Article

Green Credit, Debt Maturity, and Corporate Investment—Evidence from China

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Abstract: Against the backdrop of working hard to build a beautiful country, this paper uses the promulgation of the "Green Credit Guidelines" policy in China as a quasi-natural experiment. Based on a difference-in-differences (DID) model, the results show that, since the promulgation of the Green Credit Guidelines policy, financial institutions have significantly reduced the proportion of long-term debt to heavily polluting enterprises for reasons such as risk aversion and total credit constraints. Due to capital constraints and the restrictive terms of credit approval, the Green Credit Guidelines policy reduces the investment scale and overinvestment of heavily polluting enterprises. The dependency relationship of the debt maturity structure of heavily polluting enterprises with the investment scale and investment efficiency has been reduced. Furthermore, the negative net effect of the Green Credit Guidelines policy on long-term debt is more pronounced in heavily polluting enterprises that lack political connections. However, the promulgation of this policy inhibits the investment scale and the investment efficiency of heavily polluting enterprises (with or without political connections). To a certain extent, these results confirm the "supportive hand" perspective towards political connections. The results of this research could help relevant government departments to understand the microeconomic consequences of the Green Credit Guidelines policy and could help improve and perfect China's green credit policy.

Keywords: green credit; debt maturity; investment; overinvestment; political connections

1. Introduction

In the 40 years since the reform and opening up of China, the extensiveness of the economic growth model has allowed the Chinese economy to develop rapidly. While achieving remarkable economic results and material conditions, the natural environment, on which human beings depend, has been damaged as a consequence. Social pressure, such as public opinion, has driven the reform of informal institutions and norms [1], and the government is aware of the importance and urgency of environmental issues. The report of the 19th National Congress [2] mentioned that it is necessary to "coordinate the management of landscape and forestry lakes and grass systems, implement the most stringent ecological environmental protection system, form a green development mode and lifestyle, and firmly follow the civilizational development path of production development, an affluent life and good ecology".

The Chinese people's perception of PM2.5 stems from the Beijing "PM2.5 Explosion" incident disclosed by the US Embassy in November 2011. Before the event, people's understanding and the media's attention to PM2.5 were negligible. However, after the end of October 2011, with the

occurrence of the US Embassy "PM2.5 explosion" incident, people's attention to PM2.5 is increasing day by day. When compared to PM10, both officials and the public are highly concerned about PM2.5 indicators, and the focus of discussion and attention is also on PM2.5. Although, there is no direct evidence that PM2.5 is inextricably linked to green credit policies. However, under the background of the Chinese government's full efforts to control environmental issues, it has become a major issue affecting people's livelihood in China today. The PM2.5 explosion event made the people's spontaneous organization of the parade quickly occupy the moral high ground. When this pressure gradually accumulated to form a social consensus or strong public opinion pressure, it would force the legislative and administrative agencies to the existing laws and the administrative framework was revised and adjusted [3]. In the following year, 2012, the Green Credit Guidelines Policy was promulgated to implement loan quotas for loan projects and liquidity funds for high-energy-consumption and heavily polluting enterprises. To curb the development of polluting enterprises, promote their active transformation, and achieve green development, banks and other financial institutions have used financial means to strictly control the credit approval process. In 2012, the China Banking Regulatory Commission promulgated the "Green Credit Guidelines" policy. The introduction of green credit aims to guide industrial transformation and upgrades, reduce pollutant emissions, strengthen ecological environmental protection, and beautify the country. As a green financial policy, green credit will cause financial institutions to adjust their credit strategies regarding heavily polluting enterprises, including the adjustment of the long-term and short-term credit ratio structure, which in turn will affect the investment structure and investment efficiency of heavily polluting enterprises. Studying the investment and financing behaviors of enterprises from the perspective of green credit as a policy mechanism is of great practical significance.

Using the differences in difference (DID) method, this paper uses the listed enterprises of A-share heavily polluting industries that are listed in China from 2008 to 2015 as the experimental group and other industries of the same category as the control group and it examines the impact of the green credit policy on the investment and financing behaviors of heavily polluting enterprises and their mechanisms. This study finds that, after the promulgation of the Green Credit Guidelines policy, the proportion of long-term loans to heavily polluting enterprises has declined significantly, the scale of investment has decreased, and investment efficiency has improved, mainly because overinvestment behavior has been effectively suppressed. Moreover, due to the information and supervisory mechanisms of debt maturity, after the promulgation of the Green Credit Guidelines policy, the debt maturity of heavily polluting enterprises has had reduced dependence on the investment scale and investment efficiency. In further research, this article also finds that the negative net effect that the Green Credit Guidelines policy has had on the debt maturity of heavily polluting enterprises is more significant in enterprises without political connections (For the topic of political connections in the Chinese market, we refer to [4] and [5] for the definition of political connections. If company's chairman or CEO used to be a government official (the government's scope includes the central and local governments, as well as the military), then the company is defined as having a political connection.) and that the impact on heavily polluting enterprises with political connections is smaller. However, the promulgation of this policy has made it possible to suppress the investment scale and investment efficiency of heavily polluting enterprises, regardless of whether they have political connections. The results of this study provide us with a better understanding of the investment and financing behavior of heavily polluted enterprises in the setting of green credit. This paper explores how the green credit system affects the investment and financing behaviors of enterprises and it explores the transmission mechanisms of the meso-policy, helping us to better understand the investment and financing behaviors of enterprises in the context of the new normal, with important theoretical significance for the allocation of economic resources.

This paper makes the following three contributions to the relevant literature. First, research on the microeconomic consequences of green credit policies has expanded into the field of green credit economic consequences. The existing literature has mostly studied the role of green credit in macroeconomic growth and industrial restructuring from a macro-perspective. This paper adopts the

micro-perspective to study the Green Credit Guidelines policy, which affects the structural adjustment of financial institutions' loans to heavily polluting enterprises, namely, changes in the proportions of long-term and short-term loans, and it is related to research on the investment scale and investment efficiency of heavily polluting enterprises. Second, this article enriches the research on the factors influencing the investment behaviors of heavily polluting enterprises. It examines agency cost theory in corporate governance through a quasi-natural experiment, the promulgation of the Green Credit Guidelines policy. When compared with long-term loans, short-term loans help banks to obtain timely information about loan enterprises, helping them to place enterprises under close supervision and control; that is, when information asymmetry is higher, financial institutions are more inclined to provide short-term loans [6,7]. Through the policy impact of the Green Credit Guidelines, this paper uses the DID method to verify the above theory in a manner that is more accurate and credible. Third, this study expands the literature on the negative economic consequences of corporate political connections. This paper provides empirical evidence of the role of a "supportive hand" in the political connections of enterprises from the perspective of the Green Credit Guidelines policy, and it supplements the evidence in the academic debate on the "hand of support" and the "hand of plunder" regarding political connections.

