

Managerial Capability and Green Innovation

Cheng Feng¹, Tianzeng Wang²

¹*School of Business, Hunan University of Science and Technology, Xiangtan, 411201, China*

²*School of Management, College of Modern Science and Technology, China Jiliang University, Yiwu, 322002, China*

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Abstract: This paper explores the impact of managerial capability on green innovation. The study finds that the profitability of managers limits the development of enterprise green innovation capability, mainly due to managers' short-sighted behavior and compensation systems that prioritize income. To correct decision biases, shareholders can take measures to encourage management to reconsider the company's long-term development. Equity incentives can reduce the short-term behavioral risks of managers and increase the company's investment in green innovation. In addition, in regions with lower levels of marketization, the negative impact of enterprise manager profits on green innovation is more significant. The research results provide valuable theoretical basis and empirical evidence for the analysis of enterprise heterogeneity. Policy recommendations include establishing a comprehensive and universally applicable assessment system for enterprise green innovation capabilities, stimulating the enthusiasm of companies for green innovation, accelerating adaptation to policy environments, and improving investor professionalism and capability.

1. Introduction

Under the increasing global focus on sustainable development and environmental protection, the role of managers becomes crucial as they play a key role in driving the integration of business development with environmental protection. Green innovation concerns not only the environmental attributes of corporate products and services but also involves the efficient use of resources and reduction of waste in business operations. Managers need to guide their enterprises towards a green path in innovative ways, which helps to enhance market competitiveness, respond to government environmental policies, and meet consumers' green demands.

In the context of economic globalization, businesses face intense international competition, and green innovation has become a key factor in achieving sustainable development and enhancing international competitiveness. However, managers need to recognize that green innovation may require significant initial investments and have a longer return period. This presents higher demands on a company's financing capabilities and shareholder support. Managers need to balance the strategic value of green innovation with financial considerations in their decision-making, and develop sensible strategies for capital allocation and project selection.

The attitudes and behaviors of non-controlling major shareholders can have a significant impact on a company's green innovation decisions. They can influence the allocation of funds and the

selection of projects by supporting or resisting the innovation agenda. Therefore, managers need to effectively communicate with shareholders, explaining the importance of green innovation for the long-term development of the company, and seek their support.

Overall, managers play a crucial role in driving green innovation. They need to balance various factors within a strategy for sustainable development to ensure that the enterprise achieves an optimal balance between environmental protection and economic benefits.

The chosen research direction for this article is the impact of green innovation models on corporate economic development. Under the development of green innovation models, the resources, technology, and demand environment on which enterprises depend undergo fundamental changes. Green innovation empowers businesses in multiple ways, including driving innovation, market expansion, sustainable operation, risk management, and building ecosystems, thus driving innovation in business development models and adapting the company governance mechanism to these changes. However, the impact of green innovation on businesses is neutral. While it aids in gaining competitive advantages and achieving value creation, it also brings numerous risks and challenges at the corporate governance level.

Currently, scholars have formed two distinct viewpoints regarding the impact of managerial talent on green innovation capabilities.

