Journal of Innovation and Development
ISSN: 2958-4752 | Vol. 6, No. 1, 2024

Research on the Impact of Green Credit Policies on Green Innovation of Heavy Polluting Enterprises: A Case Study of Sichuan Province

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Abstract: Green credit is an important green financial tool to stimulate enterprise green innovation. Enterprise green innovation is an important driving force for the coordinated development of the environment and economy, and achieving high-quality economic development. This article first analyzes the current development status of green credit in Sichuan Province from two perspectives: the scale and structure of green credit, and analyzes the current status of green innovation in heavily polluting enterprises from both economic and policy perspectives. Secondly, using listed companies in Sichuan Province from 2008 to 2015 as sample data, the total amount of green innovation of enterprises was measured by the number of green patent applications. The double difference model was used to explore the impact and mechanism of green credit policies on green innovation of heavily polluting manufacturing enterprises in Sichuan Province; Once again, conduct a scientific test on the derived results through empirical analysis. Finally, policy recommendations are proposed on how to utilize green credit development to promote green innovation in heavily polluting enterprises.

Keywords: Green Credit Policy; Green Innovation of Enterprises; Double Difference Model.

1. Introduction

The report of the 20th National Congress of the Communist Party of China proposed the goal of comprehensively building a socialist modernized strong country, and the coordinated development of ecological protection and economic growth is an important path to achieve this goal. Green innovation in enterprises is an important driving force for the coordinated development of the environment and economy, and for achieving high-quality economic development. Green financial tools assist enterprises in green innovation, and green credit, as an important green financial tool, is the source of inspiration for enterprise green innovation and an important support for achieving green economic development. Green credit, as a key measure to guide the green allocation of credit resources, plays an important role in promoting green and low-carbon economic development and assisting enterprises in green innovation. In February 2012, the former China Banking Regulatory Commission officially released the "Green Credit Guidelines" (hereinafter referred to as the "Guidelines"), marking the standardization stage of China's green credit policy. Different from environmental regulatory policies characterized by administrative penalties, the Guidelines aim to guide heavily polluting enterprises in green innovation and promote economic green transformation through the allocation of credit resources. However, existing literature mainly focuses on the implementation of the Guidelines on green credit at the national level, lacking an evaluation of the micro effects of this policy from a provincial and municipal perspective. In theory, as an environmental regulatory tool, the Guidelines have multiple possible impacts on corporate green innovation. So, in the face of this green credit policy, will enterprises in Sichuan Province strengthen green innovation, and what are the underlying mechanisms behind it? To answer the above questions, this article takes the "Green Credit Guidelines" (hereinafter referred to as the Guidelines) issued in 2012 as a policy shock and conducts quasi natural experiments to explore its heterogeneous mechanism of action on corporate green innovation behavior.

2. Literature Review

2.1. Research on the Implementation Effect of Green Credit Policy

Most research on green credit policies focuses on their implementation effects, which can be roughly divided into two levels: micro and macro. At the micro level, Liu Yiwen et al. (2022) found through a continuous double difference model that green credit policies significantly improve the quality of environmental information disclosure for restricted enterprises, and the promotion effect is positively regulated by the development level of regional green finance and the supervision system. Zhang Chaolin and Liu Fenggen (2023) studied the micro effects of green credit policies from the perspective of enterprise R&D investment, and found that green credit policies have a significant inhibitory effect on R&D investment in heavily polluting enterprises, and this inhibitory effect exists for a long time; However, whether in the short or long term, green credit policies have not significantly promoted R&D investment by green enterprises. At the macro level, green credit achieves energy conservation and emission reduction through industrial structure upgrading, orderly energy structure adjustment, and regional demonstration effect mechanisms. In the context of

differentiated energy structure, Mali et al. (2023) conducted welfare analysis on green credit policies with different regulatory powers, discussed the optimal degree of policies, and promoted orderly adjustment of energy structure. The study found that optimizing and upgrading the energy structure is an inevitable choice for the benefit of the country and the people. Green credit policies can promote the development of low-carbon industries, but in the short term, exceeding the optimal degree of policies may lead to a decrease in total output, Reduce resident consumption and employment rates. Wang Qian et al. (2023) used a double difference model to test the impact of green finance policies on the pollution emissions of "two high" enterprises. The study found that the increase in financing constraints and the improvement of green innovation technology are the main ways for green credit policies to reduce the SO2 emissions of "two high" enterprises.

