based on these findings, we propose an ESG evaluation system specifically for Chinese SOEs and apply it in their actual ESG management and practices.

4.1 Data Sources

The data used in this research came from the GoldenBee Corporate Social Responsibility Report Database created by GoldenBee (Beijing) Management Consulting Co., Ltd. (hereinafter referred to as the "Report Database"). This database comprises social responsibility reports (e.g., reports on sustainability, ESG, corporate citizenship, the environment) published by Chinese companies and noncorporate organisations since 2001. It also includes data used for quality assessment by professional CSR report evaluators, following the GoldenBee Social Responsibility Report Evaluation System. The database currently comprises 22,522 social responsibility reports released by 8,290 companies, featuring various functionalities such as data searching, downloading, filtering, evaluation, and statistical analysis. According to the information in this database, GoldenBee annually prepares and publishes a "blue book" titled *GoldenBee Research on Corporate Social Responsibility Reporting in China*, to highlight the latest characteristics of and trends in Chinese enterprises' CSR reports. This provided a strong basis for our study.

Due to the timeline constraints faced by Chinese SOEs when preparing and releasing their CSR/ESG reports—they typically release reports for the previous year

during the current year—we focused on the CSR/ESG reports for 2019, 2020, and 2021. We examined the reports of Chinese SOEs listed in Shanghai, Shenzhen, Hong Kong, and overseas, in addition to those from non-SOEs.

4.2 Textual Analysis

The CSR/ESG reports of Chinese SOEs and non-SOEs were the subjects of this research, and their overall logic was examined through textual analysis. This analysis focused on report creation, the identification of and reaction to stakeholder groups, the pertinence of stakeholder ideas and organisational tactics, and the level of disclosure regarding ESG compliance practices. Using clear statistical data, our analysis mirrored the logical direction of current ESG reports of Chinese SOEs and assessed the similarities and differences between the information disclosure priorities of Chinese SOEs and non-SOEs in their CSR/ESG reports. This strengthened our research base for the development of the ESG evaluation indicator system for Chinese SOEs.

Specific analyses:

- Revealing the basis for the production of ESG reports by businesses and assessing the purpose of ESG report creation based on whether the reports refer solely to stock exchange regulatory requirements or to those for creating CSR reports.
- Analysing how businesses' ESG reports identify and respond to stakeholders, such as the types of stakeholder groups identified in a report, the responses to

stakeholder demands and expectations, and the presentation of stakeholder content, to identify the primary audience of the reports.

- Comprehensively analysing the disclosure of the ideas of stakeholders, and the relevance of these ideas and organisational tactics, to determine the main logic of a company's ESG management. If a company's strategic goals include "building a platform for employee growth" and other statements regarding social value perspectives, we can assume that its business strategies are closely connected to employees' sense of responsibility.

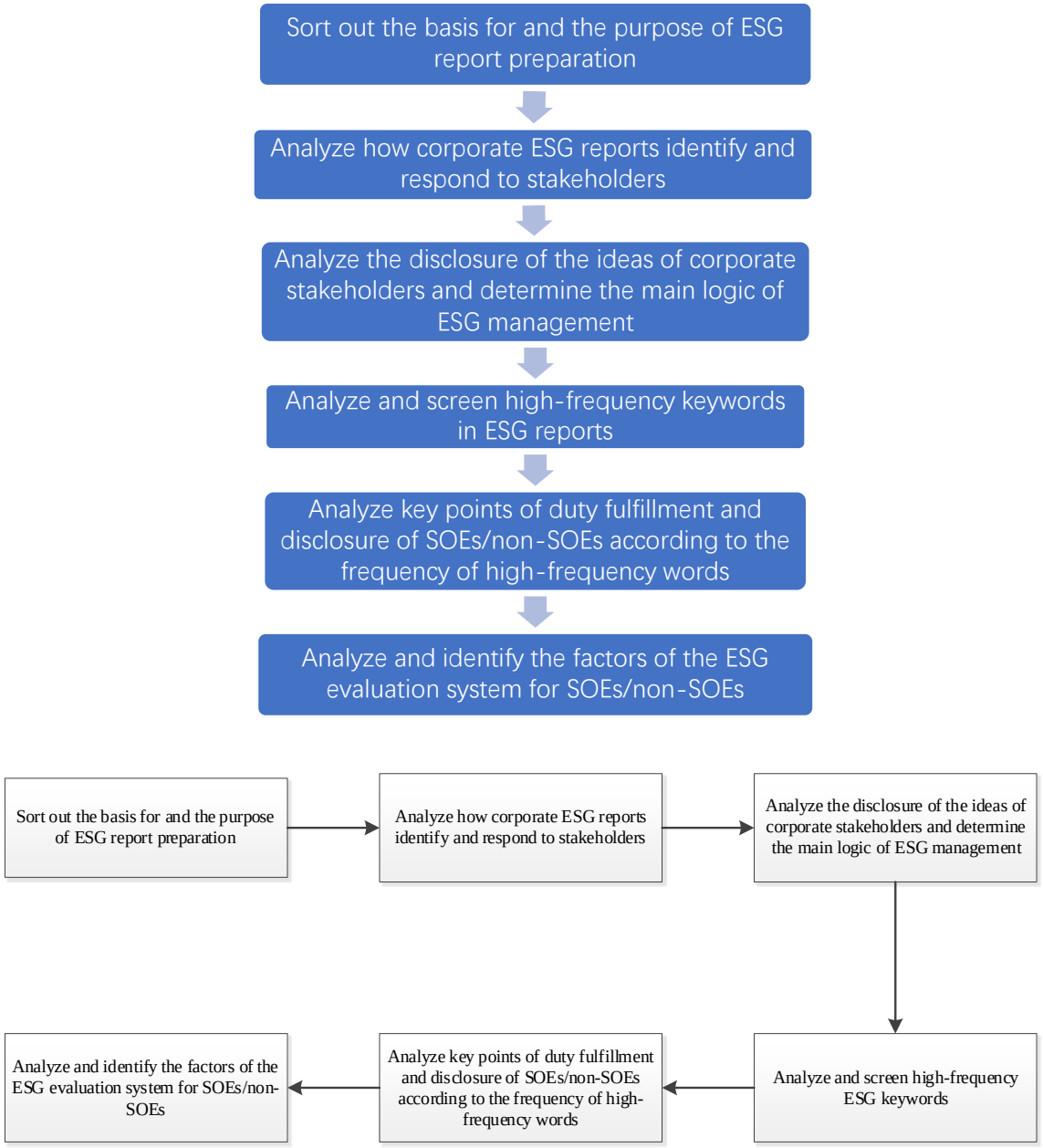
- Identifying high-frequency ESG keywords by screening relevant materials such as documents from the SASAC, the MSCI ESG Ratings system, and the HKEx guidelines.

- Analysing the frequency of high-frequency keywords in CSR/ESG reports, exploring the priorities of Chinese SOEs and non-SOEs regarding stakeholder responsibility fulfilment and information disclosure, and identifying the crucial factors that influence the ESG evaluation of Chinese SOEs.

- Conducting a comparative analysis of the frequency of keywords in the CSR/ESG reports of Chinese SOEs and non-SOEs and identifying the common and unique factors in the ESG evaluations of these companies, to strengthen the research foundation of the ESG evaluation system for Chinese SOEs.

Figure 2

Technical Flowchart2



4.3 Data Analysis

In this section, we investigate the correlation between the performance of large Chinese enterprises under the ESG framework (X) and their business performance (Y).

This research was based on the GoldenBee Research on CSR Reports Database and the annual reports of listed companies. The database currently contains 22,522 reports from 8,290 companies. We conducted a database search for companies based in Beijing, Shanghai, Guangzhou, and Sichuan that published CSR/ESG reports in 2019, 2020, and 2021. To further clarify the research scope, we narrowed the focus to large enterprises and China's top 500 enterprises in the database and eliminated duplicate entries. In total, 140 eligible companies met these criteria. For companies that did not specify their annual revenue in their CSR/ESG reports, we supplemented the missing information by referring to their respective annual reports.

We limited the research scope to large enterprises for the following reasons. (1) Narrowing the scope enhanced the feasibility of the research. (2) Large enterprises typically provide more comprehensive and substantial content in their CSR reports than small enterprises, thus reducing errors and randomness. Therefore, the alignment of indicators in their ESG assessment systems provided a more valuable point of reference. (3) Large enterprises often reflect national interests and public welfare, are public in nature, and have intrinsic connections with regulatory authorities. Therefore, they face greater regulatory and public pressure, resulting in more rigorous CSR/ESG reporting, making them suitable research subjects. (4) Large enterprises have significant social influence. Their actions and decisions can impact socioeconomic life and have the potential to influence the development and progress of surrounding communities, which is meaningful and valuable for studying the social responsibilities of large SOEs.

The ESG score data in this dissertation were obtained from the Sino-Securities Index. After the initial screening of 140 companies, the ESG score data for these companies were further refined. Three companies with missing ESG score values were excluded, leaving a total of 137 enterprises, consisting of 70 SOEs and 67 non-SOEs.

4.3.1 Selection of Variables

To better understand the correlations between variables, we used ESG scores as the independent variable and business revenue and Tobin's Q value as the dependent variables for our threshold effect analysis.

The independent variable was ESG score (Score). With the increasing global and domestic emphasis on ESG, the disclosure of ESG by companies has become one of the criteria used by investors to assess whether a company is a viable investment option. Good ESG performance often has a significant impact on increasing the value of a publicly traded company. In the market, investors tend to have a favourable attitude towards publicly traded companies with good ESG credentials, especially those that voluntarily publish ESG reports. Consequently, investors who set higher ESG screening criteria can potentially achieve higher investment returns and attract greater capital inflows. Based on this premise, we used the Sino-Securities Index ESG scores as an independent variable to investigate the influence of business income on them.

Our first dependent variable was business income (in RMB100 million; Income). In the short term, good ESG performance by large enterprises not only helps them

secure financial support and obtain favourable policy benefits but also enhances consumer trust, recognition, and satisfaction. This in turn increases consumers' willingness to purchase, leading to an increase in market share or business revenue. All of these factors have a positive impact on financial performance. For investors, publicly traded companies with good ESG performance typically exhibit high levels of governance efficiency and lower risks related to environmental and social violations. This can reduce the likelihood of investment losses and provide investors with stable returns. Based on this, we logarithmically transformed the actual values of business income, which represented a short-term performance indicator for our in-depth analysis of the impact of ESG scores on a company's short-term development.

Second, we used Tobin's Q value (Tobin's Q), which is an evaluation metric for a company's long-term market performance. It is calculated as the ratio of a company's market value to its net asset value, indicating whether a company's assets have created value that exceeds its cost of capital. It serves as a signal of strong long-term market performance for a company. Thus, we used Tobin's Q value as a long-term performance indicator for our analysis of the impact of ESG scores on a company's long-term development.

Our threshold variable was total assets (in RMB100 million; Assets). Assets form the foundation of a company's operational activities, and robust asset growth is a crucial factor in maintaining a company's stable development. Therefore, we used total assets as a measure of a company's scale and to adjust for the impact of company size

on business income. To ensure consistency in our research data, we used the logarithm of total assets as the research variable for analysis.

Drawing from previous research on factors influencing corporate performance (Zhang & Su, 2023), we included the control variables listed in Table 5.

Table 5
Definition of Control Variables
5

Variable name	Variable symbol	Meaning of variables
Debt Ratio	Debt	The ratio of total liabilities to total assets, which measures a company's long-term debt-paying capacity
Earnings per share	EPS	Measures a company's operational performance and its ability to capture markets
Total asset turnover	Tat	Measures a company's operational capabilities
The combined shareholding percentage of the top 10 largest shareholders	Shold	Assesses the equity characteristics of a company

Chapter 5 Research Findings

5.1 Screening of High-Frequency ESG Keywords

We assessed the *Guidelines on the Fulfilment of Social Responsibilities by Central Enterprises* issued by the SASAC, which outline the primary social responsibilities that central enterprises are obliged to fulfil, the stipulations of the *Guidelines on How SOEs Can Better Fulfil Their Social Responsibilities* issued by the SASACs for provinces and cities such as Shandong, Shaanxi, Beijing, Shanghai, and Shenzhen, the indices required by the MSCI ESG Ratings system, the guidelines of the Hong Kong Exchanges, the Shanghai Stock Exchange, the Shenzhen Stock Exchange, and the CASS guidelines. We preliminarily determined that 63 key indicators are used in the ESG reports of Chinese SOEs from a stakeholder perspectives.

Table 6

Sample List of Documents From Which High-Frequency ESG Keywords Are Selected6

Issuing body	Sample list of documents from which high-frequency ESG keywords are selected
SASAC of the State Council	*Guidelines on the Fulfilment of Social Responsibilities by Central Enterprises*
SASAC of Shandong	*Guidelines on the Fulfilment of Social Responsibilities by Enterprises Under the Jurisdiction of Shandong Province*

Province	
SASAC of Shaanxi Province	*Guidelines on the Fulfilment of Social Responsibilities by Enterprises Under the Jurisdiction of Shaanxi Province*
SASAC of Beijing Municipality	*Guidelines on the Fulfilment of Social Responsibilities by SOEs Under the Jurisdiction of Beijing*
SASAC of Shanghai Municipality	*Opinions on How SOEs Under the Jurisdiction of Shanghai Can Better Fulfil Their Social Responsibilities*
SASAC of Shenzhen Municipality	*Guidelines on How SOEs Under the Jurisdiction of Shenzhen Can Better Fulfil Their Social Responsibilities*
Zhejiang Provincial Commission of Economy and Informatisation	*Opinions on Promoting the Fulfilment of Social Responsibilities by Industrial Enterprises in Zhejiang Province*
SASAC of Yunnan Province	*Opinions on the Fulfilment of Social Responsibilities by SOEs*

Hong Kong Exchanges	*Environmental, Social, and Governance Reporting Guide*
Shanghai Stock Exchange	*Guidelines on Disclosure of Environmental Information*
Shenzhen Stock Exchange	*Guidelines on the Social Responsibilities of Listed Companies*
Chinese Academy of Social Sciences (CASS)	*Guidelines for Chinese Corporate Social Responsibility Reporting* (CASS-ESG 5.0)
Leading international index organisation MSCI	*MSCI ESG Ratings Indicator System*

Table 7

The 63 High-Frequency ESG Keywords Identified Based on Policy and Rating

Requirements7

Investment	Employment	Responsibility Supply chain	Audits
Production safety	Legal compliance	Employee training	Churn rate
financing	Nonhazardous Waste	Investment philosophy	Supplier management
Loan	Total profits	Environmental management	Privacy protection
Risk management	State-owned assets	Occupational health	Shared prosperity
Technological innovation	Board of directors	Employee rights and interests guarantee	Human rights
Stakeholder	Hazardous waste	Total tax payment	Medical check-up
Energy conservation and emission reduction	Assisted area	Resource conservation	Water consumption
Green finance	Rural revitalisation	Investment principles	Product

			quality
Environmental protection	Service quality	Circular economy	Business ethics
Procurement	Resource conservation	Greenhouse gas emission reduction	Earnings
Win-win outcome	Fund management	Honesty and trustworthiness	Corporate governance
National strategy	Fair competition	Responsible marketing	Information disclosure
Low carbon	Carbon peaking and carbon neutrality	Pushing suppliers to fulfil their responsibilities	Emissions
Climate change	Environmental investment	Carbon peaking and carbon neutrality	Investor relations
Democratic governance	Donations to external parties	Combating corruption	

We developed a keyword search code to more accurately determine the frequency

of keyword usage. All reports were then processed using this code to ascertain the specific frequency of keyword occurrence.

The code was executed as follows:

```
readPdf(file_path, shotname, tempfilename):
    print(datetime.datetime.now().strftime(dataformat) + ‘:  开始读取pdf文件:-
------' + shotname + ‘\n’)
    with open(file_path, ‘rb’) as file:
        parser = PDFParser(file)
        doc = PDFDocument(parser)
        parser.set_document(doc)
```

Figure 1

Keyword Search Codes1

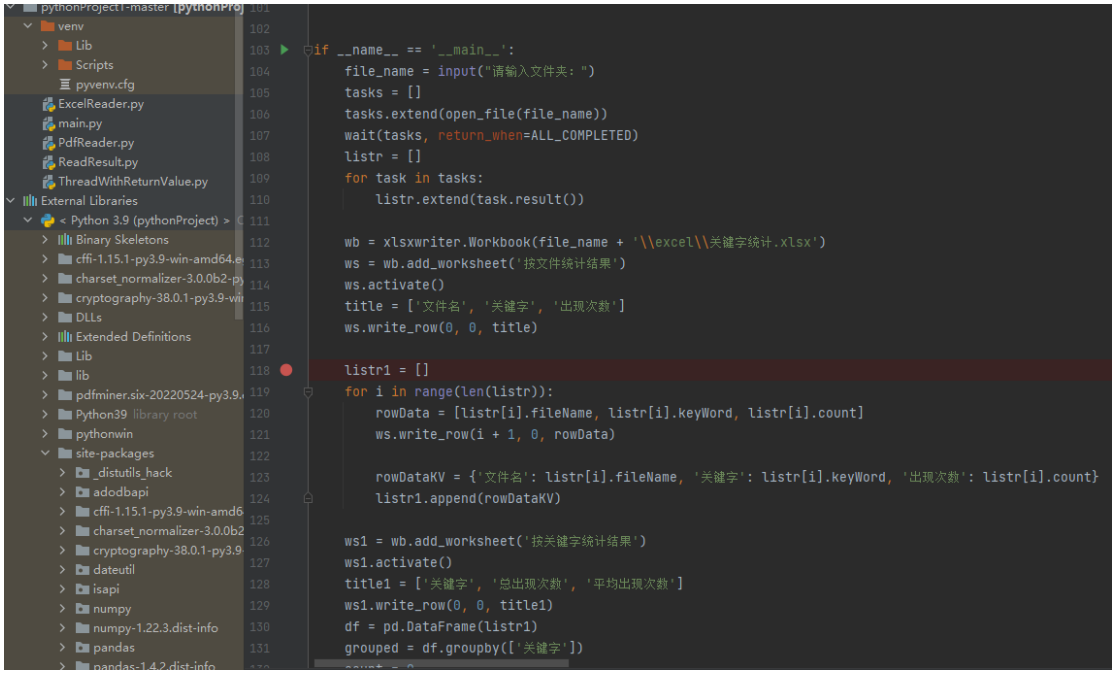
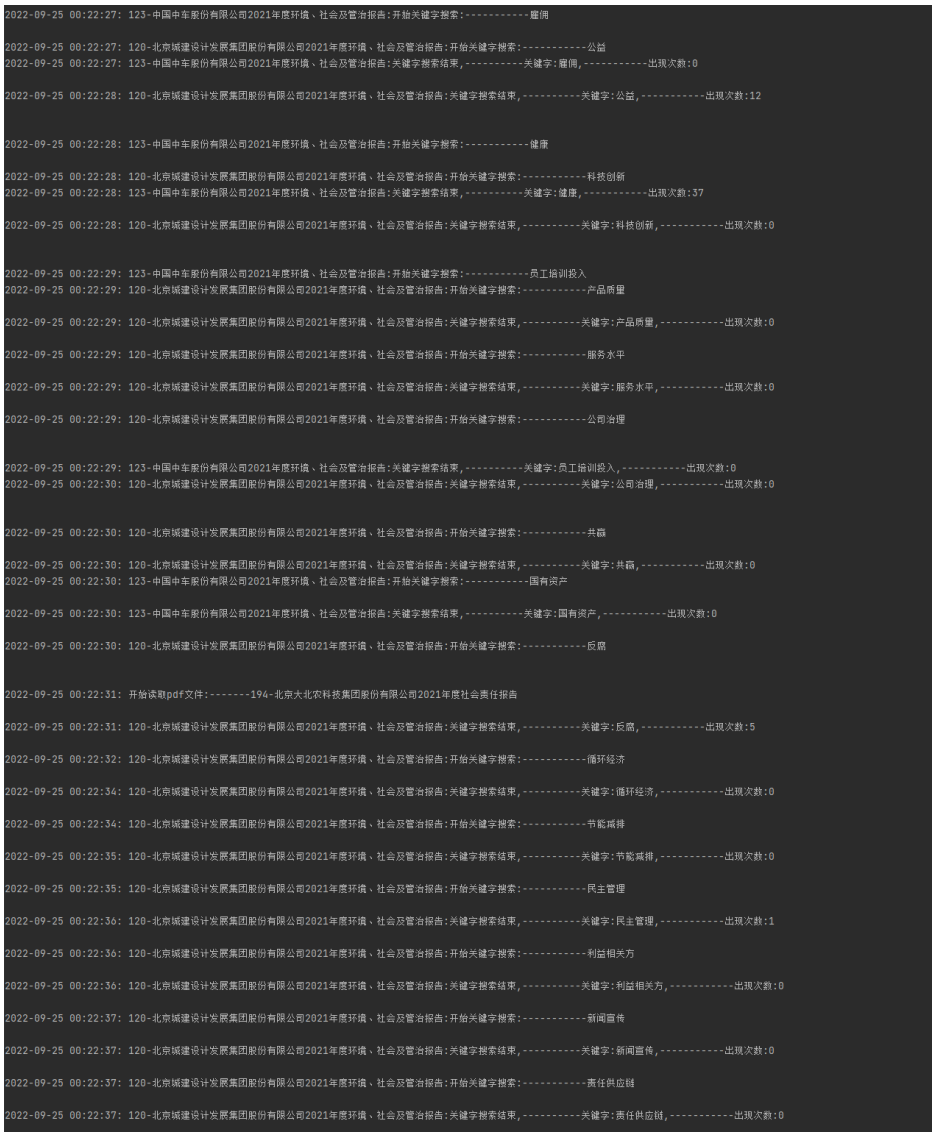


Figure 2

Some of the Operational Processes2

Figure 3

Some of the Operational Processes3



5.2 Textual Analysis of SOEs' CSR/ESG Reports

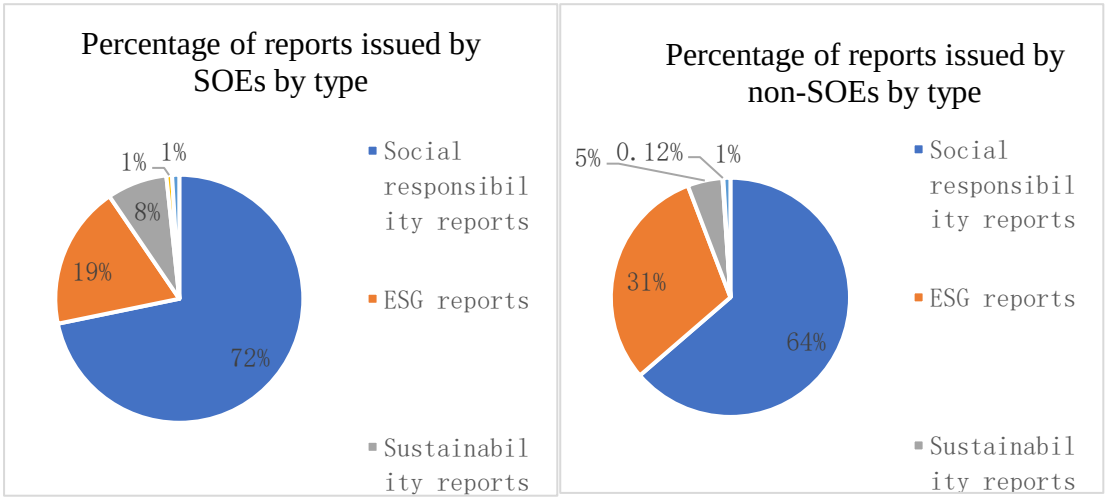
In the textual analysis, we considered the development of local social responsibility activities in China, the feasibility of conducting verifiable field surveys and interviews, and whether the business was state-owned. We focused on a sample of 1,070 CSR/ESG reports from Chinese SOEs and 845 ESG reports from non-SOEs in four provinces (municipalities directly governed by the central government), namely Beijing, Shanghai, Guangzhou, and Sichuan, from 2019 to 2021.

