

# Research on the Impact of Green Finance on Enterprise Value

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**Abstract.** This paper uses the panel data of China listed companies from 2012 to 2024 as the research sample and employs the difference-in-differences method to empirically test the effect of green finance reform and innovation pilot policies on corporate value. The study finds that the implementation of green finance pilot zones significantly promotes the improvement of corporate value within their jurisdictions, and further analyzes the mediating effect: green finance pilot zone policies enhance corporate value by reducing corporate financing constraints and promoting green innovation. Based on the above conclusions, this paper proposes two policy recommendations: first, increase policy incentives to stimulate corporate green innovation; second, increase policy incentives to stimulate corporate green innovation.

**Keywords:** Green Finance; Green Finance Policy; Difference-in-Difference.

## 1. Introduction

Since the launch of China's reform and opening-up policy, the nation has achieved world-renowned accomplishments in strategic sectors including infrastructure development and aerospace, which have significantly accelerated socioeconomic progress. However, this progress has been accompanied by environmental degradation, with various ecological issues becoming increasingly prominent and gradually affecting both public quality of life and sustainable societal development. Against this backdrop, the innovative integration of environmental regulation and green finance has emerged as a core driver for green economic development, with active exploration and implementation underway across multiple dimensions.

In June 2017, the State Council Executive Meeting designated Guangdong, Guizhou, Jiangxi, Xinjiang, and Zhejiang as the first batch of green finance innovation and reform pilot zones, based on regional economic conditions and resource endowments. This marked a new phase of large-scale implementation and practical exploration in China's green finance system. Building on the initial successes in these pilot regions, Lanzhou New Area in Gansu Province was approved as a new pilot zone in 2019. The gradual expansion of pilot areas further refined the practical framework for China's green finance reform.

The progressive expansion of the Green Finance Pilot Zone vividly demonstrates the nation's strategic commitment to green finance reform and innovation. Yet, when examining the policy's impact at the micro-level, what concrete effects have emerged? The underlying mechanisms and outcomes of its influence on corporate value require further validation. To address this, this study employs the difference-in-differences method as its core research approach, systematically investigating the policy's impact on corporate value. The findings aim to provide empirical evidence at the micro level for optimizing and scaling up such policies.

## 2. Literature Review

Numerous scholars worldwide have conducted research on green finance's impact on corporate value. Xu and Mei (2020) found through empirical studies that green finance exerts a greater influence on corporate environmental performance than innovation performance. Specifically, green investments demonstrate a more pronounced effect on corporate performance compared to green credit. Niu Haipeng (2020) employed a DID model to analyze debt financing, revealing that green credit policies enable green enterprises to secure more funding and experience significantly improved

financing accessibility. Li Rong et al. (2021) utilized green finance pilot zone policies as quasi-natural experiments, demonstrating how green finance influences corporate green innovation through debt structure optimization. Furthermore, Fan Decheng et al. (2021) argued that establishing green finance innovation pilot zones not only encourages enterprises to enhance green technology innovation and fulfill environmental responsibilities, but also effectively improves operational efficiency and profitability.

Domestic and international scholars have accumulated substantial research achievements in areas such as the policy effects of green finance and factors influencing corporate value, laying a solid foundation for this study. However, existing research still has room for expansion and deepening. Specifically, in terms of research dimensions, current studies on green finance policies predominantly focus on macro-level aspects (e.g., regional economy, industrial structure, environmental quality), while in-depth and systematic research on the micro-level impacts and underlying mechanisms of enterprises remains limited and fragmented. A few micro-level studies merely examine the direct correlations between policies and corporate value or green innovation, lacking the decomposition of transmission pathways, which necessitates further research at the micro level.

theoretical analysis

The Porter Hypothesis posits that scientifically sound environmental regulations can drive enterprises to enhance innovation capabilities and production efficiency. Such regulations not only offset the additional costs of environmental initiatives but may even counteract their negative effects, thereby boosting corporate competitiveness and value. Research by Shang Hongtao and Wang Shixiao (2020) confirmed that corporate innovation levels significantly impact their value. Bloom et al.'s study further demonstrates that R&D investment effectively promotes corporate value growth. On one hand, increased innovation spending sends positive signals to the market, helping companies build a strong reputation and attract more investors. On the other hand, additional R&D funding optimizes existing production models, improves efficiency, reduces operational costs, and strengthens core competitiveness, creating a positive feedback loop for value enhancement. Building on these theoretical foundations and empirical evidence, this paper proposes the following research hypotheses.