2.2. Analysis of Factors Influencing Green Innovation in Enterprises

The research on the influencing factors of green innovation in enterprises mainly includes internal and external factors. From the perspective of internal factors within enterprises, Yu Wei and Guo Xiaoyi (2023) empirically tested the relationship between managers' intrinsic shortsightedness and green innovation in A-share listed companies in China's heavy pollution industry from 2008 to 2020. The results showed that managers' shortsightedness suppressed green innovation in enterprises. Qi Liyun et al. (2023) used panel data from 927 manufacturing listed companies in A-shares from 2016 to 2020 as a sample to explore the impact of executive team heterogeneity on corporate green innovation performance. The study showed that executive team tenure heterogeneity has a significant positive impact on green management innovation. From the perspective of external factors of enterprises, Liu Chang et al. (2023) used Chinese A-share manufacturing listed companies from 2009 to 2020 as samples to empirically analyze the impact and mechanism of digital transformation on the green innovation efficiency of manufacturing enterprises. The results showed that digital transformation can significantly improve the green innovation efficiency of manufacturing enterprises, especially in the samples of state-owned enterprises and heavily polluting enterprises. Cheng Jianfei and Xia Bing (2023) empirically analyzed the impact of environmental regulations on green innovation of Chinese listed companies based on pollution fee data from 2011 to 2019. The study found a significant positive relationship between pollution fees and green innovation of enterprises.

2.3. Research on the Relationship between Green Credit Policy and Enterprise Green Innovation

The existing research results on green credit policies and corporate green innovation can be divided into two perspectives: one perspective believes that green credit policies stimulate corporate green innovation behavior by reducing industry green agency costs and improving green investment efficiency. Another view is that green credit policies affect external financing of enterprises, thereby inhibiting their innovation output. This viewpoint is mainly influenced by the cost theory, which suggests that green credit policies restrict credit resources of heavily polluting enterprises by reducing credit scale and increasing credit costs, thereby reducing green R&D investment and inhibiting green innovation.

3. Theoretical Mechanism Analysis and Research Hypotheses

3.1. Green Credit and Enterprise Green Innovation

Green credit originated from the Superfund Act enacted in the United States in 1980, which required banks to take responsibility for environmental pollution caused by their commercial activities. The bank loan review begins to consider the borrower's social and environmental responsibility, and uses it as a basis to develop differentiated loan interest rates and targeted loans. In 1995, the People's Bank of China issued a notice on implementing credit policies and strengthening environmental protection work, emphasizing that financial departments at all levels should attach importance to natural resources and environmental protection in credit work, and consider supporting the protection of ecological resources and pollution prevention as one of the factors to consider in bank loans. In 2007 and 2012, China successively issued the Opinions on Implementing Environmental Protection Policies and Regulations to Prevent Credit Risks and the Green Credit Guidelines. With the issuance of a series of documents, China's green credit has gradually formed a scale and system, becoming a powerful policy tool to promote economic and social development and environmental protection improvement. Innovation by enterprises can alleviate their financing constraints. In the context of green credit policies, green innovation is particularly important for enterprises. Firstly, for enterprises that generally face financing constraints, low pollution, low energy consumption, and low emissions enterprises are more in line with the requirements of green credit and are more likely to obtain green loans. Among them, the "three high" heavy polluting enterprises need to continuously strengthen green innovation, improve their production methods to reduce environmental pollution, promote green projects to reduce environmental risks, achieve green transformation, and directly obtain green loans from the bank level to alleviate financing constraints.