One viewpoint posits that managerial talent plays a significant role in promoting green innovation capabilities. Researchers like Yang Mei et al. (2023) have pointed out that green innovation supports the proactive advancement of businesses by alleviating financing constraints, reducing operational risks, and strengthening social responsibility. Executives play an active role in this process, and their positive influence significantly benefits green innovation and its efficiency (Yang Mei, Wang Youqiang, Xia Xinming, 2023) [1]. Additionally, researchers like Li Yuanyuan (2023) found that good environmental, social, and corporate governance (ESG) performance can provide more impetus for green innovation, significantly enhancing a company's green innovation outcomes. Especially for companies facing high financing constraints, improving ESG performance is a vital driver in advancing the level of green innovation. The study by Liao Guoping and Wang Wenhua (2023) shows that corporate green innovation plays a mediating role between environmental information disclosure and corporate investment efficiency, emphasizing the close relationship between information transparency and green innovation. In terms of digital development, researchers Qi Huaijin and Liu Siqin (2023) found that there is a significant positive correlation between corporate digital development and the number of green patent applications, including green invention patents and green utility model patents, suggesting that digital development helps promote green innovation. Wu Jianzu and Chen Zhiyu (2023) found a significant positive correlation between green innovation and both financial and environmental performance of companies, with a particularly notable impact on environmental performance. This highlights the key role of green innovation in sustainable corporate development and emphasizes the tight connection between businesses, stakeholders, and social capital. Xiao Renqiao et al. (2023) studied the impact of low-carbon city pilot policies on corporate green innovation, noting that policy effects are more significant for large-scale enterprises and also positively influence the green innovation of non-state-owned enterprises. Finally, Huang Yanyun's (2023) research on the role of the digital economy in promoting green innovation in high-end manufacturing indicates that the advancement of green innovation aids in the efficient recycling of resources[2].

Synthesizing the above research, one viewpoint holds that managerial capabilities play a positive role in promoting green innovation, with managers actively contributing to this process. However, another viewpoint suggests that managerial talent might have a significant negative impact on corporate economic development in the context of green innovation, particularly in low-carbon industries, where green innovation might demonstrate a certain inhibitory effect.

Yuan Yuting's (2023) research found that an increase in the discrepancy between performance expectations can lead to a reduction in the scale of green investments by companies, showing a negative correlation between performance expectation discrepancies and corporate green investments[3]. Wu Jiazhi and Ding Sheng (2023) pointed out that different types of green investments have significantly heterogeneous effects on green growth levels, especially non-productive green investments in environmental protection, which have an insignificant effect on green growth[4].

This viewpoint emphasizes that when considering the impact of green innovation on corporate economic development, it is crucial to analyze the heterogeneous effects of different industries and types of green investments. In some cases, discrepancies in performance expectations and the type of green investments might lead to negative effects of green innovation, thereby exerting a restraining influence on corporate economic development. This suggests that in formulating green innovation policies and strategies, there is a need for a more detailed consideration of industry characteristics and investment types to balance the relationship between environmental protection and economic benefits.

In summary, current research on the impact of managerial talent on corporate green innovation capabilities has not reached a consensus. On one hand, scholars supporting the "promotion theory" discuss the positive role of managerial talent in green innovation from perspectives such as alleviating financing constraints, reducing operational risks, and strengthening social responsibility. However, this viewpoint tends to overlook the impact on non-productive enterprises and low-carbon businesses under dual carbon policies. On the other hand, researchers advocating the "inhibition theory" consider the relationship between performance expectations and green innovation, and the negative impact of types of green innovation on corporate economic development, but they have not directly focused on the direct link between "green innovation models and corporate economics."

Each perspective brings valuable insights, but also highlights the complexity and multifaceted nature of the issue. It suggests that the relationship between managerial talent and green innovation is not straightforward and may vary depending on factors such as industry, type of green innovation, and specific business contexts. This underlines the need for a more nuanced understanding and approach to fostering green innovation in businesses.

In this context, this article attempts to explore the impact of managerial profitability on green innovation capabilities. Utilizing sample data from Chinese A-share listed companies from 2019 to 2021, it empirically tests the influence of corporate managers' profitability on the level of green innovation and its internal mechanisms. The potential marginal contribution of this paper lies in its divergence from the existing literature, which generally posits that corporate economic development may promote green innovation.

Based on empirical data, this study concludes that managerial talent has an inhibitory effect on the development of green innovation. This provides a new theoretical perspective and empirical evidence to address the ongoing academic debate regarding the impact of managerial talent on green innovation capabilities in the context of corporate economic development. This research not only challenges prevailing assumptions but also enriches the understanding of the complex relationship between management capabilities and green innovation, offering insights that could guide more effective policy and corporate strategies.

