

Building a Localized ESG Evaluation System in China

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Abstract. In recent years, the ESG evaluation framework consisting of the three dimensions of Environment, Social and Corporate Governance has become an increasingly important standard for the international capital market to measure the sustainable development capability and investment value of enterprises. However, the international mainstream ESG rating methodology often faces the problem of "incompatibility" when applied in China's A-share market, which makes it difficult to fully reflect China's unique regulatory environment, industrial structure and cultural background. Therefore, this paper proposes the general idea of constructing a localized ESG evaluation system in China based on a synthesis of domestic and international literature and introduces the key variables and data selection in detail to demonstrate the scientificity and feasibility of the evaluation system. The study concludes that Chinese ESG indicators should take the "dual-carbon" policy as a starting point, and take into account the reform of state-owned enterprises, social responsibility practices and local cultural characteristics, in order to more accurately measure the level of sustainable development and long-term investment value of enterprises. Finally, the paper makes some suggestions for policy making, corporate management and investment decisions.

1 Introduction

1.1 Background of the study and formulation of the problem

Since 2019, the wave of global sustainable development has continued to rise, and the concept of ESG in the three major areas of Environment, Social and Corporate Governance has spread rapidly in the capital market [1]. However, the traditional international ESG rating system, which is mainly based on the European and American markets, is not fully compatible with the actual situation of China's A-share market, which is mainly manifested in the following: first, international ratings pay more attention to the global carbon emissions

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and supply chain management of enterprises, but less reflect the structural transformation characteristics of China's "dual-carbon" policy, second, the information disclosure methods of Chinese enterprises are different from those in Europe and the United States, and second, the information disclosure methods of Chinese enterprises are different from those in the United States and the United States. Second, Chinese enterprises' information disclosure methods differ from those in Europe and the United States, which may lead to missing or low-quality rating data [2]. Therefore, how to construct a set of ESG evaluation system with international vision and local applicability has become a common concern of both academia and industry [3].

1.2 Purpose and significance of the study

The main purposes of this study are:

1. Based on the literature review: systematically combing the current status of domestic and international ESG research in the past five years, summarizing the shortcomings of international ESG ratings in local application, and clarifying the motivation for the construction of China's localized ESG system.

2. Propose a localized ESG evaluation framework: Taking into account China-specific factors such as the "dual-carbon" policy, SOE reform and cultural background, we propose specific key indicators and weightings under the three dimensions of environment, society and governance.

3. Validating the scientificity of the system: from the perspective of theory and data, to demonstrate the feasibility and reliability of the system in terms of the quality of information disclosure, rationality of indicator setting, and relevance to enterprise value.

This study is of great significance to both academics and practitioners. On the one hand, it enriches the localized theoretical results of ESG research, and on the other hand, it can provide corporate managers, regulators and investors with ESG evaluation tools that are more suitable for the actual Chinese market and promote the sustainable development of the capital market.

2 Literature review

2.1 Progress in international ESG research (last five years)

International ESG research has focused on the mechanism of ESG's impact on corporate performance, investment and financing behavior, and capital market risk [4]. Scholars generally agree that companies that maintain excellent practices in environmental protection, social responsibility, and governance can achieve a lower cost of capital and more stable returns in the long run. However, most of the studies are based on the institutional environments of mature markets in Europe and the United States and measure the performance of companies in global supply chains and cross-border carbon emissions management. For example, Li et al. studied ESG data of large global firms and found that they are more resilient in coping with macroeconomic crises but emphasized that data quality and disclosure standards are still bottlenecks [5].

2.2 Trends in China's ESG research (last five years)

In China, with the deepening of green finance and the "dual-carbon" strategy, scholars have begun to pay attention to how to measure the sustainability of A-share firms [2]. Du & Yu point out that ESG ratings have initially shown positive incentive effects in China, with better

disclosed information more likely to receive financing incentives. enterprises with better disclosure are more likely to obtain financing preferences [1]. However, the mainstream international rating systems often face the problem of lack of sample data or biased evaluation criteria in the Chinese market [6]. Chen & Zhao empirically find that some SOEs, despite their special characteristics in governance dimensions, may also have an advantage in environmental and social responsibility, which needs to be differentiated and treated differently in the rating system [3].

