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Research on the Effect of Environmental Strategy on Green Transformation of Enterprises

Lijuan Liang, Ziting Yao*

Institute of Finance and Economics, Henan Polytechnic University, Jiaozuo, China

*1159841274@qq.com

Abstract

Whether environmental strategy can drive the green transformation of enterprises is directly related to the enthusiasm of enterprises to carry out environmental strategy and whether enterprises can achieve high-quality development. To this end, this paper empirically tests the relationship between environmental strategy and green transformation by using the data of 169 companies listed in Shanghai and Shenzhen from 2011 to 2018. The results show that :(1) the implementation of environmental strategy can significantly promote the green transformation of enterprises. In addition, after changing the measurement method of dependent variables, changing the econometric regression model, excluding the interference factors and other robustness tests, the conclusion still holds. (2) Further research shows that there are significant differences in the impact of environmental strategy on the green transformation of enterprises in different life cycles, pollution levels and before and after the implementation of the new Environmental Protection Law. In other words, environmental strategy has a more obvious effect on the heavily polluting enterprises in the growth period after the implementation of the new environmental Protection Law. (3) From the perspective of effect channels, environmental strategy can promote the green transformation of enterprises by easing the pressure of financing constraints and improving the innovation ability of enterprises.

Keywords

Environmental Strategy; Green Transformation of Enterprises; Financing Constraints; Enterprise Innovation.

1. Introduction

The report to the 19th National Congress of the Communist Party of China (CPC) stressed that China's economy has shifted from a stage of rapid growth to a stage of high-quality development, and is now in a critical period of transforming the development model, improving the economic structure, and transforming the drivers of growth. In the process of economic transformation, green transformation is an indispensable part. As the core subject of creating economic wealth, as well as the taker of natural resources and the producer of environmental pollution, enterprises have the responsibility and obligation to carry out green transformation, realize sustainable development and meet people's yearning for a better life. Therefore, the focus of green transformation should be on the implementation of green transformation. However, different enterprises, especially heavy polluting enterprises, have significant differences in the implementation process of green transformation. To explore the influencing factors of green transformation of enterprises from the micro perspective is undoubtedly of great practical significance for the sustainable development of heavy polluting enterprises and the realization of high-quality development of the country.

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The green transformation of enterprises has different goals in different stages and industries. In the short term, the green transformation of enterprises requires that enterprises must strengthen management, formulate emergency plans and strengthen automatic monitoring of pollutants to reduce environmental pollution[1]. But in the long run, companies must be required to step up research and development in green technologies to meet increasingly stringent environmental standards and at the same time enhance their core competitiveness. In terms of industries, the green transformation of heavy polluting industries is an important driving force to reduce pollution emissions. Therefore, enterprises in heavy polluting industries are in urgent need of green transformation to achieve energy conservation and emission reduction and improve their sustainable development ability. In order to realize the green transformation of enterprises, scholars have analyzed the influencing factors of the green transformation of enterprises from environmental regulation[2], environmental protection experience of senior executives, resource endowment, etc. In addition, with the strengthening of the awareness of environmental protection, more and more enterprises develop environmental strategies to enhance the ability of sustainable development and form competitive advantages. Therefore, it is necessary to investigate the impact of environmental strategy on green transformation of enterprises.

The main contributions of this paper are as follows: First, for the first time, environmental strategy and enterprise green transformation are linked in depth. This is a useful supplement to the relevant literature on the economic consequences of environmental strategies, and provides empirical evidence for enterprises to formulate environmental protection strategies and optimize the path of green transformation. Second, this paper deeply studies the motivation of enterprise green transformation of heterogeneous subjects. Considering the differences in industries with different pollution levels, life cycles and before and after the implementation of the new environmental protection Law, the influence of heterogeneous factors on the green transformation effect of environmental strategy was analyzed in depth. Third, it explains how to encourage enterprises to actively carry out corporate green transformation activities. Enterprises should make full use of their own resources and advantages, formulate reasonable environmental strategies, and promote their green transformation by easing financing constraints and accelerating the pace of enterprise innovation, so as to achieve a "win-win" between environmental protection and high-quality development of enterprises.