2. Theoretical Analysis and Research Hypotheses

Since the implementation of the "carbon peak" and "carbon neutrality" strategies, the "green economy" has emerged as a new trend in China's socialist market economy system. As the concept of "green" continues to be emphasized and deepened, it has also become an important resource

orientation in the capital market. However, due to the characteristics of green innovation such as high risk, long cycle, difficulty in quantifying economic value, and dual externalities (Liu Yanxia, 2023)[5], its development brings many challenges to managers' decision-making behaviors. Due to the high uncertainty associated with innovation, the operational pressure on corporate management increases. Considering personal remuneration and reputation, they are more likely to overlook the long-term interests of the enterprise and make shortsighted decisions.

Existing research indicates that "difficulty in financing and expensive financing" have long been problems plaguing the development of Chinese enterprises. When systemic risks occur, enterprises often face serious operational risks due to the disruption of their funding chains. Furthermore, due to the characteristics of the aforementioned innovation projects, managers tend to prefer investments with stable cash flows and lower short-term risks, resulting in insufficient incentives for them to invest in innovative projects (Shi Xiaohong, 2023)[6]

Simultaneously, Wan Liquan and others believe that the management of state-owned enterprises often faces salary controls. After the mixed-ownership reform, the correlation between managers' remuneration and performance strengthens, thereby increasing their motivation to achieve short-term performance targets. This might lead to the neglect of green innovation activities, which could bring long-term benefits to the enterprise [7].

Based on the above analysis, this article proposes the following hypothesis:

H1: Managerial profitability limits the development of corporate green innovation capabilities.

From the analysis above, it is evident that the limitation of corporate green innovation capabilities by managerial profitability primarily stems from the myopic behaviors of managers, influenced by a compensation system that focuses on their revenue-generating abilities. To correct managerial decision-making biases, shareholders often take measures to encourage management to reconsider the long-term development of the company. Existing research indicates that managers lacking equity incentives face an asymmetry between the returns from green innovation activities and the risks undertaken, leading to a general lack of motivation for green innovation, thereby affecting it (Chen Xiaozhen, 2023)[8].

From the perspective of decision-makers themselves, studies have shown that equity incentives can reduce the short-sighted agency risks of executives (Li Xiuqian, 2023)[9]. This, in turn, motivates companies to increase their investment in green innovation. Based on this, the article proposes the following hypothesis:

Hypothesis 2: Equity incentives for managers can mitigate the limitation of corporate green innovation capabilities imposed by managerial profitability, thereby enhancing the company's commitment to green innovation.

H2: Equity incentives have a positive moderating effect on the relationship between managerial profitability and corporate green innovation capabilities. Specifically, the stronger the equity incentives, the weaker the limiting effect of managerial profitability on the development of corporate green innovation.

3. Research Design

3.1 Data Sources and Sample Selection

This paper selects Chinese A-share listed companies from 2019 to 2021 as the research subjects. The time range is defined from 2019 to 2021 because China first proposed the dual carbon goals for 2030 and 2060 on September 22, 2020, at the 75th United Nations General Assembly. Additionally, the release of the dual carbon policy has led investors to pay more attention to corporate green innovation capabilities. Therefore, using the carbon policy as a temporal marker, we selected sample data from one year before and after this policy announcement to form the final sample space. All data

used in this paper are sourced from the CSMAR database of Guotai'an.

3.2 Model Design and Variable Description

3.2.1 Model Design

To investigate the impact of managerial profitability on the number of utility patents for corporate green innovation, this paper constructs the following static panel model:

$$\text{GreTotal}_{it} = \beta_0 + \beta_1 \text{MA_Score}_{it} + \lambda X_{it} + \text{year}_t + \text{ind}_i + \varepsilon_{it} \quad (1)$$

In equation (1), GreTotal_{it} represents the number of utility model green innovation patents of enterprise i in year t ; MA_Score_{it} represents the final score of managerial profitability of enterprise i in year t ; X_{it} represents control variables at the corporate level; year_t and ind_i respectively represent the fixed effects for the year and industry; ε_{it} is the error term of the model.