2.3 Research synthesis and insights

Synthesizing the above literature is evident:

1. International research generally recognizes the positive impact of ESG on long-term corporate value, but empirical evidence for emerging markets, especially China, is still insufficient.

2. Local studies are beginning to pay attention to the differences in China's policy environment and disclosure mechanisms but lack a more targeted and persuasive ESG indicator design.

3. Based on the "dual-carbon" background, the governance characteristics of SOEs and the local market structure, it is necessary to build an ESG assessment framework that takes into account both international standards and local elements.

3 Motivations for building a localized ESG evaluation system in China

3.1 Policy environment and market demand

1. Dual carbon policy and green finance

In recent years, the Chinese government has put forward the "dual carbon" goal of reaching peak carbon by 2030 and carbon neutrality by 2060, and all industries are facing the pressure and opportunity of emission reduction and green transformation [5]. Therefore, the ESG evaluation system must focus on companies' efforts and achievements in carbon emission management, energy saving and emission reduction, and green technology innovation.

2. Institutionalization of a-share market and overseas investors' concerns

As China's capital market gradually opens up to the outside world, foreign institutional investors are demanding higher levels of ESG disclosure from listed companies [2]. At the same time, domestic institutional investors (e.g., social security funds and insurance funds) have begun to realize the significance of ESG in long-term risk management and investment value assessment.

3. SOE reform and cultural Factors

State-owned enterprises (SOEs) account for a relatively high proportion of China's A-share market, and their governance structures, incentive mechanisms and social responsibility practices have certain local characteristics [3]. It may be difficult to truly reflect the performance of SOEs in terms of local economic development and social responsibility if only internationally recognized indicators are applied.

3.2 International rating limitations and localized values

International rating agencies (e.g., MSCI, Sustainalytics) often ignore the importance of Chinese companies' practices such as local regulatory compliance, local government cooperation, and supply chain localization when constructing metrics. In addition, the

transparency and standardization of information disclosure of Chinese listed companies are still not as good as those in mature markets in Europe and the United States, leading to possible mismatches or biases in the collection of data or interpretation of relevant information by international rating agencies [6]. Therefore, constructing a set of localized ESG evaluation system can help to more accurately assess the true sustainability level of companies in the Chinese market, and better meet the decision-making needs of regulators and investors.

4 Variables and data: the basis for constructing a localized ESG evaluation system

When designing a localized ESG evaluation system in China, it is necessary to specify the variables to be included and the applicable data sources [7]. The following section elaborates on the key indicators and provides a description of data availability.

4.1 Design of key variables

Based on the three dimensions of environment (E), society (S) and governance (G), and combining the goal of "dual-carbon" and the practice of governance and social responsibility of SOEs, this paper splits the variables as follows:

1. Environment (E)

- **Carbon intensity** (carbon emissions per unit of output, progress in reducing emissions)
- **Investment in energy conservation and emission reduction** (expenditure on environmental protection equipment and R&D, investment in technology upgrading)
- **Resource efficiency** (water, energy and raw material efficiency)
- **Record of penalties for environmental violations** (whether there have been environmental administrative penalties in the past three years)

2. Social (S)

- **Employee rights and benefits** (labor contract coverage, investment in occupational safety training, pay equity)
- **Supply chain and social welfare** (supplier social responsibility standards, localized procurement ratio, public welfare project inputs)
- **Consumer-community relations** (product quality complaint rates, community co-production programs)

3. Governance (G)

- **Shareholding structure and board independence** (proportion of independent directors, concentration of large shareholders' ownership)
- **SOE reform and internal governance** (SOE middle-level appointment mechanisms, linkages with government)
- **Quality of disclosure** (ESG report completeness, third-party audit or assurance letter)

The above variables not only refer to the international ESG indicators but also reflect the characteristics of China's local systems and policies, such as the control of total carbon emissions and the reform of state-owned enterprises.

4.2 Data sources and access

1. Publicly available data

- Annual and semi-annual reports of listed companies, as well as ESG or social responsibility reports required by the Exchange.
- National or local government environmental protection and tax policy documents, as

well as corporate environmental credit rating information.

2. Third-party databases

- Wind, CSMAR (Cathay Pacific Database), CNRDS, etc. for financial data and some ESG indicators.