The rest of this paper is organized, as follows. Section 2 describes the institutional background. Section 3 outlines the theoretical analysis and research hypotheses. Section 4 describes the research method, while the empirical results and analysis are presented in Section 5. Section 6 presents further research and Section 7 offers the conclusions of this paper.

2. Institutional Background

The definition of "green credit" worldwide is based on the Equator Principles, which were formally established in October 2002 [8]. This joint initiative by the International Finance Corporation and the Dutch Bank has become an important loan criterion for the banking industry in the process of lending to enterprises. The Equator Principles require financial institutions to pay attention to the environmental and social effects of financing projects, in addition to assessing traditional solvency, and they require banks to use financial leverage to promote projects that will play a positive role in energy conservation and emissions reductions and create a stable society. The Equator Principles are also the first in the world to use environmental protection as a criterion in the process of corporate finance, and they provide a reference standard for the development of banking for green credit business. China's green credit policy was introduced in 2007 [9], far behind similar policies in developed countries. On 12 July 2007, the State Environmental Protection Administration, the China Banking Regulatory Commission, and the People's Bank of China jointly issued the "Opinions on Implementing Environmental Protection Policies and Regulations to Prevent Credit Risks" to enhance the economic constraints on environmentally polluting enterprises. This policy was the prototype of China's green credit. China's policy banks and commercial banks also had a green concept throughout the credit process, but the enthusiasm for policy implementation was not high at this stage. On 24 February 2012, the China Banking Regulatory Commission promulgated the "Notice on Printing and Distributing Green Credit Guidelines" [10]. To implement energy conservation and emissions reductions, as well as macroeconomic regulation and control policies, banks and financial institutions are required to consider green credit as the starting point, actively adjust the credit structure, effectively prevent environmental and social risks, better serve the real economy, and promote the transformation of the economic development mode and economic restructuring. The promulgation of the Green Credit Guidelines is a comprehensive upgrade of the requirements of China's banking industry to promote energy conservation, emissions reductions and environmental protection, and it has built a banking green credit management system from the green credit concept, process, and environmental risk management perspectives. This in-depth advancement in the transformation of the commercial bank business is of great significance. This paper uses the concept of green environmental protection as the research background and the economic consequences of the Green Credit Guidelines as the research

object, and it examines the impact of this green credit policy on the debt maturity structure, investment scale, and investment efficiency of heavily polluting enterprises. Therefore, the promulgation of the Green Credit Guidelines policy can increase the proportion of short-term loans to heavily polluting enterprises, thereby reducing the agency problem and restraining over investment. Finally, the results that are presented in this article indicate that this policy should be implemented. For China to better implement environmental governance work to reduce the negative impact of environmental pollution, financial institutions, such as commercial banks, should attach greater importance to green credit policies. The results that are presented in this paper may serve as a reference for future work.

3. Theoretical Analysis and Research Hypotheses

(1) Green credit and the corporate debt maturity structure

Over the past 40 years since China's reform and opening up, its achievements in economic construction have attracted worldwide attention. The promotion of sustained economic development, environmental protection, energy conservation, and emissions reductions have become "stable" and "influential" social norms that are widely recognized by members of society [11]. Social norms guide and strengthen the beliefs and values of members of society, thus affecting their decision-making behavior, influencing the evolution of formal social systems, and ultimately changing the level of allocation of social resources [12]. To promote energy conservation and emissions reduction efforts, relevant departments have successively introduced various measures. First, in terms of performance appraisal, various provinces and cities have incorporated ecological civilization construction assessments into the results of government performance appraisals. Actively promoting green development with the goal of PM2.5 governance has become a trend for the future. However, the use of GDP in performance appraisals has shifted, and the environmental protection pressure faced by heavily polluting enterprises has further increased [13]. Second, in terms of financial support, the concepts of "green credit" and "green finance" and related policies have been promulgated. The introduction of the Green Credit Guidelines represents a further upgrade of the formal system, and heavily polluting enterprises are more vulnerable to supervision and sanctions from external markets. The two main financing methods for Chinese enterprises are equity financing and debt financing. To maintain the stability of China's capital market, the Chinese government has stricter control over equity financing; thus, enterprises cannot directly or effectively benefit from the capital market. Currently, the main external financing channel of listed enterprises in China remains debt financing, mainly from domestic bank loans. Green credit primarily plays a role in the bank-led credit market, and it optimizes resource allocation through the control and adjustment of loans to heavily polluting enterprises.

First, to participate in green credit, an important starting point for financial institutions is the avoidance of environmental risks. Schneider reported that polluting enterprises are regarded as high-risk investments in the debt capital market [14]. Enterprises with poor environmental performance will face enormous environmental debt as a result of pollution control in the future, and the creditors will demand a higher rate of return to compensate for these environmental risks. With the promulgation of the Green Credit Guidelines, the original political status advantage of heavily polluting enterprises no longer exists, having been replaced by the strict credit control of governmental authorities. In the bank's credit review, the mechanism pays more attention investigating corporate environmental risks, which can effectively control the credit risk and lead to reasonable credit decisions. Contract theory teaches that the agency cost of enterprises is clearly subject to the loan term. Short-term loans can enable banks to better grasp the dynamics of a business; therefore, financial institutions will reduce the proportion of long-term loans to better avoid risks. Some studies have suggested that, when information asymmetry is very serious and the risk of default is enormous, enterprises cannot obtain long-term debt financing [15]. Specifically, with the promulgation of the Green Credit Guidelines policy, in the face of information asymmetry and the contract incompleteness of heavily polluting enterprises, banks must reduce their proportions of long-term loans to heavily polluting enterprises in

order to reduce or avoid operational risks. This reduction is necessary because, relative to long-term loans, short-term loans help banks to obtain timely information about lending enterprises and help banks to place enterprises under tight supervision and control [6,11].

Second, the total amount of credit from financial institutions to heavily polluting enterprises is under strict control. Since the issuing of the Green Credit Guidelines, the total amount of credit extended by financial institutions to heavily polluting enterprises has been reduced, including the proportion of long-term loans. Moreover, due to greater social pressure and policy control, heavily polluting enterprises have increased their risk of loan defaults due to corporate violations. In the case of total credit control, banks can also assume greater burdens as their main debt providers.

Third, regarding green credit, social public pressure and "metanorms" play roles [16]. Metanorms, according to Axelrod, are the same as social public pressure. If members of society do not condemn violations of social norms, they themselves could be the object of condemnation by other members of society. Therefore, under the pressure of social public pressure and metanorms, financial institutions tend to adjust their credit term structures with regard to heavily polluting enterprises, reduce the proportion of long-term loans, and increase the proportion of short-term loans.

