

The Effect of Corporate Social Responsibility on Profit Efficiency of Chinese Listed Energy Companies

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Abstract

The performance of corporate social responsibility in the energy industry has an important impact on the sustainable development of the market economy. Bloomberg database 2009-2022 has been used as the research materials to study the role of corporate social responsibility performance and the profit efficiency as well as to investigate the impact of mandatory release of corporate social responsibility reports on listed energy companies on different sectors. Through the Stochastic Frontier Analysis production function model, it is found that the environmental performance, corporate social responsibility performance, corporate governance, and ESG comprehensive scores have had a significant impact on the profit efficiency of Chinese listed energy companies. There have been differences in the impact of listed energy companies on the sectors. This study has provided a basis for policy makers and regulators. It is also of great significance to promote the performance of Chinese listed energy companies to fulfill corporate social responsibility and achieve sustainable development.

Keywords: Corporate Social Responsibility, Listed Energy Companies, Profit Efficiency, ESG Scores

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Introduction

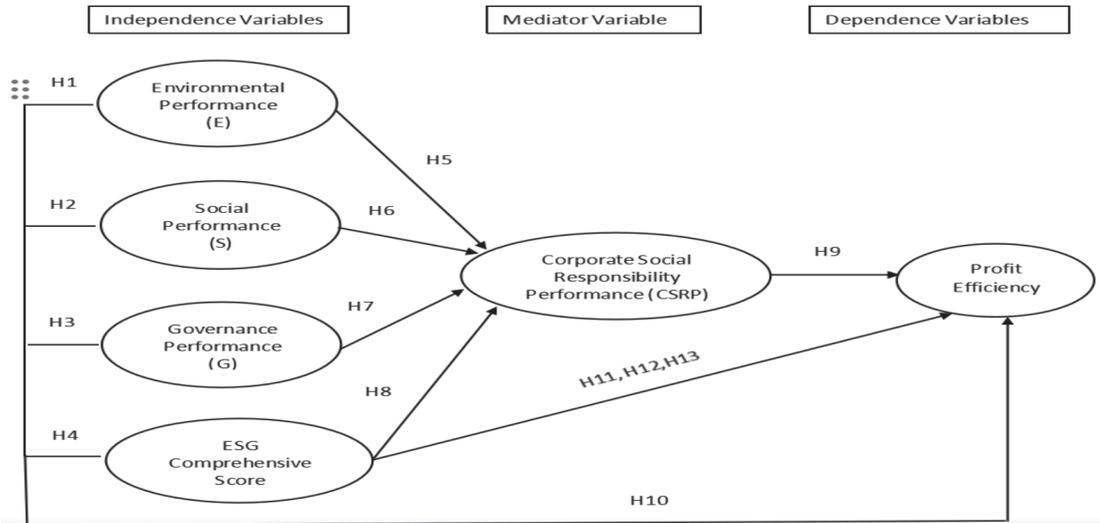
The rapid development of the world economy and society has made corporate social responsibility a key factor in shaping the strategic choice of the company. In the field of energy, social responsibility performance is closely related to the sustainability of the global economy. The social responsibility performance of energy companies is the benchmark for corporate leadership and an important factor in the sustainable growth of global economy. (Jixian yang, et al., 2022). However, the social responsibility in the energy sector is still lacking research, and the important financial indicators that measure profit efficiency have not been considered enough (Xin Guan, Haifeng Yan, 2016). It is crucial to focus on the business development capabilities and social responsibility performance of the top 100 companies in China's energy sector. To fully fulfill its social responsibilities, optimize strategic objectives, promote sustainable economic, social, and environmental development, enable the regulatory authorities to deepen their understanding of social responsibility issues in the energy industry, analyze the impact of the energy sector on China's economy, and better formulate supportive and encouraging policies.