5.2.1 Statistical Analysis of Basic Information

In terms of report type, ESG reports from non-SOEs made up a larger percentage than those from SOEs. We conducted a statistical analysis of the basic information in 1,060 ESG reports from SOEs and 845 from non-SOEs in Beijing, Guangdong, Shanghai, and Sichuan from 2019 to 2021. According to the survey, SOEs issued 768 (72%) CSR reports, 200 (19%) ESG reports, 84 (8%) sustainability reports, and eight (1%) CSR and ESG reports. Non-SOEs issued 538 (64%) CSR reports, 258 (31%) ESG reports, 40 (5%) sustainability reports, and one (0.12%) CSR and ESG report. Non-SOEs typically based their social responsibility disclosures on the ESG guidelines of the Shenzhen United Property and Equity Exchange, and thus they published more ESG reports than SOEs. This demonstrates that the capital market values the sustainability of enterprises and that the ESG concept has gradually become commonly accepted.

Figure 4

Percentages of Reports Issued by SOEs Versus Non-SOEs by Type

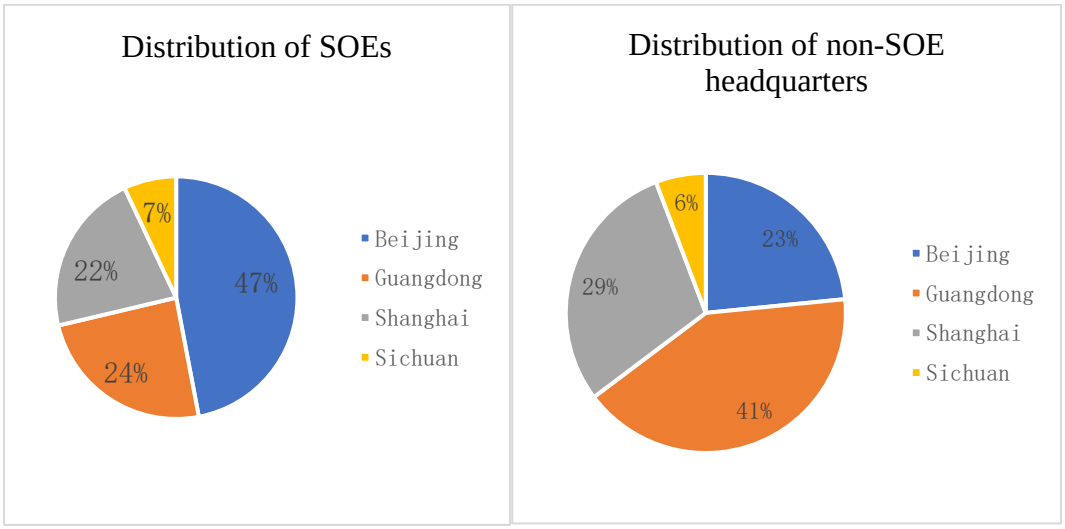


In terms of headquarters distribution, most of the headquarters of SOEs were located in Beijing, while those of non-SOEs were predominantly found in Guangdong. Of the SOEs, 503 (47%) were located in Beijing, 260 (24%) in Guangdong, 232 (22%) in Shanghai, and 75 (7%) in Sichuan. Of the non-SOEs, 198 (23%) were located in Beijing, 349 (41%) in Guangdong, 249 (29%) in Shanghai, and 48 (6%) in Sichuan. As the capital of China, Beijing serves as the country's political, economic, and cultural hub. With its abundant resources in terms of talent, capital, and technology, it is unsurprising that Beijing is the city with the highest number of SOEs in China. Guangdong is a province with a thriving private economy and has long been renowned for its dynamic private sector. The implementation of development strategies for the Guangdong–Hong Kong–Macao Greater Bay Area, coupled with the enhancement of the business environment in Guangdong, has created a favourable institutional framework for the high-quality and advanced development of private enterprises. This

explains why Guangdong has the largest number of non-SOEs in China.

Figure 5

Distribution of Report-Issuing SOEs and Non-SOEs



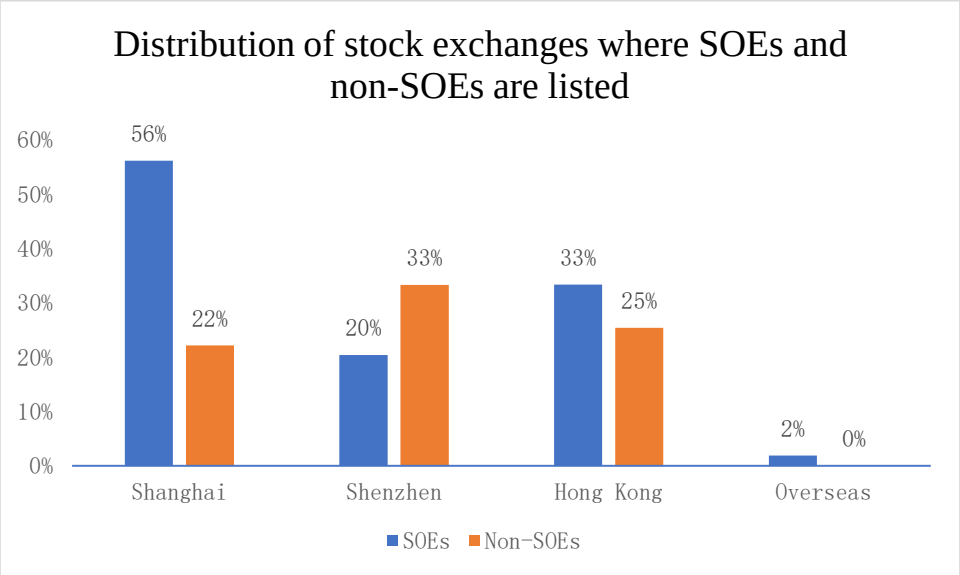
4

In terms of company listings, SOEs were primarily listed on the Shanghai Stock Exchange, while non-SOEs were mainly listed on the Shenzhen Stock Exchange. Chinese SOEs and non-SOEs were traded on various stock exchanges, with 601 (56%) SOEs in Shanghai, 218 (20%) in Shenzhen, 357 (33%) in Hong Kong, and 20 (2%) outside of China. Of the non-SOEs, 237 (28%) were listed in Shanghai, 356 (42%) in Shenzhen, and 272 (32%) in Hong Kong. This may be due to the characteristics of the stock exchanges. Large-scale shares are typically listed on the Shanghai Stock Exchange, while small- and medium-scale shares are usually listed on the Shenzhen Stock Exchange. The number of medium and small capital stocks, in addition to Growth Enterprise Market (GEM) stocks on the Shenzhen Stock Exchange, has increased with

the number of private businesses. As a result, an increasing number of non-SOEs are choosing to be listed in Shenzhen, while larger state-owned and central enterprises tend to choose the Shanghai Stock Exchange.

Figure 6

Distribution of Stock Exchanges Where Report-Issuing SOEs and Non-SOEs Are Listed5

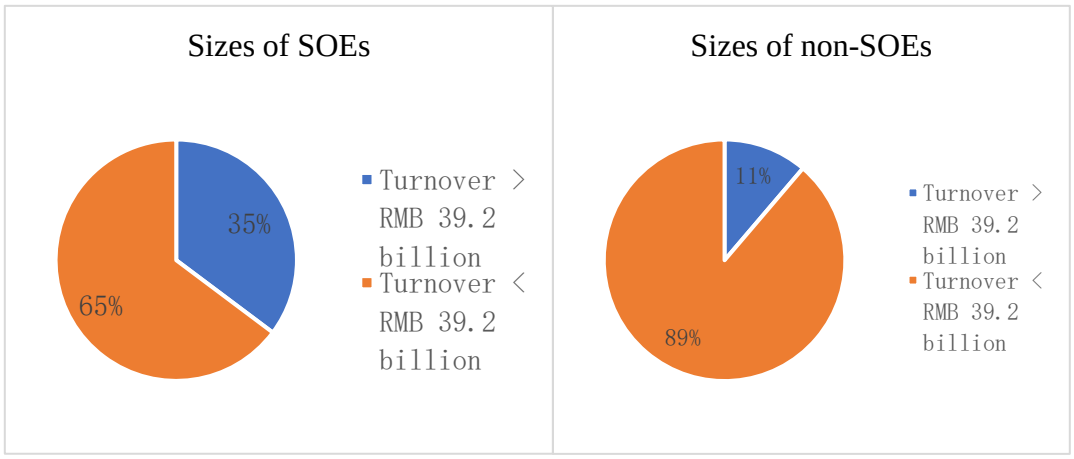


In terms of business scale, the revenue of SOEs was usually higher than that of non-SOEs. Of the SOEs, 377 (35%) had a turnover above RMB39.2 billion and 693 (65%) have a turnover below RMB39.2 billion. Among the non-SOEs, 95 (11%) had a turnover above RMB39.2 billion, while 750 (89%) had a turnover below RMB39.2 billion. SOEs in China are financed by either the central or local governments. These enterprises are financially robust and control critical sectors of the nation's economy, including railroads, natural gas, and electricity. Non-SOEs typically encompass

privately run and individual businesses. These businesses usually have simpler structures and technologies and lower turnover.

Figure 7

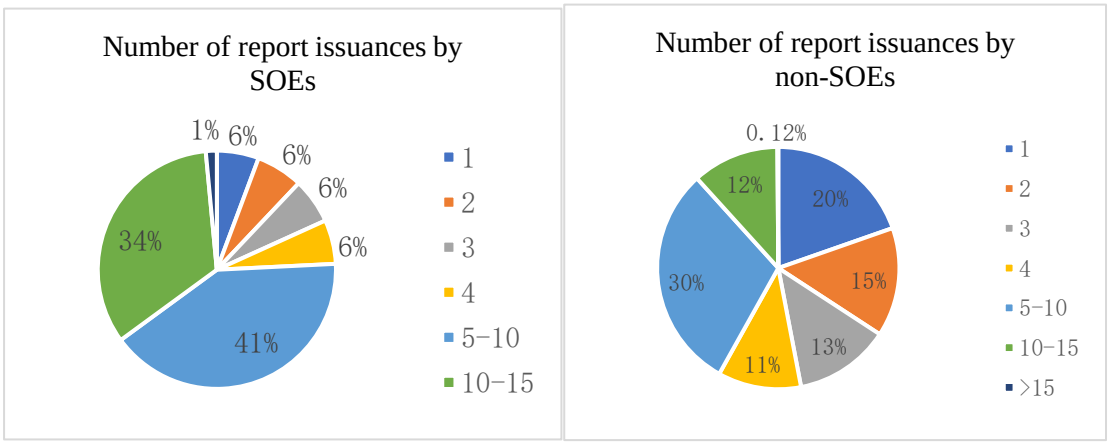
Sizes of Report-Issuing SOEs and Non-SOEs6



Significant differences between the number of reports published by Chinese SOEs and non-SOEs were observed. A total of 61 Chinese SOEs published reports for the first time, 436 published 5 to 10 times, 359 published 10 to 15 times, and 16 published more than 15 times. A total of 166 Chinese non-SOEs issued reports for the first time, 255 issued 5 to 10 times, 98 issued 10 to 15 times, and one issued more than 15 times. This demonstrates that the majority of Chinese SOEs have consistently published ESG reports over the years, indicating a gradual increase in their awareness of social responsibility. Compared with SOEs, non-SOEs have a less developed sense of social responsibility, and there is a need to enhance their social responsibility disclosure.

Figure 8

Frequency of Report Issuance by SOEs and Non-SOEs

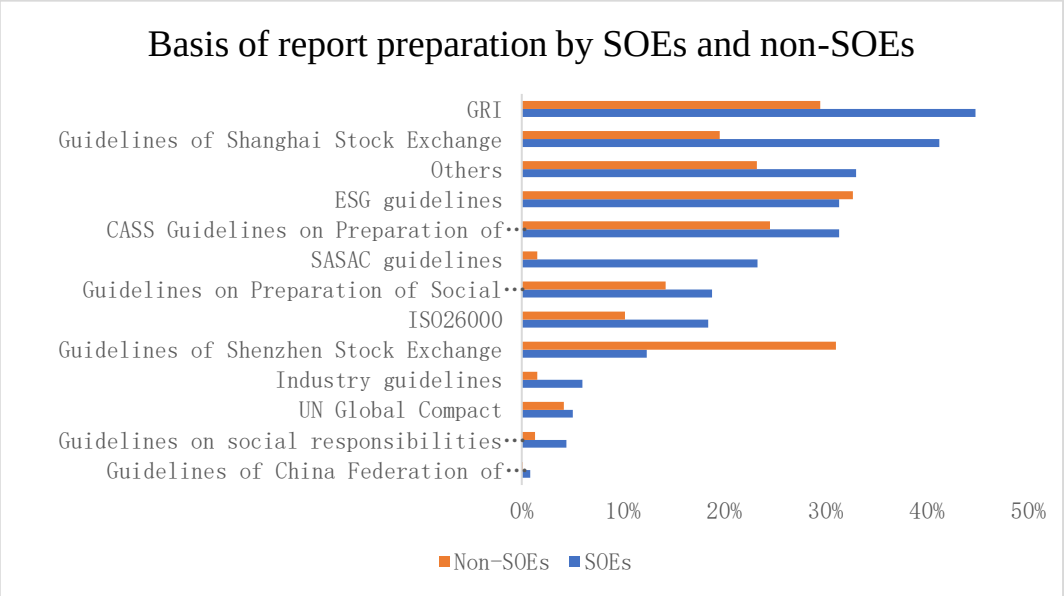


7

In terms of the basis for preparing corporate reports, the most referenced guidelines for report preparation among SOEs were those of the GRI and the Shanghai Stock Exchange, with 479 and 441 reports, respectively, accounting for 45% and 41% of the total. Following these were the ESG guidelines, with a total of 335 reports, accounting for 31% of the total. Among non-SOEs, the most commonly used frameworks for report preparation were the ESG and the Shenzhen Stock Exchange guidelines, with 276 and 262 reports, respectively, representing 33% and 31% of the total. Next were the GRI guidelines, accounting for 29%. In summary, compared with SOEs, non-SOEs primarily rely on the guidelines of securities markets as the basis for information disclosure, again because SOEs are primarily listed on the Shanghai Stock Exchange, while non-SOEs are mainly listed on the Shenzhen Stock Exchange.

Figure 9

Basis of Report Preparation by SOEs and Non-SOEs8



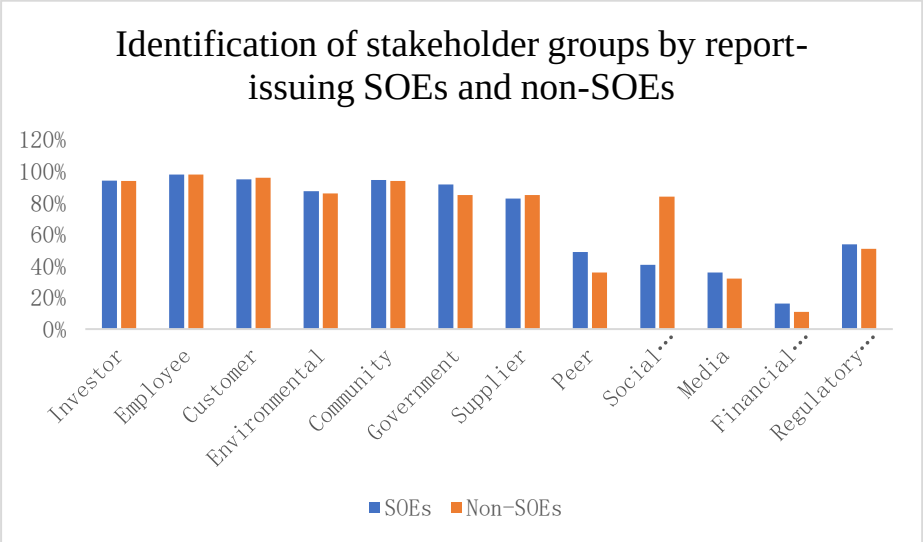
5.2.2 The Two Types of Enterprises Can Better Identify and Respond to Key Stakeholders

According to the surveys, the reports of both Chinese SOEs and non-SOEs identified key stakeholders such as investors, employees, customers, the environment, communities, governments, suppliers, peers, and regulatory agencies. SOEs appeared to be more proficient than non-SOEs at identifying the needs and expectations of all stakeholders and at disclosing their communication and response methods.

We conducted a comparison of how Chinese SOEs and non-SOEs proactively identify their stakeholder groups. Our research indicated that over 90% of the reports from both SOEs and non-SOEs identified their investors, employees, customers, and communities. This was followed by the identification of government bodies, the environment, suppliers, regulatory agencies, peers, social organisations, and the media.

Figure 10

Identification of Stakeholder Groups by Report-Issuing SOEs and Non-SOEs9

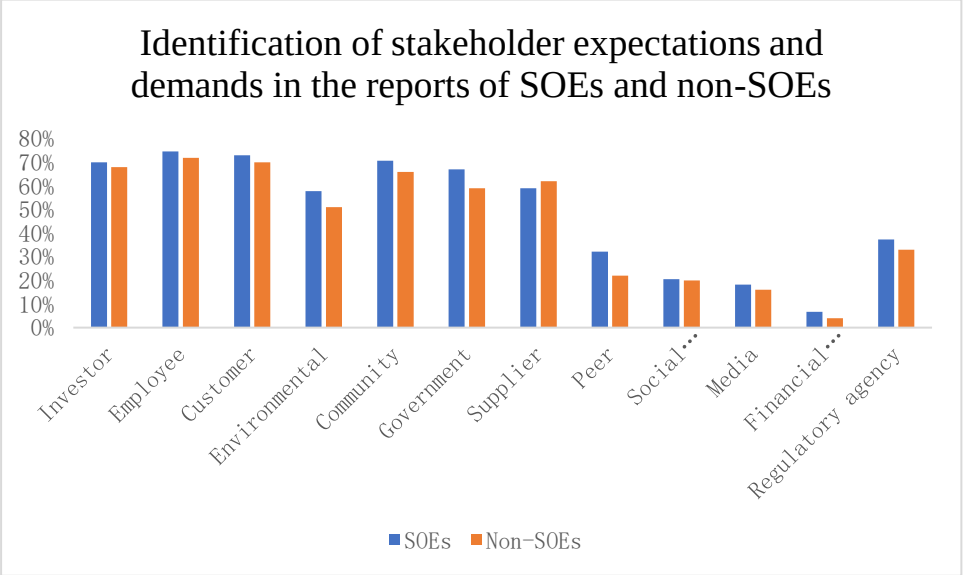


Our statistical analysis of the identification of stakeholder expectations and demands in the reports of Chinese SOEs and non-SOEs showed that generally SOEs could better identify and address the expectations and demands of their stakeholders in their reports than non-SOEs.

Chart 11

Identification of Stakeholder Expectations and Demands in the Reports of SOEs

and Non-SOEs10



5.2.3 Differences in the Disclosure of Stakeholders' Concepts of Responsibility, Policies, and Specific Information Between the Two Types of Enterprises

Our investigation revealed that Chinese SOEs and non-SOEs not only emphasised the concept of shareholder responsibility but also prioritised the principles of responsibility towards various stakeholders, including employees, customers, communities, and the environment. In addition, both categories of enterprises showed a commendable ability to incorporate these stakeholder responsibility principles into their corporate strategic planning. They further demonstrated their effectiveness in accountability by disclosing their responsibility principles and responsible practices for various stakeholders. In general, SOEs exhibited superior performance in terms of disclosing and implementing social responsibility principles than non-SOEs. However, both types of enterprises gave insufficient attention to the responsibility principles

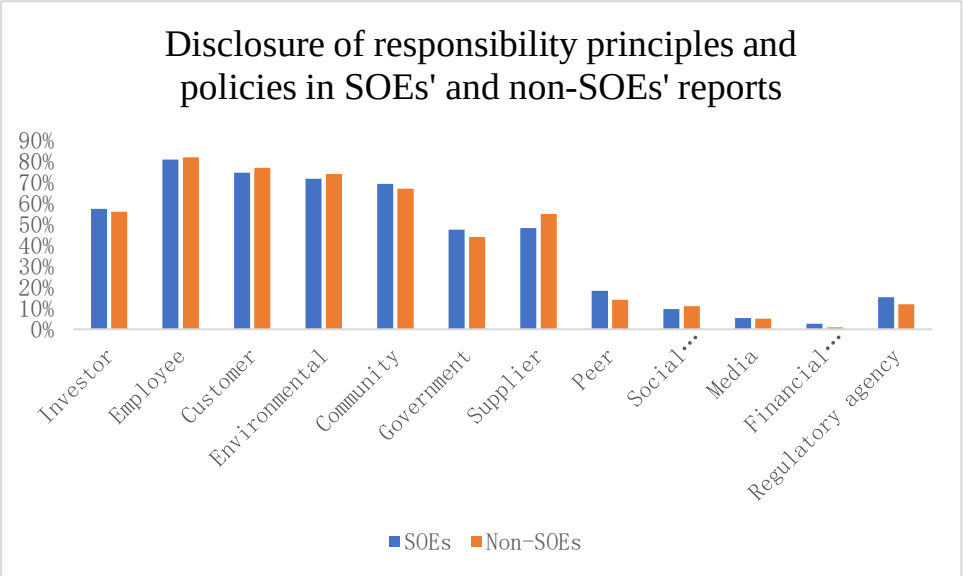
regarding stakeholders such as peers, social organisations, media outlets, financial institutions, and regulatory bodies. There was also room for improvement in integrating these responsibility principles into corporate strategic planning and disclosing responsible practices. Strengthening these aspects of disclosure is therefore warranted.

In summary, the two types of enterprises exhibited a similar level of disclosure regarding the responsibility principles and policies related to various stakeholders. However, their disclosure of such principles and policies related to peers, social organisations, media outlets, financial institutions, and regulatory bodies was relatively low. A statistical comparison of the disclosure of stakeholder responsibility principles and policies in ESG reports from Chinese SOEs and non-SOEs suggested that over 70% of the reports of both categories of enterprises disclosed such information in terms of employees, customers, and the environment, while over 60% disclosed responsibility principles and policies related to communities, and over 50% addressed those regarding shareholders. Additionally, more than 40% of the reports disclosed responsibility principles and policies concerning suppliers and government entities and less than 20% of the reports in both categories of enterprises disclosed such information related to peers, social organisations, media outlets, financial institutions, and regulatory bodies.

Figure 12

Disclosure of Responsibility Principles and Policies in SOEs' and Non-SOEs'

Reports11

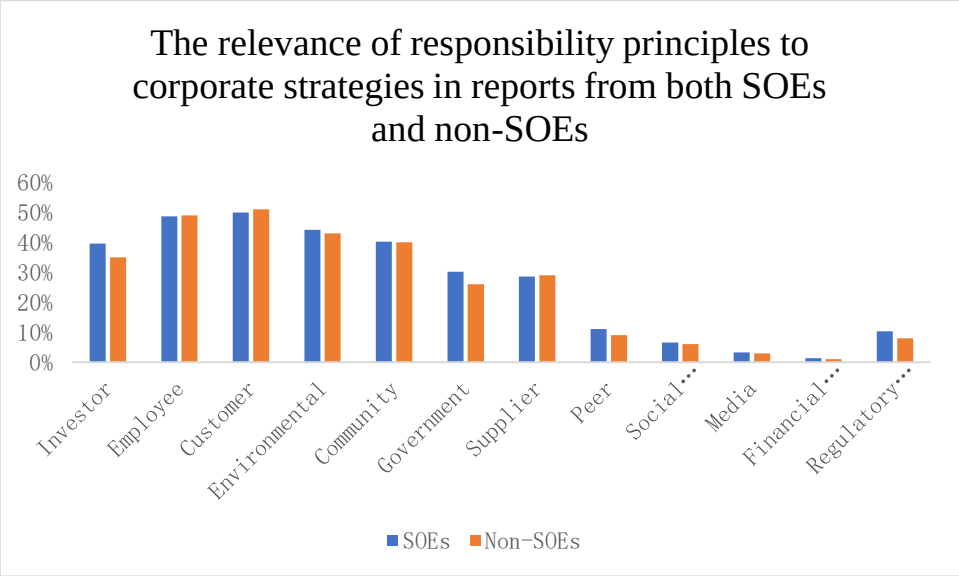


The two types of enterprises incorporated various stakeholder responsibility principles into their corporate strategic planning. However, the extent of disclosure varied among different stakeholders. We conducted a statistical comparison of the relevance of stakeholder responsibility principles to corporate strategies in reports from Chinese SOEs and non-SOEs, and found that the reports of both types of enterprises included stakeholder responsibility principles related to employees, customers, the environment, and communities that were relevant to the corporate strategy, with 40% of the reports falling into this category. Over 20% of the reports from both categories included stakeholder responsibility principles concerning shareholders, government entities, and suppliers that were relevant to the corporate strategy, and less than 10% of the reports related stakeholder responsibility principles to the corporate strategy for peers, social organisations, media outlets, financial institutions, and regulatory bodies. In addition, more reports from SOEs than from non-SOEs established a connection

between their corporate strategies and responsibility principles and policies related to shareholders, peers, and regulatory bodies. These results therefore indicate that SOEs are better at incorporating stakeholder responsibility principles and policies into their corporate strategies.