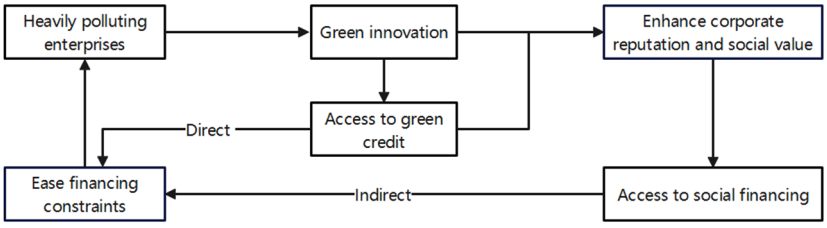

Figure 1. Channel of Green Credit Policy Promoting Enterprise Green Innovation

Therefore, green loans provide incentives for heavy polluting enterprises to engage in green innovation. Secondly, in the eyes of the outside world, enterprises with green innovation output or access to green credit have high "green" attributes, which can enhance their reputation and value, attract more social financing from the social level, and indirectly alleviate financing constraints for enterprises. In order to alleviate their financing constraints through the above two channels, enterprises will actively invest in their own green innovation activities, and the mechanism of action is shown in Figure 1. Based on this, this article proposes hypothesis 1:

Assumption 1: Green credit policies can significantly promote green innovation in heavily polluting enterprises.

3.2. Heterogeneity Analysis of Green Patents

The green patents applied by enterprises can be divided into green invention patents and green utility model patents. Green invention patents have stricter requirements compared to green utility model patents. According to China's Patent Law, green invention patents must have prominent substantive characteristics and significant progress, while only substantive characteristics and progress are required for green utility model patents. This has brought dual difficulties both internally and externally for enterprises to invest in green invention patent research. From an internal perspective, it means that companies must invest higher costs, face greater risks, and often have longer research and development cycles in order to apply for green invention patents. Even if uncontrollable factors occur during the research process, companies cannot terminate the research: firstly, due to the huge sunk costs invested, terminating the research will yield nothing. The second is that terminating the research will have a huge impact on the company's reputation. The continuous research investment that must be carried out will bring huge financial burden to the enterprise. From the perspective of external funding sources, funding providers are already aware of the high risk and long-term nature of green invention patent research and development, which inevitably puts higher demands on enterprises. They either require enterprises to pay higher interest rates or provide proof of research capabilities, which undoubtedly directly or indirectly increases the cost of investing in green invention patents. It is precisely due to the different characteristics of the two patents and the dual difficulties faced by enterprises that enterprises will measure the priority and intensity of R&D investment in the two patents based on their own situation when carrying out green innovation. In the face of financing constraints, heavily polluting enterprises often choose to apply for green utility model patents with lower investment, lower risk, and shorter research and development cycles to gradually achieve a green and low-carbon transformation from easy to difficult. Based on this, this article proposes hypothesis 2:

Assumption 2: Green credit can significantly promote heavily polluting enterprises to apply for green invention patents and green utility model patents, but it can also promote their application for green utility model patents.

3.3. Analysis of Heterogeneity of Enterprise Ownership

China's financing mainly relies on indirect financing in the currency market, resulting in significant differences in financing costs between state-owned and non-state-owned enterprises. Therefore, a large amount of previous research on enterprises has considered the issue of enterprise ownership. Under traditional loans, compared to non-state-owned enterprises, state-owned enterprises have government credit as their endorsement, making it easier to obtain lower interest loans and longer loan cycles. Non state-owned enterprises generally face problems such as difficulty in financing, high financing costs, complex loan procedures, and shorter loan cycles. Once the enterprise fails to repay on time, it will bear joint and several responsibilities, which will bring greater pressure to the continuous operation of the enterprise. In green credit, non-state-owned heavy polluting enterprises face more obvious financing constraints, and the high cost of capital utilization weakens their motivation for green innovation, squeezing out the R&D investment space for enterprise green innovation. Based on this, this article proposes Assumption3 and Assumption 4:

Assumption 3: Green credit can significantly promote state-owned heavy polluting enterprises to apply for green patents, but has no significant impact on non-state-owned heavy polluting enterprises to apply for green patents.

Assumption 4: Green credit can significantly promote state-owned heavy polluting enterprises to apply for green utility model patents, but has no significant impact on non-state-owned heavy polluting enterprises to apply for green utility model patents.