Research Objectives

1. To explore the true impact of corporate social responsibility performance on its profit efficiency by determining the efficiency measurement model.
2. To explore the company's environmental performance (E), social performance (S), corporate governance performance (G) and ESG comprehensive score, we comprehensively analyze the differential impact of different dimensions of corporate social responsibility practice on the profit efficiency of energy companies.
3. To explore the impact of energy corporate social responsibility on its profit efficiency.

- To explore the impact of energy companies on the main board, the small and medium enterprise (SME) board, and the growth enterprise market (GEM) board on their fulfillment of social responsibilities and profit efficiency.

Conceptual Framework



Literature Review

Highlighted the relevant research and theory, described the research need, and proposed the research hypotheses that would be used in the framework for the theory. The theoretical and empirical underpinnings for the study by examining the connection between corporate environmental performance (EP), social performance (SP), and corporate governance performance (GP), and ESG comprehensive score on corporate profit efficiency through a review of the literature. At the beginning of the chapter, research on the connection between financial performance and corporate social responsibility is presented. The main topics of the ESG data that the UN focuses on are the environment, society, and governance, the three pillars of sustainable development. Ting Li, Kai Wang; T. Sueyoshi; Derek D. Wang, ESG: research progress and future prospects (2021), and Yaru Bai; According to Sing Xiaoyang's Development Status and Prospects for Environmental, Social, and Governance (ESG)

in 2023, Globally sustainable economic and social development can now be supported by ESG, which has become a major paradigm, which was first proposed in 2004. One of the numerous instruments and initiatives the UN employs to promote the adoption and global standardization of ESG practices is the Principles for Responsible Investment (PRI). Kim Soohun; Yoon Aaron S. The United Nations is focus has been the central role of ESG in promoting global sustainable development. This includes adopting international agreements and resolutions to address global problems like climate change and plastic pollution. Furthermore, the United Nations promotes international cooperation in environmental protection and resource management through its subsidiary bodies and cooperation networks, such as the United Nations Environment Assembly. Zhang Haibin, United Nations and International Environmental Governance (2007).

In recent years, environmental pollution, extreme climate and other problems have become increasingly serious, green development has become a hot issue of widespread concern in the current society. The concept of green development is actively promoted by governments and pertinent international organizations, who emphasize that businesses should prioritize ecological environmental protection while pursuing economic benefits in order to minimize their negative environmental effects (Khojastehpour and Johns, 2014). At present, this concept is also more and more recognized by the majority of investors and consumers. According to Eiseningerich and Bhardwaj (2011) and Buallay (2019), stakeholders now use the state of environmental information disclosure as a key benchmark when assessing the commitment of corporations to social responsibility. In the current society, which places a strong emphasis on sustainable development, corporations' environmental impact is given more consideration when fulfilling their corporate social responsibility, This contrasts sharply with the conventional idea of "shareholder first". Enterprises should not only fulfill their responsibilities to shareholders, but also pay attention to their responsibilities to the community and the environment (Kim and Lyon, 2011). Based on stakeholder theory and reputation theory, society and environment belong to the external stakeholders of enterprise business activities,