- Analysis reports from professional research organizations (e.g. China Listed Companies Association, Green Finance Special Committee).

3. On-site research and industry association data

- For social indicators that are difficult to quantify, such as those involving supply chain responsibility and community benefits, a combination of field interviews or questionnaires may be considered.

- Industry reduction and compliance information published by industry associations (e.g., Iron and Steel Association, Chemical Association).

4.3 Data feasibility and representativeness

In the past five years, with the gradual increase in ESG disclosure requirements by the China Securities Regulatory Commission (CSRC) and the stock exchanges, the information transparency of A-share listed companies in terms of environmental compliance, social responsibility and governance structure has improved [8]. Although data disclosure is still insufficient for some SMEs, for medium and large listed companies, data availability has now been significantly improved from previous years, providing the necessary support for the establishment of a localized ESG evaluation system.

5 Design and scientific argumentation for building a localized ESG evaluation system in China

5.1 Hierarchy and weighting of the evaluation system

For the three dimensions of environment, society and governance, a hierarchical structure can be constructed as shown in Table 1, and the corresponding weights of each indicator can be assigned in accordance with the reality of the Chinese market. It should be noted that different industries differ greatly in terms of environmental pressure, social responsibility focus and governance mode and should be fine-tuned according to industry characteristics [9]. For example, high-pollution industries can appropriately increase the weight of environmental indicators, and high-tech and consumer industries can emphasize social indicators.

Table 1. Example of core structure of localized ESG evaluation system

Level	Scope of the indicator	Examples of typical indicators	Recommended weight (%)
Environment (E)	Employee Rights, Community Benefit, Supply Chain Responsibility	Carbon emissions per unit of output, environmental investment, violation records, etc.	30-40
Social (S)	Employee Rights, Community Benefit, Supply Chain Responsibility	Employee safety training, public welfare investment, customer complaint rate, etc.	20-30
Governance (G)	Shareholding structure, SOE reform, disclosure quality	Proportion of independent directors, implementation of state-	30-40

		owned enterprise reform, audit opinion, etc.	
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Note: The weights in the table are suggested intervals and can be dynamically fine-tuned according to industry and policy requirements.

5.2 Methodology for scoring and synthesizing indicators

1. Scoring methodology:

- **Quantitative indicators:** e.g. carbon intensity, number of fines, etc., which can be scored in a standardized (Z-score) or relative ranking (Percentile) manner,

- **Qualitative indicators:** e.g., implementation of SOE reforms, quality of community benefits, etc., which can be assessed in conjunction with expert scoring or questionnaires.

2. Composite score:

- The scores (E, S, G) were calculated for each of the three dimensions of environment, society and governance, and then aggregated according to the weights to obtain a composite ESG score,

- Penalty factors are set for firms with missing information or serious violations to prevent scoring distortion due to poor data quality.

5.3 Scientific arguments: both theoretical and empirical

1. Theoretical level

- **Stakeholder theory:** Chinese companies' environmental protection, labor rights and governance transparency are all in line with the needs of multiple stakeholders and scientifically set indicators can reflect the efforts and effectiveness of companies in meeting various interests [4].

- **Dual Carbon Orientation and Policy Compliance:** Localized ESG systems highlight carbon emissions and the process of emission reduction, which can be in line with the Chinese government's regulatory direction of green economy transition and have rationality at the policy level [5].

2. Empirical level

- **Correlation with corporate performance:** panel regression or causal inference methods are used to correlate the localized ESG scores with financial indicators such as corporate market capitalization, ROE, and market volatility. If there is a significant positive impact or a reduction in the risk of negative volatility, the effectiveness of the evaluation system in measuring corporate sustainability and investment value can be verified [10].

- **Disclosure Comparison:** Compare the localized ESG scores with international ratings (e.g., MSCI), and if the localized scores can more accurately reflect the actual emission reduction process or the effectiveness of the company's social welfare programs, it means that they are more locally applicable.

5.4 Application prospects and limitations

1. Application prospects:

- **Regulatory level:** helps the SEC or exchanges to develop more detailed ESG disclosure guidelines,

- **Investment Institution:** Use localized ESG system to screen high-quality companies and optimize the investment portfolio,

- **Within the enterprise:** incorporate ESG indicators into performance appraisal and strategic planning to promote green transformation and social responsibility enhancement.