Figure 13

The Relevance of Responsibility Principles to Corporate Strategies in Reports From Both SOEs and Non-SOEs12



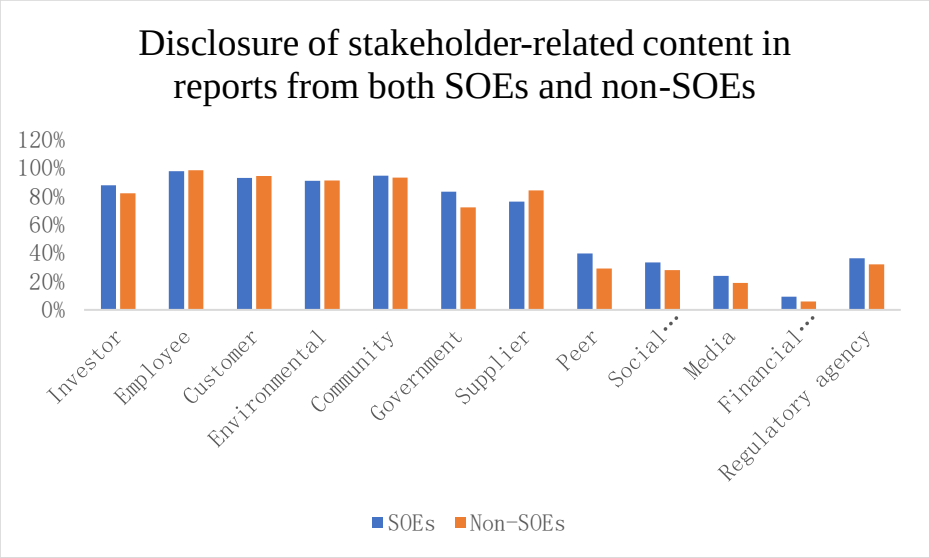
The two types of enterprises provided disclosures related to various stakeholders in their reports. However, the extent of their disclosure varied among different stakeholders. Our statistical comparison of the disclosure levels of stakeholder-related content in reports from Chinese SOEs and non-SOEs revealed that both types of enterprises had reports in which over 90% of their disclosed content was

related to employees, customers, communities, and the environment; content related to suppliers, shareholders, and government entities was disclosed in more than 70%; and content related to peers, regulatory bodies, social organisations, media outlets, and financial institutions was disclosed in less than 40% of the reports from both SOEs and non-SOEs. Furthermore, compared with non-SOEs, SOEs tended to include a higher level of disclosure regarding content related to shareholders, government entities, peers, social organisations, media outlets, financial institutions, and regulatory bodies in their reports. These research findings indicate that SOEs generally outperform non-SOEs in terms of overall content disclosure related to stakeholders.

Figure 14

Disclosure of Stakeholder-Related Content in Reports from Both SOEs and Non-

SOEs13



5.2.4 The Differing Focal Points of the Two Types of Enterprises When Disclosing Information Related to Stakeholders

We conducted a keyword analysis of 1,070 ESG reports from SOEs and 845 from non-SOEs for the period from 2019 to 2021, and the results are given in Table 8.

Table 8

Statistical Results of Keywords in SOEs' ESG Reports from 2019 to 2021

8

Order	Keywords	Frequency	Order	Keywords	Frequency	Order	Keywords	Frequency
1	Investment	18,556	22	Investor relations	1,506	43	Circular economy	385
2	Production safety	8,216	23	Medical check-up	1,462	44	Dual carbon goals (carbon peaking and carbon neutrality)	602
3	Board of directors	7,013	24	Employment	1,455	45	Fair competition	325
4	Procurement	6,954	25	Product quality	1,401	46	State-owned assets	317
5	Stakeholder	5,257	26	Employee training	1,366	47	Privacy protection	274
6	Information disclosure	4,468	27	Green finance	1,325	48	Assisted area	263
7	Corporate governance	4,334	28	Earnings	1,246	49	Fund management	250

8	Environmental protection	4,059	29	Emissions	1,056	50	Responsibility supply chain	247
9	Financing	4,039	30	Supplier management	882	51	Honesty and trustworthiness	240
10	Low carbon	3,932	31	Human rights	869	52	Environmental investment	227
11	Risk management	3,839	32	National strategy	854	53	Resource conservation	212
12	Audits	3,666	33	Democratic governance	840	54	Donations to external parties	196
13	Loan	2,869	34	Nonhazardous waste	583	55	Employee rights and interests guarantee	158
14	Technological innovation	2,626	35	Churn rate	576	56	Total tax payment	158
15	Occupational health	2,615	36	Legal compliance	538	57	Shared prosperity	118

16	Win-win outcome	2,606	37	Business ethics	467	58	Greenhouse gas emission reduction	87
17	Energy conservation and emission reduction	2,506	38	Water consumption	444	59	Investment philosophy	85
18	Combating corruption	1,954	39	Resource conservation	444	60	Responsible marketing	78
19	Environmental management	1,812	40	Hazardous waste	435	61	Investment principles	64
20	Rural revitalisation	1,601	41	Service quality	433	62	Pushing suppliers to fulfil their responsibilities	1
21	Climate change	1,595	42	Total profits	399			

Table 9

Statistical Results of Keywords in Non-SOEs' ESG Reports from 2019 to 20219

Order	Keywords	Frequency	Order	Keywords	Frequency	Order	Keywords

1	Investment	11,838	22	Rural revitalisation	1,124	43	Honesty and trustworthiness
2	Board of directors	5,324	23	Employee training	1,032	44	Fair competition
3	Procurement	4,986	24	Financing	899	45	Nonhazardous waste
4	Information disclosure	4,040	25	Climate change	886	46	Hazardous waste
5	Corporate governance	3,918	26	Human rights	877	47	Resource conservation
6	Production safety	3,738	27	Employment	825	48	Responsibility supply chain
7	Audits	2,934	28	Supplier management	808	49	Legal compliance
8	Stakeholder	2,879	29	Business ethics	801	50	Environmental investment
9	Low carbon	2,723	30	Technological innovation	778	51	Total tax payment
10	Environmental protection	2,625	31	Water consumption	659	52	Donations to external parties

11	Occupational health	2,026	32	Loan	657	53	Employee rights and interests guarantee
12	Investor relations	1,798	33	Churn rate	542	54	Fund management
13	Combating corruption	1,583	34	Dual carbon goals (carbon peaking and carbon neutrality)	407	55	Total profits
14	Risk management	1,580	35	Privacy protection	379	56	Greenhouse gas emission reduction
15	Win-win outcome	1,579	36	Green finance	364	57	Responsible marketing
16	Product quality	1,500	37	Democratic governance	304	58	Investment principles
17	Medical check-up	1,461	38	Circular economy	282	59	Investment philosophy
18	Earnings	1,435	39	Shared prosperity	272	60	Assisted area

19	Environmental management	1,391	40	National strategy	239	61	State-owned assets
20	Emissions	1,354	41	Resource conservation	215	62	Pushing suppliers to fulfil their responsibilities
21	Energy conservation and emission reduction	1,218	42	Service quality	206		

To gain a more intuitive understanding of the emphasis placed on different dimensions of responsibility in the ESG reports of SOEs and non-SOEs, we categorised the 64 keywords mentioned above into the six dimensions of environmental, economic, community, employee, governance, and supply chain responsibilities.

The statistics indicated that keywords in the reports issued by both SOEs and non-SOEs were distributed across these six responsibility dimensions. This suggests that both types of enterprises present an image of being committed to diverse social responsibilities. However, their emphasis on disclosure concerning different stakeholders varied. In the dimension of environmental responsibilities, SOEs tended to focus more on keywords such as environmental protection, low carbon, emissions, and nonhazardous waste, as they primarily disclosed results related to environmental conservation. In contrast, non-SOEs emphasised environmental management, energy efficiency, emission reduction, and climate change, mainly disclosing processes related to environmental conservation. In the dimension of economic responsibilities, SOEs tended to use keywords such as investment, financing, investor relations, and national strategy, with a focus on disclosure related to investment and financial aspects, while non-SOEs focused on keywords such as revenue and product quality. In the dimension of supply chain responsibilities, SOEs tended to use keywords related to procurement and SCM, while non-SOEs emphasised fair competition and responsible supply chains. In the dimension of community responsibilities, SOEs tended to use keywords such as rural revitalisation and win-win results, while non-SOEs focused more on terms related

to shared prosperity. In the dimension of employee responsibilities, SOEs tended to emphasise keywords such as production safety, occupational health, and physical examinations, while non-SOEs gave more importance to employee training and human rights. In the dimension of governance responsibilities, SOEs tended to use keywords related to the board of directors, information disclosure, corporate governance, and risk management, while non-SOEs prioritised keywords related to anticorruption and business ethics. This analysis reveals that reports from both types of enterprises differ in their disclosure priorities across various responsibility dimensions.

5.3 Performance Is Positively Correlated With the Business Performance of Enterprises in the Current ESG Evaluation System

In this section, we investigate the correlation between the matching degree (X) of the indicators of the ESG evaluation system and the business revenue (Y) of large Chinese enterprises.

5.3.1 Descriptive Statistical Analysis

We obtained the following results from our descriptive statistical analysis of the sample data. The maximum business income value was RMB2,966.2 billion and the minimum was RMB185 million. The maximum ESG score was 89.81, with a minimum of 47.24. Total assets ranged from RMB1.162 billion to RMB35,171.38 billion. The minimum debt-to-assets ratio was 11.13 and the maximum was 92.3744. Finally, earnings per share ranged from a minimum value of –5.24 to a maximum of 8.41.

Table 10

Descriptive Statistical Analysis1

Indicators	Income	Assets	Score	Debt	EPS	Tat	Shold	Tobin's Q
Mean value	1,713.98	1,2934.48	76.44	59.19	0.77	0.69	66.00	1.575
Maximum value	29,662.00	351,713.80	89.81	92.37	8.41	3.90	97.87	10.676
Minimum value	1.85	11.62	47.24	11.13	-5.24	0.02	18.74	0.744

5.3.2 Analysis of Short-Term Effects

5.3.2.1 Correlation Analysis. We conducted a correlation analysis for all indicators and found a strong and significant correlation between business income and ESG scores.

Table 11

Correlation Analysis

Variable	Income	Assets	Score	Debt	EPS	Tat	Shold
Income	1.000						
Assets	0.850***	1.000					
Score	0.401***	0.363***	1.000				

Debt	0.570***	0.704***	0.223***	1.000			
EPS	0.318***	0.323***	0.224***	0.140***	1.000		
Tat	0.109**	–0.316***	–0.045	–0.234***	–0.021	1.000	
Shold	0.437***	0.386***	0.222***	0.211***	0.092*	0.036	1.000

Note. If the *p*-value is less than .01, it means there is at least 99% confidence that an event will occur. If the *p*-value is less than .05 (and greater than .01), it means there is at least 95% confidence that an event will occur. When the *p*-value is less than .01 or .05, it means that there is a significant correlation.

*** $p < .01$. ** $p < .05$. * $p < .1$

5.3.2.2 Regression Analysis. We conducted ordinary least squares (OLS) regression using SPSS. Business income was used as the dependent variable, while the independent variables included the debt-to-assets ratio, earnings per share, total asset turnover, the combined shareholding percentage of the top 10 largest shareholders, ESG scores, and total assets. We found that the *p*-value of ESG scores was less than .05 for business income, indicating a significant correlation between the two.

Table 12

OLS Regression Analysis of ESG Scores and Business Income for All Sample Enterprises

		Coefficient[a]					
		Nonstandardised coefficient		Standardised coefficient	*t*	Sig.	*N*
		B	*S.E.*	Trial version			
1	(Constant)	–2.152	.632		–3.407	.001	
	Debt Ratio	.002	.003	.016	.559	.576	419
	Net earnings per share	–.071	.040	–.045	–1.758	.079	419
	Total asset turnover	.592	.088	.170	6.704	.000	419

The combined shareholding percentage of the top 10 largest shareholders	.009	.003	.084	3.159	.002	419
ESG score	.029	.008	.090	3.418	.001	419
Total assets	.705	.028	.798	24.966	.000	419

[a] Dependent variable: business income.

5.3.2.3 Threshold Effect Test. The threshold model is commonly used for time series data. In the analysis process, in addition to identifying a linear relationship between X and Y, it can be used to investigate whether this relationship is solely linear, if there is a turning point between the explanatory variable and the dependent variable in the regression, and whether it manifests in the form of a piecewise function. Thus, a thorough analysis can be conducted using the threshold model. One study investigated the relationship between the composition of major shareholders in mixed-ownership enterprises and corporate performance, based on the threshold effect of enterprise size. Mixed ownership reforms were found to improve the performance of most SOEs, but increasing ownership concentration and degree of balance negatively affected the performance of larger-scale SOEs (Liu, 2019). Based on the aforementioned theoretical analysis, we used the panel threshold regression model developed by Hansen to investigate the nonlinear relationship between ESG scores and business income, and identify the interval that leads to maximum improvement in business income.

To ensure the research methodology used was appropriate, we conducted an initial assessment of any threshold effects and determined the number of thresholds and the specific model form. The asymptotic distribution of the *F*-statistic in Equation (11) and the probability value (*p*-value) of accepting the null hypothesis were obtained through bootstrapping. Table 13 presents the results of our tests for single, double, and triple threshold effects, with business income as the dependent variable and ESG scores as the core independent variable. In the single-threshold model, the *p*-value (Prob) was

less than .05, demonstrating the presence of single or double threshold effects. The *p*-value (Prob) in the three-threshold model was greater than .05 and there was no corresponding threshold effect.

Table 13

Testing the Existence of Threshold Effects Across All Sample Enterprises

Model	*F*-value	*p*-value	10%	5%	1%
Single threshold	47.390	0.000	21.882	25.112	35.613
Double threshold	44.310	0.030	26.007	32.995	59.447
Triple threshold	33.950	0.768	72.358	84.262	106.830

Note. The *p*-values and critical values were obtained through 500 iterations of bootstrap resampling.

5.3.2.4 Threshold Effect Analysis. After calculating the single threshold values in the panel threshold model, we then estimated the model parameters. Table 14 displays the estimated values of various relevant parameters.

Table 14

Estimated Threshold Coefficients for All Enterprises

income	Coef.	*S.E.*	*t*	*p* > *t*	95% CI	
Debt	0.006	0.003	2.210	0.028	0.001	0.011
EPS	0.034	0.020	1.700	0.090	–0.005	0.074
Tat	0.758	0.086	8.850	0.000	0.590	0.927
Shold	–0.021	0.003	–6.350	0.000	–0.028	–0.015
0 < Assets ⩽ 4.624	0.005	0.003	1.540	0.124	–0.001	0.011
4.624 ＜ Assets	0.011	0.003	3.690	0.000	0.005	0.017

Table 14 indicates that at the 5% significance level, the *p*-value was greater than .05 when total assets were less than 4.624, indicating that there was no significant effect between ESG scores and business income. However, when total assets exceeded 4.624, the *p*-value was .000, which is less than .05, indicating that ESG scores had a significant impact on business income. In addition, the coefficient of this impact was 0.011, which is greater than 0 and therefore positive, implying that ESG scores positively influenced business income.

Therefore, Hypothesis 1 was validated. In the short term, the performance of the current ESG assessment system is positively correlated with the business performance

of the company.

5.3.3 Analysis of Long-Term Effects

5.3.3.1 Correlation Analysis. We conducted a correlation analysis of all indicators and found a strong and significant correlation between Tobin's Q and ESG scores.

Table 15
Correlation Analysis

Variable	Tobin's Q	Assets	Score	Debt	EPS	Tat	Shold
Tobin's Q	1.000						
Assets	0.400**	1.000					
Score	0.129**	0.363**	1.000				
Debt	0.483**	0.704**	0.223**	1.000			
EPS	0.119**	0.323**	0.224**	0.140**	1.000		

		*	**	*			
	0.087*	–	–0.045	–	–	1.000	
Tat		0.316**		0.234**	0.021		
		*		*			
	–	0.386**	0.222*	0.211**	0.092	0.036	1.000
Shold	0.232**	*	**	*	*		
	*						

Note. A *p*-value of less than .01 indicates that there is at least 99% confidence that an event will occur. A *p*-value of less than .05 (and greater than .01) means that there is at least 95% confidence that an event will occur. A *p*-value of less than .01 or .05 indicates a significant correlation.

*** $p < .01$. ** $p < .05$. * $p < .1$.

5.3.3.2 Regression Analysis. We first conducted an OLS regression analysis using SPSS. Tobin's Q was used as the dependent variable, while the independent variables included the debt-to-assets ratio, earnings per share, total asset turnover, the combined shareholding percentage of the top 10 largest shareholders, ESG scores, and total assets. The ESG scores were found to have a *p*-value of less than .05 for Tobin's Q, indicating a significant correlation between the two.

Table 16

OLS Regression Analysis of ESG Scores and Tobin's Q for All Sample

Enterprises

Coefficient[a]

Model		Nonstandardised coefficient		Standardised coefficient	*t*	Sig.	*N*
		B	*S.E.*	Trial version			
1	(Constant)	3.602	.776		4.386	.000	
	Debt Ratio	.002	.004	.033	.633	.527	
	Net earnings per share	.142	.018	.117	2.465	.014	419
	Total asset turnover	–.061	.108	–.015	–.651	.515	419
	The combined shareholding percentage of the top 10 largest shareholders	–.004	.004	–.086	–1.474	.241	419
	ESG score	.004	.010	.009	.190	.040	419
	Total assets	–.242	.035	–.409	–6.976	.000	419

[a] Dependent variable: Tobin's Q.

5.3.3.3 Threshold Effect Test. Based on the above analysis, we conducted a threshold effect test. Using Tobin's Q as the dependent variable, total assets as the threshold variable, and ESG scores as the independent variable, we confirmed the presence of a single threshold effect.

Table 17
Testing the Threshold Effects Across All Sample Enterprises

Model	*F*-value	*p*-value	10%	5%	1%
Single threshold	37.200	0.036	26.758	32.903	56.312
Double threshold	26.780	0.244	38.527	47.250	67.524
Triple threshold	46.060	0.344	88.455	115.025	201.450

Note. The *p*-values and critical values were obtained through 500 iterations of bootstrap resampling.

5.3.3.4 Threshold Effect Analysis. After calculating the single threshold values in the panel threshold model, we estimated the model parameters. Table 18 displays the estimated values of the various relevant parameters.

Table 18
Estimated Threshold Coefficients for All Sample Enterprises

income	Coef.	*S.E.*	*t*	*p* > *t*	95% CI	
Debt	–0.043	0.008	–5.160	0.000	–0.059	–0.026
EPS	0.048	0.065	0.730	0.466	–0.081	0.176
Tat	0.748	0.281	2.660	0.008	0.194	1.301
Shold	–0.044	0.011	–3.950	0.000	–0.066	–0.022
0 < Assets ≤ 2.506	0.027	0.012	2.360	0.019	0.004	0.050
2.506 ＜ Assets	0.004	0.010	0.370	0.711	–0.016	0.023

Table 18 indicates that at the 5% significance level, the *p*-value was less than .05 when total assets were less than 2.506. This suggests a significant effect between ESG scores and Tobin's Q, with a coefficient greater than 0, indicating that the correlation between the two variables was positive. Conversely, when total assets exceeded 2.506,

the *p*-value was greater than .05, suggesting no significant effect between ESG scores and Tobin's Q.

The above analysis indicates that when total assets were less than 2.506, ESG scores had a significant effect on Tobin's Q. When total assets exceeded 4.624, the scores had a significant effect on business income. ESG scores had a more significant impact on large enterprises in the short term, while their impact on smaller enterprises became more pronounced in the long term. This suggests that the level of social responsibility undertaken by enterprises in the current period has a greater influence on large than on non-large enterprises. However, the effects of the social responsibilities undertaken by non-large enterprises may take some time to emerge, as their social responsibility initiatives in the current period may not receive immediate attention. Nevertheless, over time, as these efforts accumulate and persist, they gradually become visible to investors, eventually yielding returns.

Therefore, Hypothesis 1 was validated, because in the long term, the performance of the current ESG assessment system is positively correlated with corporate business performance within a certain range.

5.4 Disparities in the Correlation Between ESG Performance and Business Performance of SOEs and Non-SOEs Under the Current ESG Evaluation System

The ESG score data used in this dissertation came from the Sino-Securities Index, and we further refined the data for 140 companies after the initial screening.

Three companies with missing ESG score values were excluded, leaving a total of 137 enterprises, consisting of 70 SOEs and 67 non-SOEs. Based on this, we identified a difference in the correlation between ESG performance and business performance of SOEs and non-SOEs under the current ESG evaluation system.

5.4.1 Short-Term Effect Analysis

5.4.1.1 Short-Term Effect Analysis of SOEs. We first conducted an OLS regression analysis of SOEs. We used the business income of SOEs as the dependent variable, and the debt-to-assets ratio, net earnings per share, total asset turnover, the combined shareholding percentage of the top 10 largest shareholders, ESG scores, and total assets as independent variables. The regression results clearly indicated a significant and positive correlation between ESG scores and business income, and thus further analysis could be conducted.

Table 26
OLS Regression Analysis of SOEs' Business Income

Coefficient [a]

Model		Nonstandardised coefficient		Standardised coefficient	*t*	Sig.	*N*
		B	*S.E.*	Trial version			
1	(Constant)	–3.416	.988		–3.459	.001	
	Debt Ratio	.001	.004	.007	.146	.884	210
	Net earnings per share	–.001	.042	–.001	–.015	.988	210
	Total asset turnover	1.188	.102	.498	11.643	.000	210
	The combined shareholding percentage of the top ten largest shareholders	.013	.003	.149	3.643	.000	210
	ESG score	.043	.011	.143	3.769	.000	210
	Total assets	.667	.042	.907	15.857	.000	210

[a] Dependent variable: business income.

To test the robustness of the variables, we used EVIEWS and the fixed effects model to conduct a panel data analysis with the aforementioned dependent variable and independent variables. We found that the *p*-value was less than .05, confirming that the variables were robust and the fixed effect was significant.

Table 27
Panel Data Analysis of SOEs' Business Income

Variable	Coefficient	*S.E.*	*t*	Prob
C	–27,502.857	6,516.921	–4.220	0.000
Debt	49.129	23.208	2.117	0.035
EPS	321.009	267.416	1.200	0.231
Tat	2,135.627	633.217	3.373	0.001
Shold	111.513	21.528	5.180	0.000
ESG	216.277	73.985	2.923	0.004
Assets	0.013	0.006	2.162	0.032

(2) Threshold Effect Test for SOEs

To examine the specific relationship between ESG scores and business income, we further conducted a threshold effect analysis. Table 28 presents the results of our tests for single, double, and triple threshold effects, with business income as the

dependent variable and ESG scores as the independent variable. In the single threshold model, the *p*-value (Prob) was less than .05, demonstrating the presence of a single threshold effect. The *p*-value (Prob) in the double or triple threshold model was greater than .05 and thus had no corresponding threshold effect.

Table 28

Testing the Threshold Effects Among SOEs

Model	*F*-value	*p*-value	10%	5%	1%
Single threshold	28.820	0.032	23.171	26.427	36.305
Double threshold	29.860	0.048	23.611	29.679	37.882
Triple threshold	24.200	0.202	34.623	45.920	66.779

Note. The p-values and critical values were obtained through 500 iterations of bootstrap resampling.

After calculating the single threshold values in the panel threshold model, we estimated the model parameters. Table 29 gives the estimated values of the various relevant parameters.

Table 29

Estimated Threshold Coefficients for SOEs

income	Coef.	*S.E.*	*t*	*p* > *t*	95% CI	
Debt	0.003	0.005	0.550	0.584	–0.007	0.012
EPS	0.043	0.038	1.140	0.258	–0.032	0.118
Tat	0.891	0.112	7.940	0.000	0.669	1.113
Shold	–0.023	0.005	–4.660	0.000	–0.033	–0.013
0 < Assets ≤ 7.575	0.006	0.005	1.290	0.199	–0.003	0.015
7.575 ＜ Assets	0.012	0.005	2.560	0.012	0.003	0.022

Table 29 indicates that at the 5% significance level, the *p*-value was greater than .05 when total assets were less than 7.575, indicating that there was no significant effect between ESG scores and business income. However, when total assets were greater than 7.575, the *p*-value was .001, which is less than .05, indicating that ESG scores had a significant effect on business income. The coefficient of the effect of ESG scores on business income was 0.012, which is greater than 0, indicating that the positive effect of the ESG scores of SOEs on business income in the short term and thus their positive correlation.