Hence, based on the above analysis, the following hypothesis (H1) is proposed:

H1: Since the promulgation of the Green Credit Guidelines policy, the proportion of long-term loans to heavily polluting enterprises has declined.

(2) Green credit and the investment scale and investment efficiency of enterprises

The green credit policy will also affect the investment scale and investment efficiency of heavily polluting enterprises. First, with the introduction of the Green Credit Guidelines policy, heavily polluting enterprises must face more stringent environmental assessments and audits by raising funds through bank lending [13]. Therefore, the capital adequacy of heavily polluting enterprises could be much lower than before the policy. Similarly, with the issuance of the Green Credit Guidelines policy, the financing of heavily polluting enterprises is uncertain, the financing risks increase, investment projects are more cautious, and the scale of foreign investment is reduced. Because of the increase in financing uncertainty, the overinvestment that existed before the policy will also be inhibited, but this policy cannot improve the underinvestment of heavily polluting enterprises. Second, the green credit policy has affected the judgment of heavily polluting enterprises regarding the external investment environment. The promulgation of the Green Credit Guidelines policy reflects the future direction of national policy regulation and it increases the political costs of heavily polluting enterprises. Therefore, heavily polluting enterprises will be subject to more control in the approval process of new investment projects. The increase in uncertainty in the external investment environment tends to force heavily polluting enterprises to reduce their investment size [17,18], in turn causing heavily polluting enterprises to reduce their investment scale and curb their over investment behaviors. Third, with the introduction of the Green Credit Guidelines policy, heavily polluting enterprises could face greater attention and supervision over the use of loans, including creditor supervision, media supervision, and capital market supervision. Additionally, financial institutions have changed the debt maturity structure of heavily polluting enterprises and increased the proportion of short-term loans, thus better monitoring the management investment behaviors of such enterprises. Furthermore, investors and analysts are concerned about the financing status of heavily polluting companies and they will continue to pay attention to their use of existing loans. Finally, to meet the needs of readers, a large number of media outlets will also increase their investigations into and coverage of the use of loans by heavily polluting enterprises. The increase in these forms of oversight could also reduce the agency problem of management overinvesting to increase "control" benefits. The reduction in debt maturity aims to curb overinvestment by heavily polluting enterprises but does not affect underinvestment. In summary, the following hypothesis (H2) is proposed:

H2: The Green Credit Guidelines policy reduces the investment scale of heavily polluting enterprises and constrains their overinvestment behaviors but has no impact on their underinvestment behaviors.

4. Research Methods

4.1. Data Source

This paper mainly studies the impact of the Green Credit Guidelines policy on the debt maturity and investment behaviors of heavily polluting enterprises. The sample interval is from2008to2015, four years before and after the promulgation of the green credit policy; the number of years before and after the data is kept consistent. In reference to the setting of the DID model, the model is usually selected for three years before or after the event or four years before or after the event. This article adopted the four-year standard. If the number of years before and after is too long, there is likely to be a mix of factors causing noise. The author divided the sample interval into 2007–2016 and re-tested the five years before and after the promulgation of the green credit policy, and the research conclusion remained unchanged. Regarding the definition of heavily polluting enterprises, this study utilizes the special emissions limits for air pollutants implemented by the Ministry of Environmental Protection in 2013 (hereafter referred to as the 2013 MEP Notice). The emissions limits target enterprises in six industries: thermal power, steel, petrochemicals, cement, nonferrous metals, and chemicals. If the listed enterprise belongs to the above six industries and is located in the identified regions or clusters, then it is regarded as a heavily polluting enterprise. According to the Guideline for Industrial Classification of Listed Companies of the China Securities Regulatory Commission (CSRC), heavily polluting enterprises belong to the same categories as other industrial listed enterprises regarded as non-heavily polluting enterprises. All heavily polluting enterprises are used as the experimental group and all non-heavily polluting enterprises are used as the control group. The remaining data are processed, as follows: (1) enterprise samples with poor financial data; (2) ST/PT-designated enterprises; (3) enterprise samples with missing financial data; additionally, to maintain the consistency of companies before and after the event, (4) companies listed after 2012 are excluded. Finally, the above areas provide a total of 7413 available observation data points. All of the financial data were obtained from the China Stock Market and Accounting Research (CSMAR) database. The study winsorized the variables at the 1% level.

4.2. Model and Variables

ADID model is used to verify the proposed hypotheses H1 and H2. The settings of the DID model are similar to those in [19–21]. The DID model can be expressed, as follows:

$$LTD_{it}/DM_{it} = \beta_0 + \beta_1 Pollute_i + \beta_2 Policy_t + \beta_3(Pollute*Policy)_{it} + \gamma Control + \varepsilon_{ii} \tag{1}$$

$$Investment_{it}/Ainvt_{it} = \beta_0 + \beta_1 Pollute_i + \beta_2 Policy_t + \beta_3(Pollute*Policy)_{it} + \gamma Control + \varepsilon_{ii} \tag{2}$$

where *i* indicates the enterprise and *t* indicates the year. $Pollute_i$ is a dummy variable assigned the value of 1 for the experimental group and the value of 0 for the control group. $Debt_{it}$ and DM_{it} are the dependent variables and measure corporate financing capacity according to [22,23]. This paper uses long-term borrowings as a percentage of total assets and long-term borrowings as long-term and short-term borrowings to measure the debt maturity structure of the enterprise (used in the year to purchase fixed assets, intangible assets, and other long-term assets to pay cash minus assets to deal with fixed assets, net intangible assets, and other long-term assets recovered)/total assets to measure the scale of investment, using the actual investment scale minus the estimated absolute value of the estimated optimal investment size to estimate investment efficiency). The other variables are control variables, including Size, Lev, Roa, Growth, Indr, Dual, Board, and First. For details, see Table 1.

Table 1. Descriptions of variables.

