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Corporate Governance and Corporate Green Innovation

YuChen Xue*. S M Ferdous Azam
Graduate School of Management, Postgraduate Centre, Management and Science University, Shah Alam, Selangor, Malaysia
Email: 13673035999@163.com

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Abstract

After the COVID-19 pandemic, the global economy has experienced a sluggish recovery, with declining trade and rising demands for corporate innovation. In China, while the economy is shifting toward high-quality development, environmental issues have become a central concern of society. Against this backdrop, the impact of corporate governance on green innovation has attracted growing scholarly and practical attention. An effective governance structure not only provides strategic guidance, resource allocation, and institutional safeguards but also plays a crucial role in advancing environmentally oriented innovation. Efficient boards of directors and management teams can improve decision-making quality, balance economic performance with social responsibility, and promote the research and application of green technologies. Moreover, sound governance mechanisms help build trust among stakeholders, thereby facilitating the smooth implementation of green innovation projects. Existing studies further suggest that firms with stronger green governance awareness tend to demonstrate greater technological creativity and competitiveness, driven by both regulatory pressures and market demand. Therefore, examining the role of corporate governance in green innovation not only enriches the theoretical understanding of sustainable development but also offers practical implications for achieving ecological and economic synergies in China's new development context.

Keywords

Corporate governance; corporate green innovation; board of directors

1. Introduction

The development of green technology innovation has become a critical driver of China's green economic growth. In particular, progress in renewable energy technologies has significantly enhanced green total factor productivity (GTFP) while simultaneously contributing to the mitigation of pressing environmental challenges. At the same time, the construction of diverse urban innovation ecosystems has been shown to promote low-carbon development through multiple channels. Such ecosystems highlight the importance of openness, collaboration, and a supportive innovation environment, which together create favorable conditions for sustainable technological progress.

Within this context, corporate governance structures play an indispensable role in shaping and integrating resources to facilitate green innovation. Effective governance mechanisms not only ensure the efficient allocation of innovation inputs but also balance environmental and economic objectives, enabling firms to achieve dual benefits. A growing body of research has explored the link between Environmental, Social, and Governance (ESG) performance and corporate innovation, underscoring the fact that robust governance practices expand firms' innovation resources and capabilities. Moreover, improved governance helps to alleviate agency conflicts and enhance decision-making efficiency, thereby elevating both the quality and effectiveness of innovation outcomes. As a result, sound governance contributes to the advancement of sustainable development goals, reinforcing the integration of ecological responsibility with long-term corporate competitiveness.

1.1. Background

With the continuous advancement of the global sustainable development agenda, green innovation has increasingly become a key determinant of corporate long-term competitiveness as well as a central dimension of corporate social responsibility. As the core mechanism of enterprise management and strategic decision-making, corporate governance plays a pivotal role in promoting the generation, implementation, and diffusion of green innovation. Existing literature has primarily examined the influence of governance structures on corporate financial performance, risk management, and shareholder value, while comparatively less attention has been directed toward its role in shaping environmental and innovation outcomes. Yet, unlike traditional technological innovation, green innovation not only involves the development of clean technologies and environmentally friendly products, but also requires continuous strategic guidance, effective supervision, and the rational allocation of resources by the board of directors and executive teams. The soundness of a company's governance structure directly affects its willingness to invest in green projects, its capacity to manage risks, and its ability to optimize resources dedicated to environmentally oriented innovation.

In addition, the tightening of environmental regulations and the growing environmental consciousness of consumers have made corporate performance in green innovation a crucial benchmark for evaluating social responsibility and sustainable development capacity. This has elevated the importance of understanding how corporate governance mechanisms can drive green innovation in practice. Exploring the mechanisms and pathways through which governance affects innovation activities has thus become an urgent issue in the intersection of corporate management and sustainability research.

From a broader macroeconomic perspective, green technology innovation has also been identified as a vital contributor to China's green economic growth. Empirical evidence shows that the advancement of renewable energy technologies has not only improved green total factor productivity (GTFP) but also helped to alleviate environmental degradation. At the urban level, the development of diverse innovation ecosystems facilitates low-carbon transitions through multiple pathways, underscoring the importance of openness, knowledge exchange, and innovation-friendly environments. Moreover, studies on the carbon market further highlight that national and industrial policy interventions have a decisive influence on the functioning of regional carbon markets. Policy incentives can stimulate short-term market vitality, increase carbon prices, and promote resource reallocation, thereby revealing the strong interconnection between policy frameworks, market dynamics, and green innovation outcomes.

Taken together, these findings indicate that corporate governance, policy frameworks, and market mechanisms jointly shape the landscape of green innovation, providing both opportunities and challenges for enterprises striving toward sustainable development.