This will eventually have a big influence on business development; also, the environmental performance of businesses is now a valuable intangible asset (Fukukawa et al., 2007). Empirical evidence indicates that businesses that genuinely prioritize sustainable development and have a harmonious relationship with the environment are more likely to see sustained and steady growth. Energy enterprises practice their social responsibilities by actively focusing on reducing energy consumption and other ways, and pass favorable environmental information to stakeholders, which helps to improve their social image (Al-Tuwaijri et al., 2004). A good reputation can win the support of stakeholders. Enhance the trust and loyalty of investors and customers, help enterprises obtain more internal and external resources conducive to development, reduce financing costs and operating costs (Chen et al., 2017), and thus improve the profit efficiency of enterprises. In *The Corporate Social Performance-Financial Performance Link* (1997), S.Waddock and Samuel B. Graves state, Research shows that the financial and corporate social performance of an organization are positively correlated, especially the future financial performance. Marc Orllitzky, *Corporate Social and Financial Performance: A Meta-Analysis*, F. Schmidt and S. Ynes, 2003 also supports this view through the meta-analysis method, suggesting that, to some extent, Participating in corporate social responsibility initiatives might yield financial benefits. Hao Xiuqing, Tong Yunhuan and Hu Chenggen pointed out Regarding the Impact, corporate social responsibility Social capital perspectives on the relationship between performance and business performance (2011), The social performance of a firm and its short-term financial performance are not correlated, Nonetheless, there is a clear correlation between long-term financial success and nonfinancial performance. *Corporate Social Performance: A Review of Empirical Research Examining the Connection Between the Corporate and Social Using Kinder, Measurement and Assessment of Corporate Social Performance Domini Social Ratings Data*, James E. Mathewly, Lydenberg, 2017, using Kinder, Lydenberg, Domini. An empirical study conducted with Domini (KLD) social rating data and combined with 100 studies, points out that while financial performance from accounting measures is a positive outcome of corporate sustainability practices, this is not always the case for stock returns. Luo Nanfeng

and Zhou Zucheng put forward a Chinese enterprise social performance evaluation index system in Enterprise Social Performance Assessment System Research (2009), which takes stakeholders as the analytical framework.

The theoretical then discusses the study on the connection between corporate social responsibility performance (CSR) and profit efficiency. It analyzes the scholarly viewpoints and research findings of academics from China and other countries, looking at the connections between the ESG Comprehensive Score, environmental performance (EP), social performance (SP), corporate governance performance (GP), and profit efficiency. Finally, the theoretical introduces research on corporate profit efficiency measurement methods. It presents methods for measuring corporate efficiency, combining the new profit efficiency data envelopment analysis (DEA) method, Data Envelopment Analysis (DEA), Stochastic Frontier Analysis (SFA), and the stochastic meta frontier method (SMF), and detailing their unique study approaches and findings. This theoretical review the literature on corporate profit efficiency and social responsibility, highlighting current research trends and status and pointing out areas that need further research and areas that need improvement. Specifically, this chapter first introduces the core concepts related to the paper; then, it reviews the literature from several aspects, discussing research methodologies on corporate profit efficiency as well as the connections between corporate social responsibility and business performance and profit efficiency; finally, it summarizes previous research findings and provides corresponding research comments and evaluations.

Research Methodology

The Bloomberg database provides panel data on China's listed energy companies for the 14-year period between 2009 and 2022. Excluded are businesses with missing or unusual data, Special Treatment (ST), and Special Treatment with Star (ST*). Four businesses with inadequate information about the E, S, and G in Bloomberg and five businesses with missing information about input, output, inefficiency, and characteristic variables of energy firms in the Bank Focus database

are eliminated after the top 100 companies are chosen from the list. Code environment, society, corporate governance, ESG comprehensive score, social responsibility report, total assets, unemployment rate, inflation, GDP growth rate, profit efficiency, per capita, and so on, and extract pertinent indicators for the remaining 81 businesses. In order to assess the validity and reliability of the data, the statistic software was utilized. The stochastic frontier analysis model was also used, and the efficiency of the process of the influence of independent and intermediary variables on dependent variables was tested. The input of production factors (capital, labor, and capital) was used to estimate marginal output (loan, investment, and non-interest income). The impact of CSR on profit efficiency is examined, and the situations where the variables are correlated but unrelated to the error term are described, using the two-stage least squares tool variable panel regression model analysis.