4. Research Design

4.1. Sample Selection and Data Sources

This article takes the "Green Credit Guidelines" issued in 2012 as an exogenous policy shock. Considering that the international financial crisis that occurred in 2008 will have an impact on corporate green innovation, this article selects data on corporate green innovation after 2008. At the same time, in order to ensure that the time interval before and after the event is consistent, and to avoid sequence related problems that may be caused by too long time, and to comprehensively consider the impact of the COVID-19, the data of green innovation of enterprises before 2015 are selected. In summary, this article selects A-share listed companies in Sichuan Province from 2008 to 2015 as the research sample, with heavily polluting companies as the treatment group and the remaining companies as the control group.

The patent data for green innovation in this article is sourced from the China Research Data Service Platform (CNRDS), while the basic information and financial data of other listed companies are sourced from the CSMAR database. Listed companies in Sichuan Province were selected from the initial sample, and based on this, individual stocks such as the financial industry and abnormal listings were excluded, as well as stocks with missing data. And companies that went public after 2012 have not been affected by policies, so they have also been deleted. Finally, we obtained balanced panel data from 34 listed companies over an 8-year period, with a total of 272 annual observations. In order to eliminate the interference of outliers, this article applies a truncation of the upper and lower 1% quantiles to continuous variables that may have outliers.

4.2. Variable Definition

(1) The dependent variable. This article mainly examines

the impact of green credit policies on the green innovation of heavily polluting A-share enterprises in Sichuan Province. Referring to the research of Lian Chao (2019) and others, this article mainly measures the green innovation of enterprises by applying for green patents (Grea). In heterogeneity analysis, it is subdivided into two categories: enterprises applying for green invention patents (Grenova) and enterprises applying for green utility model patents (Greuma). The variables used to measure green innovation in enterprises have been logarithmically processed by adding 1.

(2) Interpret variables. The explanatory variable in this article is Di, which is the interaction term between industry dummy variables and time dummy variables. If the enterprise is a heavily polluting enterprise, then Treat=1, otherwise Treat=0; If the year is 2012 or later, then Post=1, otherwise Post=0. The classification of heavily polluting enterprises in this article is based on the Industry Classification Guidelines for Listed Enterprises revised by the China Securities Regulatory Commission in 2012, the Catalogue of Environmental Protection Verification Industry Classification Management for Listed Enterprises formulated by the former Ministry of Environmental Protection in 2008 (Huan Ban Han [2008] No. 373), and the Environmental Information Disclosure Guidelines for Listed Enterprises (Huan Ban Han [2010] No. 78).

(3) Control variables. In a double difference model, a better control variable should not only affect the dependent variable but also be unaffected by policy time variables. Therefore, referring to Yang Liuyong's research, the following control variables are set: asset size (Size), debt to asset ratio (Debt), equity concentration (Top1), capital intensity (Tangibility), return on equity (Roa), Tobin Q value (Tobinq), and number of employees (Staff). In addition, considering that the actual tax rate of a company will have an impact on its operating costs and thus affect its green innovation behavior, the actual tax rate (Tax) is further added as a control variable, and the value of the actual tax rate less than 0 is replaced with the original average actual tax rate. The specific variable definitions and descriptive statistics are shown in Table 1.

Table 1. Variable Definition and Descriptive Statistics

Variable	Variable Definition	S.D.	Observations	Mean	5th percentile	median	95th percentile
Grea	Applying for green patents	0.9576	272	0.334	0	0	2.3026
Greinva	Applying for a green invention patent	0.6047	272	0.2074	0	0	1.6094
Greuma	Applying for a green utility model patent	0.4165	272	0.1266	0	0	0.6931
Treat	If it is a heavily polluting enterprise, Treat=1, otherwise Treat=0	0.5008	272	0.489	0	0	1
Post	If the year is after 2012, Post=1, otherwise Post=0	0.5009	272	0.5	0	0.5	1
Did	The interaction term between Treat and Dids, i.e. Dids=Treat * Dids	0.4338	272	0.25	0	0	1
Size	The natural logarithm of total assets at the end of the year	1.5373	272	21.9088	19.98	21.645	24.75
Debt	Total liabilities/total assets	0.3517	272	0.5652	0.2073	0.5064	0.9415
Top1	The largest shareholder's shareholding ratio	14.9205	272	51.9347	26.65	53.295	73.37
Tax	Income tax expenses/total pretax profit	0.3034	272	0.2421	0.0206	0.1908	0.6077
Staff	Number of employees	12659	272	6587	289	2098	26478
Tangibility	Total assets/operating income	3.5361	272	2.5697	0.7907	1.8708	4.4459
Tobinq	Market value/total assets	1.7414	272	2.3938	1.0317	1.8851	6.0644
Roa	Net profit/total assets ending balance	0.1531	272	0.0131	-0.1141	0.0241	0.1591