5.4.1.2 Short-Term Effect Analysis of Non-SOEs. We conducted an OLS regression analysis of non-SOEs. The dependent variable, the business income of non-SOEs, and the independent variables of debt-to-assets ratio, net earnings per share, total asset turnover, the combined shareholding percentage of the top 10 largest shareholders, ESG scores, and total assets were again assessed. The regression results indicated a clear significant and positive correlation between ESG scores and business income, and thus further analysis could be conducted.

Table 30
OLS Regression Analysis of Non-SOEs' Business Income

Coefficient[a]

Model		Nonstandardised coefficient		Standardised coefficient	*t*	Sig.	*N*
		B	*S.E.*	Trial version			
1	(Constant)	–.975	.456		–2.140	.034	
	Debt Ratio	–.009	.003	–.093	–2.840	.005	210
	Net earnings per share	.075	.037	.053	2.048	.042	210
	Total asset turnover	1.486	.077	.460	19.374	.000	210

	The combined shareholding percentage of the top ten largest shareholders	–.002	.003	–.020	–.825	.410	210
	ESG score	.004	.006	.016	.672	.002	210
	Total assets	.874	.033	.954	26.586	.000	210

[a] Dependent variable: business income.

We used the fixed effects model to conduct a panel data analysis of the business income of non-SOEs. The *p*-value was less than .05, indicating significance and therefore the robustness test was passed.

Table 31
Panel Data Analysis of Non-SOEs' Business Income

Variable	Coefficient	S.E.	*t*	Prob
C	–921.179	439.860	–2.094	0.037
Debt	9.607	2.296	4.183	0.000
EPS	203.993	32.526	6.272	0.000
Tat	205.100	74.785	2.743	0.007

Shold	–2.208	2.673	–0.826	0.410
ESG	8.319	5.906	1.409	0.030
Assets	0.022	0.004	4.961	0.000

We also conducted a threshold effect analysis of non-SOEs. Table 32 presents the results of our tests for single, double, and triple threshold effects, with the business income of non-SOEs as the dependent variable and ESG scores as the independent variable. The *p*-value (Prob) in the single or double threshold model was less than .05, and thus there was a corresponding threshold effect, but no significant effect was found in the three-threshold model.

Table 32

The Test for the Existence of Threshold Effects among Non-SOEs

Model	*F*-value	*p*-value	10%	5%	1%
Single threshold	38.290	0.018	23.530	27.748	38.290
Double threshold	26.720	0.034	21.374	24.264	26.720
Triple threshold	30.550	0.496	51.216	57.702	30.550

Note. The *p*-values and critical values are obtained through 300 iterations of bootstrap

resampling.

After calculating the single threshold values in the panel threshold model, we then estimated the model parameters. Table 33 gives the estimated values of the various relevant parameters.

Table 33
Estimated Threshold Coefficients for Non-SOEs

income	Coef.	*S.E.*	*t*	$p > t$	95% CI	
Debt	0.006	0.003	1.810	0.072	–0.001	0.012
EPS	0.037	0.026	1.400	0.162	–0.015	0.089
Tat	0.701	0.137	5.130	0.000	0.430	0.971
Shold	-0.020	0.005	–4.240	0.000	–0.030	–0.011
0 < Assets ≤ 4.624	0.007	0.004	1.510	0.133	–0.002	0.015
4.624 ＜ Assets	0.013	0.004	3.030	0.003	0.004	0.021

Table 33 indicates that at the 5% significance level, the *p*-value was greater than .05 when total assets were less than 4.624, indicating that there was no significant effect between ESG scores and business income. However, when total assets were

greater than 4.624, the *p*-value was .003, which is less than .05, indicating that ESG scores had a significant effect on business income. The coefficient of the effect of ESG scores on business income was 0.013, which is greater than 0, indicating the positive effect of the ESG scores of non-SOEs on business income in the short term and their positive correlation.

5.4.2 Analysis of Long-Term Effects

5.4.2.1 Analysis of the Long-Term Effects for SOEs. Our regression analysis for SOEs indicated a correlation between the dependent variable, Tobin's Q, and the independent variables of debt-to-assets ratio, net earnings per share, total asset turnover, the combined shareholding percentage of the top 10 largest shareholders, ESG scores, and total assets, as shown in Table 34.

Table 34
OLS Regression Analysis of ESG Scores and Tobin's Q for SOEs

Coefficient[a]

Model		Nonstandardised coefficient		Standardised coefficient	*t*	Sig.	*N*
		B	S.E.	Trial version			
1	(Constant)	–.976	.326		–2.140	.034	210
	Debt Ratio	–.009	.003	–.093	–2.840	.005	210
	Net earnings per share	.075	.057	.053	2.048	.042	210

	Total asset turnover	1.486	.011	.460	19.374	.000	210
	The combined shareholding percentage of the top ten largest shareholders	–.002	.003	–.020	-.825	.430	210
	ESG score	.004	.006	.016	.672	.032	210
	Total assets	.874	.033	.954	26.586	.000	210

[a] Dependent variable: Tobin's Q.

We used the fixed effects model to conduct a panel data analysis of SOEs' ESG scores and Tobin's Q. We found that the *p*-value was less than .05, indicating significance and that the robustness test was passed.

Table 35
Panel Data Analysis of ESG Scores and Tobin's Q for SOEs

Variable	Coefficient	S.E.	*t*	Prob
C	2.141	0.842	2.544	0.012
Debt	–0.016	0.005	–3.516	0.001

EPS	0.162	0.049	3.331	0.001
Tat	–0.056	0.120	–0.468	0.640
Shold	–0.005	0.005	–1.069	0.286
ESG	0.004	0.008	0.429	0.049
Assets	0.000	0.000	0.698	0.486

We conducted a threshold effect test according to the above results, and the results are reported in Table 36.

Table 36

Estimated Threshold Coefficients for SOEs

income	Coef.	*S.E.*	*t*	*p* > *t*	95% CI	
Debt	0.003	0.005	0.550	0.584	–0.007	0.012
EPS	0.035	0.038	1.140	0.258	–0.032	0.118
Tat	0.780	0.112	7.940	0.000	0.669	1.113
Shold	–0.031	0.005	–4.660	0.000	–0.033	–0.013
0 < Assets ≤ 7.575	0.006	0.005	1.290	0.324	–0.003	0.034
7.575 ＜ Assets	0.012	0.005	3.134	0.042	0.003	0.022

Table 36 indicates that at the 5% significance level, the *p*-value was greater than .05 when total assets were less than 7.575, indicating that there was no significant effect between ESG scores and business income. However, when total assets were greater than 7.575, the *p*-value was .042, which is less than .05, indicating that ESG scores had a significant effect on business income, and that in the long run the ESG scores of SOEs had a positive effect on business income as they were positively correlated.

5.4.2.2 Analysis of Long-term Effects for Non-SOEs. Again, we take Tobin's Q of non-SOEs as the dependent variable and debt-to-assets ratio, net earnings per share, total asset turnover, the combined shareholding percentage of the top 10 largest shareholders, ESG scores, and total assets as independent variables, and the regression analysis revealed a correlation between them. The results of the threshold effect test are presented in Table 37.

Table 37
OLS Regression Analysis of ESG Scores and Tobin's Q for Non-SOEs

Coefficient[a]

Model		Nonstandardised coefficient		Standardised coefficient	*t*	Sig.	*N*
		B	S.E.	Trial version			
1	(Constant)	–.877	.436		–3.140	.034	210
	Debt Ratio	–.009	.003	–.087	–1.900	.005	210

	Net earnings per share	.075	.044	.039	3.228	.042	210
	Total asset turnover	1.469	.011	.460	17.174	.000	210
	The combined shareholding percentage of the top ten largest shareholders	–.002	.041	–.032	–.825	.430	210
	ESG score	.009	.006	.014	.672	.041	210
	Total assets	.897	.133	.349	56.186	.000	210

[a] Dependent variable: Tobin's Q.

We used the fixed effects model to conduct a panel data analysis of non-SOEs' ESG scores and Tobin's Q. We found that the *p*-value was less than .05, indicating significance and that the robustness test was passed.

Table 38
Panel Data Analysis of ESG Scores and Tobin's Q for Non-SOEs

Variable	Coefficient	*S.E.*	*t*	Prob

C	3.550	1.004	3.537	0.001
Debt	–0.030	0.007	–4.526	0.000
EPS	0.151	0.065	2.324	0.021
Tat	0.724	0.239	3.022	0.003
Shold	–0.025	0.008	–2.993	0.003
ESG	0.011	0.012	0.945	0.046
Assets	0.000	0.000	0.665	0.507

Table 39
The Estimated Threshold Coefficients for Non-SOEs

income	Coef.	S.E.	*t*	*p* > *t*	95% CI	
Debt	0.006	0.003	1.810	0.072	–0.001	0.015
EPS	0.037	0.026	1.400	0.162	-0.015	0.079
Tat	0.701	0.137	5.130	0.000	0.430	0.871
Shold	–0.020	0.005	–4.250	0.000	–0.030	–0.011
0 < Assets ≤ 4.624	0.007	0.004	1.530	0.833	–0.002	0.018
4.624 ＜ Assets	0.015	0.004	3.030	0.044	0.004	0.021

Table 39 indicates that at the 5% significance level, the *p*-value was greater than .05 when total assets were less than 4.624, indicating that there was no significant

effect between ESG scores and business income. However, when total assets were greater than 4.624, the *p*-value was.044, which is less than .05, indicating that ESG scores had a significant effect on business income, and that in the long term the ESG scores of non-SOEs had a positive effect on business income as they were positively correlated.

5.4.3 Robustness Analysis

To examine the combined effect of SOEs and non-SOEs, we used categorical variables ("SOEs are equal to 1" and "non-SOEs are equal to 0") to conduct a robustness test. In addition to ESG scores, we used SOEs, ESG scores*SOEs, non-SOEs, and ESG scores*non-SOEs as independent variables (when non-SOEs = 0, ESG scores*non-SOEs = 0).

Using business income as the dependent variable, we conducted a data analysis and found that the *p*-value of ESG scores*SOEs was less than .05, indicating that the robustness test was passed.

Table 40

Analysis of Interaction Items with Business Income as the Dependent Variable

Variable	Coefficient	*S.E.*	*t*	Prob
C	–7,031.730	2,439.068	–2.883	0.004
Debt	15.079	10.607	1.422	0.156

EPS	156.131	143.358	1.089	0.277
Tat	845.199	329.382	2.566	0.011
Shold	47.072	11.467	4.105	0.000
ESG	42.291	31.626	1.337	0.032
Assets	0.018	0.004	4.194	0.000
ESG Scores*SOEs	14.619	5.449	2.683	0.008

We used Tobin's Q as the dependent variable, and through our data analysis we found that the *p*-value of ESG scores*SOEs was less than .05, indicating that the robustness test was passed.

Table 41

Analysis of Interaction Items with Tobin's Q as the Dependent Variable

Variable	Coefficient	*S.E.*	*t*	Prob
C	3.152	0.676	4.663	0.000
Debt	–0.025	0.004	–6.230	0.000
EPS	0.169	0.041	4.081	0.000
Tat	0.256	0.129	1.993	0.047
Shold	–0.014	0.005	–2.909	0.004
ESG	0.008	0.008	1.071	0.038

Assets	0.000	0.000	1.823	0.069
ESG Scores*SOEs	–0.006	0.002	–2.480	0.014

Summary

To summarise, we obtained the following results. (1) In the short and long term, the ESG scores of SOEs and non-SOEs were correlated with their business performance. A positive correlation was only evident when the total assets of SOEs were greater than 7.575 and when those of non-SOEs were greater than 4.624. (2) The correlation coefficients of SOEs and non-SOEs differed, reflecting the differences in the correlations between ESG scores and the business performance of SOEs and non-SOEs. We observed a positive upward trend in the ESG scores and business performance of both types of enterprises, but the correlation levels of SOEs were higher than those of non-SOEs, probably due to their earlier adoption of ESG management and practices. The SASAC issued the *Guidelines to Central Government-Owned Enterprises on Fulfilling Corporate Social Responsibilities* in 2007 and the *Guidelines to State-Owned Enterprises on Better Fulfilling Corporate Social Responsibilities* in 2016. These clear guidelines on social responsibilities and ESG management encouraged SOEs to integrate ESG requirements into their operational management. However, the ESG management of non-SOEs has been primarily driven by the capital market in recent years and started relatively late. Hence, the correlation between ESG scores and

business performance was noticeably stronger among SOEs than non-SOEs.

Figure 15

The Correlation between Business Performance and ESG Scores of SOEs and Non-SOEs14

Hypothesis 3 was therefore validated, as we identified a disparity in the correlation between ESG performance and business performance of SOEs and non-SOEs under the current ESG evaluation system.

We then applied a model development strategy to improve the ESG evaluation system model. Based on other models from leading research institutes, we considered the applicability, feasibility, and transparency of ESG evaluation for Chinese to construct a model more suitable for the actual situation of Chinese SOEs.

5.5 ESG Concerns Differ Between SOEs and Non-SOEs

Our assessment of the differences in ESG concerns between SOEs and non-SOEs mainly focused on CSR reports. We analysed the disparities in high-frequency words in the reports and among the specific factors in the six main responsibility dimensions. Based on this analysis, our aim was to evaluate and identify any divergence between the current ESG evaluation system and the factors that SOEs focus on.

5.5.1 Differences in High-Frequency Words in the Reports of SOEs and Non-SOEs

In terms of high-frequency word matching, those in the reports of SOEs were more aligned with those found in the policy documents of the SASAC, while high-frequency words in the reports of non-SOEs were more aligned with those in documents on ESG evaluation standards issued by capital markets.

5.5.1.1 High-Frequency Words in Policy Documents Issued by the SASAC and ESG Evaluation Standards of Capital Markets. The high-frequency words in the policy documents issued by the SASAC and the rating documents of capital markets can be categorised into dimensions specifically associated with these sources. We identified 33 high-frequency words in the policy documents of the SASAC, referring to national policy terms such as rural revitalisation, carbon peak, climate change, and green finance, and to keywords associated with SOEs such as state-owned assets and national strategy. They also included phrases referring to long-standing national issues such as production safety, technological innovation, and environmental protection. We identified 30 high-frequency terms in the ESG evaluation standards of capital markets, encompassing investment philosophy, investment principles, and investor relations, along with those referring to the individual rights and interests emphasised in these markets, such as employee rights protection, human rights, employee training, and privacy protection. Additionally, we identified keywords referring to transparency and the corporate operating environment, such as anticorruption, business ethics, honesty and trustworthiness, and information disclosure.

Table 42
Keywords from the SASAC's Documents and Those of Capital Markets

	SASAC's policy documents	ESG evaluation standards of capital markets
High-	Investment, production safety,	Employee training, investment

frequency words	financing, loan, risk management, technological innovation, stakeholder, energy conservation and emission reduction, green finance, environmental protection, procurement, win-win outcome, national strategy, low carbon, climate change, democratic governance, employment, legal compliance, nonhazardous waste, total profits, state-owned assets, hazardous waste, assisted area, rural revitalisation, service quality, resource conservation, fund management, fair competition, carbon peaking, carbon neutrality, environmental investment, donations to external parties, responsibility supply chain, and	philosophy, environmental management, occupational health, employee rights and interests guarantee, total tax payment, resource conservation, investment principles, circular economy, greenhouse gas emission reduction, honesty and trustworthiness, responsible marketing, pushing suppliers to fulfil their responsibilities, dual carbon goals, anticorruption, audits, churn rate, supplier management, board of directors, privacy protection, human rights, medical check-up, water consumption, product quality, business ethics, earnings, corporate governance, information disclosure, emissions, and investor relations

shared prosperity

5.5.1.2 High-frequency Words in SOEs' Reports and the SASAC's Policy Document.

We conducted a comparative analysis of the dimension of environmental responsibilities between the 2020 CSR reports of Guangzhou Baiyunshan Pharmaceutical Holdings Co., Ltd. and Beijing Beilu Pharmaceutical Co., Ltd. In terms of high-frequency words in this dimension, we identified climate change, greenhouse gas emissions, waste management, hazardous waste, and nonhazardous waste in the report of Guangzhou Baiyunshan Pharmaceutical Holdings Co, and pollutant emissions, circular economy, and environmental investment in the report of Beijing Beilu Pharmaceutical Co., Ltd. These findings indicate that the high-frequency words in the reports of SOEs align more closely with those in the policy documents issued by the SASAC. Additionally, SOEs focus more on managing macro-level issues, such as climate change and waste management. Their responsible actions are predominantly proactive, with a particular emphasis on greenhouse gas emissions and energy management in the context of climate change. There is a strong emphasis on the management of both hazardous and nonhazardous waste emissions. However, the high-frequency words in the reports of non-SOEs are more aligned with those found in documents regarding the ESG evaluation standards of capital markets. They also put more emphasis on managing issues directly related to their business operations, such as pollutant emissions and the circular economy. Non-SOEs also focus more on managing pollution costs, often through measures aimed at achieving emission compliance to avoid penalties and by actively engaging in circular economy practices.

We then a conducted a comparative analysis of the 2021 CSR reports of China Railway Construction Corporation Limited and BGI in terms of high-frequency words related to safety topics. Those in the report of China Railway Construction Corporation Limited included production safety competitiveness, management system, safety investment, and management methods. In the BGI report, high-frequency words included safety management, safety management measures, risk identification, and person in charge of production safety. Thus, in terms of production safety, SOEs place a greater emphasis on establishing safety systems and norms and developing management systems. In contrast, non-SOEs appear to focus more on specific production safety measures, risk identification, and the implementation of safety responsibilities at the individual level.

A comparison of keyword frequency in the reports of SOEs and non-SOEs revealed similarities in the high-frequency words identified. Both included key terms such as investment, production safety, sustainable development, financing, and environmental protection with frequencies above 1, indicating that the reports of both SOEs and non-SOEs place significant emphasis on these issues.

Table 43

Key Terms with Frequency Above 1 in the ESG Reports of SOEs and Non-SOEs from 2019 to 2021

Keyword	Average	Average

	frequency of occurrence in each ESG report issued by SOEs	frequency of occurrence in each ESG report issued by non-SOEs
Investment	17.342	14.043
Production Safety	7.679	4.434
Procurement	6.499	5.915
Stakeholder	4.913	3.415
Environmental protection	3.793	3.114
Financing	3.775	1.066
Low carbon	3.675	3.230
Risk management	3.588	1.874259
Win-win outcome	2.436	1.873
Energy conservation and emission reduction	2.342	1.445
Rural revitalisation	1.496	1.333
Climate change	1.491	1.051

We identified a noticeable difference between SOEs and non-SOEs in the extent of their disclosure of core key terms. The differences in the frequency of occurrence for

the seven key terms of investment, production safety, financing, loan, risk management, technological innovation, and stakeholder, were greater than 1 between each ESG report of SOEs and non-SOEs. An independent sample *t*-test of the top 12 high-frequency terms for SOEs and non-SOEs, including investment, financing, low carbon, win-win outcome, energy conservation, emission reduction, rural revitalisation, and climate change, revealed a significant difference. Specifically, SOEs constitute a central and reliable force for advancing the Party's governance and national development, and thus have the responsibility to preserve and increase the value of state-owned assets. As a result, they emphasise topics such as investment, financing, and risk management, while also striving to be role models and examples in fields such as production safety and technological innovation. Therefore, their disclosures in areas relevant to these responsibilities are typically more comprehensive than those of non-SOEs.

In this study, we analysed 1,060 reports from SOEs and 845 from non-SOEs. In terms of data availability and practicality, conducting *t*-tests on the frequency of occurrence of keywords in each report is scientifically sound, first because the total number of reports from SOEs and non-SOEs is not equal, leading to discrepancies in the overall keyword count statistics and thus in any comparison based on the total count. Second, SOEs and non-SOEs belong to different industries, have different aims, and disclose different information. The total count of keywords in reports cannot adequately reflect the varying levels of attention to different topics across enterprises. Using averages provides a more holistic understanding of the differences between SOEs and

non-SOEs. Thus, we analysed the frequency of occurrence of keywords in each report.

Table 44

Independent Sample *t*-Test Based on Keywords from the Reports of SOEs and Non-SOEs

Dimensions of responsibility	*t*	*p*-value
Investment	0.124	0.024
Production safety	0.121	0.065
Procurement	0.338	0.123
Stakeholder	0.744	0.094
Environmental protection	0.233	0.102
Financing	0.452	0.032
Low carbon	0.030	0.012
Risk management	0.034	0.125
Win-win outcome	0.162	0.038
Energy conservation and emission reduction	0.874	0.048
Rural revitalisation	0.842	0.019
Climate change	1.389	0.006

The results showed that SOEs focus more on significant social events and issues than non-SOEs, and proactively address concerns that are of public interest. The higher frequencies of key terms such as energy conservation and emission reduction, green finance, environmental protection, procurement, win-win outcome, and climate change in SOEs' reports indicate that they are more proactive in fulfilling their environmental responsibilities and disclosing their efforts to address climate change and align their reporting with national and societal priorities.

Furthermore, SOEs' reports tend to be based on speeches by national leaders and on policy documents, giving importance to keywords that reflect strategy and pioneering approaches. High-frequency words in these reports include national strategy, legal compliance, state-owned assets, assisted area, and low carbon, which are clearly associated with SOEs, and appear much less frequently in the reports of non-SOEs.

Table 45

Statistical Results of High-Frequency Words in the Policy Documents Issued by the SASAC

High-frequency words in the policy documents issued by the SASAC	Average frequency of occurrence	Average frequency of occurrence	Average frequency of occurrence

	in each ESG report issued by SOEs	in each ESG report issued by non-SOEs	in each ESG report issued by SOEs and non-SOEs
Investment	17.342	14.043	3.299
Production safety	7.679	4.434	3.244
Financing	3.775	1.066	2.708
Loan	2.681	0.779	1.902
Risk management	3.588	1.8742586	1.714
Technological innovation	2.454	0.923	1.531
Stakeholder	4.913	3.415	1.498
Energy conservation and emission reduction	2.342	1.445	0.897
Green finance	1.238	0.432	0.807
Environmental protection	3.793	3.114	0.680
Procurement	6.499	5.915	0.584
Win-win outcome	2.436	1.873	0.562
National strategy	0.798	0.284	0.515
Low carbon	3.675	3.230	0.445
Climate change	1.491	1.051	0.440

Democratic governance	0.785	0.361	0.424
Employment	1.360	0.979	0.381
Legal compliance	0.503	0.146	0.357
Nonhazardous waste	0.545	0.208	0.337
Total profits	0.373	0.078	0.295
State-owned assets	0.296	0.021	0.275
Hazardous waste	0.407	0.177	0.230
Assisted area	0.246	0.031	0.215
Rural revitalisation	1.496	1.333	0.163
Service quality	0.405	0.244	0.160
Resource conservation	0.415	0.255	0.160
Fund management	0.234	0.102	0.132
Fair competition	0.304	0.215	0.089
Carbon peaking and carbon neutrality	0.221	0.138	0.083
Environmental investment	0.212	0.134	0.078
Donations to external parties	0.183	0.115	0.068
Responsibility supply chain	0.231	0.171	0.060
Shared prosperity	0.110	0.323	–0.212

5.5.1.3 High-Frequency Words in the Reports of Non-SOEs and ESG Evaluation Standard Documents of Capital Markets. Our analysis of high-frequency words related to capital markets revealed that those in the reports of non-SOEs aligned more closely with the high-frequency words in ESG evaluation standard documents of capital markets compared with those of SOEs.

SOEs and non-SOEs have different priorities when disclosing information related to the various responsibility dimensions. In terms of employee responsibilities, keywords such as employee training and occupational health appear more frequently in the reports of SOEs, while keywords such as churn rate, supplier management, privacy protection, and human rights appear more frequently in the reports of non-SOEs. This suggests that SOEs prioritise employee health and development, focusing on the long-term growth of their workforce. In contrast, non-SOEs typically align their disclosures with capital market indicators and thus emphasise employee rights, privacy, and other employee-related aspects. In terms of the economy, keywords such as investment philosophy and investment principles appear more frequently in the reports of SOEs, while keywords such as investor relations and corporate governance appear more frequently in the reports of non-SOEs. This indicates that SOEs emphasise content related to investment theory, whereas non-SOEs focus on communication and relationship maintenance with stakeholders.