Results

The following are the empirical results of the research on how social responsibility affects the profitability of 81 energy companies:

Objective 1 : The social responsibility report scores and disclosure levels of Chinese energy enterprises are gradually improving. China's economic, their social responsibility performance has been widely concerned. Through research and analysis, development is currently underway. Energy enterprises as an important pillar of the national economy, an upward tendency is observed annually in the social responsibility report scores and disclosure levels of energy firms. Specifically, energy companies' social responsibility understanding and activities have greatly improved since the Chinese government introduced the notion of corporate social responsibility. Energy corporations received a relatively low score in the early social responsibility report, and the disclosure content is relatively simple, mainly focused on environmental protection investment and employee welfare. However, over time, energy corporations' social responsibility report scores have increased year, and the level of disclosure has also increased. On the one hand, the deeper

comprehension of the social responsibility connotation and the report's more thorough substance is indicative of the report's improved score. Companies not only focus on traditional environmental protection and employee care but also expand their horizons to supply chain management, community participation, consumer rights and interests' protection, and other fields. The increase in these contents makes the score of the social responsibility report significantly improve in the quantitative evaluation system. On the other hand, the improvement of disclosure degree is manifested in the initiative and transparency of corporate information disclosure. In the past, enterprises were often passive disclosure of social responsibility information under external pressure, but now, more and more energy enterprises began to take the initiative to release social responsibility reports, detailed disclosure of their specific practices and results in social responsibility. This modification represents the advancement of corporate governance as well as the significance of corporate social responsibility. Furthermore, this trend of increasing year by year is also inseparable from the relevant policy promotion of our government. In order to support and direct businesses in carrying out their social obligations, the government has released a number of laws, rules, and policy documents. It has also established precise guidelines for the creation and publication of corporate social responsibility reports. By putting these policies and procedures into place, energy corporate social responsibility reports' score and degree of disclosure have improved with a solid external guarantee.

Objective 2: The top 81 listed energy companies in China exhibit a significant positive correlation between their profit efficiency and their environmental performance (EP), social performance (SP), and corporate governance performance (GP), and ESG comprehensive score. This suggests that the implementation of corporate social responsibility positively impacts these metrics. Corporate social responsibility has grown in importance in today's business climate and is now a key component of their operational strategy. It is discovered that carrying out corporate social responsibility positively influences an organization's social image and brand value in addition to significantly boosting its ability to generate profits. First of all,

corporate social responsibility can improve production efficiency by improving employee satisfaction and loyalty. Research has shown that when companies focus on employee well-being and development, providing fair pay and a good working environment, employees are significantly more motivated to work, thereby reducing employee turnover and reducing recruitment and training costs. This stability and efficiency of human capital is directly translated into the improvement of productivity, which in turn improves the profit efficiency of enterprises. Secondly, performing social responsibility helps businesses build and preserve positive relationships with their customers. By participating in social welfare activities and promoting sustainable development practices, companies can enhance consumer identification with their products and services and increase brand loyalty. This brand loyalty can be transformed into a competitive advantage in the market, increasing sales, and thus improving the revenue and profit efficiency of the enterprise. Moreover, corporate social responsibility can help optimize resource allocation and reduce operating costs. By implementing environmental protection measures and energy conservation and emission reduction projects, enterprises can reduce energy consumption and waste emissions, and reduce operating costs. simultaneously, the discharge of social responsibility can foster company innovation, leading to the creation of more eco-friendly and productive products and technologies. These developments have the potential to enhance businesses' competitiveness in the market, but also further improve profit efficiency. In addition, corporate social responsibility can also improve their relationship with the government and regulators. Compliance with social responsibility practices can help enterprises avoid legal risks and potential financial losses, and at the same time may obtain government policy support and tax incentives, which support enhancing businesses' profit-efficiency.