Secondly, to examine the significant role of equity incentives in the impact of managerial profitability on corporate green innovation capabilities, this paper adds the logarithm of the intensity of equity incentives and its interaction term with managerial profitability to the basis of equation (1), constructing the following moderation effect model:

$$\text{GreTotal}_{it} = \omega_0 + \omega_1 \text{MA_Score}_{it} + \text{MA_Score}_{it} \times \ln(\text{inc}_{it}) + \omega_3 \ln(\text{inc}_{it}) + \vartheta X_{it} + \text{year}_t + \text{ind}_i + \varepsilon_{it} \quad (2)$$

The variable represents the intensity of equity incentives for enterprise i in year t , with the remaining variables the same as in equation (1). The measurement of the intensity of equity incentives follows the method used by Liu Baohua (2020)[10] and others, which uses the ratio of the actual number of equity incentives or restricted stocks granted as disclosed by listed companies to the total number of shares as the proxy indicator for the intensity of equity incentives (inc). For companies that implement equity incentives multiple times, the intensity is measured by the number of additional grants each year. In equation (2), the significance and direction of the coefficient of the interaction term need special attention.

3.2.2 Variable Description

(1) Dependent Variable: Green Innovation Capability (GreTotal)

Drawing on the measurement methods of Ma Yongqiang (2021)[11] and Song Deyong (2022)[12], this paper uses the number of utility model green innovation patents as a proxy variable for corporate green innovation capability, denoted as GreTotal . The number of utility model green innovation patents is the number of patents a company holds in the field of the green economy, which to a certain extent reflects the company's green innovation capabilities. The higher the value of this indicator, the stronger the company's green innovation capability.

(2) Explanatory Variable: Managerial Profitability (MA_Score)

He Weifeng, Liu Wei, and Huang Kaili (2016)[13] measured managerial ability by summarizing data from Chinese listed companies and using data envelopment analysis. Managerial profitability reflects the cognitive level of managers and their ability to handle complex affairs, which is one of the important capabilities promoting corporate development. In the process of continuous growth of a company, managers must not only utilize their abilities for high-risk investments but also ensure that the company fulfills its social responsibilities completely. Balancing the two is crucial, making managerial profitability of great importance.

(3) Control variables

Following existing research, this paper controls for company-level characteristics such as Return

on Equity (ROE), Asset-Liability Ratio (Lev), Company Establishment Years (FirmAge), Proportion of Accounts Receivable (REC), Proportion of Fixed Assets (FIXED), and Nature of Equity (SOE).

The descriptive statistics for the above variables are presented in Table 1.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
MA Score	19604	-.005	.167	-.344	.444
GreTotal	19604	8.33	22.379	0	183
ROE	19604	.055	.151	-1.036	.406
Lev	19604	.422	.202	.055	.903
FirmAge	19604	2.975	.291	2.079	3.584
REC	19604	.128	.106	0	.508
FIXED	19604	.198	.152	.002	.697
SOE	19604	.319	.466	0	1

4. Empirical Results and Analysis

4.1 Baseline Regression Results

Table 2: Manager Profitability and Green Innovation: Baseline Regression Results

	(1)	(2)	(3)
VARIABLES	GreTotal	GreTotal	GreTotal
MA_Score	-0.347 (-0.310)	-0.742 (-0.508)	-3.898** (-2.239)
ROE			1.138 (0.928)
Lev			3.285** (2.033)
FirmAge			3.896*** (3.013)
REC			-5.971* (-1.895)
FIXED			-2.031 (-0.827)
SOE			0.929 (1.248)
Constant	8.304*** (27.549)	-0.045 (-0.014)	-8.939 (-1.414)