Variables	Descriptions
LTD	Debt maturity, long-term borrowing/total assets
DM	Debt maturity, long-term borrowing/(short-term borrowing + long-term borrowing + long-term liabilities due within one year)
Treat	0 for non-heavily polluting enterprises; 1 for heavily polluting enterprises
Policy	0 for policies issued during 2008–2011; 1 for policies issued during 2012–2015
Size	The natural logarithm of the enterprise's assets at the end of the year
Investment	(Used in the year to purchase fixed assets, intangible assets and other long-term assets to pay cash minus to deal with fixed assets, net intangible assets and other long-term assets recovered)/total assets
Ainvt	Using the method of [24], the residual with the actual investment scale minus the estimated optimal investment size, using the absolute value of the residual
Lev	Total liabilities/total assets
Growth	(Present sales revenues) − (past sales revenues)/(past sales revenues)
Roa	Net income/total assets
Indr	Number of independent directors/number of directors on the board
Dual	1 if the chair and CEO are the same person; otherwise 0
Board	Board size
First	Proportion of first shareholders

5. Empirical Results and Analysis

5.1. Descriptive Statistics

There are a total of 2613 observations on the heavily polluting enterprises of the experimental group in the industrial distribution of Table 2. The sample distribution of the experimental group is not equal; there are 12 (The 12 industries are oil and gas exploration (B07), ferrous mining (B08), nonferrous mining (B09), petroleum processing, paper and paper products (C22), coking and nuclear fuel (C25), chemical raw materials and chemical manufacturing (C26), chemical fiber manufacturing (C28), rubber and plastic products (C29), nonmetallic mineral products (C30), ferrous metal smelting and rolling processing (C31), nonferrous metals smelting and rolling processing (C32), and electricity, thermal production, and supply (D44).) major industry categories classified by the CSRC, accounting for 13% of the 90 major industry categories. This percentage is close to the actual overall industry distribution percentages of listed enterprises for China's heavily polluting industries and is thus the best and most representative.

Table 2. Distribution.

Nnindcd	B07	B08	B09	C22	C25	C26	C28	C29	C30	C31	C32	D44	Total
Freq.	38	24	106	145	68	674	122	157	327	203	304	445	2613
Percent	1.45	0.92	4.06	5.55	2.60	25.79	4.67	6.01	12.51	7.77	11.63	17.03	100
Cum.	1.45	2.37	6.43	11.98	14.58	40.38	45.04	51.05	63.57	71.34	82.97	100	100

In Table 3, the whole sample of descriptive statistics is shown. The samples are from the statistical characteristics of enterprises Size and Lev most consistent with the previous literature [21,23]. The mean of Treat is 0.350, which means that the proportion of heavily polluting enterprises in the sample reaches 35% and more than one-third of the sample enterprises are heavily polluting enterprises. The two main variables that measure corporate financing are LTD and DM. Regarding LTD, the mean is 0.060, the maximum is 0.460, and the minimum is 0; regarding DM, the mean is 0.220, the maximum is 1, and the minimum is 0. For Lev, the mean is 0.490, the minimum is 0.100, and the maximum is 1. The mean of Dual is 0.200, reflecting that 20% of enterprises have a dual CEO/chair. The mean of First is 0.360, indicating that the single large shareholder phenomenon in China's listed enterprises is obvious and significant.

Table 3. Descriptive statistics of the whole sample.

Variable	N	Mean	sd	p25	p50	p75	Min	Max
Treat	7413	0.350	0.480	0	0	1	0	1
LTD	7413	0.060	0.090	0	0.020	0.080	0	0.460
DM	7413	0.220	0.270	0	0.120	0.380	0	1
Investment	7413	0.060	0.050	0.020	0.0500	0.080	−0.040	0.240
Ainvt	7413	0.090	0.080	0.030	0.0700	0.120	0	0.400
Size	7413	22.120	1.230	21.250	21.930	22.810	19.790	25.860
Lev	7413	0.490	0.190	0.350	0.490	0.630	0.100	1
Roa	7413	0.030	0.0600	0.010	0.0300	0.0600	−0.220	0.190
Growth	7413	0.070	0.250	−0.050	0.0900	0.200	−0.900	0.740
Dual	7413	0.200	0.400	0	0	0	0	1
Board	7413	9.040	1.780	8	9	9	5	15
Indr	7413	0.370	0.0500	0.330	0.330	0.400	0.300	0.560
First	7413	0.360	0.150	0.240	0.340	0.470	0.080	0.770

Table 4 shows the debt maturity structure of heavily polluting enterprises and the single-variable test of enterprise investment after the introduction of the Green Credit Guidelines. According to the results in Table 4, it can be initially observed that this policy has a certain negative net effect on the long-term borrowing and investment behaviors of heavily polluting enterprises, regardless of whether LTD and DM are used as indicators to represent debt maturity, or Investment and Ainvt are used as indicators of corporate investment. All of these values decreased significantly at the 1% level, indicating that the issuance of the Green Credit Guidelines policy significantly affected heavily polluting enterprises. Naturally, regarding their investment and financing behaviors, more stable conclusions must be obtained in the subsequent multiple regression analyses.

Table 4. In debt maturity and enterprise investment before and after the event period.

Variables	G1(0)	Mean1	Median1	G2(1)	Mean2	Median2	MeanDiff	Chi^2
LTD	1109	0.119	0.080	1506	0.075	0.033	0.044 ***	88.260 ***
DM	1109	0.309	0.263	1506	0.229	0.137	0.080 ***	62.269 ***
Investment	1109	0.076	0.063	1506	0.059	0.047	0.017 ***	35.901 ***
Ainvt	1109	0.116	0.095	1506	0.09	0.071	0.026 ***	34.029 ***

Note: ***, ** and * represent significance levels of 1%, 5% and 10%, respectively. MeanDiff represents the difference of means, and MedianDiff represents Chi-square value.

5.2. Analysis of the Regression Results

5.2.1. Green Credit Policy and the Debt Maturity Structure of Heavily Polluting Enterprises

Table 5 shows the empirical results of testing corporate debt financing under public pressure. This paper uses LTD and DM to measure the debt maturity structure of enterprises, mainly focusing on the change in the debt maturity structure before and after the issuance of the Green Credit Guidelines, that is, paying attention to the coefficient of Treat_Policy. From the coefficient being significantly negative, it is particularly shown that, for heavily polluting enterprises, green credit has a negative net effect. The explanatory variables of columns (1) and (2) are LTD, and the explanatory variables of columns (3) and (4) are DM. Among them, no control variables are added to columns (1) and (3), while the enterprise characteristic variables at the company level and the year and industry are added as control variables in columns (2) and (4). Column (1) did not include any control variables, at which time the value of Treat_Policy was negatively significant at the 1% level, while column (3) Treat_Policy coefficient was also significantly negative at the 1% level. Columns (2) and (4) added control variables at the company level. The regression results of Treat_Policy are still negatively significant at the 1% level. The revised R square has been significantly improved. After the promulgation of the Green Credit Guidelines for heavily polluting enterprises, the debt maturity

was significantly reduced; that is, the proportion of long-term loans decreased significantly, proving hypothesis 1 of the study. In terms of the control variable coefficient, could observe that Size, Lev, and Growth are significantly positively correlated with corporate debt maturity, but Policy, Dual, Board, and First are significantly negatively correlated with corporate debt maturity. These findings are consistent with the conclusions of the existing literature [19]. Heavily polluting enterprises tend to have a greater scale and higher growth; thus, they seem to have more financing advantages in columns (1) and (3) with uncontrolled company-level variables. After controlling for the characteristic variables of heavily polluting enterprises, the study found that heavily polluting enterprises no longer have financing advantages, indicating that heavily polluting enterprises pay the "cost of polluting the environment" to a certain degree. In addition, in China, there is a general phenomenon in which listed enterprises have only one large shareholder, and frequently, this type of enterprise is prone to the existence of large shareholders with the ability to infringe upon the rights of small and medium shareholders and creditors, gain control and private benefits, and have higher agency costs [25]. Having the same person as chair and CEO means more management rights, and a sufficient number of studies have proven that these types of management rights lead to higher agency costs and information asymmetry [26,27], which are therefore negatively related to the company's debt maturity.