4.3. Model Settings

The double difference model of the main regression in this article is set as:

$$Grea_{it} = \alpha + \beta_1 Did_{it} + \beta_2 X_{it} + u_i + u_t + u_c + u_{in} + \varepsilon_{it} \quad (1)$$

Among them, $Grea_{it}$ represents the dependent variable of the enterprise applying for green patents in this article, and Did_{it} is the explanatory variable, both of which have been explained in the previous section, so they will not be repeated. i and t represents the enterprise and year respectively, and X_{it} is the control variable at the enterprise level, u_i, u_t, u_c, u_{in} refers to individual fixed effects, time fixed effects, urban fixed effects, and industry fixed effects, respectively, ε_{it} is a random perturbation term. The coefficient that this article focuses on is β_1. It measures the effect of green credit on corporate green innovation.

5. Empirical Result Analysis

5.1. Benchmark Regression Analysis

The regression results of the impact of green credit on the green innovation of heavily polluting enterprises listed on the A-share market in Sichuan Province are shown in Table 2. The coefficient of Did is significantly positive at the 5% level, indicating that the Guidelines have a promoting effect on green innovation of heavily polluting enterprises listed on the A-share market in Sichuan Province, increasing their application for green patents by 30.52%, which verifies hypothesis 1 of this article. The possible reason is that Sichuan Province has the advantage of clean energy, which makes enterprises have lower green transformation costs compared to the national average, thus having a stronger willingness for green innovation.

Table 2. The Impact of Green Credit on Enterprise Green Innovation

Variable	(1) Grea
Did	0.3052** (0.126)
Constant	5.8769*** (2.104)
Observations	271
R2	0.822

5.2. Robust Test

The effective estimation of the double difference method requires the experimental group and the control group to satisfy the parallel trend assumption, that is, in the absence of policy interference, the outcome variables of the treatment group and the control group have the same development trend. Therefore, this article selects the period before the policy occurs as the benchmark period and uses the event study method to test the parallel trend, while analyzing its dynamic effects. The results in Figure 2 indicate that before the policy was implemented, the results of green credit intersected with the 0 axis and were not statistically significant, satisfying the parallel trend assumption. In the third period, in 2015, the coefficient was significantly positive, indicating a lag effect of green credit policies on promoting green innovation in enterprises. The lag effect is due to the time required for enterprises to use funds for green innovation research and development and achieve results.

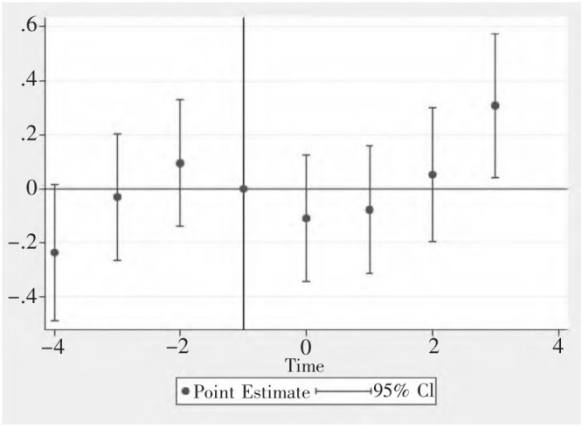

Figure 2. Parallel trend chart of enterprises applying for green patents

5.3. Heterogeneity Analysis

(1) Heterogeneity analysis based on green innovation types. Regarding the types of green innovation, they are divided into green invention patents and green utility model patents. Heterogeneity analysis is conducted on the green innovation of enterprises, and the following regression models are constructed:

$$Greinva_{it} = \alpha + \beta_1 Did_{it} + \beta_2 X_{it} + u_i + u_t + u_c + u_{in} + \varepsilon_{it} \quad (2)$$

$$Greuma_{it} = \alpha + \beta_1 Did_{it} + \beta_2 X_{it} + u_i + u_t + u_c + u_{in} + \varepsilon_{it} \quad (3)$$