Objective 3: The empirical findings demonstrate that the comprehensive corporate social responsibility performance (CSR) of China's listed energy companies is positively influenced by environmental performance (EP), social performance (SP), and corporate governance performance (GP), and ESG

comprehensive score, in that order. Corporate social responsibility performance (CSR) can help improve the profit efficiency of China's listed energy enterprises, and the comprehensive performance of social responsibility has the greatest impact. The improvement of the profit efficiency of enterprises is further enhanced by the environmental performance (EP), social performance (SP), and corporate governance performance (GP), and ESG comprehensive score. Environmental performance (EP), social performance (SP), and corporate governance performance (GP), and the ESG comprehensive score are regarded as the primary contributing variables when addressing the complete performance of corporate social responsibility. First of all, one of the key components of corporate social responsibility performance is environmental performance. Environmental performance (EP) refers to how businesses behave in terms of pollution control, resource conservation, and environmental protection. Good environmental performance helps businesses not only minimize their use of natural resources and their detrimental effects on the environment, but it also improves their reputation among investors and customers as green businesses. This recognition can be transformed into a market advantage, thereby enhancing corporate social responsibility's overall performance. Second, social performance shows how a business treats its constituents—workers, customers, suppliers, and communities—during business operations. By providing fair employment opportunities, protecting employees' rights and interests, and actively participating in community development and charitable activities, enterprises can build good social relations and enhance social trust and respect. This type of social trust is a crucial component of business culture and significantly enhances the overall effectiveness of corporate social responsibility. Additionally, the effectiveness of corporate governance plays a crucial role in the overall success of corporate social responsibility. An efficient corporate governance framework can lower agency costs, increase an organization's operational efficiency, and guarantee the fairness and transparency of corporate decision-making. When an enterprise demonstrates good corporate governance practices, it can not only attract more investors, but also improve the reputation of the enterprise, thus enhancing the comprehensive performance of social responsibility. Finally, the environmental

performance (EP), social performance (SP), and corporate governance performance (GP) are all fully embodied in the entire performance of social responsibility. It reflects the overall capability and commitment of the company in fulfilling its social responsibility. The better an enterprise's comprehensive performance in these aspects, the higher its comprehensive performance of social responsibility. This comprehensive performance can not only enhance the brand value of the enterprise, but also promote the harmonious relationship between the enterprise and stakeholders, establishing the framework for the business's long-term, sustainable growth.

Objective 4: Additionally, it has been discovered that while the mandatory disclosure of corporate social responsibility reporting regulations can boost the profitability of businesses on the main board and small- and medium-sized boards of publicly traded energy companies in China, it negatively affects the profitability of businesses on the market for growth enterprises. The required publication of corporate social responsibility reports has evolved into a standard regulatory tool in the present corporate social responsibility practice. However, although there are notable variations, this regulation's effect on the profitability of energy companies across various industries is not constant. First, for energy companies on the main market, mandatory corporate social responsibility reporting standards can often have a positive impact. Enterprises in the main board market are usually large in scale, with a more mature governance structure and sufficient resources. These companies are better able to cope with the compilation and disclosure requirements of corporate social responsibility reports, enhance their corporate image by demonstrating their social responsibility practices, and enhance investor and consumer confidence, which may improve profit efficiency. In addition, since businesses in the main market are typically more concerned with long-term growth, they may give corporate social responsibility (CSR) reports' representation of the environmental performance (EP), social performance (SP), and corporate governance performance (GP) issues more thought in an effort to improve these issues' impact on their operational efficiency and profitability. In contrast, the impact of profit efficiency on energy companies

in small and medium enterprise board markets may be complex when faced with mandatory corporate social responsibility reporting regulations. Small and medium enterprise board companies are smaller and have relatively limited resources, hence they might have more difficulty producing reports and carrying out their corporate social responsibilities. On the one hand, by disclosing corporate social responsibility reports, these businesses may increase their openness and draw in more investors, which will increase their profit efficiency. However, small and medium enterprise board organizations may face increased financial, personnel, and administrative expenditures as a result of compiling corporate social responsibility reports, which could hurt their ability to turn a profit. Therefore, for small and medium enterprise (SME) board, how corporate social responsibility reporting criteria are implemented relies on how businesses weigh the advantages and disadvantages of adopting these policies. The mandatory release of corporate social responsibility reporting standards may negatively affect the profit efficiency of energy companies operating in the growth enterprise market (GEM) board. Gem businesses are typically in their growth stage and prioritize quick development and market expansion. On the other hand, preparing and disclosing corporate social responsibility reports may divert an organization's attention and resources. Furthermore, rather than corporate social responsibility performance, investors in growth enterprise market (GEM) board companies typically focus more on a company's potential for expansion and capacity for technical innovation. Regulations requiring corporate social responsibility reporting may thereby raise these companies' compliance costs without providing them with comparable market advantages, which would negatively impact their profit efficiency.