Table 2 reports the baseline regression results of the impact of managerial profitability on corporate green innovation capability. Column (1) in the table presents the regression results without any control variables, while columns (2) and (3) show the results after sequentially adding year and industry fixed effects, and control variables at the corporate level. According to the results in column (3), after controlling for a series of variables that may affect corporate green innovation, the regression coefficient of MA_Score is significantly negative at the 5% significance level. This indicates that managerial profitability restricts the development of corporate green innovation, confirming the previously proposed research hypothesis H1. The assessment system for corporate managers'

profitability determines that managers will focus more on profit-making processes while neglecting the comprehensive functional development of the enterprise. Particularly, as the company ages, it becomes more challenging to adjust the direction of development and business structure. In addition, the level of financial leverage increases managerial operational pressure, leading to more profit-driven behavior, thereby affecting the enhancement of corporate green innovation levels.

4.2 Testing the Moderation Effect Mechanism of Equity Incentive Intensity

Table 3 reports the results testing the moderation effect of equity incentive intensity. As shown in the table, the interaction term TJ4 (Inc×MA_Score) is significantly positive at the 1% level, while MA_Score is significantly negative at the 1% level. This indicates that the moderating variable Inc weakens the negative impact of MA_Score on GreTotal. The greater the intensity of equity incentives, the more managers, to obtain incentive benefits, will begin to review their decision-making behaviors from the company level and start focusing on the development of the company's comprehensive functions. Empirical evidence also suggests that when a company provides equity incentives to managers, their earnings are not solely dependent on their revenue-generating capabilities, but also on their contributions to the comprehensive and overall development of the company. This also confirms the research hypothesis H2.

Table 3: Moderating Variables

	(1)
	stock ownership incentive
VARIABLES	GreTotal2
TJ4	0.010***
(Inc×MA_Score)	(3.086)
MA_Score	-0.149***
	(-2.974)
Inc	-0.001
	(-1.115)
ROE	-0.004
	(-0.887)
Lev	0.011
	(1.245)
FirmAge	0.003
	(0.548)
REC	-0.017*
	(-1.812)
FIXED	0.002
	(0.169)
SOE	-0.002
	(-0.933)

4.3 Heterogeneity Analysis

4.3.1 Heterogeneity Analysis Based on the Degree of Marketization

Due to the varying degrees of marketization in different regions, there are significant differences in factors such as resource allocation, legal system, and the competitive environment for businesses,

which inevitably influence the extent to which corporate managers prioritize green innovation. To verify whether the heterogeneity of the degree of marketization exists, the author, based on the Fan Gang Marketization Index [14], divides the sample into two sub-samples: high marketization and low marketization, based on the median of the marketization index. The sub-samples are then separately regressed into the model to examine the actual effect of managers' profitability on corporate green innovation in regions with different degrees of marketization. The regression results are presented in Table 4.

Table 4: Heterogeneity Analysis Based on the Degree of Marketization

	(1)	(2)
	Low marketization degree	High marketization degree
VARIABLES	GreTotal	GreTotal
MA_Score	-5.484*	-2.511
	(-1.922)	(-0.891)
ROE	0.166	1.940
	(0.112)	(1.013)
Lev	1.394	4.240*
	(0.594)	(1.781)
FirmAge	3.985**	4.337***
	(2.335)	(2.768)
REC	1.406	-11.877***
	(0.348)	(-2.993)
FIXED	2.819	-8.114**
	(0.660)	(-2.563)
SOE	1.016	0.586
	(0.888)	(0.586)

The regression results show that in regions with lower levels of marketization, the negative impact of corporate managers' profitability on corporate green innovation capabilities is more significant compared to regions with higher levels of marketization. This can be interpreted as follows:

Firstly, a lower degree of marketization implies that the region's property rights protection system is in urgent need of improvement. Weaker awareness of intellectual property protection and lower levels of intellectual property protection increase the likelihood of enterprises being infringed upon. This, in turn, leads to an upward adjustment in managers' objective assessment of the risks associated with green innovation business sectors. The stronger the managerial profitability, the less attention the enterprise pays to the development of green innovation.