Table 3. Heterogeneity analysis based on green innovation types

Variable	(1) Greinva	(2) Greuma
Did	0.1334* (0.079)	0.1718** (0.070)
Constant	3.4443*** (1.314)	2.4326** (1.174)
Observations	271	271
R-squared	0.826	0.707

Note: The parentheses represent standard errors; *, * **** is significantly at the 10%, 5%, and 1% levels, respectively; All fixed individual, year, city, and industry effects.

The results are shown in Table 3. Enterprises applying for green invention patents are only significant at the 10% level, while applying for green utility model patents is significant at the 5% level. Among the 30.52% increase in the effect of green credit policies on enterprises applying for green patents, 13.34% comes from the contribution of applying for green invention patents, and 17.18% comes from the contribution of applying for green utility model patents. Both in terms of significance and coefficient size, the promotion effect of green credit policies on enterprises applying for green utility model patents is greater than that of enterprises applying for green invention patents, which verifies Hypothesis 3 and Hypothesis 4 in this article. Figures 3 and 4 show parallel trend graphs of the two, and their results were not statistically significant before the policy was implemented. In the third period, the two were significant at 90% and 95% confidence intervals, indicating that the effect of green credit policy has the same lag effect on both.

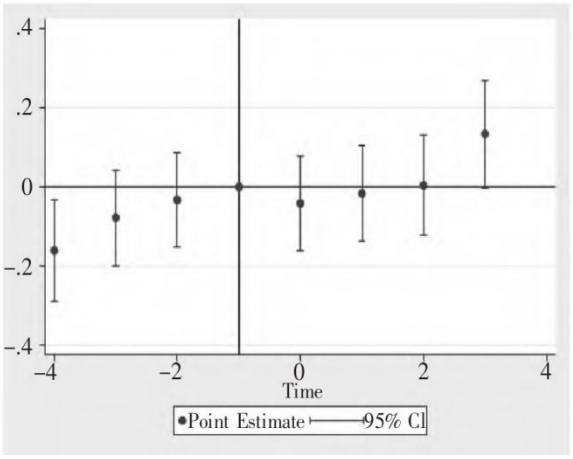

Figure 3. Parallel trend chart of enterprises applying for green invention patents

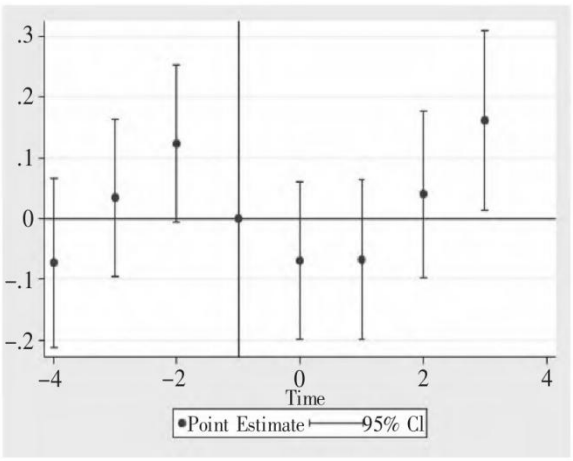

Figure 4. Parallel trend chart of enterprises applying for green utility model patents

(2) Heterogeneity analysis based on the nature of enterprises. The results of heterogeneity analysis on whether the enterprise is state-owned or non-state-owned are shown in Table 4. The first, second, and third columns respectively show the impact of green credit policies on the application of green patents, green invention patents, and green utility model patents by A-share state-owned heavy polluting enterprises in Sichuan Province. Among them, (1) and (3) are significantly positive at the 5% level, indicating that green credit policies have a positive promoting effect on their green innovation. The fourth, fifth, and sixth columns respectively show the impact of green credit policies on non-state-owned heavy polluting enterprises in Sichuan Province applying for green patents, green invention patents, and green utility model patents. The coefficients are not significant, indicating that green credit has no significant impact on their green innovation. Hypothesis 3 and Hypothesis 4 have been validated in this article.