Non-SOEs disclose more information about the priority issues of capital markets. Keywords such as anticorruption, audits, business ethics, earnings, information disclosure, water consumption, and product quality appear more frequently in the reports of SOEs, indicating that these enterprises pay more attention to the disclosure indicators of the capital market. Thus, based on these findings, we can conclude that there are differences in the high-frequency words found in the reports of SOEs and non-SOEs.

Table 46

Statistical Results of High-Frequency Words in ESG Evaluation Standard Documents of Capital Markets

High-frequency words in ESG evaluation standard documents of capital markets	Average frequency of occurrence in each ESG report issued by SOEs	Average frequency of occurrence in each ESG report issued by non-SOEs	Average frequency of occurrence in each ESG report issued by SOEs and non-SOEs
Employee training	1.277	1.224	0.052
Investment philosophy	0.079	0.032	0.047
Environmental management	1.693	1.650	0.043
Occupational health	2.444	2.403	0.041
Employee rights and interests guarantee	0.148	0.112	0.036
Total tax payment	0.148	0.119	0.029
Resource conservation	0.198	0.171	0.027
Investment principles	0.060	0.034	0.025
Circular economy	0.360	0.335	0.025
Board of directors	6.554	6.316	0.239
Greenhouse gas emission reduction	0.081	0.076	0.005

Honesty and trustworthiness	0.224	0.219	0.005
Responsible marketing	0.073	0.069	0.004
Carbon peaking and carbon neutrality	0.342	0.345	–0.003
Combating corruption	1.826	1.878	–0.052
Audits	3.426	3.480	–0.054
Churn rate	0.538	0.643	–0.105
Supplier management	0.824	0.958	–0.134
Privacy protection	0.256	0.450	–0.194
Human rights	0.812	1.040	–0.228
Medical check-up	1.366	1.733	–0.367
Water consumption	0.415	0.782	–0.367
Product quality	1.309	1.779	–0.470
Business ethics	0.436	0.950	–0.514
Earnings	1.164	1.702	–0.538
Corporate governance	4.050	4.648	–0.597
Information disclosure	4.176	4.792	–0.617
Emissions	0.987	1.606	–0.619
Investor relations	1.407	2.133	–0.725

5.5.2 Differences in the Focus of SOEs and Non-SOEs Regarding the Evaluation Factors of ESG Dimensions

SOEs and non-SOEs differ in the level of attention they give to various responsibility dimensions in their ESG reports. The current ESG evaluation system does not consider the specific characteristics of enterprises with diverse ownership structures, and thus it cannot effectively and scientifically assess the ESG performance of Chinese SOEs. Thus, we identified the differences between SOEs and non-SOEs in their priorities regarding the evaluation factors of ESG dimensions.

To better understand the emphasis placed by SOEs and non-SOEs on the different dimensions of responsibility in their ESG reports, we categorised the keywords from the reports into the previously defined six responsibility dimensions: environmental, economic, community, employee, governance, and supply chain responsibilities, as detailed in Table 47.

Table 47
Categorisation of the Dimensions of Responsibility for Keywords in ESG Reports

Dimensions of responsibility	Keywords
Supply chain responsibilities	Pushing suppliers to fulfil their responsibilities, supplier management, procurement, fair competition, responsibility supply chain

Environmental responsibilities	Low carbon, water consumption, environmental investment, environmental protection, environmental management, energy conservation and emission reduction, resource conservation, emissions, climate change, dual carbon goals, carbon peaking and carbon neutrality, greenhouse gas emission reduction, nonhazardous waste, hazardous waste, circular economy
Economic responsibilities	Product quality, honesty and trustworthiness, service quality, national strategy, technological innovation, loan, state-owned assets, fund management, total profits, total tax payment, financing, earnings, investment, investment philosophy, investment principles, responsible marketing, privacy protection, investor relations, green finance
Community responsibilities	Assisted area, donations to external parties, shared prosperity, rural revitalisation, win-win outcome
Employee responsibilities	Churn rate, production safety, employment, medical check-up, human rights, employee training, employee rights and interests guarantee, democratic governance, occupational health
Governance responsibilities	Anticorruption, corporate governance, stakeholder, information disclosure, legal compliance, board of directors, business ethics, audits, risk management

To assess the various dimensions, we conducted independent sample *t*-tests on the reports issued by SOEs and non-SOEs. The results showed that in the environmental, community, and employee responsibility dimensions, the *p*-values were less than .05, indicating significant differences between SOEs and non-SOEs in terms of their environmental, community, and employee-related responsibilities. However, the differences between SOEs and non-SOEs in supply chain responsibilities and economic responsibilities were not significant, possibly because economic development is of paramount importance to all enterprises and fulfilling economic responsibilities is an essential obligation that does not change based on corporate attributes. Similarly, fulfilling supply chain responsibilities is a necessary condition for industrial development. As links in industry chains, enterprises do not change their role or position because of their attributes in the production and operation processes. Therefore, the impact of enterprise attributes on their supply chain and economic responsibilities is relatively small.

Table 48

Independent Sample *t*-Tests for the Reports of SOEs and Non-SOEs in Different Dimensions

Dimensions of responsibility	*t*	*p*-value

Environmental responsibilities	.974	0.024
Economic responsibilities	28	0.065
Community responsibilities	.338	0.043
Employee responsibilities	.744	0.744
Governance responsibilities	36	0.036
Supply chain responsibilities	.462	0.462

The proportions of various keyword categories in the ESG reports issued by SOEs and non-SOEs are illustrated in Figures 16 and 17.

Figure 16

Proportion of Keywords in ESG Reports Issued by SOEs in Different

Dimensions15

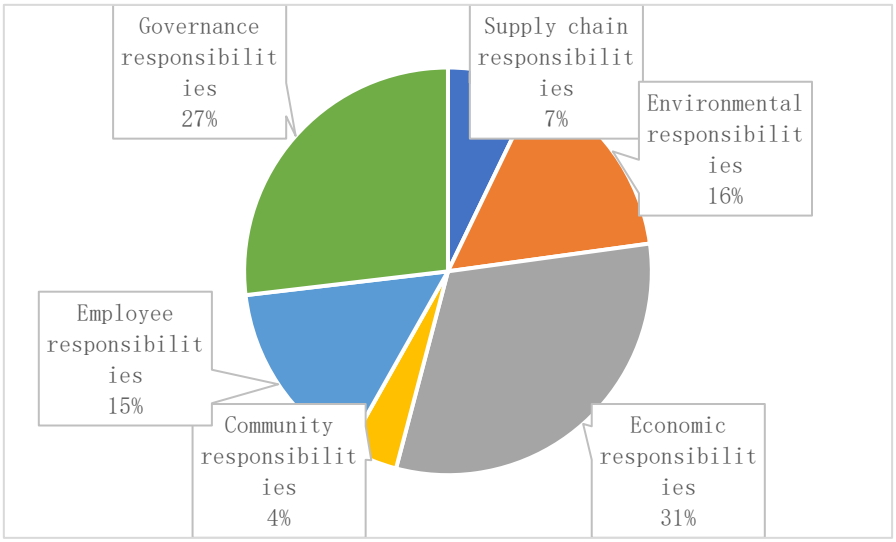
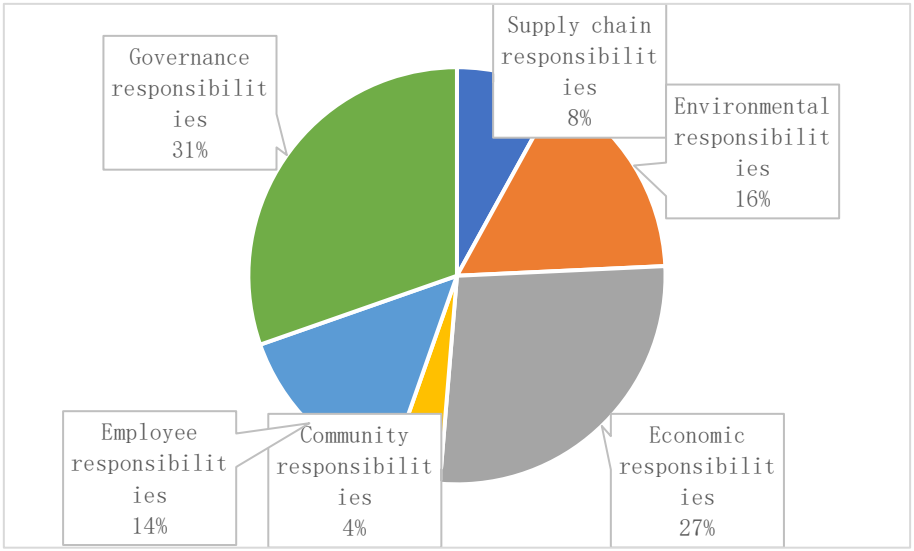


Figure 17

Proportion of Keywords in ESG Reports Issued by Non-SOEs in Different Dimensions16



First, our statistical analysis revealed that the frequency of environmental responsibility keywords in the reports from SOEs was the same as in those of non-SOEs (16%), as was the frequency of social responsibility keywords (4%). In the environmental dimension, the reports of both SOEs and non-SOEs reflected a sense of

social responsibility oriented towards environmental protection and low carbon emissions, in addition to a sense of environmental management. The frequency of keywords relevant to the community dimension was the same in the reports of both types of enterprises.

A further analysis of the keywords in this dimension revealed that SOEs used terms such as rural revitalisation and assistance more frequently than non-SOEs. These terms have strong political and official connotations. As SOEs are endorsed by the government, they frequently use official language to articulate government intentions and preferences and to effectively promote government policies. They also exhibit a higher degree of interest in rural revitalisation, mainly because they have the responsibility to help achieve the nation's economic and social development objectives. The state has identified rural revitalisation as a key development initiative, and SOEs have a corresponding responsibility to contribute and help achieve more in terms of this initiative. In summary, SOEs use official language and concepts more frequently than non-SOEs, thus closely aligning their reports with national policies.

Second, non-SOEs (31%) placed more emphasis on governance responsibilities than SOEs (27%). In the reports of non-SOEs, terms such as board of directors, corporate governance, audits, and risk management were frequently used and were focal points of disclosure.

Third, compared with non-SOEs (14%), SOEs placed more emphasis on

employee responsibilities (15%), with topics such as employment, occupational health, and production safety being key areas of focus. SOEs (31%) paid more attention to the economic dimension than non-SOEs (27%). Keywords related to economics such as earnings, financing, loan and technological innovation were found in higher proportions in SOEs' ESG reports. Non-SOEs (8%) prioritised supply chain responsibilities more than SOEs (7%) and also disclosed more content related to supplier management and procurement.

Therefore, SOEs and non-SOEs exhibit differences in their focus on the evaluation factors of ESG dimensions, which may be due to various factors.

First, SOEs serve as principal entities in the public sector. This public nature leads them to prioritise labour rights and investment in production safety, and to protect the rights and interests and ensure the safety of employees. Thus, they give more weight to evaluation factors related to employees.

Second, the role of large-scale SOEs in shaping China's economic landscape means that their economic responsibilities are closely tied to increasing state-owned assets and the development of China's market economy. The financial security of these companies is also central to maintaining financial market stability and currency environments. As major players in the national economy, large-scale SOEs must therefore focus on the evaluation of economic dimensions.

Third, non-SOEs place more emphasis on cost control, which leads them to

prioritise SCM with the aim of enhancing overall operational efficiency and reducing costs, while collaborating with supply chain partners both upstream and downstream to fulfil their social responsibilities.

In summary, while SOEs and non-SOEs focus similar levels of attention on environmental and supply chain responsibilities, their differences in ownership lead to differences in the specific content and extent of disclosure across the six major dimensions of responsibility in their ESG reports. Measuring the social responsibility performance of SOEs using the current ESG evaluation system may entail "cutting off one's feet to fit the shoes," as the design of the indicator system cannot fully reflect the social responsibility values of these enterprises.

Based on the above analysis, Hypothesis 2 was supported, as we found differences in the levels of attention that SOEs and non-SOEs give to ESG evaluation factors.

5.5.3 Significant Differences Between the Current ESG Evaluation System and the Factors that Concern SOEs

The Sino-Securities ESG rating system includes 16 secondary indicators covering various aspects of the economy, society, and the environment. However, these diverge from SOEs' ESG reports in various ways.

First, differences can be observed between some of the indicators in the evaluation system and the information disclosed in SOEs' ESG reports. For example,

indicators such as management stability, short-term debt risk, and the percentage of major shareholder pledges often get attention as they echo the concerns of capital markets. However, SOEs, as large state-owned holding companies, do not regularly disclose these indicators in their standard reports or prioritise them. For example, in 2021, over 60% of SOEs' reports did not disclose indicators such as management stability, short-term debt risk, and the percentage of major shareholder pledges. This indicates a certain disparity between the current evaluation system and the information disclosure of SOEs.

Second, the evaluation system does not cover all of the aspects included in the SASAC documentation or those given priority by SOEs. The *Guiding Opinions on the Fulfilment of Social Responsibilities by SOEs* emphasise increasing investment in environmental protection, improving production processes, strictly implementing the accountability system for production safety, and increasing investment to ensure production safety. The document also highlights actively undertaking initiatives such as supporting regions in Xinjiang and Xizang and helping impoverished areas, especially those with elderly and young populations on the borders. These guidelines provide specific directions for SOEs on how to fulfil their social responsibilities and the key areas of focus, which include production safety, assisted areas, and environmental investment. The frequencies of terms such as production safety and rural revitalisation in the reports of SOEs were 7.679 and 1.496, respectively. However, indicators such as production safety and environmental investment are not included in

the current Sino-Securities ESG rating system.

Therefore, differences can be observed between the current ESG evaluation system and the factors that SOEs focus on. While there is a positive correlation between the current ESG evaluation system and corporate performance, it requires further localisation to make it more suitable for SOEs. Establishing a rating system that aligns with the characteristics and priorities of SOEs is critical, as we highlight in this study.

5.6 Construction of Evaluation System Dimensions

Domestic and international mainstream research institutes currently classify the ESG evaluation system into three dimensions of responsibility: environmental, social, and governance responsibilities. As Chinese SOEs strive to preserve and increase the value of state-owned assets and are if major economic importance, we propose the new dimension of economic responsibilities. In addition, drawing on previous research and expert consultation, we further divide the dimension of social responsibilities into employee, supply chain, and community responsibilities, so we can clearly evaluate the value created by Chinese SOEs' ESG management and practices for various stakeholder groups. Thus, the ESG evaluation system considered in this study consists of the six dimensions of environmental, employee, supply chain, community, economic, and governance responsibilities.

5.6.1 Indicator Selection Based on Literature Analysis

We identified an initial list of indicators through a comprehensive analysis of

the high-frequency indicators in the main ESG evaluation systems of MSCI ESG Ratings, the HSI ESG Index, FTSE Russell's ESG rating system, and Wind ESG Rating. We then categorised the selected indicators suitable for the ESG evaluation system for Chinese SOEs. To ensure the effectiveness of such a system, it is essential to consider the social responsibilities and high-quality development requirements of SOEs, along with the ESG management and information disclosure requirements set by stock exchanges. Various issues in terms of economy, environment, and society can then be comprehensively evaluated. Compliance, feasibility, and effectiveness must also be considered, by assessing the diverse needs of multiple stakeholders such as the environment, employees, suppliers, communities, governments, and investors. Compliance refers to the ESG evaluation system conforming to the guidelines and requirements provided by the SASAC and local SASACs for Chinese SOEs, so that they can fulfil their social responsibilities based on their management practices. Feasibility highlights that in the selection of key indicators, both domestic and international requirements of current ESG evaluation systems should be considered, along with the operational and management practices of Chinese SOEs. Effectiveness means that the key performance indicators of Chinese SOEs can be evaluated and measured.

Based on the above discussion, we set the indicators of the ESG evaluation system for Chinese SOEs as in Table 49.

Table 49

Indicators of the ESG Evaluation System for Chinese SOEs

Categories	Key indicators
Environmental responsibilities	Low carbon
	Water consumption
	Environmental investment
	Environmental protection
	Environmental management
	Energy conservation and emission reduction
	Resource conservation
	Emissions
	Climate change
	Carbon peaking and carbon neutrality
	Greenhouse gas emissions
	Nonhazardous waste
	Hazardous waste
	Circular economy
	Churn rate
Employee responsibilities	Production safety
	Employment
	Medical check-up
	Human rights
	Employee training
	Employee rights and interests guarantee
	Democratic governance
	Occupational health
Supply chain responsibilities	Pushing suppliers to fulfil their responsibilities

	Supplier management
	Procurement
	Fair competition
	Responsibility supply chain
	Assisted area
	Donations to external parties
Community responsibilities	Shared prosperity
	Rural revitalisation
	Win-win outcome
	Product quality
	Honesty and trustworthiness
	Service quality
	National strategy
	Technological innovation
	Loan
	State-owned assets
	Fund management
	Total profits
Economic responsibilities	Total tax payment
	Financing
	Earnings
	Investment
	Investment philosophy
	Investment principles
	Responsible marketing
	Privacy protection
	Investor relations
	Green finance

Governance responsibilities	Combating corruption
	Corporate governance
	Stakeholder
	Information disclosure
	Legal compliance
	Board of directors
	Business ethics
	Audits
	Risk management

5.6.2 Interpretation of the ESG Evaluation Indicator System for Chinese SOEs

We have established the ESG evaluation indicator system for Chinese SOEs, which includes six primary indicators and 64 secondary indicators. The primary indicators are based on the core concepts of ESG, namely the environment, society, and governance, and reflect the six dimensions of environmental, employee, supply chain, community, economic, and governance responsibilities. The secondary indicators are based on theories related to the environment, society, and governance, the needs of multiple stakeholders, and the guidance and requirements provided by the SASAC and local SASACs for Chinese SOEs so that they can fulfil their social responsibilities. Our specific interpretations of these indicators are as follows.

Low carbon: Lower greenhouse gas (primarily carbon dioxide) emissions.

Water consumption: Including both direct water consumption (obtained from natural resources) and indirect water consumption (supplied by water supply departments). These data can be acquired through enterprises' water meters or water bills. If feasible, the enterprises should provide data at the operational facility level in areas with limited water resources, in addition to information on water intake and drainage based on categories of water sources (such as surface water, underground water, seawater, and third-party water supplies including municipal supplies).

Environmental investment: The total amount of funds invested by enterprises in environmental protection annually.

Environmental protection: The results and effects achieved by enterprises in terms of environmental protection and environmental pollution improvement in their operational activities.

Environmental management: Enterprises' consumption of resources and energy and emissions of pollutants.

Energy conservation and emission reduction: Reductions in direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions generated by enterprises' daily operations, multiplied by the currency conversion coefficient for greenhouse gas emissions. Scope 1 refers to direct emissions generated by sources that are directly controlled or owned by enterprises, which are mainly emissions from fuels such as gasoline and diesel or from refrigeration and air conditioning equipment; Scope 2 refers to indirect emissions generated by electricity purchased and consumed by enterprises for their use.

Resource conservation: The aims of reducing the absolute amount of resources consumed and improving the efficiency of resource use.

Emissions: Emissions of pollutants.

Climate change: The total amount of direct/indirect energy consumption divided by type.

Dual carbon goals (carbon peaking and carbon neutrality): Reductions in direct and indirect emissions.

Greenhouse gas emissions: Greenhouse gas (primarily carbon dioxide) emissions.

Waste management: Expenses incurred for the disposal of waste batteries, toner cartridges and ink cartridges, scrapped printers, computers and other large electronic and electrical equipment in enterprises' daily operations, in addition to the waste oil residues and other hazardous waste handed over to a professional third party for disposal or recycling. In addition, expenses incurred for the disposal of hazardous and nonhazardous waste generated in the daily operations of enterprises, including construction/demolition waste, commercial waste (such as waste paper, magazines, books, and household waste), and other nonhazardous waste.

Circular economy: The level of economic use by enterprises of natural resources, reuse of goods, and waste recycling and harmless treatment.

Churn rate: The proportion of departing employees to the average total number of employees per unit of time.

Production safety: Enterprises' annual expenditure on production safety, including investment in employees' occupational health.

Employment: The employee provides labour services to the employer, and the employer pays the remuneration, thus forming a relationship of rights and obligations.

Medical check-up: Enterprises' annual expenditure on medical check-ups.

Human rights: The extent to which enterprises regard the universality of human rights as fundamental, respect the personalities and characters of all individuals involved in the business, ensure against disparities in employment and treatment, and respect basic human rights at work.

Employee training: Enterprises' investment in employee training and support for their growth.

Employee rights and interests guarantee: The total cost of providing salaries, wages, and benefits to employees. If there are penalties for failing to pay employee insurance, the penalty amount will be deducted from the total.

Democratic governance: The extent to which employees of enterprises participate in decision-making processes, management, and supervision in accordance with laws, regulations, and policies, and the extent to which managers respect, support, and guarantee the democratic rights of employees, such as the rights to know, participate, be heard, and oversee and implement institutional and normative activities in an organised way.

Occupational health: Enterprises establish the concept of medical check-ups and provide health-based lectures and health clinics.

Pushing suppliers to fulfil their responsibilities: Enterprises engage in supplier development, the selection of suppliers to cooperate with, supplier cooperation transactions, supplier performance reviews, supplier performance improvement, and

other areas to ensure that suppliers manage their social responsibilities.

Supplier management: By establishing long-term and close partnerships and combining the resources and competitive advantages of both parties, enterprises work with suppliers to jointly expand the market, increase market demand and market share, and reduce the costs associated with products in the early stages.

Procurement: Acquiring products or services from the supply market.

Fair competition: Complying with competition laws.

Responsibility supply chain: Enterprises support and promote suppliers to fulfil their responsibilities to conduct and manage various activities during the reporting periods.

Assisted areas: Enterprises provide assistance to provinces (autonomous regions) in China where the national key assistance areas for rural revitalisation are located.

Donations to external parties: Enterprises donate to charities, social organisations, and research institutions for the construction of community infrastructure and social welfare programmes.

Shared prosperity: The measures taken by enterprises and their achievements in helping the country reach the goals of eliminating poverty, improving people's livelihoods, and gradually achieving shared prosperity.

Rural revitalisation: The total amount of funds and converted value of goods

and materials invested by enterprises to support rural revitalisation.

Win-win outcome: Enterprises provide customers with suitable development opportunities to help them achieve their goals, exceed expectations, and thus realise win-win outcomes.

Product quality: Enterprises' product qualification rate, defect rate of incoming materials determined by spot checks, scrap rate of incoming materials on assembly lines, exemption rate of incoming materials, rework rate for incoming materials, return rate, complaint rate for supply and handling time, etc.

Honesty and trustworthiness: The extent to which enterprises regard honesty and trustworthiness as their core value and standardise their business activities accordingly.

Service quality: Enterprises' service awareness and service level, as reflected by customer feedback.

National strategy: The fit and closeness between corporate strategies and national strategies.

Technological innovation: The innovation capabilities of enterprises and their roles as key players in technological innovation, such as their capabilities to invest in innovation (technical R&D expenses/human input).

Loan: The amount of loans granted to enterprises.

State-owned assets: The amount of equity formed by the contributions made by the nation to enterprises in various forms.

Fund management: Various effects of enterprises engaging in fund management activities.

Total profits: Consistent with the statistical calibre of enterprises' annual reports.

Total tax payment: Consistent with the statistical calibre of enterprises' annual reports. In cases involving penalties for tax evasion, the penalties should be deducted from the total amount of tax paid.

Financing: Consistent with the statistical calibre of enterprises' annual reports.

Earnings: Consistent with the statistical calibre of enterprises' annual reports.

Investment: Consistent with the statistical calibre of enterprises' annual reports.

Investment philosophy: The relationship between the values that reflect investors' investment objectives and intentions and national strategies.

Investment principles: When making investment decisions, the relationship between the overall development strategies of enterprises and national strategies.

Responsible marketing: The ways in which the influence of news and advertising is used to improve enterprises' reputations, promote their image, enhance brand awareness, and increase customer loyalty.

Privacy protection: The degree of emphasis and protection given to trade secrets

and personal privacy during business activities.

Investor relations: The level of relationship management between enterprises and investors.

Green finance: Participation and investment in green finance.