Secondly, regions with a lower degree of marketization face less intense market competition compared to those with higher marketization. Therefore, enterprises lack sufficient motivation to proactively undertake green innovations to meet the green demands of consumers and investors.

4.3.2 Heterogeneity Analysis Based on Audit Opinions

The issuance of audit opinions is closely related to managerial profitability. The audit results provided by auditors and auditing institutions can reflect the decision-making behaviors of managers to a certain extent. Based on whether the auditing institutions issue an unqualified opinion (Opinion=1) or a qualified opinion (Opinion=0), the samples are divided into two groups to examine whether there is heterogeneity in audit opinions. The regression results are presented in Table 5.

The regression results indicate that in companies where the auditing institutions have issued unqualified opinions, the negative impact of managerial profitability on corporate green innovation

capability is more significant. This is because managers, aiming to achieve financial targets, may be motivated to embellish the financial statements to conceal aspects that negatively affect the overall financial condition. At the same time, business operations related to green innovation R&D and production are characterized by immaturity, high risk, and long cycles. Therefore, under self-interest oriented goals, managers might take measures to embellish the related content in the financial statements about this sector, ultimately leading to the issuance of qualified opinions by the auditing institutions. Accordingly, the negative impact of managerial profitability on corporate green innovation capability is more pronounced in companies where the auditing institutions have issued unqualified opinions.

Table 5: Heterogeneity Analysis Based on Audit Opinions

	(1)	(2)
	Opinion0	Opinion1
VARIABLES	GreTotal	GreTotal
MA_Score	-10.802	-3.450*
	(-1.467)	(-1.734)
ROE	-0.139	0.720
	(-0.061)	(0.514)
Lev	-0.174	2.965
	(-0.024)	(1.624)
FirmAge	11.225**	3.478***
	(2.106)	(2.871)
REC	4.313	-5.524*
	(0.336)	(-1.883)
FIXED	0.256	-2.965
	(0.020)	(-1.104)
SOE	9.846	1.139
	(1.462)	(1.456)

4.3.3 Heterogeneity Analysis Based on Total Asset Turnover Ratio

The Total Asset Turnover Ratio reflects the overall asset operation capacity of a company. Based on the median of the Total Asset Turnover Ratio, the sample is divided into two sub-samples: a high Total Asset Turnover Ratio group (ATO 0) and a low Total Asset Turnover Ratio group (ATO 1) to examine the heterogeneity of the Total Asset Turnover Ratio. These sub-samples are then separately regressed into the model, with the regression results presented in Table 6.

From the regression results, it's evident that in the sub-sample with a low Total Asset Turnover Ratio, the negative impact of managerial profitability on corporate green innovation is more pronounced. Referencing the research perspective of Gong Shimin (2023)[15], an increase in the Total Asset Turnover Ratio promotes corporate green innovation capabilities by reducing corporate agency costs. From an empirical standpoint, a low Total Asset Turnover Ratio for a company indicates high current operational pressure, leading to the company being unable to focus on innovation and development in the short term. In this scenario, the stronger the managerial profitability, the more rigid the corporate business structure becomes, thereby imposing greater constraints on the company's green innovation capabilities.