Table 5. Green credit and debt maturity.

	(1)	(2)	(3)	(4)
	LTD	LTD	DM	DM
Treat	0.072 ***	0.005	0.099 ***	−0.081 *
	(21.68)	(0.42)	(9.86)	(−1.87)
Policy	−0.010 ***	−0.007 *	−0.015 *	−0.025 *
	(−4.04)	(−1.96)	(−1.90)	(−1.92)
Treat_Policy	−0.034 ***	−0.026 ***	−0.065 ***	−0.050 ***
	(−7.81)	(−7.38)	(−4.96)	(−4.23)
Size		0.016 ***		0.058 ***
		(18.29)		(19.68)
Lev		0.111 ***		0.020
		(20.58)		(1.09)
Roa		−0.083 ***		−0.011
		(−4.66)		(−0.18)
Growth		0.012 ***		0.020
		(3.41)		(1.58)
Dual		−0.006 ***		−0.024 ***
		(−2.67)		(−3.44)
Board		−0.002 ***		−0.006 ***
		(−3.00)		(−3.24)
Indr		−0.022		−0.019
		(−1.26)		(−0.33)
First		−0.010 *		−0.054 ***
		(−1.74)		(−2.68)
Industry&Year		Control		Control
_cons	0.047 ***	−0.297 ***	0.210 ***	−0.763 ***
	(23.20)	(−14.87)	(34.12)	(−11.30)
N	7419	7419	7419	7419
Adjust_R^2	0.097	0.417	0.020	0.216

Note: ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

5.2.2. Green Credit Policy and the Investment Efficiency of Heavily Polluting Enterprises

Table 6 reports the consequences of the impact of the Green Credit Guidelines policy on the investment scale and investment efficiency. Column (1) does not include any control variables, whereas column (2) adds the control variables. In both columns (1) and (2), the value of Treat_Policy is negatively significant at the 1% level. This result shows that, first, the Green Credit Guidelines

policy increases the uncertainty of the investment environment that is faced by heavily polluting enterprises, thus reducing the scale of investment and thereby reducing investment risks. Second, after the promulgation of this policy, financial institutions increased the proportion of short-term loans, thus strengthening the supervision of management investment efficiency and thus inhibiting over investment behavior. Finally, due to the stricter loan approval process, the capital adequacy of heavily polluting enterprises might be much lower than that before the promulgation of the Green Credit Guidelines policy, causing heavily polluting enterprises to reduce their scale of investment and curb their over investment behavior. Similarly, for both column (3), which omits the control variables, and column (4), which includes the control variables, the value of Treat_Policy is negatively significant at the 1% level. This result shows that the Green Credit Guidelines policy significantly inhibits the overinvestment behavior of heavily polluting enterprises and enhances the investment efficiency of heavily polluting enterprises, supportingH2.

Table 6. Green credit and enterprise investment.

	(1)	(2)	(3)	(4)
	Investment	Investment	Ainvt	Ainvt
Treat	0.019 ***	0.023 **	0.024 ***	0.071 ***
	(9.90)	(2.55)	(8.35)	(5.39)
Policy	−0.004 ***	−0.022 ***	−0.013 ***	−0.034 ***
	(−2.71)	(−8.28)	(−5.57)	(−8.92)
Treat_Policy	−0.013 ***	−0.012 ***	−0.013 ***	−0.010 ***
	(−4.97)	(−5.10)	(−3.46)	(−2.68)
Size		0.006 ***		−0.007 ***
		(9.71)		(−8.02)
Lev		−0.034 ***		0.036 ***
		(−9.11)		(6.45)
Roa		0.059 ***		−0.024
		(4.74)		(−1.33)
Growth1		0.020 ***		0.019 ***
		(8.01)		(4.99)
Dual		0.008 ***		0.002
		(5.51)		(0.93)
Board		0.001		−0.000
		(1.59)		(−0.04)
Indr		−0.008		0.071 ***
		(−0.69)		(3.97)
First		−0.001		−0.018 ***
		(−0.17)		(−2.92)
Industry&Year		Control		Control
_cons	0.056 ***	−0.041 ***	0.092 ***	0.282 ***
	(47.06)	(−2.92)	(51.63)	(13.85)
N	7419	7419	7419	7419
Adjust_R^2	0.022	0.123	0.024	0.145

Note: ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

Table 7 shows the relationship between debt maturity under green credit and the sensitivity of investment. The results show that, after the promulgation of the Green Credit Guidelines policy, the long-term borrowing of heavily polluting enterprises has reduced dependence on the investment scale and investment efficiency. Both the investment scale and the long-term debt sensitivity coefficient are significantly negative at the 1% level, and investment efficiency and long-term debt are significantly negative at the 5% level. The reason is that the liabilities of different maturity structures have different effects on corporate investment. When compared with short-term debt values, long-term debt values are more sensitive to changes in corporate asset values. In addition, with the promulgation of the Green Credit Guidelines policy, debt maturity can inhibit the asset substitution behavior of shareholders because, when compared to short-term debt, the value of long-term debt is more sensitive to changes in the value of corporate assets.

Table 7. Investment scale, investment efficiency, and long-term debt sensitivity under green credit.

	(1)	(2)	(3)	(4)
	Investment	Investment	Ainvt	Ainvt
Policy	−0.008 *	−0.006	−0.024 ***	−0.021 ***
	(−1.67)	(−1.35)	(−3.57)	(−3.03)
LTD	0.168 ***		0.037 *	
	(12.04)		(1.79)	
Policy_LTD	−0.076 ***		−0.061 **	
	(−4.35)		(−2.33)	
DM		0.060 ***		0.034 ***
		(9.54)		(3.73)
Policy_DM		−0.036 ***		−0.028 **
		(−4.65)		(−2.47)
Size	0.006 ***	0.006 ***	−0.005 ***	−0.006 ***
	(5.32)	(5.97)	(−2.91)	(−3.70)
Lev	−0.037 ***	−0.021 ***	0.038 ***	0.036 ***
	(−5.27)	(−3.13)	(3.66)	(3.62)
Roa	0.118 ***	0.112 ***	0.053 *	0.045
	(5.48)	(5.17)	(1.66)	(1.42)
Growth	0.017 ***	0.018 ***	0.011 *	0.011 *
	(3.68)	(4.00)	(1.66)	(1.65)
Dual	0.011 ***	0.010 ***	0.008 **	0.009 **
	(3.83)	(3.71)	(1.99)	(2.15)
Board	0.001	0.001	0.001	0.001
	(1.17)	(1.11)	(1.19)	(1.25)
Indr	0.004	0.002	0.098 ***	0.097 ***
	(0.19)	(0.09)	(2.98)	(2.94)
First	−0.004	−0.003	−0.015	−0.013
	(−0.54)	(−0.39)	(−1.39)	(−1.26)
Industry&Year	Control	Control	Control	Control
_cons	−0.063 ***	−0.087 ***	0.329 ***	0.352 ***
	(−2.61)	(−3.57)	(9.12)	(9.89)
N	2615	2615	2615	2615
Adjust_R^2	0.179	0.162	0.185	0.187