Discussion

The first corporate social responsibility reports in China were published by the Shenzhen stock exchange's "Guidelines for Social Responsibility of Listed Companies," which required listed companies to actively fulfill their social responsibilities, voluntarily disclose corporate social responsibility reports, and periodically evaluate their performance. This standard was incorporated into

the “Guidelines for the Standardized Operation of Listed Companies” in 2010. According to the Shenzhen stock exchange’s 2015 publication, “Guidelines for the standardized operation of small and medium enterprise (SME) board listed companies,” listed companies are required to promptly disclose the reasons behind significant environmental pollution issues, the effects of environmental pollution on the company’s performance, and the actions the company plans to take.

The China securities regulatory commission’s 2007 publication, “Measures for Information Disclosure by Listed Companies,” required listed companies to provide certain corporate governance metrics, including board composition, in their periodic reports. In 2008, the Shanghai stock exchange produced two documents: “Guide for the Disclosure of Environmental Information by Shanghai Stock Exchange Listed Companies” and “Strengthening the Work of Corporate Social Responsibility and the Disclosure of Environmental Information by Listed Companies.”. In addition to disclosing their methods and accomplishments in taking social responsibilities in areas like environmental protection, product responsibility, and worker safety, this notice mandated listed firms to step up their efforts in this regard. The notice also outlined specific requirements for listed companies’ disclosure of environmental information, including their efforts to support ecologically sustainable development and prevent pollution. These efforts include safeguarding energy and water resources, ensuring the area is habitable, and protecting and enhancing the region’s biodiversity. With a focus on enforcing the law by bolstering government supervision, outlining ecological protection red lines, improving pollution prevention and control, increasing the responsibilities of enterprises and government at all levels, publicly disclosing environmental information, opening up public participation, and permitting public litigation, On January 1, 2015, the People’s Republic of China’s new environmental protection law became operative.

The environmental protection authorities’ list of key polluting units and their subsidiaries, complies with the China securities regulatory commission’s 2016 requirements for enterprises that publicly issue securities, including the publication of relevant environmental information in annual and semi-annual reports. In 2017,

the requirements were further strengthened, stating that if a company does not disclose information, it should provide a full explanation of the reasons; businesses are urged to voluntarily provide information that contributes to pollution prevention, environmental responsibility, and ecological protection. A significant reorganization of the national ministries and agencies took place in March 2018, this comprised the China banking regulatory commission and the China insurance regulatory commission merging to form the China banking regulatory commission. Article 86 of the revised “Guidelines for the Corporate Governance of Listed Companies,” which the CBIRC published in September 2018, mandates that listed companies take into account the public welfare, community welfare, environmental protection, and sustainable development of their business while balancing the interests of their shareholders. Laws, rules, and the company’s articles of association mandate that listed enterprises provide information in a timely, truthful, accurate, and comprehensive manner (Article 87). “Made in China 2025” is an initiative aimed at putting the “Promotion Law of Cleaner Production in the People’s Republic of China” into practice. which promotes green manufacturing. The “Methods for Cleaner Production Audits” officially took effect on July 1, 2016, the “Green Manufacturing Engineering Implementation Guide (2016-2020),” released by the Ministry of Information and Industry, was made available. With the ultimate goal of creating 10,000 green products, 1,000 green factories, and 100 green parks by 2020, considerable efforts were made to promote green manufacturing throughout the 13th Five-Year Plan period. A trend of decreasing energy and resource consumption was observed in some heavy industries; in important industries, the intensity of main pollutant emissions dropped by 20%. and a green manufacturing system would be put in place by 2025 to raise the bar for major product energy usage and green manufacturing development to international standards.