Table 6: Heterogeneity Analysis Based on Total Asset Turnover Ratio

	(1)	(2)
	ATO0	ATO1
VARIABLES	GreTotal	GreTotal
MA_Score	-5.567** (-2.410)	-1.177 (-0.399)
ROE	4.258*** (2.606)	-2.165 (-1.442)
Lev	4.113 (1.463)	3.206 (1.604)
FirmAge	5.269*** (2.806)	3.111** (2.326)
REC	-0.692 (-0.146)	-1.844 (-0.580)
FIXED	-3.990 (-0.997)	-1.049 (-0.365)
SOE	0.958 (0.890)	0.016 (0.017)

4.4 Robustness Test

To further verify the robustness of the above results, this paper conducts the following robustness tests:

Firstly, considering the lag effect of policies, the independent variable MA_Score is lagged by one year and two years, respectively, to test the robustness of the impact of managerial profitability from the previous year, two years ago, and the combined previous year and two years on the current corporate green innovation capability.

Secondly, an individual fixed effects model is used to capture the differences between individuals that do not change over time.

Table 7: Robustness Test Results

	(1)	(2)	(3)	(4)
VARIABLES	GreTotal2	GreTotal2	GreTotal2	GreTotal2
MA_Score	-0.007*** (-2.636)	-0.007*** (-2.910)	-0.007*** (-2.870)	-0.006*** (-2.661)
ROE	0.002 (1.145)	0.001 (0.910)	0.002 (1.411)	0.001 (0.880)
Lev	0.005** (1.973)	0.005* (1.837)	0.005* (1.948)	0.005** (2.002)
FirmAge	0.018 (1.495)	0.017 (1.369)	0.020* (1.661)	0.012 (1.060)
REC	0.002 (0.355)	0.000 (0.034)	0.001 (0.222)	-0.001 (-0.104)
FIXED	0.001 (0.149)	0.001 (0.153)	0.003 (0.742)	-0.001 (-0.294)
SOE	0.001 (0.686)	0.001 (0.970)	0.001 (0.714)	0.002 (1.019)
GreTotal11	0.190*** (14.243)		0.208*** (15.490)	

The results in Table 7 show that the regression coefficients of managerial profitability are

significant at the 1% level in all the above robustness tests, further demonstrating the robustness of the conclusions of this paper.

5. Conclusions and Implications

This study selected Chinese A-share listed companies from 2019 to 2021 as the research sample and empirically examined the impact of managerial capability on corporate green innovation capability using a constructed green innovation capability index. The main conclusions are as follows: (1) Managerial profitability significantly reduces corporate green innovation capability, a conclusion that holds even after considering potential endogeneity issues and conducting a series of robustness tests. (2) Mechanism tests based on the moderation effect model show that the intensity of equity incentives positively moderates the relationship between managerial capability and corporate green innovation. In other words, the greater the intensity of equity incentives, the weaker the restrictive effect of managerial capability on corporate green innovation capability. (3) Heterogeneity analysis shows that the restrictive effect of managerial capability on corporate green innovation capability is more significant in enterprises located in regions with low total asset turnover, where audit firms issue unqualified opinions, and where the degree of marketization is low.

From the research conclusions of this article, the following policy implications can be drawn:

Firstly, in the current initial phase of implementing the dual carbon policy, government departments should accelerate the establishment of a comprehensive and universally applicable evaluation system for corporate green innovation capabilities. They should actively address the risk control and regulatory challenges behind green innovation, improve regulations on information disclosure by listed companies, and effectively supervise and utilize third-party intermediaries such as accounting firms to fully stimulate the positive role of managers in corporate green innovation practices.

Secondly, the government should take active measures to internalize the externalities of green innovation, mobilize the enthusiasm for green innovation in enterprises, and accelerate their adaptation to the policy environment. They should explore the governance mechanisms that adapt to the high integration of technology and the environment, creating a new business ecosystem.

Lastly, investors should continuously improve their professional qualifications and capabilities. They should utilize emerging information technologies such as the internet and big data to gather information on corporate business model innovations. Additionally, they should understand the profit logic of new business models and enhance their ability to analyze and use financial information of companies with complex business operation models. Institutional investors with strong professional capabilities should leverage their information advantages to rigorously supervise the decision-making of management during complex business operations and restrain opportunistic behavior aimed at private gains.

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