Anticorruption: Establishing the "integrity indicators" from the aspects of social effectiveness construction, transparent decision-making, democratic management, public appraisal, and the supervision of the People's Congress and the Chinese People's Political Consultative Conference (CPPCC).

Corporate governance: The history of enterprises' violations and penalties, their compliance status at 3, 5, 10, and 20 years, the number of violations, and the amount of fines; presence of criminal individuals and records; the reliability and stability of their supply chains; their evaluation of systems for finance, procurement, tendering, supply chain, and employment; the extent of their prevention of collusion to seek personal gains by causing losses to enterprises and sabotaging their development; their evaluation of systems for supervision, audits, discipline inspection, and oversight; previous problems and incidents related to internal control systems; enterprises' profit sharing, the scale and ratio of dividends, and their historical fluctuations, which can reflect the trend and changing trajectory of their business performance.

Stakeholder: The extent to which enterprises focus on serving their stakeholders and their commitment to maximising shareholder profits without sacrificing the

interests of stakeholders.

Information disclosure: Regular reports (quarterly reports Q1, semi-annual reports, quarterly reports Q3, and annual reports) and interim announcements (production and operation information of listed companies in compliance with disclosure standards).

Legal compliance: Organised and planned management activities conducted by enterprises, which include establishing the compliance system, improving operation mechanisms, fostering a compliance culture, and strengthening supervision and accountability.

Board of directors: The degree of standardisation and effectiveness of the functioning of the board of directors.

Business ethics: The application of recognised moral rules in specific business scenarios and activities.

Audits: Whether enterprises carry out production, operation, and management activities in accordance with national laws and regulations and financial and economic systems, and whether the relevant data provided by them are compliant.

Risk management: The number of management processes an enterprise implements to minimise risks in a risky environment.

5.7 The Positive Correlation Between the High Matching Degree of the Newly Established ESG Evaluation System and SOEs and their Business Performance

In this study, we sought to establish an ESG evaluation system that is more in line with the actual development of SOEs. To effectively verify whether the evaluation system can accurately reflect the business performance of SOEs, the correlation between them must be further explored. We therefore conducted a comparative analysis of the matching degree of keywords in the 2021 reports of SOEs and the indicators of the newly established ESG evaluation system. With consideration of the data available and the business scale, we identified 70 SOEs that have keywords in their CSR reports with a high degree of matching with the indicators of the newly established ESG evaluation system. By analysing the business performance growth of these SOEs, we could determine whether there is a correlation between the CSR reports being highly matched with the newly established ESG evaluation system and their business performance.

Our dependent variable was business income. Traditional performance evaluation system indicators are generally financial and include net earnings, return on investment (ROI), residual earnings, and cash flow. ROI is a commonly used indicator and is calculated by dividing business income by asset investment. Strategic performance evaluation methods in the industry currently include EVA and balanced scorecard (BSC), which are based on different perspectives and understandings. Due to the model design, we used SOEs as the research object in this study. If the proportions of debt

capital in their financing structures differed, we used the actual value of business income as the dependent variable, which better reflects the research question of this dissertation, namely how the newly established ESG evaluation system affects the business performance of enterprises.

Our independent variable was the frequency of keywords in the newly established ESG evaluation system. Currently, ESG-related standards are in the process of development. Capital markets and governments, as well as other stakeholders, have a strong desire to explore better correlated ESG standards. Our new ESG evaluation system was established based on a series of extracted indicators that are potentially more strongly correlated. This new evaluation system can have a profound impact on investors' choices of investment strategies and policy implementers can also make more targeted policy adjustments based on the effects generated by the indicators. The frequency of keywords identified in this dissertation refers to the cumulative number of the various core indicators in the newly established ESG evaluation system that appear in the reports of SOEs.

The control variables were analysed on the basis of the above-mentioned variables and included the debt-to-assets ratio, net earnings per share, total asset turnover, and the combined shareholding percentage of the top 10 largest shareholders.

Table 50

The Frequency of Keywords in the Newly Established ESG Evaluation System and Business Income

Company name	Frequency	Business income (RMB100 million)
CSSC Offshore & Marine Engineering (Group) Co., Ltd.	3	116.7
Beijing Capital Development, Co., Ltd.	4	678.0
Huayuan Property Co., Ltd.	5	136.9
Sinopec Oilfield Service Corporation	7	27,408.8
Shanghai Pharmaceuticals Holding Co., Ltd.	12	2,158.2
CGN Nuclear Technology Development Co., Ltd.	20	80.0
Bank of Beijing Co., Ltd.	20	662.8
Ping An Insurance (Group) Company of China, Ltd.	20	11,804.4
Hisense Home Appliances Group Co., Ltd.	20	675.6
Beijing Shougang Co., Ltd.	20	1,340.3
Unisplendour Corporation Limited	21	676.4
Sinopec Shanghai Petrochemical Co., Ltd.	21	892.8
Sichuan Changhong Electric Co., Ltd.	22	996.3
Beijing Dabeinong Technology Group Co., Ltd.	22	313.3
Agricultural Bank of China Limited	25	6,272.7

China Nonferrous Metal Industry's Foreign Engineering and Construction Co., Ltd.	25	110.8
China Shenhua Energy Company Limited	26	3,352.2
Sinopharm Group Co., Ltd.	28	464.7
Zhuhai Huafa Properties Co., Ltd.	31	512.4
Guotai Junan Securities Co., Ltd.	32	428.0
Shenzhen Zhongjin Lingnan Nonfemet Co., Ltd.	36	445.0
China Meheco Group Co., Ltd.	36	362.1
Shenzhen Overseas Chinese Town Co., Ltd.	44	1,025.8
China National Accord Medicines Co., Ltd.	44	683.6
China Galaxy Securities Co., Ltd.	45	359.8
Bright Dairy & Food Co., Ltd.	45	225.6
Sinotrans Limited	46	1,243.0
Industrial and Commercial Bank of China Limited	48	8,608.8
Sinomach Automobile Co., Ltd.	49	439.5
China Construction Bank Corporation	50	8,242.5
Minmetals Development Co., Ltd.	52	875.1
China National Nuclear Power Co., Ltd.	53	623.7
The People's Insurance Company (Group) of China Limited.	59	5,854.2
Power Construction Corporation of China	61	4,489.8

Datang International Power Generation Co., Ltd.	61	1,015.0
BBMG Corporation Ltd.	67	1,236.3
China National Coal Group Corporation	67	2,311.3
Aluminum Corporation of China	74	2,697.5
China Railway Construction Corporation Limited	76	10,200.1
Poly Developments and Holdings Group Co., Ltd.	82	2,849.3
Bank of Communications Co., Ltd.	82	2,693.9
CRRC Corporation Limited	90	2,257.3
China Nuclear Engineering & Construction Corporation Limited	90	837.2
Huadian Power International Corporation Limited	90	1,043.5
Sichuan Nitrocell Corporation	90	24.6
China Aluminium International Engineering Co., Ltd.	92	233.5
New China Life Insurance Company Ltd.	92	1,634.7
China Eastern Airlines Co., Ltd.	92	671.3
Guangzhou Development Group Incorporated	95	379.1
Zhongjin Gold Corporation Limited	96	561.0
Bank of China Limited	97	6,055.6
China Southern Airlines Co., Ltd.	98	1,016.4
Sichuan Yibin Wuliangye Group Co., Ltd.	108	662.1

PetroChina Company Limited	111	28,072.8
CITIC Securities Co., Ltd.	118	765.2
Shanghai Electric Group Co., Ltd.	123	1,306.8
BOE Technology Group Co., Ltd.	128	2,193.1
Guangzhou Baiyunshan Pharmaceutical Holdings Co., Ltd.	131	690.1
Metallurgical Corporation of China Ltd.	141	5,005.7
Sinochem International Corporation	145	806.5
China Petroleum & Chemical Corporation	157	26,143.5
China Railway Group Limited	171	9,747.5
Guangzhou Automobile Group Co., Ltd.	181	756.8

To better assess the correlation between the two variables, we used SPSS to conduct a regression analysis, with business income as the dependent variable and the frequency of keywords as the independent variable. The regression analysis results are presented in Table 51.

Table 51

Regression Analysis Results

Model		Nonstandardised coefficient		Standardised coefficient	*t*	Sig.	*N*
		B	*S.E.*	Trial version			
1	(Constant)	–11,543.345	4,423.774		–2.609	0.011	
	Frequency	16.524	14.673	0.132	1.126	0.024	70
	Debt Ratio	62.827	43.905	0.180	1.431	0.157	70
	Earnings per share	482.214	528.260	0.105	0.913	0.365	70
	Total asset turnover	1,518.770	1,117.940	0.170	1.359	0.179	70
	The combined shareholding percentage of the top 10 largest shareholders	112.635	38.791	0.341	2.904	0.005	70

[a] Dependent variable: business income.

Business income and frequency of keywords were normally distributed. The *p*-value was .024, which is less than .05. According to the significance test, the frequency coefficient was 1.126, which is greater than 0, indicating that there was a positive correlation between business income and the frequency of keywords. Thus, a high matching degree between the keywords in SOEs' reports and the indicators of the newly established ESG evaluation system was positively correlated with their business performance.

Based on the above analysis, we can initially assume that there is a positive correlation between the high matching degree of SOEs with the newly established ESG evaluation system and their business performance. Current ESG standard evaluation systems, such as MSCI ESG Ratings, the HSI ESG Index, FTSE Russell's ESG rating system, and Wind ESG Rating, have different priorities based on different analysis perspectives and application scenarios. For instance, FTSE Russell emphasises changes in global sustainable development issues in its evaluation logic and topic setting. Therefore, for SOEs that have different systems from those in the West, a more consistent model is required, to reflect the correlation between a specific combination of indicators and overall business performance.

Chapter 6 Empirical Verification of the Effectiveness of the ESG Evaluation System for Chinese SOEs

Our empirical research was conducted among stakeholders of Chinese SOEs, and our results not only verified the theoretical hypotheses but also served as an important reference for the continuous improvement of the ESG evaluation system for Chinese SOEs. To ensure that our empirical research objectively reflects the objective requirements of Chinese SOE stakeholders, we conducted interviews with entrepreneurs. Our goal was first to determine whether the value dimensions identified through textual analysis in this study, based on high-frequency words, align more closely with the value judgments of SOEs; second, whether the establishment of an ESG evaluation system for Chinese SOEs can help them develop quantifiable ESG key indicators; and third, whether Chinese SOEs can enhance their comprehensive value by fulfilling their ESG social responsibilities.

6.1 Selection of Interviewees

A total of 20 entrepreneurs from 10 SOEs and non-SOEs in China were interviewed. All of the interviewees were experienced, forward-looking, and influential entrepreneurs in their respective industries. Their perspectives thus represent the latest concept of responsibility of Chinese SOEs in ESG fulfilment, which can inform the future construction of the ESG evaluation indicator system for Chinese SOEs. Additionally, as the entrepreneurs interviewed had a deep understanding of the current situation and issues related to ESG for Chinese SOEs, they could offer valuable

feedback and corrections to improve the newly established ESG evaluation indicator system.

The interview design consisted of open-ended qualitative questions. The interviews were conducted either face-to-face or online, and the answers were recorded. The research outline was otherwise sent via email, and the relevant answers were then returned.

Table 52
Industries of the Interviewed Entrepreneurs

SOE entrepreneurs	Non-SOE entrepreneurs
Investment industry	Medical industry
Financial industry	Real estate industry
Chemical industry	Food industry
Transportation industry	Cosmetics industry
Food industry	Internet industry
Machinery industry	Financial industry
Logistics industry	

6.2 The Interview Process

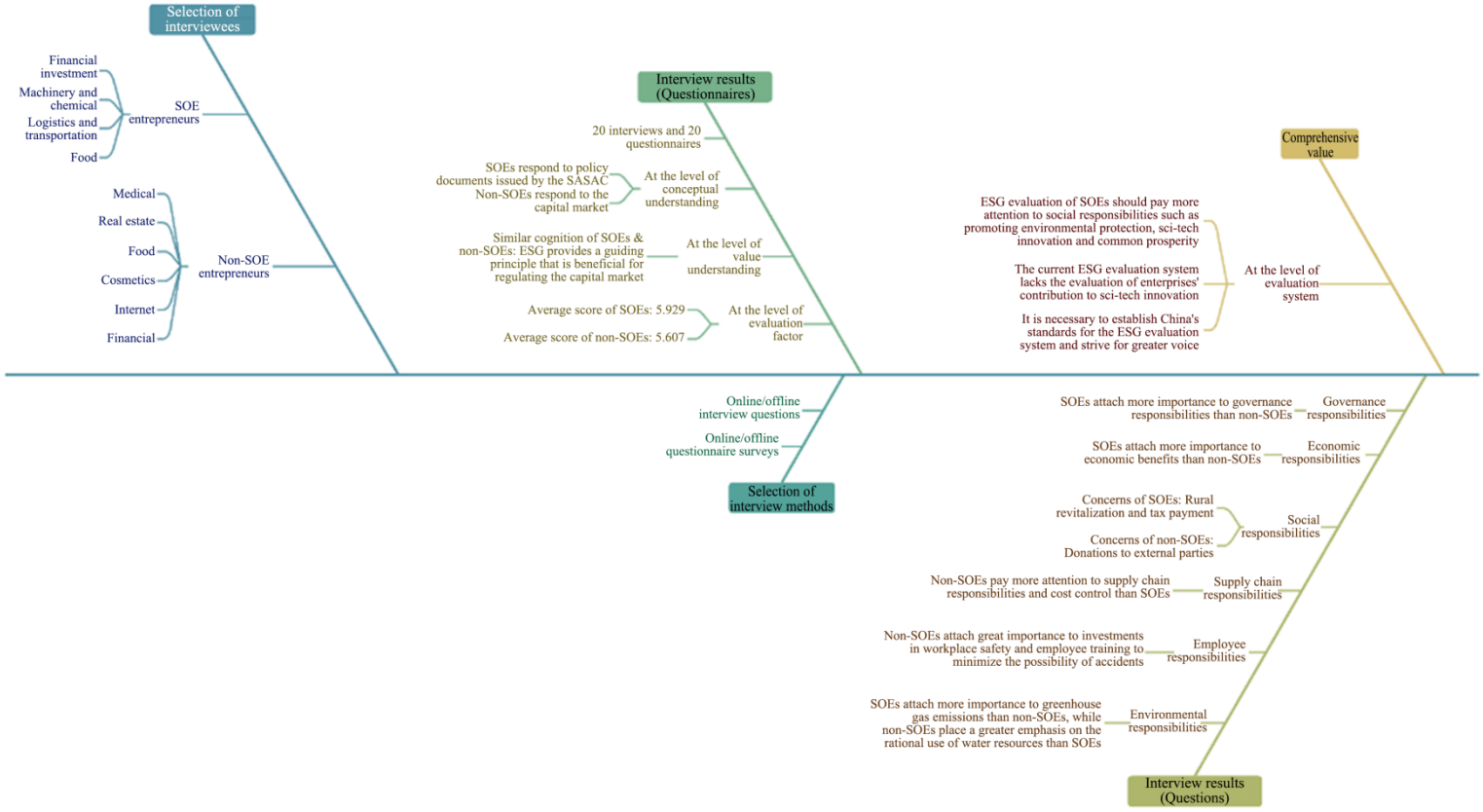
We used a combination of primarily qualitative and quantitative evaluation indicators in the process of conducting interviews and collecting data and evaluation indicators. Different conclusions may be drawn when evaluating the same object using the same indicator, due to the various understandings of indicators among entrepreneurs in different industries. If there was a significant difference in the data obtained from different entrepreneurs using the same evaluation indicator for the same object, we considered that the evaluation indicator could not accurately reflect the object. Conversely, a smaller deviation among the interviewed entrepreneurs when using a specific indicator to evaluate the objects indicated greater consensus regarding the evaluation function of that indicator, suggesting that the indicator was more effective. We therefore applied a validity coefficient to describe the effectiveness of the ESG evaluation indicator system, with the aim of scientifically and systematically obtaining a comprehensive value evaluation.

6.3 Results of the Interviews

In this research, nine entrepreneurs from SOEs were interviewed, resulting in nine sets of interview data and nine sets of questionnaire data, and eight entrepreneurs from non-SOEs were also interviewed, giving eight sets of interview data and eight sets of questionnaire data. In this chapter, we discuss the authenticity and reliability of the research results in Chapter 5 from both qualitative and quantitative perspectives.

Figure 18

Flowchart of Empirical Verification17



1. Chinese SOE entrepreneurs generally believe that it is necessary to establish an ESG evaluation system for Chinese SOEs.
2. The value dimensions screened by high-frequency words in text analysis show a tendency to be closer to the value judgment of SOEs in the scale analysis of entrepreneur interviews. Therefore, the model we have built is more suitable for the environment of Chinese SOEs.
3. It can be seen from the data that entrepreneurs agreed to disclose that the establishment of an ESG evaluation system for Chinese SOEs can help them formulate quantifiable ESG key indicators.
4. While fulfilling their ESG social responsibilities, Chinese SOEs can enhance their comprehensive value to achieve China's national strategic goals and accelerate the construction of world-class enterprises.

6.3.1 At the Level of Conceptual Understanding

SOEs respond to the policy documents issued by the SASAC, while non-SOEs respond to capital markets.

The interviews revealed obvious differences between entrepreneurs from Chinese SOEs and those from non-SOEs in their interpretations of the concept of ESG. Those from SOEs typically interpreted the ESG concept based on the policy documents issued by the SASAC and responded actively to the guidelines outlined in these documents, such as the requirements for incorporating the concept and indicators of ESG. This could be observed in the inclusion of ESG-related content in their future reports. In contrast, those from non-SOEs often interpreted the ESG concept from an international or market perspective. They tended to focus more on the industries and fields adopting the ESG concept to seek more development opportunities.

A non-SOE interviewee (in the AI industry) stated that "Currently, the ESG concept has received strong attention and welcome from investors and consumers. From this perspective, our company regards relevant industries and enterprises as the focus of our future investment and development."

A non-SOE interviewee (in the food industry) suggested that "Listed companies with higher ESG scores tend to be more competitive compared with their peers in the long term. This competitiveness results in better share premiums and more sustainable potential for market value growth."

Another non-SOE interviewee (in the cosmetics industry) offered the following:

> Currently, 26% of the company is owned by foreign investors, who attach great importance to ESG-related disclosures. Since the company went public, it has established an ESG organisational framework and a committee, and incorporated ESG-related contents into performance assessing methods.

An SOE interviewee (in the coal chemical industry) noted that "The report to the 20th CPC National Congress explicitly stated the need to accelerate the development of world-class enterprises, while also highlighting the ESG concept. I believe that ESG is a powerful tool to implement this goal."

An SOE interviewee (in the food industry) said that "ESG evaluation can help transform the inherent image of SOEs that are inefficient and resource-consuming, and promote the enhancement of their social images and management capabilities. It serves as an important factor in accelerating the development of world-class enterprises."

Thus, the interviewees from SOEs and non-SOEs clearly had different objectives when it came to ESG. The interviewees from non-SOEs expected to create more economic value with ESG as the starting point, thus providing better returns for investors and promoting the sustainable growth and high-quality development of the capital market. In contrast, those from SOEs were guided by the development goals set by the SASAC. This aligns with our findings from the textual analysis that SOEs demonstrate a higher level of response than non-SOEs to high-frequency words in the

policy documents issued by the SASAC, thereby confirming the accuracy of our model in evaluating the ESG of SOEs.

6.3.2 At the Level of Value Understanding

ESG provides both SOEs and non-SOEs with a guiding principle that is beneficial for the regulation of capital markets.

Despite different interpretations of the ESG concept among our interviewees from SOEs and non-SOEs, they generally believed that ESG deserves global attention. The promotion of ESG evaluation was considered beneficial to global sustainable development and the progress of human civilisation. Additionally, it helped regulate capital markets by providing guidance.

A non-SOE interviewee (in the cosmetics industry) gave the following opinion:

> Even before going public or disclosing its ESG, our company showed an ESG prototype in terms of internal institutional development and management. The implementation of an ESG evaluation system is advantageous for a company to establish a robust system to regulate the company's behaviour rather than presenting it in a scattered manner, which is also not conducive for external investors to understand the condition of the company.

An SOE interviewee (in the food industry) expressed the following:

> ESG is a set of evaluation criteria for investors and stakeholders and serves as

a judgment on the future profitability of a company as perceived by the public, thus playing a certain role in standardising its market value. A standardised and specific evaluation system in the industry has two functions: first, it guides the flow of capital; and second, it serves as a discovery mechanism. In addition to traditional quantizable financial data, the ESG evaluation system can quantitatively assess the company's social responsibility values, which can also influence its market value.

6.3.3 At the Evaluation Factor Level

Compared with non-SOEs, SOEs gave a higher level of importance to the six primary indicators and 64 secondary indicators identified (see the Appendix for details), which was reflected in the average score of SOEs (M = 5.873), which was higher than that of non-SOEs (M = 5.607), although the difference was not significant.

Table 53

Average Scores of Questionnaire Indicators for SOEs and Non-SOEs

6 primary indicators	64 secondary indicators (see the Appendix for details)	Average score for SOEs	Average score for non-SOEs
Environmental responsibilities	Environmental investment	5.678	5.625
	Hazardous waste	6.356	6.000
	Greenhouse gas emission reduction	5.344	5.000
	Water consumption	5.000	5.125
Employee responsibilities	Employee rights and interests guarantee	6.944	6.000
	Investments in production safety	6.756	6.750
	Investments in employee training	6.200	6.500
	Damage to employee health	6.433	6.750

Supply chain responsibilities	Pushing suppliers to fulfil their responsibilities	5.222	5.250
Social responsibilities	Donations to external parties	4.778	4.750
	Participation in rural revitalisation	5.000	5.100
	Total tax payment	6.000	5.750
Economic responsibilities	Total profits	6.222	6.000
Governance responsibilities	Penalties for corruption and disciplinary offences	6.889	5.500
		5.873	5.607

6.3.3.1 Environmental Responsibilities. We found that non-SOEs and SOEs attached equal importance to the evaluation factor of environmental responsibilities, and exhibited no obvious differences in their concerns.

The scale analysis indicated that the highest average scores for both SOEs and

non-SOEs were for hazardous waste (SOEs and non-SOEs are distinguished by the suffix a), at 6.556 and 6.000, respectively. SOEs also showed a reduced level of importance towards the environmental factors of environmental investment, greenhouse gas emissions, and water consumption, while non-SOEs showed a reduced level of importance towards the environmental factors of environmental investment, water consumption, and greenhouse gas emissions. Thus, SOEs attached more importance to greenhouse gas emissions than non-SOEs, while non-SOEs placed more emphasis on the rational use of water resources than SOEs.

Table 54

Scores of Environmental Responsibilities Given by Entrepreneurs from Chinese SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Environmental investment a	9	4.000	7.000	5.778	0.972	6.000
Hazardous waste a	9	5.000	7.000	6.556	0.726	7.000
Greenhouse gas emission reduction a	9	4.000	7.000	5.444	1.014	6.000

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Water consumption a	9	3.000	6.000	5.000	1.000	5.000

Table 55

Scores of Environmental Responsibilities Given by Entrepreneurs from Chinese Non-SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Environmental investment	8	4.000	7.000	5.625	0.916	6.000
Hazardous waste	8	3.000	7.000	6.000	1.414	6.500
Greenhouse gas emission reduction	8	3.000	7.000	5.000	1.309	5.000
Water consumption	8	3.000	7.000	5.125	1.246	5.000

The results of the questionnaire were also reflected in the interviews. In addition to hazardous waste emissions, entrepreneurs put a high value on resource use:

SOEs, with national endorsement, possess obvious resource advantages. In addition to focusing on emissions, they should consider resource use as a major concern. Efforts such as conducting technology R&D, promoting technological innovation, reducing resource consumption, and improving the efficiency of resource use can contribute to the optimisation of resource allocation in the country.

A non-SOE interviewee (in the cosmetics industry) said: “Our company has basically achieved zero emissions, with all cooling water recycled for indoor and outdoor green plant irrigation and reuse.”

Another non-SOE interviewee (in the real estate industry) offered the following:

All of our projects that started in 2021 are star-rated green buildings. In terms of building materials, we have achieved a thermal insulation rate of 65%. Rainwater harvesting systems and the buildings are designed synchronously. Each construction site spanning 10,000 square metres is equipped with a rainwater storage and regulation tank of 100 cubic metres. We also build green factories in the industrial sector. In 2022, we saved 51,000 litres of diesel and 374,000 kilowatts of electricity in the industry.