Since regulations and guidelines primarily impact the publication of ESG information in China, it is advised that the country’s regulatory bodies require the country’s top 81 banks to publish corporate social responsibility reports. It is suggested that Chinese energy companies pay attention to the rise of

sustainable development investments, social responsibility investments, and impact investments, and encourage the disclosure of carbon management activities and the formulation of climate change risk response plan. It is suggested that regulatory bodies support the equator principles' adoption or voluntary participation and advise Chinese energy companies to include corporate social responsibility among the sustainable Development Goals (SDGs) of the UN, and urge Chinese businesses to sign up for or voluntarily accept the sustainable banking principles. An organization's stakeholders are any individuals or groups that have the ability to influence it or are influenced by its decisions, according to Freeman et al. (1984), actions, policies, behaviors, and goals. Primary and secondary stakeholders are two categories of stakeholders. The owners (shareholders), clients, staff, vendors, community, and society are regarded as the main stakeholders. Businesses have social obligations to all parties involved. Actively assuming social responsibilities can help coordinate the interests of various parties, reduce friction in the transaction process, lower the potential operational risks of the company, create a good business environment, and ultimately enhance the company's profit efficiency. During the development of a company, various stakeholders provide the resources needed for survival in direct or indirect ways, such as shareholders providing financial support, society creating a favorable external environment, employees contributing labor, and the company itself serving as a link between stakeholders, with each contributing to the company's development in their own way. Consequently, businesses should carry out their social obligations, live up to stakeholder expectations, and eventually create a win-win scenario.

Suggestions

1. Strengthen China's guidelines and policy for disclosing ESG information. The competent authorities should regulate the CSR reports that China's listed energy companies issue, focus on investments in sustainable development, social responsibility, and impact, make clear the duties and responsibilities of listed energy companies to fulfill social responsibilities, and assist businesses in establishing appropriate values.

2. Strengthen the coordination of the government, enterprises, and society. Government guidance, enterprise participation, social supervision, and jointly build a corporate social responsibility ecosystem to promote sustainable development of enterprises.

3. Strengthen the quality of social responsibility information disclosure. In order to improve the enterprise's enterprise, it is recommended that implement the most authoritative corporate social responsibility disclosure standards to prepare the social responsibility reports of various corporate social responsibility. Additionally, a third-party recommendation certificate should be used to ensure the credibility, integrity, and communication of social responsibility information disclosure. The quality and substance of the report contribute to increased profit efficiency.

Conclusion

Summary of finding

Energy firms' profit efficiency is positively impacted by social, environmental, corporate governance, ESG, and social responsibility performance. Its social responsibility performance serves as an intermediary variable to increase energy businesses' profitability. Businesses with a specific size and level of development should be required to release social responsibility reports; expanding businesses should exercise caution.

Recommendation and Future Research

1. Expand the corporate governance scoring index system. Future research can consider incorporating more comprehensive corporate governance indicators into the analytical framework, as well as the relationship between board structure and profitability, and cross-comparison analysis of the ESG scoring systems of major institutions to improve the credibility and comprehensiveness of empirical results.

2. Improve the comprehensiveness of data. Future research should refer to more databases, such as the Financial Times Banker Database, ProQuest Bank Information Source, D&B Hoovers, Harvard Business School's Banking Regulatory

Database, WRDS-Wharton Research Data Services, and the United Nations' ESG social responsibility information to obtain more complete global energy company data.

3. Multi-dimensional analysis of energy enterprise efficiency. Future research can comprehensively consider the pure technical efficiency, scale efficiency or production efficiency of energy companies, and can explore the differences in corporate governance and efficiency between energy companies in industrialized countries and developing countries.

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