2. Limitations:

- Information asymmetry still exists, and the quality of data disclosure by some small and medium-sized enterprises (SMEs) or non-state-owned enterprises (SOEs) needs to be improved,
- There are obvious differences within the industry, so it is difficult to "apply one set of indicators to all enterprises", and it is necessary to adapt them to the characteristics of the sub-industry.

6 Conclusion

6.1 Main findings

- **The necessity and urgency of building a localized ESG system**

China faces obvious localization needs in terms of "dual carbon" target, SOE reform and social responsibility construction, which are difficult to be fully covered by international mainstream ratings.

- **Key variables and data design should take into account both policy and market characteristics.**

Under the three dimensions of environment, society and governance, we focus on local variables such as carbon emission management, governance mechanism of SOEs and social welfare, and the data can be obtained from annual reports of listed companies, regulatory information and third-party databases.

- **Scientificity can be demonstrated by both theory and empirical evidence**

The selection of indicators of the localization system is in line with the stakeholder theory and the requirements of green transformation and can reflect the effective measurement of the enterprise's sustainable development capability in the correlation test with the enterprise's financial performance and risk indicators.

6.2 Policy and practice recommendations

- **Polymakers:** Further improve ESG disclosure regulations, strengthen mandatory or semi-mandatory disclosure requirements for carbon emissions and social responsibility, and improve disciplinary and incentive mechanisms.

- **Corporate managers:** take the initiative to improve the level of environmental and social responsibility practices, improve the corporate governance structure, and make higher-quality disclosures in annual reports or ESG reports to provide credible data for investors and rating agencies.

- **Investors and Financial Institutions:** Actively adopt localized ESG scores in investment analysis and risk management and conduct comprehensive assessments in line with international rating standards to reduce decision-making errors and support sustainable investment and financing.

6.3 Directions for future research

- **Industry segmentation indicators:** Highly polluting industries, technology and internet industries, etc. will be included in a more targeted sub-indicator study,

- **Dynamic weight adjustment:** Considering the economic cycle and policy changes, establish a model of indicator weights that can change over time or with industry conditions,

- **International Comparison and Exchange:** Comparative analysis with other emerging markets (e.g., India, Brazil) or developed markets to test the versatility and expandability of localized ESG systems.

Authors contribution

Bin Tang performed the data analysis, the formal analysis and wrote the manuscript; Xinheng Cheng performed the validation.

References

1. S. Du, K. Yu, Does ESG performance improve credit ratings? Evidence from China. *Sustain*, **13**(5), 3001 (2021)
2. X. Zhang, Y. Wang, S. Li, ESG disclosure, financial constraints, and firm value: Evidence from China's capital market. *Financ. Res. Lett.*, **48**, 102983. (2022)
3. L. Chen, H. Zhao, Impact of ESG disclosure on firm performance: Evidence from Chinese listed companies. *Emerg. Mark. Financ. Trade*, **57**(6), 1687- 1701 (2021)
4. H. Liang, L. Renneboog, Corporate donations and shareholder wealth. *J. Corp. Financ*, **65**, 101585 (2020)
5. C. Li, W. Jiang, M. Song, Enhanced ESG performance and the economic resilience of Chinese manufacturing firms. *J. Sustain. Financ. Invest*, **13**(3), 465-486 (2023)
6. Q. Guo, B. Li, X. Wang, ESG disclosure, policy uncertainty and the cost of equity: Evidence from China. *Asia-Pac. J. Financ. Stud*, **51**(4), 718- 741 (2022)
7. J. Sun, Y. Xu, Environmental regulation, green innovation, and corporate value: Evidence from Chinese manufacturing firms. *energy Policy*, **135**, 110983 (2019)
8. Y. Liu, C. Chen, The role of ESG performance in corporate innovation: Evidence from Chinese A-share listed companies. *J. Clean. Prod*, **316**, 128329 (2021)
9. J. Zhou, J. Xie, Corporate social responsibility and sustainable growth in China: Evidence from a dynamic panel data analysis. *Sustain*, **12**(18), 7351. (2023)
10. L. Wang, Q. Sun, ESG practices in emerging markets: A review and future agenda. *Int. J. Emerg. Mark*, **18**(2), 367-383 (2020)