China and the global community have actively promoted carbon peaking and carbon neutrality. Rural revitalisation is also considered an important policy by the Chinese central government. Thus, no significant differences are likely to emerge in

terms of environmental responsibilities between Chinese SOEs and non-SOEs when operating within the same framework.

6.3.3.2 Employee Responsibilities. We found that non-SOEs and SOEs attached equal importance to the evaluation factor of employee responsibilities, but their concerns were slightly different.

Our scale analysis indicated that SOEs had the highest average score of 6.556 in terms of investment in production safety, while non-SOEs had the highest average score of 6.750 in terms of investment in production safety and damage to employee health, but they had the lowest average score in terms of employee rights and interests guarantee. The reasons for these subtle differences may be as follows. First, the interviewees were from different industries, including manufacturing industries, chemical industries, and the service industry. Thus, the measures they took to guarantee employees' rights and interests may differ slightly. Second, non-SOEs are faced with market competition. Accidents may undermine employees' morale, impede work progress, and affect their overall performance. The corporate images of non-SOEs will also be damaged by the occurrence of accidents, which can be a serious blow as they depend heavily on suppliers, shareholders, and other stakeholders such as consumers. Therefore, non-SOEs attach great importance to investment in production safety and employee training to minimise the possibility of accidents.

Table 56

Scores for Employee Responsibilities Given by Entrepreneurs from Chinese SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Employee rights and interests guarantee a	9	5.000	7.000	6.444	0.726	7.000
Investment in production safety a	9	5.000	7.000	6.556	0.882	7.000
Investment in employee training a	9	5.000	7.000	6.000	0.866	6.000
Damage to employee health a	9	5.000	7.000	6.750	0.707	6.000

Table 57

Scores for Employee Responsibilities Given by Entrepreneurs from Chinese Non-SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Employee rights and interests guarantee	8	4.000	7.000	6.000	1.069	6.000
Investment in production safety	8	6.000	7.000	6.750	0.463	7.000
Investment in employee training	8	6.000	7.000	6.500	0.535	6.500
Damage to employee health	8	6.000	7.000	6.333	0.463	7.000

During the interviews, the entrepreneurs from both SOEs and non-SOEs all emphasised the importance of human resources. The personal safety and production safety of employees were identified as the most important factors when they evaluated their employee responsibilities. Those from non-SOEs, which rely on market-oriented recruitment, placed more emphasis on safety training for their employees, as demonstrated by an SOE interviewee from the coal chemical industry:

Due to the nature of our production activities, our company is prone to accidents such as mechanical injury or high-altitude falling. In order to minimise the likelihood of such injuries, the company invests RMB70–80 million annually in safety protection measures. For instance, in recent years, we have installed AI-based error correcting systems in the delivery areas and loading/unloading areas of our factories to reduce the chances of vehicles entering the wrong areas and to address mechanical malfunctions, thereby reducing the possibility of employee injury to a certain extent.

The primary business of our company is coal mining. In recent years, we have introduced a large number of machines and automation equipment to replace manual operation, which greatly reduces the probability of underground accidents, safeguards the health and safety of our employees, and enhances efficiency.

Another SOE interviewee in the chemical industry offered the following opinion:

Apart from ensuring production safety and industrial safety, we should guarantee the health of our employees. In the chemical industry, in addition to avoiding accidents and employee injuries, it is crucial to protect employees from potential secondary injuries caused by industrial pollution and production contamination. We should ensure that employees can work in good health.

A non-SOE interviewee (in the food industry) also explained their approach:

> Our company regularly conducts inspection actions with the theme of "upholding the bottom line, identifying hidden dangers, and ensuring safety" to investigate potential risks and hazards through self-inspection and self-correction. We also continuously organise learning and training activities on quality and safety.

Another non-SOE interviewee (in the AI industry) said: "Any safety incident could be fatal to us. The alarm bells must always be ringing, and we must never take chances."

6.3.3.3 Supply Chain Responsibilities. We found that non-SOEs attached more importance to supply chain responsibilities than SOEs, but the difference was not large.

The scale analysis indicated that the average score of SOEs in pushing suppliers to fulfil their responsibilities was 5.222 and that of non-SOEs was 5.250.

Table 58
Scores for Supply Chain Responsibilities Given by Entrepreneurs from Chinese

SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Pushing suppliers to fulfil their responsibilities a	9	3.000	7.000	5.222	1.093	5.000

Table 59

Scores for Supply Chain Responsibilities Given by Entrepreneurs from Chinese Non-SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Pushing suppliers to fulfil their responsibilities	8	4.000	6.000	5.250	0.707	5.000

These findings may be due to non-SOEs placing more emphasis on cost control, which leads them to prioritise SCM. By managing various aspects of the supply chain, they aim to enhance overall operational efficiency, reduce costs, and collaborate with both upstream and downstream supply chain partners to fulfil their social responsibilities.

6.3.3.4 Social Responsibilities. We found that non-SOEs and SOEs attached equal importance to the evaluation factor of social responsibilities, but their concerns were clearly different.

The scale analysis indicated that SOEs had the highest average score of 6.000 for total tax payment and non-SOEs had the highest average score of 5.250 for donations to external parties. The difference between the average scores of SOEs and non-SOEs for total tax payment was greater than 1, indicating that they attached significantly different levels of importance to tax payment. We found no major difference between the average scores of SOEs and non-SOEs for rural revitalisation. SOEs regard paying taxes as their most important social responsibility, as this contributes to the government's financial revenue.

Table 60

Scores for Social Responsibilities Given by Entrepreneurs from Chinese SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Donations to external parties a	9	3.000	6.000	4.778	0.833	5.000

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Participation in rural revitalisation a	9	2.000	7.000	5.000	1.414	5.000
Total tax payment a	9	3.000	7.000	6.000	1.225	6.000

Table 61

Scores for Social Responsibilities Given by Entrepreneurs from Chinese Non-SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Donations to external parties	8	4.000	6.000	5.250	0.707	5.000
Participation in rural revitalisation	8	3.000	6.000	4.750	0.886	5.000
Total tax payment	8	3.000	6.000	4.500	1.309	5.000

An SOE interviewee (in the financial industry) expressed the following

regarding rural revitalisation:

> After advancing rural revitalisation across the board was proposed, the most challenging and arduous tasks we face in building a modern socialist China in all respects remain in our rural areas. We will continue to put agricultural and rural development first, pursue integrated development of urban and rural areas, and facilitate the flow of production factors between them. We will move faster to build up China's strength in agriculture and steadily promote the revitalisation of businesses, talent, culture, ecosystems, and organisations in the countryside. SOEs should play an important role in finance, infrastructure, and other fields to support the strategic development of the country.
>
> The company takes charitable trust as an important measure to fulfil its social responsibilities and support rural revitalisation. By the end of 2021, the company had 33 charitable trust products worth RMB60,411,300.

A non-SOE interviewee (in the food industry) discussed their social responsibilities:

> Our company has actively carried out public-interest programmes when it comes to fulfilling social responsibilities. On 26 January 2020, we donated RMB10 million to the epidemic-hit areas in Wuhan for the prevention and control of COVID-19. During the July 20 flood in Henan province, we donated supplies worth RMB10,000 to Xinxiang Charity General Federation and

Yuanyang Charity Association respectively. In April 2022, we donated anti-pandemic supplies to Jilin.

Another non-SOE interviewee (in the Internet industry) stated the following:

The company actively takes on social responsibilities and participates in and organises various public benefit activities. The company has launched a public welfare platform to give full play to the advantages of the Internet and expand channels for the public to express goodwill. It attaches importance to input in public welfare fields such as emergency disaster relief and safety assistance.

6.3.3.5 Economic Responsibilities. We found that SOEs attached more importance to economic benefits than non-SOEs.

The scale analysis indicated that the average score of SOEs for total profits was 6.889 and that of non-SOEs was 6.000. Thus, SOEs pay more attention to total profits than non-SOEs.

Table 62
Scores for Economic Responsibilities Given by Entrepreneurs from Chinese

SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Total profits a	9	5.000	7.000	6.889	0.333	7.000

Table 63

Scores for Economic Responsibilities Given by Entrepreneurs from Chinese Non-SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Total Profits	8	4.000	7.000	6.000	1.069	6.000

6.3.3.6 Governance Responsibilities. We found that SOEs attached more importance to governance responsibilities than non-SOEs.

The scale analysis indicated that the average score of SOEs for penalties for corruption and disciplinary offences was 6.889 and that of non-SOEs was 5.500. The difference was greater than 1, indicating the significantly different importance they attached to this factor.

Table 64

Scores for Governance Responsibilities Given by Entrepreneurs from Chinese

SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Penalties for corruption and disciplinary offenses a	9	6.000	7.000	6.889	0.333	7.000

Table 65

Scores for Governance Responsibilities Given by Entrepreneurs from Chinese Non-SOEs

Name	Sample size	Minimum value	Maximum value	Average score	*SD*	Median
Penalties for corruption and disciplinary offences	8	4.000	7.000	5.500	1.309	6.000

6.3.4 At the Evaluation System Level

Information on all of our quantitative indicators were collected from the SOEs participating in the interviews and research, according to the six primary indicators and 14 secondary indicators selected.

Table 66

Specific Data Disclosure of SOEs and Non-SOEs

	Specific Data Disclosure		
Environmental investment	RMB (24.96 million)	RMB (40,000)	RMB (294 million)
Hazardous waste	(114) tons	(12) tons	(10,928) tons in 2021
Greenhouse gas emission reduction	(2,230) tons	(10) tons	(2,817,127.78) tons in 2021
Water consumption	(973) tons	(18,705) tons	(4,525,490.2) tons in 2021
Employee rights and interests guarantee	RMB (9.57 million)	RMB (880,000)	RMB (9,797,400)
Investment in production safety	RMB (24.89 million)	RMB (260,000)	RMB (153,749,200)
Investment in employee training	RMB (32 million)	RMB (1.35 million)	RMB (1,057,800)
Damage to employee health	RMB (3.54 million)	RMB (35,000)	RMB ()

Pushing suppliers to fulfil their responsibilities	RMB ()	RMB ()	RMB (1,734 million)
Amount of donations to external parties	RMB (11.81 million)	RMB ()	RMB (1,898,000) in 2021
Investment in rural revitalisation	RMB (10.16 million)	RMB ()	RMB (1.6 million) in 2021
Total tax payment	RMB (348 million)	RMB ()	RMB (1,130.38 million)
Total profits	RMB (1.42 billion)	RMB ()	RMB (738.11 million)
Penalties for corruption and disciplinary offences	RMB ()	RMB (0)	RMB ()

In the interviews, we also asked the Chinese SOE entrepreneurs to comment on the impact of ESG on the comprehensive value of their companies and our model. They gave the following replies.

There are many ESG evaluation systems at home and abroad. Those evaluation

systems pay attention to different perspectives, and the results obtained vary greatly. For example, overseas ESG evaluation systems generally involve indicators such as human rights and community impact, while Chinese ESG evaluation systems attach more importance to indicators such as poverty alleviation. For SOEs, the ESG evaluation criteria should be adjusted due to the large difference between them and private enterprises in terms of company size and equity structure. We believe that the ESG evaluation of SOEs should pay more attention to social responsibilities such as promoting environmental protection, technological innovation, and shared prosperity.

SOEs are more advantageous than private enterprises in terms of funds and government resources. They often undertake major scientific research projects and play a very important role in technological innovation. The current ESG evaluation system lacks the evaluation of enterprises' contributions to technological innovation. When ESG performance is evaluated, more attention should be paid to enterprises' contributions and support to technological innovation.

ESG focuses on a company's environmental protection, fulfilment of social responsibilities, and operation of internal governance rather than only its economic indicators. Reasonable and appropriate ESG criteria can help enterprises further standardise their operations and achieve higher-quality development.

There are different ESG evaluation systems in the world, and SOEs themselves assume a lot of social responsibilities. Carrying out ESG evaluation can help them better identify ESG achievements and further enhance their sense of social responsibility.

Although I don't have an in-depth understanding of the current ESG evaluation system, it is better not to evaluate Chinese SOEs completely according to international standards. China should have its own evaluation system that sets out the main aspects that need attention from the perspective of the actual situation and long-term development of SOEs.

The ESG evaluation system will be implemented on a regular basis, but the current system has insufficient and deviated knowledge of China. I think it is necessary to establish China's standards and strive for greater voice.

In summary, first, the SOE entrepreneurs interviewed generally believed that it is necessary to establish an ESG evaluation system for Chinese SOEs. We found that the value dimensions represented by high-frequency words in our textual analysis tended to be close to the value judgments of SOEs in our scale analysis of entrepreneur interviews. Therefore, our model is more suitable for the environment of Chinese SOEs. Second, the data showed that the entrepreneurs interviewed agreed that the establishment of an ESG evaluation system for Chinese SOEs can help them formulate quantifiable ESG key indicators. Third, while fulfilling their ESG responsibilities,

Chinese SOEs can enhance their comprehensive value to achieve China's national strategic goals and accelerate the construction of world-class enterprises.

Chapter 7 Conclusions and Discussion

7.1 Research Conclusions

A global consensus is gradually being reached regarding carbon emission peaking and carbon neutrality, and ESG has become a central investment concept and practical strategy that is attracting increasing attention. China has recently attached great importance to ESG activities. The SASAC has established the Bureau of Social Responsibility to guide SOEs to actively implement the concept of ESG and adapt to and lead the formulation of international rules and standards. ESG represents a common language for Chinese enterprises aiming to integrate into international markets (Liu, 2022b) and the only way to accelerate the construction of world-class enterprises. Over 600 enterprise rating agencies have emerged worldwide. ESG evaluation systems have major differences in terms of their system characteristics, rating objectives, rating frameworks, rating methods, scoring mechanisms, rating results, and even products and services. There is still room for improvement in the level of information disclosure and in the construction of a management system and an evaluation system.

First, China lacks a localised ESG evaluation indicator system. When benchmarking against foreign ESG rating indicators, it is clear that most foreign standards cannot fully reflect the true social value of Chinese SOEs. For example, so-called international standards do not reflect the efforts made by Chinese SOEs in terms of shared prosperity, rural revitalisation, and building a beautiful China.

Second, China has not issued any specific laws or regulations regarding ESG information disclosure and lacks practical guidelines or content standards for Chinese SOEs. Thus, enterprises tend to choose evaluation systems that they find beneficial when disclosing ESG information, resulting in a lack of comparability among the ESG reports of different enterprises (Cao, 2022b). Chinese SOEs adopt different forms of ESG information disclosure, due to the lack of a unified reporting standard. Some disclose this information in separate ESG reports, and others release relevant information in the social performance and management analysis sections of their corporate annual reports (Wu & Chen, 2022b). In addition, due to the lack of standardisation in information disclosure, the information governance of ESG disclosure is inconsistent. Chinese SOEs have a wide range of information disclosure approaches to choose from, making it difficult for regulatory authorities and investors to effectively evaluate their ESG practices. This situation in turn reduces the enthusiasm of Chinese SOEs to publish ESG reports.

Third, regulatory authorities and stakeholders have increasingly strict requirements for the ESG-related activities of Chinese SOEs, although at present ESG information disclosure remains voluntary and driven by policies. However, with the formulation of new guidelines, it will inevitably move closer to the global trend and gradually become mandatory. In addition, all sectors of society now have expectations regarding the ESG activities of Chinese SOEs, as they occupy an important position in the national economy and have a significant influence on the capital market and public

opinion. Thus, the public is interested in various aspects of their operations, in addition to investors paying close attention to their ESG activities. Undoubtedly, this raises expectations regarding their ESG information disclosure (Wei, 2021).

Fourth, Chinese SOEs suffer from a lack of investment and ESG management capabilities. They will face increasing pressure from more stringent environmental regulations. To address further environmental problems, these enterprises will be required to make significant improvements and enhancements in terms of human resources, financial resources, technological optimisation, and other aspects, which will inevitably affect their business performance (Yang, 2015). Chinese SOEs must also improve their governance efficiency and the effectiveness of their policy implementation. Against the backdrop of economic structural transformation and SOE reform, Chinese SOEs must ensure against any superficial, perfunctory, or fake rectification in the relationship between administrative agencies and enterprise management. They must also improve and fully implement performance evaluation systems, avoid choosing quantity over quality to cater to market preferences (Qu, unknown), and improve the overall efficiency of their ESG governance and management capabilities.

Thus, in this dissertation, we focused on constructing an ESG evaluation indicator system suitable for Chinese SOEs through textual analysis and verified its effectiveness. First, we identified several influencing factors that may affect Chinese SOEs' ESG evaluation by assessing CSR and ESG reports, conducting interview

research and analysis, and comprehensively assessing relevant materials such as policy documents issued by the SASAC. Second, we empirically tested and explained the correlation between indicators and the ESG performance of Chinese SOEs, and subsequently determined the main factors affecting this performance. Based on this, an ESG evaluation system for Chinese SOEs was constructed and applied to their ESG management and practices.

We tested the hypotheses using textual analysis. The data were mainly sourced from the database of GoldenBee Research on CSR Reports, which includes CSR reports (e.g., sustainable development reports, ESG reports, corporate citizenship reports, special environmental reports) issued by Chinese companies and non-corporate organisations since 2001, and data for quality assessment by professional CSR report evaluators, according to the GoldenBee Social Responsibility Report Evaluation System. Using these data, we validated the proposed hypotheses and offer the following findings.

(1) The performance of the current ESG evaluation system is positively correlated with the business performance of enterprises.

We found a strong positive correlation between ESG scores and the business performance of enterprises: in the short term, the higher the ESG scores, the higher the business income; in the long term, the higher the ESG scores, the higher the business income of enterprises with small assets. This indicates that the scores obtained under

the ESG system can have an impact on the business performance of enterprises, because the higher the scores, the better the business performance of enterprises.

(2) ESG concerns differ between SOEs and non-SOEs.

First, the keywords in CSR reports issued by SOEs and non-SOEs were more consistent with the 33 high-frequency words in the documents published by the SASAC and the 30 high-frequency words in the documents issued by capital markets, respectively.

Although these high-frequency words came from different categories of documents, they had some similarities. For example, in the reports of both SOEs and non-SOEs, the terms investment, production safety, sustainable development, financing, and environmental protection appeared more than once.

Second, SOEs and non-SOEs differ in terms of the high-frequency words they disclose. For example, SOEs pay more attention to important social events and actively respond to social concerns; based on the speeches of national leaders and policy documents, they use more strategic and leadership keywords. Through our research, our interviews with SOE entrepreneurs, and the data analysis, we found that SOEs are mainly established to be pillars of the national economy and to promote its high-quality development. This is achieved by focusing on important issues and actively aiming to achieve major goals such as advancing the modern industrial system, promoting the coordinated development of regions, facilitating high-level openness to the outside world, and driving green development. Non-SOEs pay more attention to anticorruption,

audits, business ethics, earnings, and information disclosure, as their shareholder structures include private investors such as individuals through privatisation. Profit is typically the core objective of the establishment and development of these enterprises. They closely associate factors such as audits, business ethics, and earnings with their financial value, as reflected in the frequency of use of these keywords, thus emphasising market orientation and pursuing maximum economic benefits and value transformation. SOEs and non-SOEs therefore have differences and similarities in the use of the identified keywords, and the frequency of their use of them also differs.

We assessed their attention to ESG evaluation factors by dividing the identified high-frequency words into the six dimensions of environmental, social, governance, employee, economic, and supply chain responsibilities, according to the current ESG system. We found that SOEs and non-SOEs pay equal attention to environmental and social responsibilities, and that SOEs pay more attention to employee and economic responsibilities and less attention to social and supply chain responsibilities than non-SOEs. Thus, SOEs and non-SOEs differ in the attention they pay to our newly developed ESG evaluation dimensions.

(3) Under the current ESG evaluation system, there is a disparity in the correlation between ESG performance and business performance for SOEs and non-SOEs.

We first examined the relationship between ESG scores and the business

performance of enterprises at the macro level. By comparing SOEs with non-SOEs, we then found that the effects of their ESG scores on their performance differed. In the short term, the higher the ESG scores, the higher the business income for both SOEs and non-SOEs. However, in the long term, for SOEs, the higher their ESG scores, the higher their business income when their assets are greater than 7.575; while this is the case for non-SOEs when their assets are greater than 4.624. This demonstrates that in the ESG evaluation system, SOEs and non-SOEs of different types and sizes cannot be treated equally. Comparing the correlations between ESG scores and business performance for SOEs and non-SOEs showed that the correlation for SOEs is significantly stronger than for non-SOEs. The higher the ESG scores of SOEs, the greater the impact on their business performance compared with that of non-SOEs that have the same ESG scores. Thus, the scores of the ESG evaluation factors have a greater impact on SOEs.

(4) A high matching degree between the keywords in SOEs' reports and the indicators of the newly established ESG evaluation system is positively correlated with their business performance.

After establishing the new evaluation system, we compared and analysed the matching degree between the keywords in the 2021 reports of SOEs and the defined indicators. We selected 70 enterprises with a high matching degree and obtained their business performance results. We compared the business performances of enterprises with high and low matching degrees to assess whether the newly built system was

correlated with performance. We found that a high matching degree between the keywords in SOEs' reports and the indicators of the newly established ESG evaluation system was positively correlated with their business performance. Higher scores in the newly established system for evaluating ESG in enterprises in the future will therefore indicate better future business performance. The newly established ESG evaluation system will thus have a positive impact on the business performance of enterprises, confirming its value. We propose that for SOEs that have different systems from those in the West, there should be a more consistent model to reflect the correlation between a specific combination of factors and overall business performance.

7.2 Research Significance

First, through our research on the matching degree of high-frequency words in CSR reports, we found that the reports of SOEs matched the high-frequency words in the SASAC's policy documents more closely, while those of non-SOEs more closely matched the high-frequency words in the ESG evaluation standard documents of capital markets. For example, SOEs demonstrate a higher level of focus on significant social events and issues, proactively addressing concerns that are of public interest. The higher frequencies of key terms such as energy conservation and emission reduction, green finance, environmental protection, procurement, win-win outcome, and climate change in SOEs' reports indicate that they are more proactive in terms of environmental responsibilities and disclosure regarding their efforts in addressing climate change. They align their reporting with national and societal priorities in this regard. SOEs'

reports tend to reflect speeches by national leaders and policy documents, giving importance to keywords that have strategic and pioneering connotations. High-frequency words such as national strategy, legal compliance, state-owned assets, assisted areas, and low carbon are clearly associated with SOEs, and appear much more frequently in their reports than in those of non-SOEs. In contrast, the high-frequency words in the reports of non-SOEs matched the ESG evaluation standard documents of capital markets more closely. For example, keywords such as anticorruption, audits, business ethics, earnings, information disclosure, water consumption, and product quality appear more frequently in the reports of non-SOEs, indicating that they pay more attention to the disclosure indicators of capital markets.

We then further studied the degree of attention paid by SOEs and non-SOEs to ESG evaluation factors and identified various differences. First, the frequency of environmental responsibility keywords was the same in SOE and non-SOE reports (16%), as was the frequency of social responsibility keywords (4%). Second, non-SOEs (31%) placed more emphasis on governance responsibilities than SOEs (27%). Third, SOEs (15%) put more emphasis on employee responsibilities than non-SOEs (14%); SOEs (31%) paid more attention to economic responsibilities than non-SOEs (27%); while non-SOEs (8%) put a higher value on supply chain responsibilities than SOEs (7%).

We then developed a scientifically based and sound methodology for building an ESG evaluation indicator system for Chinese SOEs. We focused on the ESG factors

of Chinese SOEs from the top-level strategic dimension, to provide a systematic and practical approach that can help Chinese SOEs continuously improve their level of quality and sustainable development. China's economy is in a transition period regarding the two development strategies of "dual carbon goals" and "dual circulation." Chinese SOEs can be viewed as the lifeblood of the national economy and finance, so they should strive to promote the transformation of institutional advantages into governance efficiency, adhere to the philosophy of innovative, coordinated, green, open, and shared development, and play an exemplary role by assuming social responsibility, practicing environmental protection, and ensuring employee welfare. The ESG evaluation indicator system provides a practical new approach to measuring the nonfinancial benefits of Chinese SOEs. The proposed methodology for establishing such a system not only provides a basis for SOEs to establish core ESG indicators for future internal assessment but also offers reference ideas for regulatory agencies overseeing SOEs, for provincial and municipal SASACs when evaluating the management of state-owned assets, industry associations, the stock market, and other stakeholders or collaborative entities. To ensure that the evaluation system can be practically applied, the attention of senior enterprise leaders is required. The underlying causes for enterprises' underperformance in certain areas should then be identified. Finally, by establishing an ESG evaluation system, SOEs can advance their sustainable development management across various industries. This not only provides an opportunity for the effective implementation of the system in terms of external

disclosures and internal assessments but can also help managers of SOEs establish why CSR is separated from management improvement.