2. Theoretical Analysis and Research Hypothesis

Fundamentally speaking, in the process of transformation, existing enterprises are faced with problems such as strategic deviation, high transformation cost, weak core technology, shortage of resources and so on. In the process of transformation, they will be imitated by peers, and the "homogenization" among enterprises is serious, so there are certain risks in the green transformation of enterprises. The purpose of enterprises to implement environmental strategy is to reduce and weaken the environmental pollution or damage caused by their production and business activities. Now China has entered the period of strategic opportunities of green transformation and upgrading, enterprises invest more funds, manpower and time to implement the strategy of positive environment, reduce resource waste and reduce the pollution control cost and production of environmentally friendly products consumer market support, to carry out research and development of environmental technology innovation activities, won the brand advantage and competitive advantage to reduce the risks of green transition. In addition, the motivation of strategic decision is the active strategy adopted by managers to adapt to the change of external environment. Faced with the uncertain stimulus of green transformation of enterprises, managers may adopt environmental strategies to promote green transformation of enterprises out of opportunism, irrational judgment or value drive.

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Opportunism believes that when the green transformation of enterprises is difficult, it is difficult for managers to accurately and comprehensively predict the future development trend of enterprises. By formulating forward-looking environmental strategies, they can not only effectively avoid the risk of being punished by the government, but also avoid salary reduction[3]. The irrational view holds that when the green transformation of enterprises is at the forefront of the industry, the psychology of comparison makes managers overconfident. In order to pursue to become the "leading enterprises" in the transformation, managers will implement positive environmental strategies, which is also the inevitable choice for enterprises to expand their reputation. According to the value-driven view, green transformation of enterprises is in line with the trend of The Times, and many enterprises in green transformation have huge market potential and appreciation space. In this environment, the environmental strategy formulated by the management can not only enable the successful transformation of enterprises, but also achieve scale effect. Based on the above analysis, this paper proposes the following hypotheses:

H1: Environmental strategy can promote the green transformation of enterprises.

Financing constraints are one of the important reasons that restrict the development of enterprises[4]. Under this condition, if enterprise managers only emphasize internal funds, or use government subsidies, tax incentives and other measures to encourage enterprises to carry out green transformation, but ignore the use of external funds to solve the problem of green transformation, the green transformation of enterprises may eventually be ineffective. One of the key characteristics of green transformation of enterprises is the uncertainty of green transformation. In the process of green transformation of enterprises, information asymmetry exists among stakeholders, which leads to potential adverse selection and moral hazard, making the green transformation activities of enterprises subject to serious financing constraints. Due to the exclusivity of knowledge and technology in green transformation, enterprises generally do not disclose relevant information in detail, making it difficult for external investors to accurately and comprehensively understand the process of green transformation. In addition, the transition process requires the efforts of managers and r&d personnel, which is difficult to measure. Therefore, the financing market for the green transformation of enterprises is more like the "lemon market". It is difficult for external investors to evaluate the advantages and disadvantages of the green transformation of enterprises, so there will be a high risk premium, which increases the external financing cost of the green transformation of enterprises. The environmental strategy can make up for the problem of information asymmetry, and the environmental strategy formulated and executed by the enterprise plays a role of information transmission. Environmental strategy as an important enterprise reflect the information channel, through the implementation of the strategy for the environment to the outside world passing enterprise's strategic planning, strategic targets and strategic measures, make better potential for the growth of enterprise stakeholders to conduct a comprehensive assessment and judgment, is reduced because of information asymmetry and influence the risk of the enterprise green transition. Therefore, this paper proposes the following assumptions:

H2: Environmental strategy promotes green transformation of enterprises by alleviating financing constraints.