Note: ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

Table 8 reports the test results of the sensitivity of debt maturity to overinvestment and underinvestment under the Green Credit Guidelines policy. Columns (1) and (2) represent the sensitivity of overinvestment to long-term debt, and the coefficients are significantly negative at the 5% level. This result shows that the introduction of the Green Credit Guidelines has led to a significant reduction in the sensitivity of the overinvestment of heavily polluting enterprises to long-term debt. The sensitivity coefficients of underinvestment and long-term debt are negative but not significant. Therefore, with the promulgation of the Green Credit Guidelines, the change in the long-term debt ratio is only sensitive to overinvestment.

Table 8. Under investment and long-term debt sensitivity.

	(1)	(2)	(3)	(4)
	Overinvestment	Overinvestment	Underinvestment	Underinvestment
Policy	−0.008	−0.008	0.028 ***	0.026 ***
	(−0.69)	(−0.65)	(5.99)	(5.37)
LTD	0.286 ***		0.061 ***	
	(8.27)		(3.98)	
Policy _LTD	−0.112 **		−0.018	
	(−2.53)		(−0.96)	

Table 8. *Cont.*

	(1)	(2)	(3)	(4)
	Overinvestment	Overinvestment	Underinvestment	Underinvestment
DM		0.103 ***		0.012 *
		(6.67)		(1.81)
Policy_DM		−0.045 **		−0.003
		(−2.26)		(−0.36)
Size	0.023 ***	0.021 ***	0.051 ***	0.052 ***
	(8.49)	(7.92)	(34.73)	(35.99)
Lev	−0.037 *	0.001	−0.044 ***	−0.038 ***
	(−1.83)	(0.05)	(−6.48)	(−5.85)
Roa	0.218 ***	0.187 ***	0.013	0.014
	(3.33)	(2.84)	(0.64)	(0.68)
Growth	0.061 ***	0.061 ***	0.010 **	0.011 **
	(4.84)	(4.85)	(2.21)	(2.34)
Dual	0.015 **	0.015 **	0.007 **	0.007 **
	(2.15)	(2.16)	(2.30)	(2.33)
Board	−0.002	−0.002	0.000	0.000
	(−1.35)	(−1.22)	(0.53)	(0.50)
Indr	0.110 **	0.105 **	−0.018	−0.017
	(2.16)	(2.04)	(−0.72)	(−0.67)
First	−0.021	−0.021	0.000	0.001
	(−1.26)	(−1.26)	(0.02)	(0.08)
Industry&Year	Control	Control	Control	Control
_cons	−0.433 ***	−0.427 ***	−1.334 ***	−1.360 ***
	(−7.13)	(−6.96)	(−38.05)	(−39.66)
N	1189	1189	1426	1426
Adjust_R^2	0.226	0.214	0.719	0.717

Note: ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

5.3. Robustness Testing

5.3.1. Replacing Variables

To render the empirical testing robust, this paper first replaces the explained variables, using the ratio of long-term borrowings to total debt (LTD1), the ratio of long-term borrowings to the sum of long-term borrowings and short-term borrowings (DM1), and investment efficiency (Ainvt1) as variables. In Table 9, the results of the empirical tests show that, after replacing the explained variables and controlling for the company-level variables, the issuance of the Green Credit Guidelines policy still has a significantly negative net effect on the financing capacity and investment capacity of heavily polluting enterprises. In columns (1), (2), and (3), Treat_Policy is significantly negative at the 1%, 1%, and 5% levels, respectively, all supporting the hypotheses of this paper.

Table 9. Robustness testing by replacing variables.

	(1)	(2)	(3)
	LTD1	DM1	Ainvt1
Treat	−0.082 ***	−0.097 **	−0.018
	(−2.91)	(−1.99)	(−0.39)
Policy	−0.018 ***	0.026 *	−0.012
	(−2.61)	(1.80)	(−0.97)
Treat_Policy	−0.038 ***	−0.061 ***	−0.018 **
	(−6.00)	(−4.57)	(−2.33)
Size	0.027 ***	0.069 ***	0
	(17.40)	(20.94)	(0.19)

Table 9. *Cont.*

	(1)	(2)	(3)
	LTD1	**DM1**	**Ainvt1**
Lev	0.058 ***	0.009	0.032 **
	(5.91)	(0.43)	(2.37)
Roa	−0.141 ***	−0.008	0.057
	(−4.37)	(−0.11)	(1.24)
Growth	0.019 ***	0.009	0.073 ***
	(2.95)	(0.66)	(8.63)
Dual	−0.008 **	−0.025 ***	0.008 *
	(−2.23)	(−3.09)	(1.90)
Board	−0.003 ***	−0.007 ***	−0.002
	(−3.12)	(−3.43)	(−1.26)
Indr	−0.001	−0.071	0.023
	(−0.04)	(−1.07)	(0.59)
First	−0.021 *	−0.058 **	0.017
	(−1.91)	(−2.52)	(1.26)
Industry&Year	Control	Control	Control
_cons	−0.430 ***	−0.923 ***	0.110 **
	(−11.90)	(−12.11)	(2.11)
N	7413	7332	2305
Adjust_R^2	0.316	0.224	0.092

Note: ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

5.3.2. PSM-DID

This paper also uses the propensity score matching DID (PSM-DID) method to test the hypotheses and to increase the robustness of the test results. The PSM-DID method can control for the differences between groups that are not observable but do not change with time, that is, the difference between the experimental group and the control group at the company level. The results of the empirical test (Table 10) show that, after controlling for the variables at the company level, the promulgation of the Green Credit Guidelines policy is significantly negatively correlated with the debt period of heavily polluting enterprises and it is significantly negatively correlated with the scale of investment. The results show a negative association with investment efficiency, but the outcome result is not significant; thus, the hypotheses are generally confirmed.

Table 10. Robustness test.