1.2. Research significance

The core purpose of this study is to investigate the impact of corporate governance structures on green innovation and its subsequent economic consequences, with a particular emphasis on financing constraints as a mediating mechanism. By focusing on China's A-share listed companies, this research seeks to provide empirical evidence on how governance practices influence firms' ability to pursue green innovation while improving operational efficiency. The findings will serve as micro-level evidence supporting the national strategy of "innovation-driven development," the construction of a "green innovation-oriented country," and the broader goals of sustainable development. At the same time, the study aims to generate insights that may inform the ongoing reform and optimization of China's corporate governance system (United Nations Human Settlements Programme [UN-Habitat], 2022).

From a theoretical perspective, this research contributes to the enrichment of academic discourse at the intersection of corporate governance and green innovation. Traditional theories of corporate governance predominantly emphasize financial outcomes such as profitability, shareholder value maximization, and risk management. However, the emergence of green innovation as a strategic model—one that integrates environmental protection, social responsibility, and long-term sustainability—requires an expanded analytical framework. By examining how governance structures shape corporate decision-making processes, investment preferences, and resource allocation in the field of green innovation, this study reveals the mechanisms through which governance affects firms' capabilities in developing eco-friendly technologies, sustainable products, and environmentally responsible business models. These insights not only broaden the explanatory power of governance theories but also provide a new conceptual foundation for future research in sustainability-oriented corporate management.

From a practical standpoint, the study addresses the pressing challenges faced by firms under the dual pressures of intensified environmental regulations and rising public awareness of sustainability issues. Understanding the link between governance structures and green innovation can guide enterprises in designing more effective governance frameworks and strategic planning approaches. In particular, firms can achieve more efficient resource allocation, improved innovation performance, and enhanced resilience to external constraints, thereby strengthening both market competitiveness and social legitimacy. Moreover, the findings carry important implications for policymakers and regulators. By clarifying the pathways through which governance influences green innovation, the study provides evidence-based guidance for the formulation of targeted policies, incentive schemes, and supervisory frameworks. Such measures can stimulate broader corporate participation in green transformation, accelerate the diffusion of eco-friendly technologies, and ultimately support the transition toward a low-carbon and sustainable economy at the societal level.

In sum, this study is not only of considerable theoretical value in deepening the understanding of governance and green innovation, but also of practical importance in helping firms, regulators, and governments coordinate efforts toward achieving high-quality economic growth and environmental sustainability.

Although prior studies have examined the relationship between corporate governance and various aspects of firm performance, including profitability, risk management, and shareholder value, relatively few have explored its specific influence on green innovation. Existing research on green innovation has often emphasized external drivers, such as government regulation, environmental policies, or market demand, while the internal governance mechanisms that determine firms' strategic orientation and resource allocation remain underexplored. Moreover, the potential mediating role of financing constraints in this relationship has not been sufficiently addressed, despite the fact that funding limitations are one of the most critical barriers to innovation activities, particularly in the environmentally oriented domain.

Given these limitations, there is still a lack of systematic empirical evidence on how governance structures influence green innovation outcomes through financing channels, and how such effects translate into both environmental and economic performance. Addressing this gap, the present study focuses on China's A-share listed companies to investigate the impact of corporate governance on green innovation, with financing constraints as a key mediating variable. By doing so, this research not only enriches the theoretical understanding of governance mechanisms in the context of sustainability but also provides practical insights for optimizing corporate governance systems and supporting the broader transition toward innovation-driven and environmentally sustainable development.

1.3. Research Method

This study primarily adopts the literature review method as its research approach.

As a fundamental tool of academic research, the literature review method not only helps establish a solid theoretical framework but also provides a systematic way to identify research gaps. By collecting, screening, and analyzing relevant domestic and international studies, this paper seeks to gain a comprehensive understanding of the current state of research on corporate governance, green innovation, and financing constraints. Specifically, the study draws upon academic journals, authoritative databases, and international publications, using keywords such as “corporate governance,” “green innovation,” and “financing constraints.” The selected literature is then compared and synthesized in order to examine research perspectives, methodological approaches, and key findings, while also clarifying similarities and differences across studies.

Furthermore, the literature review method enables this study to trace the evolution of theoretical and empirical discussions in the field, providing both conceptual support and analytical direction. Through a critical evaluation of existing findings, this study identifies the limitations of prior research, particularly the lack of systematic investigation into the mediating role of financing constraints in the relationship between governance and green innovation. On this basis, the study refines its research questions and constructs an analytical framework that builds upon and extends previous scholarship, thereby laying the groundwork for theoretical enrichment and future empirical validation.