Enterprise innovation is the key to accelerate the transformation of green transformation of enterprises[5]. Cost is one of the most important influencing factors of Porter's hypothesis, and enterprises should follow the cost effect. To some extent, the cost-compliance effect has a crowding-out effect on the R&D investment of enterprises, which is not conducive to the technological innovation of enterprises and has a negative impact on the performance of enterprises. Strict environmental regulations will also magnify this negative impact. However, this will also strongly encourage enterprises to carry out technological innovation, accelerate

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the pace of technological RESEARCH and development, improve production efficiency, and improve enterprise performance through productivity improvement to compensate for the negative impact[6]. From the perspective of innovation compensation, under appropriate environmental regulation conditions, enterprises are forced to improve the efficiency and motivation of RESEARCH and development, which has a favorable impact on innovation, so as to realize the innovation compensation effect, and stimulate the development potential of enterprises through technological innovation and the green transformation market development opportunity after innovation. Environmental strategies to the cost of the innovation effect and compensation effect, the combination of specific performance in advance, matter and afterwards, enterprise production and management for the green adjustment, on the source from the ecological design of products, in the introduction of energy conservation and emissions reduction technology development, the production stage, the late operations recycling, improve the utilization rate. Provide continuous economic incentives for enterprises' innovation[7]. Based on the above logic, this paper proposes the following assumptions:

H3: Environmental strategy can promote the green transformation of enterprises through enterprise innovation.

3. Study Design

3.1. Sample Selection and Data Sources

In this paper, a-share heavy polluting enterprises listed in Shanghai and Shenzhen during 2011-2018 were selected as research samples to empirically test the relationship between environmental strategy and green transformation of enterprises. The data of corporate environmental strategy and management transformation in green transformation comes from corporate annual reports, social responsibility reports and sustainable development reports. (2) The marketization degree index from 2011 to 2014 comes from marketization Process Index by Fan Gang and Wang Xiaolu, and the marketization degree index from 2015 to 2018 is calculated by interpolation method. (3) The data of technology transformation comes from the website of the State Intellectual Property Office. (4) The data of the remaining variables are derived from gTAan database. In addition, in order to avoid the interference of extreme values to the empirical study, the corresponding continuous variables were tailed at the 1% and 99% sub-points. In addition, in order to maintain the rationality and validity of the sample data, the following enterprises were excluded: (1) ST and *ST continuous loss-making enterprises were excluded; (2) Eliminate enterprises with serious missing values; (3) Industrial enterprises listed after 2011 are excluded. Finally, 169 sample enterprises were obtained, with a total of 1352 observations.

3.2. Variable Definitions

3.2.1. Explained Variable -- Enterprise Green Transformation

Table 1. Green transformation index selection and variable assignment

Behalf of the Dimension	Variable Name	Variable Assignment
Green management transformation	Whether to issue a social responsibility report	0-1
	Whether an environmental emergency plan is in place	0-1
	Environmental self-monitoring	0-1
	Whether the environmental protection facilities are in normal operation	0-1
Green technology transformation	Number of green invention patents granted	/
	Number of green utility patents granted	/

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According to existing studies, scholars believe that green transformation needs to be supported by comprehensive innovation in ideas, management, technology and institutions. Drawing on the evaluation system of industrial enterprises' green transformation constructed by Lian Chao et al., this paper divides green transformation into green management transformation and green technology transformation, and sets the weights of the two as 0.3 and 0.7 respectively according to the expert scoring method, as shown in Table 1.

3.2.2. Explanatory Variable -- Environmental Strategy

This paper believes that environmental strategy is the integration of internal management and external compliance behavior. Considering the actual needs of stakeholders and the characteristics of enterprises, environmental strategy is further divided into environmental management and environmental legitimacy. Environmental management is an important aspect of corporate governance. It supports the effective implementation of environmental strategy, can change the direction of the operation of the whole enterprise, and prevent potential dangers related to environmental protection. Environmental management is divided into environmental objectives, environmental management institutions and environmental education and training fees. Environmental legitimacy emphasizes effective response to external threats and reflects the extent of a company's environmental initiatives and social norms[8]. The environmental legality is divided into the application for pollution discharge permit, whether there is environmental punishment, whether there is environmental reward, etc., and the specific value is assigned according to the green management transformation. In addition, using the method of Tang Yali for reference, the environmental strategy index value is measured by the ratio of the sum of the scores of a company's environmental strategy items (six items in total) to the sum of the scores of the best environmental strategy items.