H1: The implementation of green finance policies enhances corporate value within the pilot zone.

Traditional financing constraint theory identifies information asymmetry, agency conflicts, and transaction costs as the core causes of corporate financing difficulties and high costs. Green enterprises, however, face unique challenges such as extended project cycles, unquantifiable environmental benefits, and limited initial profitability. The signaling theory provides a crucial solution: environmental information, serving as a "high-quality signal" for green enterprises, can significantly reduce market information asymmetry through transparent disclosure and effective verification. This enables financial institutions to accurately assess a company's green development potential and risks, thereby providing a scientific basis for credit resource allocation.

Based on the above analysis, the following hypothesis is proposed:

H2: The implementation of green finance policies enhances corporate value in the pilot zone by easing financing constraints and expanding green credit channels for local enterprises.

The Strong Porter Hypothesis examines the cost-saving and value-adding effects of green innovation, revealing the underlying mechanism by which environmental regulations drive high-quality corporate development. As a key intermediary, green technological innovation not only enables cost control and compliance assurance through process optimization but also enhances market value via signal transmission and technology commercialization. Schumpeter's innovation theory, from the perspective of innovation factor drivers, provides theoretical support for their interconnection. Together, these three elements form a comprehensive analytical framework of "environmental regulation—green innovation—corporate value enhancement," offering crucial theoretical guidance for understanding corporate development logic in the context of green transformation.

Based on the above analysis, the following hypothesis is proposed:

H3: The implementation of green finance policies enhances green innovation outputs among enterprises in the pilot zone, ultimately boosting their overall value.

### 3. Introduction to variable and Its Modeling Design

#### 3.1. Variable Selection

This paper selects China's A-share listed companies in Shanghai and Shenzhen from 2012 to 2024 as samples, and conducts research using the Tobin's Q value of listed companies and other data representing corporate characteristics. To ensure the authenticity and reliability of the results, the original data are processed as follows: First, companies in the financial, insurance, securities, and real estate sectors are excluded from the initial sample, focusing on the comprehensive impact of green finance policies on real enterprises. Second, companies listed after 2017 are excluded to ensure that the sample contains data before and after policy shocks, guaranteeing the balance of the sample and the fairness of the analysis. Third, samples classified as S, ST, \*ST, or those with missing or abnormal data are removed. Finally, all feature data undergo a 1% tail-trimming process to eliminate the interference of extreme values. The final sample consists of 29,831 observations.

##### Definition of Variables

1. Dependent Variable: Corporate Value This study selects Tobin's Q-value A (market value ÷ total assets at the end of the period) from the CSMAR database as the specific indicator for measuring corporate value, denoted as Tobinq. 2. Independent Variables: Treated×Time Treated×Time serves as the core explanatory variable in this paper. The coefficient  $\beta_1$  of this term reveals the impact of green finance pilot policies on corporate value. A significantly positive  $\beta_1$  indicates that the implementation of pilot policies positively promotes corporate value in the experimental zone. 3. Control Variables To account for other influencing factors, this study adopts the following control variables based on Xu Liping et al.'s research: Corporate Maturity (age): logarithm of the number of years since establishment; Corporate Size (size): logarithm of total assets; Corporate Leverage (lev); Corporate Growth Potential (npr); Equity Concentration (top10): shareholding ratio of the top10 shareholders; Cash Flow Level (cf): ratio of net operating cash flow to total assets.