	(1)	(2)	(3)	(4)
	LTD	**DM**	**Investment**	**Ainvt**
Treat	0.008	−0.075	0.023 *	0.054 ***
	(0.42)	(−1.32)	(1.92)	(3.01)
Policy	−0.002	−0.012	−0.017 ***	−0.035 ***
	(−0.38)	(−0.63)	(−4.23)	(−5.86)
Treat_Policy	−0.030 ***	−0.070 ***	−0.014 ***	−0.006
	(−5.70)	(−4.29)	(−4.00)	(−1.22)
Size	0.017 ***	0.059 ***	0.005 ***	−0.005 ***
	(12.91)	(14.43)	(6.13)	(−3.91)
Lev	0.120 ***	0.061 **	−0.031 ***	0.039 ***
	(14.20)	(2.29)	(−5.41)	(4.68)
Roa	−0.069 **	0.103	0.075 ***	−0.028
	(−2.50)	(1.19)	(4.09)	(−1.04)
Growth	0.011 **	0.018	0.021 ***	0.016 ***
	(1.99)	(0.99)	(5.60)	(2.89)
Dual	−0.006 *	−0.025 **	0.005 **	0.003
	(−1.70)	(−2.35)	(2.07)	(0.95)

Table 10. *Cont.*

	(1)	(2)	(3)	(4)
	LTD	**DM**	**Investment**	**Ainvt**
Board	−0.002 **	−0.007 ***	0.001 *	0
	(−2.16)	(−2.58)	(1.95)	(0.32)
Indr	−0.033	0	0.003	0.063 **
	(−1.17)	(−0.00)	(0.15)	(2.32)
First	−0.018 *	−0.093 ***	−0.001	−0.017 *
	(−1.92)	(−3.21)	(−0.21)	(−1.90)
	(3.57)	(2.14)	(0.03)	(−1.04)
Industry&Year	Control	Control	Control	Control
_cons	−0.317 ***	−0.841 ***	−0.049 **	0.232 ***
	(−10.28)	(−8.73)	(−2.38)	(7.67)
N	3426	3426	3426	3426
Adjust_R^2	0.381	0.228	0.121	0.164

Note: ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

6. Further Research

6.1. Green Credit and the Investment and Financing Behaviors of Heavily Polluting Enterprises—Based on the Political Connections Perspective

Corporate decision-making is deeply influenced by legal and judicial operational efficiency, property rights protection, the financial system, and other institutional factors in the company's country or region. As an important resource, political resources play an important role in corporate decision-making [28,29]. Heavily polluting enterprises with political connections and heavily polluting enterprises without political connections are likely to face different restrictions with regard to the Green Credit Guidelines policy. The previous literature has shown that there are two views on the role of political connections: the hand of support and the hand of plunder. On the one hand, a large number of studies have shown that political connections play a supporting role because entrepreneurs establish a political relationship with government departments to protect the external space of enterprise development, obtain more resources, enable enterprises to achieve faster development, and enhance corporate value, thus fully playing the role of a supportive hand [30–34]. Enterprises with political connections are more likely to receive government assistance to reverse a bad situation [35]. It has been widely reported in the literature that enterprises with political connections are more likely to obtain bank loans, the cost of acquisition is lower, the number of loans obtained is higher, and the debt maturity is longer [29,36–40]. On the other hand, a large number of studies have asserted that political connections can also bring some negative effects to enterprises, resulting in the curse effect of political resources. Political connections can bring more bank loans to enterprises, but they can also reduce the efficiency of resource allocation and adversely affect the national economy [41]. Enterprises can also cater to the hand of plunder of the government, distorting the enterprise's normal investment behavior [42]. Political resources have intensified the extensive development of enterprises and they have hindered their independent innovation, and ultimately, they have not helped to improve the quality of economic growth [28]. In terms of safe production, there is higher employee mortality in enterprises with political connections [43]. Therefore, there is no certain result to the longstanding debate between the hand of support and hand of plunder of political connections. This paper uses the introduction of the Green Credit Guidelines policy as a natural experiment to test the role of political connections in corporate investment and financing behavior.

Tables 11 and 12 show the impact of the Green Credit Guidelines policy on the debt maturity and investment scale of heavily polluting enterprises with or without political connections. Columns (1) and (3) are the group of heavily polluting enterprises with political connections, whereas columns (2) and (4) are the group of heavily polluting enterprises without political connections. In Table 11, the study uses LTM as the proxy variable for the long-term borrowing ratio. The absolute value and coefficient of the T value of column (1) are smaller than those of the T value of column. (2) When the study uses DM as the proxy variable for the long-term borrowing ratio, the Treat_Policy coefficient of column (3) is not significant, while the Treat_Policy coefficient of column (4) is significantly negative at the 1% level. This result shows that heavily polluting enterprises with political connections can obtain government support through their political connections and obtain more resources. Therefore, heavily polluting enterprises with political connections have moderated the negative net effect of the Green Credit Guidelines policy to some extent. The results that are shown in Table 12 reveal that, regardless of whether the sample group has political connections, the scale of investment has declined with the issuance of the Green Credit Guidelines policy, and overinvestment behavior has been suppressed. Overall, the empirical results of this paper support the view that political connections play the role of a supportive hand. For heavily polluting enterprises that lack political connections, their scale of investment is more affected by the Green Credit Guidelines policy. With the introduction of the Green Credit Guidelines policy, for heavily polluting enterprises that lack political connections, their ability to obtain loans from financial institutions decreases more significantly than that of heavily polluting enterprises with political connections.

Table 11. Green credit, political connections, and debt maturity.

	(1)	(2)	(3)	(4)
	LTD	LTD	DM	DM
Treat	−0.010	−0.045 **	−0.012	−0.328 ***
	(−0.32)	(−2.19)	(−0.10)	(−4.64)
Policy	−0.011 *	−0.008 *	−0.057 **	−0.030 **
	(−1.65)	(−1.88)	(−2.38)	(−1.99)
Treat_Policy	−0.017 ***	−0.025 ***	−0.006	−0.048 ***
	(−2.62)	(−5.61)	(−0.27)	(−3.14)
Size	0.010 ***	0.017 ***	0.051 ***	0.060 ***
	(6.24)	(15.67)	(9.05)	(16.10)
Lev	0.136 ***	0.104 ***	0.031	0.011
	(13.08)	(15.43)	(0.86)	(0.47)
Roa	−0.024	−0.109 ***	0.202	−0.115
	(−0.67)	(−4.91)	(1.58)	(−1.51)
Growth	0.017 **	0.011 **	0.017	0.018
	(2.34)	(2.39)	(0.70)	(1.14)
Dual	−0.005	−0.006 **	−0.033 **	−0.025 ***
	(−1.16)	(−2.43)	(−2.40)	(−2.84)
Board	−0.003 ***	−0.001	−0.009 **	−0.006 **
	(−3.25)	(−1.35)	(−2.54)	(−2.35)
Indr	−0.013	−0.037 *	−0.053	−0.059
	(−0.42)	(−1.66)	(−0.49)	(−0.76)
First	−0.007	−0.014 *	−0.065 *	−0.058 **
	(−0.60)	(−1.80)	(−1.69)	(−2.22)
	(3.37)	(5.80)	(3.91)	(3.60)
Industry&Year	Control	Control	Control	Control
_cons	−0.155 ***	−0.309 ***	−0.644 ***	−0.739 ***
	(−4.01)	(−12.03)	(−4.79)	(−8.42)
N	2065	4691	2065	4691
Adjust_R^2	0.445	0.416	0.244	0.213

Note: ***, ** and * represent significance levels of 1%, 5%, and 10%, respectively.