Table 4. Heterogeneity analysis based on the nature of enterprises

	-1	-2	-3	-4	-5	-6
Enterprise nature	State owned enterprise			non-state-owned enterprise		
Variable	Grea	Greinva	Greuma	Grea	Greinva	Greuma
Did	0.3888**	0.1635	0.2253**	0.1301	0.1135	0.0166
	-0.184	-0.114	-0.102	-0.128	-0.086	-0.091
Constant	6.2243	3.522	2.7022	0.9236	0.375	0.5486
	-3.776	-2.347	-2.083	-2.054	-1.372	-1.455
Observations	196	196	196	73	73	73
R-squared	0.828	0.832	0.722	0.299	0.34	0.361

Note: The parentheses represent standard errors; *, * **** is significantly at the 10%, 5%, and 1% levels, respectively; All fixed individual, year, city, and industry effects.

6. Research Conclusion and Policy Implications

The research conclusion of this article is as follows: (1) Green credit policies can significantly promote heavily polluting listed enterprises in Sichuan Province to apply for green invention patents and green utility model patents, and significantly promote their acquisition of green utility model patents. (2) The impact of green credit policies on green innovation in enterprises mainly promotes the application of green utility model patents, while the promotion effect on the application of green invention patents is smaller. (3) The results of heterogeneity analysis indicate that green credit policies can significantly improve the level of green innovation in state-owned enterprises, but have no such effect on non-state-owned enterprises. The possible reason is that non-state-owned enterprises generally face difficulties and high financing costs, and the cost of using funds is generally higher, which limits their ability to engage in related green innovation activities.

The operation process of green credit is a market mechanism, which is difficult to avoid its inherent market failure defects, resulting in more serious financing difficulties and high financing costs faced by non-state-owned enterprises, especially heavy polluting enterprises, in the context of dual carbon. Solving this problem requires the joint efforts of green finance and green credit at both the government and market levels. Therefore, based on the shortcomings of the green credit mechanism and the above research conclusions, this article proposes the following policy recommendations for green credit lending institutions and the government: (1) Green credit lending institutions: Firstly, due to the characteristics of long cycle, high difficulty, and high risk in the research and development of green invention patents, if the purpose of enterprise green credit funds is to invest in green invention patents, lending institutions should invest in the loan cycle Provide more tolerance and flexibility to enterprises in terms of loan interest rates and other aspects: If a company's green invention patent is not completed, the loan term should be appropriately extended; A successful application for a green invention patent by an enterprise should be granted a certain interest rate discount. This will encourage enterprises to invest more in the research and development of green invention patents. Secondly, if the purpose of the enterprise's green credit funds is to invest in green utility model patents, a certain interest rate discount should also be given to the enterprise when the enterprise's patent application is successful, to motivate the enterprise to improve the quality and success rate of green utility model patent applications, and to improve the efficiency of the use of green credit funds. Thirdly, banks should actively develop intangible asset pledge financing, increase the proportion of loans obtained by enterprises using patents, intellectual property rights, etc., encourage enterprise innovation, and optimize the bank's own lending structure. (2) At the government level, firstly, local governments should vigorously promote the development of green credit and promote tripartite cooperation between government, banks, and enterprises. For enterprises that have successfully applied

for green patents, the government can issue them with specific certificates. With this certificate, enterprises can obtain preferential interest rate loans from government designated banks, and the government and banks will jointly bear the preferential portion in a certain proportion. Secondly, local finance should adopt a pre subsidy and post reward approach to address the green innovation behavior of enterprises, reducing their worries. Thirdly, the government should promote the establishment of a corporate green innovation bank responsibility system in the banking industry, allowing banks to bear a small amount of responsibility for corporate green innovation, and encouraging banks to actively supervise the use of corporate loan funds and research and development processes. And evaluate the bank based on the green innovation output of the bank's credit enterprises, issue relevant green innovation promotion licenses to outstanding banks, and improve their social reputation. Fourthly, local finance should actively play a role in promoting the development of green finance, while providing more comprehensive subsidy loans for "brown industries" that do not meet the requirements. In addition to special re loans for coal and steel, special re loans for other heavily polluting industries should also be explored.

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