#### 3.2. model specification

This paper adopts the double difference model to evaluate the effect of policy implementation, and the specific model construction is as follows:

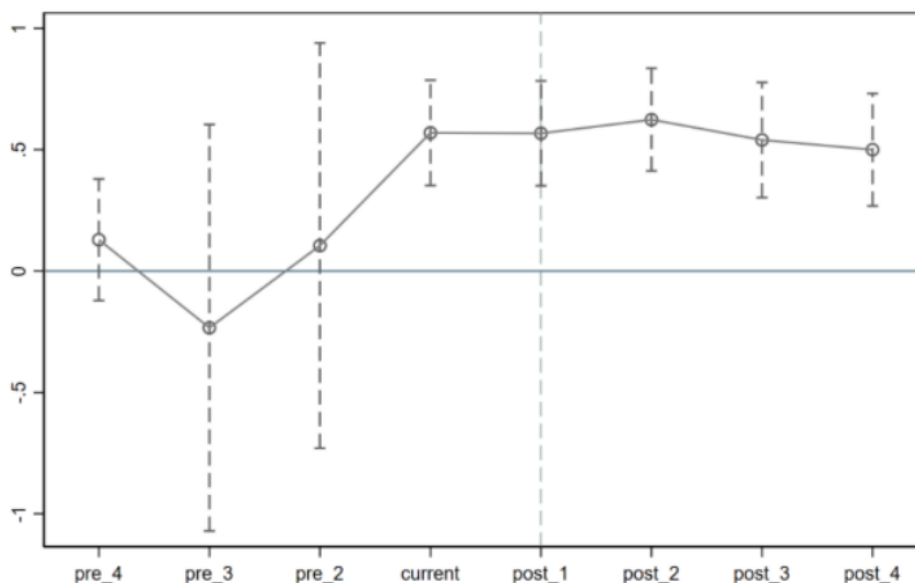
$$\text{Tobinq}_{i,t} = \alpha_0 + \alpha_1 \text{treat}_{i,t} * \text{post}_{i,t} + \sum \alpha_i \text{Controls}_{i,t} + \gamma_i + \mu_t + \varepsilon_{i,t} \quad (1)$$

denotes the Tobin Q value of a listed company  $i$  in year  $t$  Tobinq Controls $_{i,t}$   $\gamma_i$   $\mu_t$   $\varepsilon_{i,t}$ , where  $i$  and  $t$  represent the listed company and its corresponding year respectively. The matrix represents the control variables for the company's economic characteristics. The terms and respectively denote the firm-specific fixed effects and the year-specific fixed effects.

### 4. Empirical analysis

#### (1) Parallel Trend Test

Before the double difference estimation, we test the parallel trend of the sample data based on the following model to investigate whether the experimental group and the control group have the same trend of change before the implementation of the pilot policy. The specific results are shown in Figure 1. The interaction term coefficients before policy implementation were not statistically significant, indicating no significant differences between the experimental and control groups prior to the 2017 pilot policy rollout. Post-implementation, distinct changes emerged, confirming the parallel trends test was passed.



**Fig. 1** Parallel trend test

(2) Impact of Green Finance Pilot Policies on Enterprise Value

The regression analysis of the core explanatory variable "policy net effect (treatpost)" reveals that in Column (1), the coefficient stands at 0.307 with a t-value of 2.39, demonstrating statistical significance at the 5% level. This indicates that the green innovation demonstration zone policy exerts a significant positive impact on corporate value. When all control variables are incorporated in Column (2), the coefficient rises to 0.463 with a t-value of 2.81, remaining significant at the 1% level. This suggests that after controlling for firm characteristics, the policy's positive effect on corporate value becomes more pronounced and robust.