3.2.3. Mediation Variables

Financing constraint is an intermediary variable in this paper. The KZ method was used to calculate the degree of financing constraint, and the Size and Age of enterprises were used to construct the SA index =-0.737*Size+0.043* size2-0.04 *Age[9]. The reasons are as follows: First, the variables contained in SA index do not have endogeneity; Second, data are available and financing is calculated. Finally, the results of SA index are relatively robust, without too much deviation.

Enterprise innovation is another mediating variable in this paper. Existing scholars use the number of patent applications and R&D investment to measure enterprise innovation. In this paper, r&d investment is used to measure enterprise innovation for the following reasons: enterprise innovation is the embodiment of resource input and utilization efficiency, and the use of innovation input indicators can better reflect the efforts of enterprise managers and managers for the green transformation of enterprises.

3.2.4. Control Variables

In order to better explain the endogenous relationships among the variables studied, it is necessary to control for other important factors. In this paper, the use for reference in the selection of control variable Lv Minghan research, such as the final selection of companies listed age, the nature of property rights, the enterprise scale, the degree of marketization, financial leverage, growth, capital intensity, the former major shareholders holdings, both separation, board size, business activities generated cash flows, assets return rate of 12 variables. To sum up, the definitions of variables in this paper are shown in Table 2.

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Table 2. Variable definitions

Variable nature	variable name	Variable code	Variable
Explained variable	Green transformation	GT	Composite index
Explanatory variables	Environmental strategies	ES	Content analysis
Intervening variable	Financing constraints	FIN	Index of the SA
	Enterprise innovation	INNO	R&d investment/revenue
Control variables	Listed age	AGE	Current year - The year the company goes public
	Property rights	OWN	The state-owned enterprise is recorded as 1, otherwise it is recorded as 0
	Enterprise scale	SIZE	LN (Operating revenue)
	Degree of marketization	MAR	Marketization index
	Financial leverage	LEV	Asset-liability ratio
	Growth	GRO	Operating revenue growth rate
	Capital intensity	CAP	Fixed assets/operating revenue
	Ownership concentration	H1	The proportion of shares held by the previous major shareholder
	Two separate	TV	Whether the general manager and the chairman are separated
	Board size	BOA	Total number of board members
	Cash flow	FLO	Net cash flow from operating activities
	Enterprise performance	ROA	Return on assets

3.3. Model Specification

In order to investigate the impact of environmental strategy on green transformation of enterprises, this paper constructs the following model:

$$GT = a_0 + \alpha_1 ES_{it} + \sum_{m=2}^{12} \alpha_m Control_{it} + \varepsilon_{1it} \quad (1)$$

On the basis of theoretical analysis, in order to better explore the impact of environmental strategy on the green transformation of enterprises, this paper constructs an intermediary model to test the transmission channels of financing constraints and enterprise innovation. In formula (2), (3) and (4), a mediating model is established to test the mediating effect of financing constraints on the promotion of green transformation by environmental strategy. The financing constraint (FIN) of the following formula is replaced by firm innovation (INNO) to test the mediating effect of firm innovation between environmental strategy and green transformation.

$$GT = b_0 + \beta_1 ES_{it} + \sum_{n=2}^{12} \beta_n Control_{it} + \varepsilon_{2it} \quad (2)$$

$$FIN = c_0 + \delta_1 ES_{it} + \sum_{j=2}^{12} \delta_j Control_{it} + \varepsilon_{3it} \quad (3)$$

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$$GT = d_0 + \phi_1 ES_{it} + \phi_2 FIN_{it} + \sum_{k=3}^{13} \phi_k Control_{it} + \varepsilon_{4it} \quad (4)$$

Type in the: i : companies; t : time; a_0、b_0、c_0、d_0、e_0、f_0、g_0 : Public intercept; α、β、δ、ϕ、φ、η、μ : he regression coefficients of each variable; $Control$: Control variables, including: AGE、OWN、$SIZE$、MAR、LEV、GRO、CAP、$H1$、TV、BOA、FLO、ROA ; ε : Random perturbation term.