Although some agree that China should establish its own rating system to help stakeholders better understand and judge corporate disclosures, research on how such a system can be built or practical initiatives is limited. This dissertation fills this gap by exploring the above propositions. By establishing a model that can be practically operated and applied, we obtained specific parameter results, which can inform research in terms of views on necessity and also confirm the differences in ESG concerns between SOEs and non-SOEs. The high-frequency words in the reports of SOEs better match those of the SASAC's policy documents, and those of non-SOEs better match the high-frequency words in the ESG evaluation standard documents of capital markets. The degree of disclosure regarding the main keywords in the reports of SOEs and non-SOEs obviously differ: those of SOEs pay more attention to important social events and other matters and actively respond to social concerns, and are based on speeches made by national leaders and policy documents and focus on the use of strategic and leader keywords. In the future, scholars could conduct further in-depth research into the differences between the current evaluation system indicators and the information disclosure content of SOEs' reports, as the system does not cover all of the content in the SASAC's documents and those considered by SOEs.

7.3 Limitations

This dissertation has various limitations, due to the author's limited research ability.

First, due to limited research time and personal resources, only a small sample of public reports issued by Chinese SOEs and non-SOEs were selected as the research object. Whether this can effectively represent common economic entities in other emerging economies requires further research.

Second, in this study, we followed previous practice and used the number of dimensions covered in current ESG evaluation systems as a measurement indicator for the new model (Xu & Huang, 2014), which may not be sufficiently granular. Future research could measure ESG indicators more scientifically, for example by increasing the weight of the dimensions covered by ESG.

Third, some scholars have suggested that SOE compliance through ESG indicators may be a "political task," which we argue may be the case in this dissertation for some enterprises when taking social responsibility, but we did not distinguish these enterprises or the stage in which they assume social responsibility as political. Subsequent research could explore this issue in more depth.

Finally, the theoretical contribution of this dissertation is limited, as we did not explore the regulatory roles of cognitive bias and institutional factors under a unified theoretical framework, which makes the research content appear relatively scattered. The author will continue to develop this limited theoretical ability. However, the

regulatory factors are truly presented to readers as the realities encountered in the operation of enterprises, and thus can prompt further discussion and thought.

References

Alizati Tulhon (n.d.). Research on the relationship between ESG performance, ownership structure and corporate value of listed companies.

Allouche, J., & Laroche, P. (2005). A meta-analytical investigation of the relationship between corporate social and financial performance. *Revue de Gestion Des Ressources Humaines*, *57*, 18.

Appuhami, R., & Tashakor, S. (2017). The impact of audit committee characteristics on CSR disclosure: An analysis of Australian firms. *Australian Accounting Review*, *27*(4), 400–420.

Bamahros, H. M., Alquhaif, A., Qasem, A., Wan-Hussin, W. N., Thomran, M., Al-Duais, S. D., Shukeri, S. N., & Khojally, H. M. (2022). Corporate governance mechanisms and ESG reporting: Evidence from the Saudi Stock Market. *Sustainability*, *14*(10), 6202.

Baron, D. P. (2013). *Business and its environment*. Pearson.

Boffo, R., Marshall, C., & Patalano, R. (2020). ESG investing: Environmental pillar scoring and reporting. *Retrieved*, *14*, 2021.

Bowen, F., Newenham-Kahindi, A., & Herremans, I. (2010). When suits meet roots: The antecedents and consequences of community engagement strategy. *Journal of Business Ethics*, *95*, 297–318.

Cao Siyu (2022a). Current situation, problems and suggestions of ESG information disclosure in China. *Accountant,* (4), 2.

Cao Siyu (2022b). Current situation, problems and suggestions of ESG information disclosure in China. *Accountant,* (4), 2.

Chen Haixia (2019). Analysis on strengthening human resource management as an effective way to improve the benefits of enterprise operation and management. *Finance and Management,* (3), 47. https://doi.org/10.26549/cjygl.v3i3.1794

Chen Xin (2020a). Listed companies get higher ESG scores as party building works well. *Directors & Boards,* (9), 3.

Chen Xin (2020b). Integral part of high-quality development—Current situation and outlook of ESG construction in Chinese SOEs. *Directors & Boards,* (05), 4.

Chen Xin (2020c). Integral part of high-quality development—Current situation and outlook of ESG construction in Chinese SOEs. *Directors & Boards,* (05), 4.

Cui Sainan, & Chang Zheng (2012). Discussion on enterprise human resource management and realization of human value. *Manager's Journal,* (16), 130–130.

Destoumieux-Garzón, D., Matthies-Wiesler, F., Bierne, N., Binot, A., Boissier, J., Devouge, A., Garric, J., Gruetzmacher, K., Grunau, C., Guégan, J.-F., Hurtrez-Boussès, S., Huss, A., Morand, S., Palmer, C., Sarigiannis, D., Vermeulen, R., & Barouki, R. (2022). Getting out of crises: Environmental,

social-ecological and evolutionary research is needed to avoid future risks of pandemics. *Environment International*, *158*, 106915. https://doi.org/10.1016/j.envint.2021.106915

Doh, J. P., Howton, S. D., Howton, S. W., & Siegel, D. S. (2010). Does the market respond to an endorsement of social responsibility? The role of institutions, information, and legitimacy. *Journal of Management*, *36*(6), 1461–1485.

Fan Guorong (2011). Research on China's characteristics of SOEs promoting social modernization [D]. *East China University Of Science and Technology.*

Fang Jian (2023). Analysis of corporate ESG sustainable development goals. *Modern Accounting,* (3), 44–45.

Feng Yukun, & Zhuang Yang. (2022). Review of research on corporate ESG performance and financial performance. *Research on Economics and Management*, *4*(6), 92–94.

Frooman, J. (1997). Socially irresponsible and illegal behavior and shareholder wealth: A meta-analysis of event studies. *Business & Society*, *36*(3), 221–249.

Fu Lixin. (2021). Design and reconstruction of "Disclosure or Explanation" rule under the information disclosure system. *The Chinese Banker*, *11*, 3.

Gao Yue (2023). Analysis of ESG rating development from the perspective of corporate governance. *Economic Research Guide,* (8), 1–3.

Gaudencio, P., Coelho, A., & Ribeiro, N. (2021). The impact of CSR perceptions on workers' turnover intentions: Exploring the supervisor exchange process and the role of perceived external prestige. *Social Responsibility Journal*, *17*(4), 543–561.

Geng Jianxin, Li Zhijian, & Lyu Xiaomin. (n.d.). Suggestions on strengthening information disclosure of resource utilization by listed companies—Based on the current situation of ESG information disclosure in China's capital market. *Communication of Finance and Accounting.*

Green Finance Group of Industrial and Commercial Bank of China, Zhang Hongli, Zhou Yueqiu, Yin Hong, Ma Suhong, Yang Xing, Qiu Muyuan, & Zhang Jingwen. (2017). ESG green rating and green index research. *Financial Forum*, *9*, 12.

Guo Yuchen (2022). Enterprise ESG information disclosure in the context of dual carbon goals: Practice and thinking. *Journal of Taiyuan University (Social Sciences Edition), 23*(2), 10.

Han Bin (2019). The significance of global sustainable development goals to enterprise development. *China Sustainability Tribune,* (9), 2.

Han Song (2022). Analysis of impact indicators and optimization paths of ESG disclosure system in China. https://doi.org/10.26962/d.cnki.gbjwu.2022.001037

Hart, S. L., & Dowell, G. (2011). Invited editorial: A natural-resource-based view

of the firm: Fifteen years after. *Journal of Management*, *37*(5), 1464–1479.

He Dazhi (2015). Research on the impact of strategic human resource management on enterprise performance. *Management & Technology of SME,* (17). https://qikan.cqvip.com/Qikan/Article/Detail? id=665210212

Heald, M. (2018). The social responsibilities of business: Company and community, 1900-1960. Routledge.

Henisz, W. J., Dorobantu, S., & Nartey, L. (2011). Spinning gold: The financial returns to external stakeholder engagement. *Academy of Management Proceedings*, *2011*(1), 1–6.

Holtbrügge, D., & Oberhauser, M. (2019). CSR orientation of future top managers in India. *Journal of Indian Business Research*, *11*(2), 162–178.

Hong Gongxiang (2016). Theoretical reflection on strengthening, optimizing and enlarging SOEs. *Theoretical Exploration, 222*(6), 70–77.

Huang He, & Zhou Xiao (2022). Beyond sovereignty: The influence and remodeling of multinational corporations on the international political and economic order. *Printed Newspaper Materials: Guide to World Economy,* (5), 14.

Jones, S. C. (2023). Advice for autistic people considering a career in academia. *Autism*, *27*(7), 2187–2192. https://doi.org/10.1177/13623613231161882

Ju Tao, Liu Bai, & Lu Jiarui, (n.d.). Formalism or substantialism: Research on green innovation under soft regulation of ESG rating. *Nankai Business*

Review, 1–24.

Kartikasari, E. D., Hermantono, A., & Mahmudah, A. (2019). Good corporate governance, dividend, leverage, and firm value. *International Research Journal of Business Studies*, *12*(3),309–310.

Kim, S. W. (2009). An investigation on the direct and indirect effect of supply chain integration on firm performance. *International Journal of Production Economics*, *119*(2), 328–346.

Kim, Y. H. (2017). The effects of major customer networks on supplier profitability. *Journal of Supply Chain Management*, *53*(1), 26–40.

Kocmanová, A., Dočekalová, M., & others. (2012). Construction of the economic indicators of performance in relation to environmental, social and corporate governance (ESG) factors. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, *60*(4), 195–206.

Kraus, S., Rehman, S. U., & García, F. J. S. (2020). Corporate social responsibility and environmental performance: The mediating role of environmental strategy and green innovation. *Technological Forecasting and Social Change*, *160*, 120262.

Lai Cailin, & Miao Yicong (2022). Research on the impact of ESG scores on profitability of listed companies—Based on empirical evidence from A-share listed companies. *Market Weekly, 35*(08), 113–117.

Lanier Jr, D., Wempe, W. F., & Zacharia, Z. G. (2010). Concentrated supply chain

membership and financial performance: Chain-and firm-level perspectives. *Journal of Operations Management*, *28*(1), 1–16.

Li Bijia (2021). Research on the impact of ESG performance on enterprise idiosyncratic risks [D]. *Harbin Institute of Technology.*

Li Jinglin, Yang Zhen, Chen Jin, & Cui Wenqing (2021). Research on the mechanism of ESG promoting enterprise performance: From the perspective of enterprise innovation. *Science of Science and Management of S.& T., 4*2(9), 19.

Li Junzhen, Zhang Hua, & Zhang Wen (2022). Research on the influence of ESG concept on enterprise internal control. *Commercial Accounting* (15), 28–31.

Li Kaile, & Hu Dong. (n.d.). Discussion on economic responsibility audit of SOEs under the ESG framework. *Shenji Yuekan.,* 2021, *3*, 10-12.

Li Qin (2021). The development of ESG concept in China—Taking Ping as an example. *Modern Marketing,* (5), 2.

Li Xiaodi (2018). Importance of supply chain management to enterprise development (Continued I). *China Writing Instruments,* (2), 2.

Li Yu, & Li Meng (2018). An empirical study on the relationship between social responsibility and financial performance of SMEs in Western China. *Journal of Tibet University (Social Sciences Edition), 33*(4), 7.

Liao Xiaofei, & Tan Jie (2021). Green supply chain management, supply chain

concentration and enterprise value. *Journal of Jilin Business and Technology College, 37*(6), 7.

Liu Chengda. (2019). Composition of major shareholders and corporate performance of mixed ownership enterprises – Empirical test based on the threshold effect of enterprise size. *Modern Finance and Economics: Journal of Tianjin University of Finance and Economics*, 6, 12.

Liu Lu, & Yu Wentao. (2021). A comparative study of enterprise ESG evaluation and traditional credit rating system. *New Finance*, *000*(004), 59–64.

Liu Xinwei (2022a). The first ESG standard released: Vigorously developing ESG to help Chinese enterprises go global with high standards. *China's Foreign Trade,* (7), 70–71.

Liu Xinwei (2022b). The first ESG standard released: Vigorously developing ESG to help Chinese enterprises go global with high standards. *China's Foreign Trade,* (7), 70–71.

Liu Yanfeng. (2020). ESG: From topic to action. *Directors & Boards*, *4*, 3.

Ma Ling, Chen Xin, Zhao Shuming, & Yan Xiaoqiang (2020). Internal mechanism of corporate social responsibility to promote employee engagement: A case study based on Haidilao [J]. *Journal of Management Case Studies, 13*(3), 13.

Ma Xili (2019). Does the ESG investment strategy have demining capabilities: An empirical study based on China's A-share market. *Northern*

*Finance,*2019,*5*,14-19

Ma Yin, & Li Yan (2019). Research on the impact of internal governance structure of listed companies on enterprise value. *Value Engineering, 38*(35), 4.

Ma Yue, & Liu Ying (2022). Practice ESG concept and strive to be an ESG ecological builder. *C-Enterprise Management*, (9), 3.

Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly*, *48*(2), 268–305.

Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. (2009). Does it pay to be good... And does it matter? A meta-analysis of the relationship between corporate social and financial performance. *SSRN Electronic Journal*, 1–68.

McWilliams, A., & Siegel, D. (2000). Corporate social responsibility and financial performance: Correlation or misspecification? *Strategic Management Journal*, *21*(5), 603–609.

Miroshnychenko, I., Barontini, R., & Testa, F. (2017). Green practices and financial performance: A global outlook. *Journal of Cleaner Production*, *147*, 340–351.

Noe, R., Hollenbeck, J., Gerhart, B., & Wright, P. (2006). *Human resources management: Gaining a competitive advantage. Tenth Global Edition*. McGraw-Hill Education.

Orlitzky, M., & Benjamin, J. D. (2001). Corporate social performance and firm risk: A meta-analytic review. *Business & Society*, *40*(4), 369–396.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, *24*(3), 403–441.

Pan Haiying, Zhu Yidan, & Xin Fu. (n.d.). ESG performance and corporate financialization: Regulatory effect of internal and external regulation. *Journal of Nanjing Audit University, 2,* 60-69.

Pfajfar, G., Shoham, A., Małecka, A., & Zalaznik, M. (2022). Value of corporate social responsibility for multiple stakeholders and social impact– Relationship marketing perspective. *Journal of Business Research*, *143*, 46–61.

Porter, M. E., & Linde, C. van der. (1995). Toward a new conception of the environment-competitiveness relationship. *Journal of Economic Perspectives*, *9*(4), 97–118.

Qian Lina, & Zhu Yun (2021). ESG investment fever under the "Dual Carbon" Goals. *Business Management Review,* (9), 2.

Qian Xiaojun (2020). Strengthening the concept and practice of sustainable development to build a new "Dual Circulation" development pattern. *China Sustainability Tribune,* (12), 4.

Ren Gengpo. (2022). ESG development progress and policy suggestions. *Shanghai Energy Saving*, *7*, 5.

Ren Guangqian, Zhou Xueya, Li Xinyi, & Liu Li. (2021). Nature of property right, corporate governance and enterprise environmental behavior. *Journal of*

Beijing Institute of Technology (Social Sciences Edition), *23*(2), 12.

Ren Zixian, Gu Shuchang, Yang Yuzhu, & Li Jingwen. (2021). Empirical study on the relationship between ESG performance and corporate financial performance. *Management and Administration*, *11*, 7.

Schachtschabel, H. (1958). Soziologische Forschung in unserer Zeit. JSTOR.

Senadheera, S. S., Withana, P. A., Dissanayake, P. D., Sarkar, B., Chopra, S. S., Rhee, J. H., & Ok, Y. S. (2021). Scoring environment pillar in environmental, social, and governance (ESG) assessment. *Sustainable Environment*, *7*(1), 1960097. https://doi.org/10.1080/27658511.2021.1960097

Shen Min，Ma Xiaodi, Pan Chan. (2020). Research on the performance of cross-border M&A under institutional theory and springboard theory. *Hubei Social Science*, 2022(3), 81-92.

Su Chang, & Chen Cheng (2022). Research on ESG evaluation system of listed companies under the new development philosophy—Taking listed companies in heavily polluting manufacturing as an example. *Finance and Accounting Monthly,* (06), 6.

Su Lifang (2022). Trends in SOEs' responsibilities and new directions of corporate governance under ESG goals. *Communication of Finance and Accounting,* (18), 133–136.

Sun Lulu (2021). FTSE Russell WGBI included in China's government bonds.

Foreign Investment in China, 000(005): 62–62.

Sun Xiuli, Zhao Shuming, & Jiang Chunyan. (n.d.). Institutional support, corporate entrepreneurship and enterprise performance.

Tamimi, N., & Sebastianelli, R. (2017). Transparency among S&P 500 companies: An analysis of ESG disclosure scores. *Management Decision*, *55*(8), 1660–1680.

Tang Yuejun (2009). Bargaining power of suppliers and dealers, and corporate performance—Empirical evidence from Chinese listed manufacturing companies in 2005-2007. *China Industrial Economics,* (10), 10.

Tarmuji, I., Maelah, R., & Tarmuji, N. H. (2016). The impact of environmental, social and governance practices (ESG) on economic performance: Evidence from ESG score. *International Journal of Trade, Economics and Finance*, *7*(3), 67.

Turban, D. B., & Greening, D. W. (1997). Corporate social performance and organizational attractiveness to prospective employees. *Academy of Management Journal*, *40*(3), 658–672.

Wang Bo, & Yang Maojia (2022). Research on the impact mechanism of ESG performance on firm value—Empirical evidence from Chinese A-share listed companies. *Soft Science, 36*(6), 7.

Wang Lei (2022). Problems and measures of ESG responsible investment in Chinese financial institutions. *Hainan Finance,* (7), 7.

Wang Qi (2023). Exploration of SOEs' fulfillment of social responsibilities under the orientation of high-quality development. *China Management Magazine,* (14), 1–3.

Wang Qinggang, & Xu Xinyu (2016). Value creation mechanism and empirical test of corporate social responsibility—Based on stakeholder theory and life cycle theory. *China Soft Science*, (02), 14.

Wang Rong (2022). Research on the relationship between ESG information disclosure and firm value from a cost-benefit perspective. *Journal of Shanghai University of International Business and Economics, 29*(4), 13.

Wang Yuhong, & Li Junhui (2021). Research on the impact of environmental regulation on enterprises' investment in environmental protection: Based on a case study of China Shenhua. *Review of Accounting and Control,* (2), 20.

Wei Fang, & Sun Bo (2021). Analysis on the governance practice of state-controlled listed companies. *State-Owned Assets Report, 000*(004): 94–97.

Wellman, B. (1979). The community question: The intimate networks of East Yorkers. *American Journal of Sociology*, *84*(5), 1201–1231.

Wood, D. J., & Jones, R. E. (1995). Stakeholder mismatching: A theoretical problem in empirical research on corporate social performance. *The International Journal of Organizational Analysis*, *3*(3), 229–267.

Wu Aili, & Zhang Wenhuan (2015). Research on social responsibility information

disclosure of SOEs—Analysis based on State Grid Corporation of China. *Friends of Accounting,* (20), 3.

Wu Chenyu, & Chen Shiyi (2022). Green transformation and high-quality development under the ESG system with Chinese characteristics. *New Finance,* (4), 9.

Xing Yang, & Zhang Jingwen (2022). ESG management system of state-owned enterprises: History, current situation and suggestions. *Modern SOE Research,* (9), 30–34.

Xu Miao, & Zhang Yu (2020). Research on the operational efficiency evaluation of green supply chain enterprises from a total factor perspective—Taking listed enterprises in green supply chain as an example. *Journal of Southwest University of Science and Technology (Philosophy and Social Science Edition), 37*(1), 6.

Xu Mingyu, Liu Cancan, Hu Yixiang, & Yue Xiukui (2021). An empirical study on the impact of ESG performance of listed companies on firm value—Taking A-share listed companies as an example. *Appraisal Journal of China,* (07): 27–37.

Xu Shan, & Huang Jianbai (2014). Empirical analysis of the impact of corporate social and environmental information disclosure on market quality. *Journal of Business Economics and Management,* (10), 9.

Xu Zhihao (2022). Discussion on improving China's ESG information disclosure

system. *iChina,* (8), 103–104.

Xu, X., Zeng, S., Zou, H., & Shi, J. J. (2016). The impact of corporate environmental violation on shareholders' wealth: A perspective taken from media coverage. *Business Strategy and the Environment*, *25*(2), 73–91.

Yan Xiao. (n.d.). Research on the impact of enterprise ESG performance on enterprise value.

Yang Yang (2023). Synergy between ESG system construction and internal audit of SOEs [J]. *China Sustainability Tribune,* (7), 59–60.

Yang Yankun (2015). Research on the impact of environmental regulation on enterprise performance—Taking heavy pollution enterprises as an example.

Yin Gefei (2023). ESG competitiveness powers China's modernization. *Enterprise Management,* (1), 36–37.

Yin Gefei, Yu Zhihong, & Cui Shengxiang (2006). Action guide of corporate social responsibility.

You Yi (2022). Preliminary analysis on the construction of corporate governance measurement indicator system in ESG. *Hainan Finance,* (9), 58–64.

Yuan Rongli, Jiang Na, & Liu Mengyao (2022). Overview and outlook of ESG research. *Finance and Accounting Monthly,* (17), 7.

Yuan Yajing (2021). Research on the relationship between entrepreneurship orientation and enterprise performance: Based on the regulation of diversification strategy and institutional environment [D]. *South China*

University of Technology.

Zhang Changjiang, Zhang Yue, & Chen Yuqing (2021). ESG performance, investor confidence and performance of listed companies. *Journal of Environmental Economics, 006*(004), 22–39.

Zhang Chi. (n.d.). Practice longtermism and responsible investment to promote green, low-carbon and sustainable development.， *China Insurance*, 2021, *7*, 7

Zhang Jing, & Yang Hui (2012). An empirical study on the relationship between CSR behaviors and firm performance based on institutional theory. *Journal of Commercial Economics, 000*(034), 71–74.

Zhang Jingxian, Feng Yongjie, & Lin Yanfei (2021). Can ESG performance enhance corporate value: Based on mediating effect of analyst coverage [J]. *Economic Vision, 40*(6), 8–22.

Zhang Junjie, & Zhang Zichen (2022). Discussion on building an ESG evaluation system for SOEs. *Management & Technology of SME,* (23), 116–119.

Zhang Lin, & Zhao Haitao (2019). Does corporate environmental, social and governance (ESG) performance affect enterprise value: An empirical study based on A-share listed companies. *Wuhan Finance*, (10), 8.

Zhang Xiaoxue (2022). ESG information disclosure and responsible investment to promote high-quality development of enterprises. *Xiandai Qiye,* (12), 104–106.

Zhang Yalian, & Su Changping (2023). Research on the impact of enterprise ESG performance on financing constraints: Based on signal asymmetry and principal–agent perspective. *Finance & Economics of Xinjiang,* (2), 48–57.

Zhang Yao (2014). Social responsibilities of SOEs. *Commerce,* (14), 1.

Zhao Daozhi, & Jiang Ning (2007). Research on the formation of competitive advantage based on resource. *Journal of China University of Geosciences (Social Sciences Edition), 7*(5), 5.

Zhao Yufu (2022). Achieving the "Three-Four-Five:" Grasping the "Root" and "Soul" of Corporate Governance. *Directors & Boards,* (8), 71–72.

Zhou Qinye (2020). Accelerating the construction of ESG evaluation system suitable for China's market. *Directors & Boards,* (4), 1.

Zhou Yang (2021). Analysis of new development strategies for international trade transformation under the goal of carbon neutrality. *China Business Update,* (21), 4–6.

Zhou Yiwen (2021). ESG information disclosure and rating system of listed companies. *Wealth Magazine,* (9), 3.

Zhou Yuhao, & Fan Lin (2022). Reshaping corporate information disclosure in the post-pandemic period: Application logic and path of comprehensive reporting. *Qilu Zhutan,* (3), 4.

Zhuang Bochao, Yu Shiqing, & Zhang Hong (2015). Supply chain concentration, working capital turnover and business performance—the empirical

investigation from Chinese public listed manufacturers. *Soft Science, 29*(03), 6.