**Table.1** Basic regression results

	(1)	(2)
variable	Tobinq	Tobinq
treatpost	0.307** (2.39)	0.463*** (2.81)
Size		-2.602*** (-3.35)
Roa		0.098** (2.15)
Lev		3.034** (2.00)
TOP10		-0.008** (-2.27)
Age		3.436*** (4.94)
NPR		-0.001** (-2.26)
Cashflow		-1.887 (-1.33)
Observations	29,831	29,831
R-squared	0.248	0.275
idFE	YES	YES
YearFE	YES	YES

\*\*\*p<0.01, \*\*p<0.05, \*p<0.1

(3) Mediation Effect Analysis

1. Financing Constraint Effect

This study employs the Corporate Financing Constraint Index (WW Index) as a mediator variable to develop a mediation model, examining how green finance policies influence corporate value. Theoretically, green finance policies can alleviate corporate financing constraints by providing credit support and reducing financing costs, thereby enhancing corporate value.

The empirical results demonstrate that the coefficient of the policy differential variable "treatpost" in Column (2) is -0.026, statistically significant at the 1% level. This indicates that lower WW indices correlate with stronger financing constraints, confirming the policy's effectiveness in alleviating financing constraints for pilot enterprises and passing the first-stage mediation test. In Column (3), after incorporating policy variables and mediation variables, the WW index coefficient becomes -0.074, remaining significant at the 1% level, which validates that stronger financing constraints further limit corporate value growth. Simultaneously, the policy variable coefficient shifts from 0.463 in Column (1) to 0.531 while maintaining statistical significance, indicating that green finance policies not only directly enhance corporate value but also exert their effects through the mediation pathway of "relieving financing constraints".

**Table. 2** Mediation effect regression

	(1)	(2)	(3)
variable	Tobinq	WW	Tobinq
treatpost	0.463*** (2.81)	-0.026*** (-4.31)	0.531*** (2.83)
WW			-0.074*** (-3.46)
Size	-2.602*** (-3.35)	-0.110*** (-33.45)	-2.594*** (-3.38)
Roa	0.098** (2.15)	-0.002*** (-2.85)	0.098** (2.14)
Lev	3.034** (2.00)	-0.215*** (-13.83)	3.050** (1.98)
TOP10	-0.008** (-2.27)	-0.001*** (-3.92)	-0.007** (-2.27)
Age	3.436*** (4.94)	0.084*** (3.43)	3.430*** (4.97)
NPR	-0.001** (-2.26)	-0.000 (-0.79)	-0.001** (-2.26)
Cashflow	-1.887 (-1.33)	-0.075** (-2.06)	-1.881 (-1.33)
o.yq_var		-	
Observations	29,831	29,831	29,831
R-squared	0.275	0.479	0.275
idFE	YES	YES	YES
YearFE	YES	YES	YES

\*\*\*p<0.01,\*\*p<0.05,\*p<0.1

2. Green Innovation Effect

The empirical results demonstrate that: In column (2), the policy interaction term 'treatpost' yields a coefficient of 0.032 (10% significance), indicating that green finance policies can enhance enterprises 'green innovation capacity (patent) in the pilot zone by directing financial resources toward green projects, thereby passing the first-stage mediation test. Column (3) reveals a positive patent coefficient of 0.319 (1% significance) after incorporating policy and mediation variables, confirming that green innovation significantly drives corporate value growth. The policy variable'

treatpost' coefficient decreases slightly from 0.463 to 0.453 while remaining statistically significant at the 1% level, indicating that green innovation mediates the relationship between green finance policies and corporate value. These findings provide empirical support for the research hypothesis.