4. Analysis of Empirical Results

4.1. Descriptive Statistics

Table 3 shows the descriptive statistics of the main variables. Combined with the mean, variance, minimum value and maximum value, the differences of environmental strategies among enterprises are small. However, the green transformation of enterprises is unevenly distributed. Most enterprises' green transformation does not reach the average level, and even some enterprises' green transformation is 0, which indicates that there is a large difference in green transformation among enterprises and strong individual heterogeneity, which provides an opportunity to study the green transformation of enterprises. The variance of most variables is less than the mean, indicating that the sample is stable.

Table 3. Descriptive statistics of variables

	MEAN	SD	P25	P50	P75	MIN	MAX	N
GT	0.85	1.75	0	0.60	0.90	0	25.50	1352
ES	0.35	0.21	0.13	0.38	0.50	0	0.88	1352
AGE	16.48	5.09	13	17	20	2	32	1352
OWN	0.52	0.50	0	1	1	0	1	1352
SIZE	8.71	1.16	7.98	8.59	9.48	4.48	12.91	1352
MAR	7.23	2.01	5.84	7.16	9.26	-1.14	10.62	1352
LEV	0.46	0.20	0.31	0.48	0.620	0.06	0.92	1352
GRO	0.18	0.73	-0.06	0.06	0.230	-0.75	5.83	1352
CAP	0.35	0.16	0.22	0.34	0.460	0.06	0.76	1352
H1	35.44	15.46	23.95	33.47	45.28	3.89	89.99	1352
TV	1.81	0.39	2	2	2	1	2	1352
BOA	2.19	0.19	2.08	2.20	2.200	1.61	2.89	1352
FLO	0.10	0.13	0.03	0.09	0.17	-0.33	0.61	1352
ROA	0.03	0.05	0.01	0.03	0.06	-0.16	0.20	1352
FIN	-3.76	0.21	-3.91	-3.77	-3.63	-4.17	-3.23	1352
INNO	0.02	0.02	0	0.01	0.03	0	0.07	1352

4.2. Regression Results

Table 4 lists the regression results of environmental strategy and green transformation of enterprises. According to the full-sample regression results, regardless of whether the control variables were added, the environmental strategy was positively correlated with the green transformation of enterprises at the 1% level. This regression result verifies the validity of H1. Among the control variables, the influence coefficients of SIZE, MAR, LEV, TV, BOA and ROA are positive and significant, that is, enterprise SIZE, marketization degree, financial leverage, two-job integration, board SIZE and return on assets are all conducive to the green transformation of enterprises. From the regression results of environmental strategy grouping, it can be seen that the implementation of better environmental strategy can promote the green transformation of enterprises. The implementation of better environmental strategies by enterprises is the manifestation of enterprises taking the initiative to assume social

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responsibilities, avoiding pollution in the process of operation, and thus promoting the green management ability of enterprises [10].

Table 4. Basic regression of environmental strategy and enterprise green transformation