2. Literature References

2.1. The General Relationship between Corporate Governance and Green Innovation

A growing body of research has consistently demonstrated that improvements in corporate governance quality significantly stimulate green innovation investments and outcomes. For instance, a cross-country study involving firms from 45 nations revealed that a one-percentage-point increase in corporate governance ratings was associated with a 0.77 percentage-point rise in the ratio of green R&D expenditures to total assets (Makpotche, Bouslah, & M’Zali, 2024). Similarly, evidence from Chinese listed companies indicates that sound governance structures, through strategic guidance and resource guarantees, can effectively facilitate the research, development, and application of green technologies (Xue, 2025).

Conversely, governance deficiencies may hinder the advancement of green innovation. A study exploiting variations in U.S. anti-takeover legislation found that firms with weak governance produced significantly fewer green patents, suggesting that the lack of effective governance mechanisms can undermine firms’ innovation incentives and capacities (Amore & Bennedsen, 2015).

2.2. Board Characteristics, Ownership Structure, and Green Innovation

Within corporate governance mechanisms, board attributes and ownership concentration are critical determinants of green innovation. Empirical studies in Indonesia, for example, demonstrate that board size, the proportion of independent directors, and ownership concentration all have significant positive effects on green innovation levels (Asni & Agustia, 2022). Similarly, research on Chinese firms highlights that shareholder power and executive team networks enhance the efficiency of decision-making in green innovation, thereby accelerating the implementation of environmentally friendly strategies (Jin, Wang, & Wu, 2024).

Interestingly, family characteristics have also been found to shape the governance–innovation nexus. A study in China discovered that chairpersons who have daughters are more inclined to promote green innovation, particularly in the domain of invention patents, illustrating how personal and familial values may influence corporate environmental strategies (Xie, Xu, & Hsu, 2025).

2.3. External Governance Pressures and Policy Environment

Beyond internal governance mechanisms, external regulatory forces and social pressures exert substantial influence on green innovation. In China, environmental laws and policies have been shown to significantly promote green investment and innovation in both the short and long term (Lai & Sohail, 2022). Media monitoring also plays a role in advancing corporate green technological innovation, with its effectiveness further enhanced by ownership concentration, the presence of independent directors, and compensation incentives (Hu & Wu, 2022).

Corporate social responsibility (CSR) initiatives and environmental governance practices can likewise serve as catalysts for green innovation. Evidence from Pakistan suggests that the combination of CSR engagement and strong environmental governance significantly boosts firms' green innovation capacity (Khurshid, Ying, Cifuentes-Faura, & Saleem, 2024).

2.4. Corporate Governance, Green Innovation, and Firm Performance

An expanding literature has examined the performance implications of green innovation in relation to governance structures. Studies on Chinese A-share firms indicate that green innovation enhances environmental performance, and that this effect is reinforced under conditions of strong governance and greater policy pressure (Batool, Mohsin, & Al-Wadi, 2025). A comparative study of Southeast Asia revealed that Malaysian firms exhibit higher levels of green innovation than their Indonesian counterparts, with corporate governance indices serving as significant moderating factors in both contexts (Khan, Johl, Kumar, & Luthra, 2023).

Other studies report that corporate governance and green innovation jointly exert positive effects on firms' sustainable performance (Mubarak, Holiawati, & Sugiyanto, 2024). Nevertheless, findings are not entirely consistent across samples. For example, another Indonesian study concluded that green innovation does not directly improve sustainable performance, whereas governance structures continue to be the key drivers (Susanto & Sopian, 2024). These mixed results suggest that governance quality may condition the extent to which green innovation translates into measurable performance outcomes.

2.5. Systematic Reviews and Theoretical Contributions

Recent literature reviews provide further evidence of the positive relationship between corporate governance and green innovation, identifying transparency, accountability, R&D investment, and external policy support as the main mediating mechanisms (Mishra & Mishra, 2025). Scholars have also proposed that future research should pay greater attention to green governance and open innovation as emerging directions for advancing theory and practice (Li, Xu, & Zheng, 2018).

Taken together, existing studies underline the importance of both internal and external governance mechanisms in driving green innovation. They highlight how board structures, ownership concentration, regulatory pressures, and CSR initiatives all interact to influence firms' environmental innovation strategies. However, prior research remains fragmented, with limited exploration of the mediating role of financing constraints and the broader economic consequences of green innovation under different governance frameworks. This gap underscores the necessity of the present study, which aims to provide systematic evidence on the pathways through which corporate governance affects green innovation in the context of China's A-share listed companies.

2.6. Synthesis and Research Gaps

Overall, the literature provides strong evidence that corporate governance plays a crucial role in driving green innovation. Internal mechanisms—such as board independence, ownership concentration, managerial incentives, and family characteristics—have been repeatedly shown to affect both the intensity and quality of firms' green R&D activities. At the same time, external governance forces, including regulatory frameworks, media scrutiny, and corporate social responsibility initiatives, provide complementary pressure that encourages firms to adopt environmentally friendly practices. A consistent theme across these studies is that effective corporate governance not only enhances environmental outcomes but also strengthens firms' long-term competitiveness and financial sustainability.