**Table.3** Mediation effect regression

	(1)	(2)	(3)
variable	Tobinq	patent	Tobinq
treatpost	0.463*** (2.81)	0.032* (1.82)	0.453*** (2.81)
patent			0.319*** (2.65)
Size	-2.602*** (-3.35)	0.306*** (28.31)	-2.700*** (-3.33)
Roa	0.098** (2.15)	0.003** (2.43)	0.097** (2.13)
Lev	3.034** (2.00)	0.032 (0.74)	3.024** (2.00)
TOP10	-0.008** (-2.27)	0.002*** (3.96)	-0.008** (-2.49)
Age	3.436*** (4.94)	-0.099 (-1.18)	3.467*** (4.92)
NPR	-0.001** (-2.26)	-0.000 (-1.48)	-0.001** (-2.25)
Cashflow	-1.887 (-1.33)	-0.085 (-0.96)	-1.860 (-1.32)
o.yq_var		-	
Observations	29,831	29,831	29,831
R-squared	0.275	0.721	0.276
idFE	YES	YES	YES
YearFE	YES	YES	YES

\*\*\*p<0.01,\*\*p<0.05,\*p<0.1

#### (4) Robustness Test

To ensure the reliability of the conclusions, this study employed a placebo test through a simulated experimental group design. A total of 308 randomly selected enterprises were assigned to the experimental group, with 500 regression analyses conducted. The results demonstrated that most estimated coefficients clustered around zero with insignificant p-values, while only a small subset of randomized results showed statistical significance. This indicates that the establishment of the pilot zone indeed yielded policy effects, confirming the robustness of the study's findings.

## 5. Summary

Using panel data from China's listed companies between 2012 and 2024, this study employs the difference-in-differences (DID) method to empirically examine the impact of green finance pilot policies on corporate value. The findings demonstrate that these policies not only represent a crucial step in China's financial system development but also yield significant economic benefits, effectively enhancing the value of listed companies in pilot regions. Heterogeneity analysis reveals that the policy's value-boosting effect is particularly pronounced among state-owned enterprises and non-polluting firms.

### 1. Promote Pilot Experiences and Implement Differentiated Policies

Guided by the principle of "categorized guidance and targeted efforts," we will summarize the successes and failures of green finance pilot zones to develop replicable models and expand their

coverage. Tailored approaches will be implemented based on regional development levels, corporate ownership structures, and pollution severity, moving away from a "one-size-fits-all" approach. For underdeveloped regions, priority will be given to green infrastructure and fiscal interest subsidies. State-owned enterprises will see optimized green innovation assessments, with energy conservation and emission reduction incorporated into performance evaluations. Non-heavy-pollution enterprises will receive enhanced policy support in green credit and bonds, fostering synergy between economic and environmental benefits.

#### 2. Strengthening Policy Incentives to Activate the Green Innovation Motivation of Enterprises

Guided by the principle of "balancing regulation and incentives," we will establish a multi-tiered support system. For heavily polluting enterprises, we will increase environmental taxes and tighten approval and financing to force capacity reduction, while enhancing technological upgrade subsidies and tax breaks to lower transition costs. A tiered green patent incentive mechanism will be introduced to provide additional incentives for high-quality innovative enterprises. A fiscal-financial coordination platform will be established, with a national green innovation fund to guide private capital inflows.

#### 3. Strengthen Environmental Protection Supervision and Improve Long-term Governance Mechanism

Establish a governance framework centered on "strict market access, robust oversight, and severe penalties": Implement the environmental access negative list, using credit limits and environmental credit assessments to restrict financing for heavily polluting enterprises, thereby leveraging the Porter effect. Define clear penalties for "greenwashing" and "wash-and-go" practices, and establish an environmental information sharing platform through big data and blockchain technology. Develop end-to-end green credit supervision: Conduct thorough fund tracing for transitioning enterprises to ensure dedicated use of allocated funds.

#### 4. Improving the Quality and Efficiency of Financial Services and Optimizing the Allocation of Green Resources

Guide financial institutions to adopt sustainable development principles by developing innovative financial products tailored to regional green industries, including credit facilities, bonds, REITs, and carbon pledges, to address enterprises' financing needs throughout their lifecycle. Strengthen ESG risk management in financial institutions by incorporating corporate environmental compliance and transformation potential into credit approvals and risk pricing. Support financial institutions in collaborating with third parties to conduct environmental risk assessments and project valuations, while refining risk-sharing and compensation mechanisms.

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