	GT	GT	GT	GT
	Full sample regression		Environmental Strategy Group	
	(1)	(2)	(3)	(4)
ES	2.370***	1.892***	1.985***	1.713***
	(10.99)	(8.23)	(3.56)	(3.82)
AGE		0.002	-0.000	0.001
		(0.19)	(-0.03)	(0.08)
OWN		0.143	0.339*	-0.067
		(1.32)	(1.83)	(-0.73)
SIZE		0.105*	0.151*	0.052
		(1.94)	(1.69)	(1.10)
MAR		0.072***	0.104***	0.038*
		(3.04)	(2.65)	(1.80)
LEV		0.459	0.649	0.425
		(1.45)	(1.20)	(1.58)
GRO		-0.008	-0.094	-0.013
		(-0.13)	(-0.64)	(-0.28)
CAP		-0.374	-0.568	-0.037
		(-1.21)	(-1.13)	(-0.13)
H1		-0.004	-0.010*	-0.001
		(-1.42)	(-1.85)	(-0.20)
TV		0.245**	0.390*	0.140
		(2.05)	(1.86)	(1.44)
BOA		1.319***	1.599***	0.791***
		(4.99)	(3.60)	(3.43)
FLO		0.112	0.049	0.114
		(0.30)	(0.08)	(0.36)
ROA		2.195**	2.468	2.328**
		(2.20)	(1.54)	(2.50)
_cons	0.014	-4.699***	-6.159***	-2.766***
	(0.15)	(-7.67)	(-5.99)	(-5.07)
N	1352	1352	737	615
r2_a	0.081	0.130	0.088	0.083

4.3. Exploration of Influence Mechanism

4.3.1. Environmental Strategy, Financing Constraints and Green Transformation of Enterprises

This paper uses the mediating effect test model to empirically test the mediating effect of financing constraints on the promotion of green transformation by environmental strategy. Columns (1) - (3) of Table 6 report the mediating effect regression results of financing constraints. Among them, Column (1) shows that the regression coefficient of environmental strategy (ES) on enterprises' green transformation (GT) is 1.892, which is significant at the 1% level, indicating that environmental strategy positively promotes enterprises' green transformation. Column (2) shows that the regression coefficient of environmental strategy (ES)

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to financing constraint (FIN) is -0.034, which is significant at the level of 0.01, indicating a negative correlation between financing constraint and green transformation of enterprises. Column (3) shows the influence of environmental strategy (ES) and financing constraint (FIN) on enterprise green transformation (GT). The regression coefficient of financing constraint on green transformation is 1.046, which is significant at 5% level and passes the significance test. The regression coefficient of environmental strategy is significant at 1% level. It can be concluded that environmental strategy can promote the green transformation of enterprises by alleviating financing constraints.

4.3.2. Environmental Strategy, Enterprise Innovation and Enterprise Green Transformation

This paper empirically examines the mediating effect of firm innovation on environmental strategy promoting firm green transformation. Columns (4) - (6) of Table 8 report the regression results of the mediating effect of firm innovation. Column (5) shows that the regression coefficient of environmental strategy (ES) on firm innovation (INNO) is 0.011, which is significant at the 1% level, indicating a positive correlation between firm innovation and firm green transformation. Column (6) shows the influence of environmental strategy (ES) and firm innovation (INNO) on firm's green transformation (GT). The regression coefficient of financing constraints on green transformation is 13.652, which is significant at the level of 0.01 and passes the significance test. The regression coefficient of environmental strategy is 1.739, which is significant at 1% level, and its coefficient is smaller than column (1). In conclusion, the establishment of enterprise innovation path, that is, environmental strategy can effectively promote the green transformation of enterprises through enterprise innovation, and reflects that the compensation effect of enterprise innovation on green transformation is greater than the cost compliance effect.

4.4. Robustness Test

4.4.1. Change the Measurement Method of Dependent Variables

This paper changes the weight of management transformation and technology transformation in green transformation, and considers that management transformation and technology transformation are equally important. Therefore, the weight of the two is set to 1:1 to re-examine the relationship between environmental strategy and enterprise transformation. The results are shown in Table 6 column (1). No matter how the dependent variable is changed, the regression coefficient of environmental strategy ES is positive and significant. The above results are consistent with the research conclusion of this paper.

4.4.2. Change the Econometric Model

On the one hand, because the green transformation of some enterprises selected in this paper is 0, the green transformation of enterprises can be defined as the dummy variable GT_dummy, and Logit model is used for testing. On the other hand, Tobit model is used to control the error of the left sample of green transformation of enterprises. The regression results are shown in columns (2) - (3) of Table 6. No matter which econometric model is selected, the regression coefficient of environmental strategy ES is always positive and significant at the level of 1%. Therefore, the results are robust.