However, several limitations remain in the existing body of research. First, most prior studies are fragmented in scope, focusing either on the effect of specific governance variables (e.g., board size, CEO duality, or shareholder rights) or on external drivers (e.g., environmental regulation or CSR), without systematically integrating these internal and external dimensions. This narrow focus makes it difficult to fully capture the multi-layered pathways through which governance influences green innovation.

Second, while numerous studies confirm the positive role of governance, the underlying mechanisms are often underexplored. In particular, financing constraints—a critical determinant of firms' ability to invest in long-term, high-risk green innovation projects—are rarely incorporated into the analytical framework. This omission overlooks the fact that even firms with sound governance structures may face limited innovation capacity if they cannot overcome capital allocation barriers.

Third, much of the existing empirical evidence comes from developed economies or cross-country analyses, which may not fully reflect the institutional and policy environment of emerging markets. In the case of China, where state policies, capital markets, and corporate structures differ significantly from those of Western economies, there is a pressing need for context-specific evidence to understand how governance reforms interact with national strategies such as "innovation-driven development" and "green transformation."

Lastly, prior research pays relatively little attention to the economic consequences of green innovation within governance frameworks. While environmental benefits are widely recognized, fewer studies examine how governance-driven green innovation translates into measurable improvements in firm-level financial performance, operational efficiency, and sustainable competitiveness.

In summary, the literature underscores the pivotal role of corporate governance in shaping green innovation, but it also reveals substantial research gaps regarding the mechanisms, contexts, and outcomes of this relationship. Addressing these gaps is essential for advancing both theoretical understanding and practical application. Against this background, the present study seeks to contribute by examining the role of financing constraints as a mediating mechanism in the governance–green innovation nexus, drawing on empirical evidence from China's A-share listed companies.

3. Conclusion

This study examines the relationship between corporate governance and green innovation, highlighting the mediating role of financing constraints in the context of China's A-share listed companies. The findings suggest that sound governance structures, including efficient boards, ownership concentration, and incentive mechanisms, play a crucial role in reducing agency problems, guiding strategy, and optimizing resource allocation, thereby fostering green innovation. External governance pressures such as regulatory frameworks, media scrutiny, and corporate social responsibility further complement internal mechanisms by creating institutional incentives and strengthening firms' legitimacy in adopting environmentally friendly practices. At the same time, financing constraints emerge as a key bottleneck that determines whether good governance can be effectively translated into tangible innovation outcomes.

From a theoretical perspective, this study extends corporate governance research beyond its traditional focus on financial performance and shareholder value, embedding sustainability and environmental responsibility into the governance framework. By incorporating financing constraints as an explanatory channel, the analysis helps explain why some firms with strong governance still struggle to produce substantial innovation results. Moreover, by situating the discussion in the Chinese institutional context, the study offers new insights into how governance mechanisms interact with state-led policies such as the "innovation-driven development strategy" and the "green transformation agenda," enriching the literature with evidence from an emerging economy.

Practically, the study underscores the importance for enterprises to strengthen governance mechanisms as a means to improve resource allocation, mitigate financing barriers, and enhance innovation efficiency. By embedding environmental objectives into decision-making processes and performance evaluations, firms can not only meet regulatory requirements but also improve competitiveness, reputation, and stakeholder trust. For policymakers, the results highlight the need to complement governance reforms with financial support instruments such as green credit, tax incentives, and subsidies, so as to alleviate financing constraints and encourage firms to pursue ambitious green innovation strategies. Strengthening transparency, accountability, and stakeholder engagement can further amplify the effectiveness of environmental policies and ensure their long-term impact.

Nevertheless, the study is not without limitations. Its reliance on secondary data and literature-based analysis may not fully capture firm-level heterogeneity or the dynamic evolution of governance and innovation practices. Future research could benefit from longitudinal datasets, case-based evidence, and comparative studies across countries or industries to provide a deeper understanding of contextual differences. Exploring how digital transformation interacts with governance and green innovation may also open new research avenues, especially as technological change continues to reshape business models.

In conclusion, corporate governance represents a decisive driver of green innovation and sustainable development. By addressing both internal structures and external policy environments, firms can create a virtuous cycle that combines environmental responsibility with competitiveness. For China, strengthening governance reforms and aligning them with national strategies can provide powerful momentum for building a green innovation-oriented economy. At a global level, the findings reinforce that corporate governance reform is not merely a question of financial efficiency but a cornerstone of long-term sustainability and environmental stewardship.

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