Table 12. Green credit, political connections, and the investment scale.

	(1)	(2)	(3)	(4)
	Investment	Investment	Overinvestment	Overinvestment
Treat	−0.000	−0.029 **	−0.019	0.155 ***
	(−0.01)	(−2.03)	(−0.32)	(4.77)
Policy	−0.013 ***	0.009 ***	−0.038 ***	−0.048 ***
	(−2.65)	(3.00)	(−3.39)	(−5.33)
Treat_Policy	−0.008 *	−0.011 ***	−0.023 **	−0.014 *
	(−1.73)	(−3.52)	(−2.10)	(−1.77)
Size	0.003 **	0.006 ***	0.022 ***	0.022 ***
	(2.32)	(8.16)	(7.26)	(9.94)
Lev	−0.039 ***	−0.031 ***	−0.010	−0.003
	(−5.25)	(−6.57)	(−0.51)	(−0.22)
Roa	0.060 **	0.048 ***	0.137 *	−0.063
	(2.31)	(3.11)	(1.94)	(−1.19)
Growth	0.022 ***	0.019 ***	0.073 ***	0.084 ***
	(4.26)	(6.00)	(5.33)	(9.20)
Dual	0.008 ***	0.008 ***	0.011	0.015 ***
	(2.93)	(4.73)	(1.57)	(2.83)
Board	0.002 **	−0	−0	−0.003 **
	(2.54)	(−0.35)	(−0.18)	(−2.15)
Indr	−0.003	−0.017	0.026	0.017
	(−0.11)	(−1.07)	(0.49)	(0.40)
First	0.014 *	−0.005	−0.004	−0.023 *
	(1.75)	(−1.04)	(−0.18)	(−1.66)
	(−0.91)	(0.85)	(0.15)	(2.00)
Industry&Year	Control	Control	Control	Control
_cons	0.018	−0.045 **	−0.439 ***	−0.386 ***
	(0.66)	(−2.56)	(−6.43)	(−7.31)
N	2065	4691	918	1919
Adjust_R^2	0.125	0.123	0.193	0.141

Note: ***, ** and * represent significance levels of 1%, 5%, and 10%, respectively.

7. Discussion and Conclusions

The report of the 19th National Congress of the Communist Party of China (CPC) stated that it is necessary to establish and practice the concept of green mountains and clear water, which are equivalent to mountains of gold and silver, and to firmly adhere to the civilizational development path of production development, an affluent life, and good ecology. Economic development must be based on ecological environmental protection, with sustainable development as the basic principle. Environmental governance issues have become especially important. Based on the background of environmental issues governance under China's new economic model, this paper uses the enactment of the Green Credit Guidelines policy as a quasi-natural experiment and the DID empirical method to test the effect of this green credit policy on the debt maturity and investment behaviors of heavily polluting enterprises and the mechanism of this effect. The empirical results show that, with the promulgation of the Green Credit Guidelines policy, financial institutions have significantly reduced the proportion of long-term loans to heavily polluting enterprises to avoid environmental risks and to limit the total amount of credit. At the same time, due to the difficulty that heavily polluting enterprises face when borrowing from banks and the more stringent approval of investment behaviors by government departments, the scale of investment has decreased, and overinvestment has been curbed. In addition, due to the information mechanism and the supervisory mechanism of debt maturity, with the issuance of the Green Credit Guidelines policy, the debt maturity structure of heavily polluting enterprises reduced their dependence on investment scale and investment efficiency. The robustness test part of this paper retested the results by replacing the variables and using the PSM-DID, and all of the results were consistent. In further research, the study also found that the

negative net effect of the introduction of the Green Credit Guidelines on the debt maturity of heavily polluting enterprises is more significant in enterprises with no political connections and that the impact is smaller on heavily polluting enterprises with political connections. However, this policy has made it possible to suppress the investment scale and investment efficiency of heavily polluting enterprises with or without political connections. From the perspective of political relations, this result reflects that, in the context of the Chinese system, because credit is more of a government-controlled resource, politically linked enterprises obtain more credit resources, confirming the supportive hand perspective towards political resources described in the literature.

This study is helpful for clarifying corporate financing and investment behavior in the context of China's current environmental governance, and it provides a new solution for corporate regulators to achieve environmental governance from the perspective of credit resource allocation within the framework of the existing formal system. The results presented in this paper have certain practical implications. First, formal institutional constraints are a better way to conduct environmental regulation. The Green Credit Guidelines policy can change the debt maturity structure of heavily polluting enterprises, strengthen the supervision of enterprises, and thus inhibit the scale of investment and overinvestment behaviors of enterprises. Therefore, governmental authorities should strengthen research on and the formulation of norms that are similar to the Green Credit Guidelines, improve the enforcement of laws and regulations, and effectively supervise enterprises. For heavily polluting enterprises, it is necessary to strengthen the control of pollution emissions to meet the requirements of green credit. Consequently, heavily polluting enterprises being constrained in debt financing has been confirmed in this empirical study, indicating that green credit has proved to be a significant criterion for banks to make decisions when extending loans. Second, in protecting the environment, not only should heavily polluting enterprises meet their obligations, but the mass media and social personnel should also supervise the behaviors of polluting enterprises and supervise and suppress collusion between the government and polluting enterprises. Third, this research shows that political connections have certain supporting effects that will weaken the effects of environmental regulation. It is clearly important to recognize the role of political connections in environmental regulation and to help environmental governance decision makers to develop more targeted and effective environmental regulatory systems to avoid the negative effects of government linkages.

Of course, this paper has some shortcomings. First, although this study uses a variety of empirical methods, the individual differences at the company level between the experimental group and the control group remain difficult to effectively control; thus, there is some statistical noise. Second, the impact of the Green Credit Guidelines policy on heavily polluting enterprises is not limited to corporate financing and investment behaviors; it also affects phenomena, such as bankruptcies and the restructuring of heavily polluting enterprises, corporate earnings management, and audit fees. All of these aspects could be studied in future research.

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