4.4.3. Eliminate Distractions

China's heavy polluting enterprises, due to the characteristics of the industry, will face the risk of being punished, some well-known listed companies have multiple environmental violations, such as Zhongjin Lingnan, Tongling Yise, and more than 100 listed companies have been the environmental protection department's administrative punishment.

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Table 5. Analysis of influence mechanism

	GT	FIN	GT	GT	INNO	GT
	Financing constraint path			Enterprise innovation path		
	(1)	(2)	(3)	(4)	(5)	(6)
ES	1.892***	-0.034***	1.928***	1.892***	0.011***	1.739***
	(8.23)	(-2.76)	(8.37)	(8.23)	(5.41)	(7.54)
FIN			1.046**			
			(2.07)			
INNO						13.652***
						(4.52)
AGE	0.002	-0.039***	0.043*	0.002	-0.000**	0.005
	(0.19)	(-74.38)	(1.94)	(0.19)	(-2.19)	(0.46)
OWN	0.143	0.010*	0.132	0.143	-0.005***	0.207*
	(1.32)	(1.75)	(1.22)	(1.32)	(-4.80)	(1.91)
MAR	0.072***	0.001	0.070***	0.072***	0.002***	0.047**
	(3.04)	(1.13)	(2.98)	(3.04)	(8.49)	(1.96)
LEV	0.459	-0.014	0.473	0.459	-0.014***	0.656**
	(1.45)	(-0.80)	(1.50)	(1.45)	(-5.09)	(2.07)
GRO	-0.008	-0.003	-0.005	-0.008	-0.000	-0.005
	(-0.13)	(-0.95)	(-0.07)	(-0.13)	(-0.39)	(-0.08)
CAP	-0.374	0.034**	-0.410	-0.374	-0.009***	-0.251
	(-1.21)	(2.06)	(-1.33)	(-1.21)	(-3.26)	(-0.81)
HI	-0.004	0.000	-0.004	-0.004	-0.000***	-0.002
	(-1.42)	(0.37)	(-1.45)	(-1.42)	(-5.41)	(-0.76)
SIZE	0.105*	0.030***	0.074	0.105*	-0.002***	0.130**
	(1.94)	(10.14)	(1.32)	(1.94)	(-3.76)	(2.41)
TV	0.245**	-0.016**	0.261**	0.245**	-0.004***	0.297**
	(2.05)	(-2.43)	(2.19)	(2.05)	(-3.55)	(2.49)
BOA	1.319***	0.079***	1.236***	1.319***	0.004*	1.263***
	(4.99)	(5.54)	(4.63)	(4.99)	(1.72)	(4.81)
FLO	0.112	0.029	0.081	0.112	-0.005	0.184
	(0.30)	(1.42)	(0.22)	(0.30)	(-1.56)	(0.49)
ROA	2.195**	-0.152***	2.354**	2.195**	-0.003	2.232**
	(2.20)	(-2.82)	(2.36)	(2.20)	(-0.30)	(2.26)
_cons	-4.699***	-3.522***	-1.016	-4.699***	0.034***	-5.167***
	(-7.67)	(-106.34)	(-0.54)	(-7.67)	(6.24)	(-8.37)
N	1352	1352	1352	1352	1352	1352
r2_a	0.130	0.829	0.133	0.130	0.265	0.143

The disclosure of these negative information will affect the profits and future development level of enterprises [11]. If the disclosure of these negative information has too great an impact on the enterprise, or the penalty cost is greater than the benefit of information disclosure, the enterprise and its preferences choose to hide the information. Therefore, the interference of information disclosure needs to be eliminated. In the analysis of the impact of environmental strategy on the green transformation of enterprises, the samples of enterprises punished by environmental protection were eliminated, leaving 1323 samples. The test results show that the regression coefficient of environmental strategy is always positive at the level of 1%, which excludes the disturbing factors of information disclosure.

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Table 6. Robustness test

	GT2	GT_dummy	GT	GT
	(1)	(2)	(3)	(4)
ES	4.849***	7.743***	4.331***	1.898***
	(14.12)	(15.08)	(13.20)	(8.08)
AGE	0.019	0.009	0.002	0.003
	(1.32)	(0.56)	(0.15)	(0.28)
OWN	0.292*	0.676***	0.352**	0.135
	(1.81)	(3.89)	(2.35)	(1.22)
SIZE	0.186**	0.105	0.159**	0.105*
	(2.30)	(1.10)	(2.09)	(1.89)
MAR	0.118***	0.003	0.086***	0.073***
	(3.34)	(0.09)	(2.64)	(3.02)
LEV	0.614	-0.093	0.590	0.477
	(1.30)	(-0.17)	(1.33)	(1.47)
GRO	-0.001	0.034	-0.021	-0.010
	(-0.01)	(0.34)	(-0.22)	(-0.16)
CAP	-0.331	1.575***	0.094	-0.403
	(-0.72)	(3.01)	(0.22)	(-1.28)
HI	-0.009*	-0.007	-0.009**	-0.004
	(-1.94)	(-1.38)	(-2.05)	(-1.37)
TV	0.422**	0.180	0.483***	0.258**
	(2.37)	(0.95)	(2.81)	(2.12)
BOA	1.966***	1.760***	1.874***	1.343***
	(4.98)	(3.77)	(5.10)	(4.98)
FLO	0.200	0.508	0.247	0.150
	(0.36)	(0.85)	(0.47)	(0.39)
ROA	4.530***	6.915***	4.899***	2.182**
	(3.05)	(4.02)	(3.53)	(2.14)
_cons	-7.739***	-7.755***	-8.750***	-4.799***
	(-8.46)	(-6.65)	(-10.16)	(-7.67)
N	1352	1352	1352	1323
r2_a	0.245			0.131

5. Conclusion and Enlightenment

5.1. Research Conclusion

In this paper, using the data of listed companies, Shanghai heavy pollution empirically the relationship between environmental strategy and the enterprise green transition and channels, the main conclusions are as follows: (1) the environmental strategies significantly promote the enterprise green transition, compared to implement the strategy of poor environment of the enterprise, to implement the strategy of good environment of enterprise green transition of a greater role in promoting. In addition, the conclusion that environmental strategy promotes green transformation of enterprises still holds even after changing the measurement method of dependent variables, changing the econometric regression model, and excluding interfering factors. (2) Further research shows that there are significant differences in the impact of environmental strategy on the green transformation of enterprises in different life cycles, pollution levels and before and after the implementation of the new Environmental Protection Law. In other words, environmental strategy has a more obvious effect on the heavily polluting

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enterprises in the growth period after the implementation of the new environmental Protection Law. (3) From the perspective of effect channels, environmental strategy can promote the green transformation of enterprises by easing the pressure of financing constraints and improving the innovation ability of enterprises.

5.2. Revelation

(1) Adopt multiple and different implementation policies. First, enterprises should establish scientific environmental protection concept from the source and internalize environmental protection strategy in the construction of enterprise culture. Second, enterprises in heavily polluting industries, as the main battlefield for the implementation of environmental strategies, should increase the intensity and intensity of the implementation of environmental strategies of heavily polluting enterprises, so that they can enter the track of green transformation and development. Thirdly, according to the characteristics of the life cycle and considering the effectiveness and precision of the environmental strategy, the environmental strategy should be adjusted so that it can really "help" the green transformation of enterprises in the mature period and the decline period.

(2) Strengthen government support and supervision of enterprises. First, expand the financing channels of enterprise funds. The government should improve the financing market, actively promote green credit, and establish a multi-level capital market to ease the financing constraint pressure. Secondly, strengthen the support of enterprise innovation. The government should implement financial incentives, tax incentives, talent support services and other measures to stimulate enterprises to carry out RESEARCH and innovation. Finally, strengthen the supervision of the new environmental protection law, so that green transformation becomes a common practice among enterprises, so that the new environmental protection law becomes the legal basis for improving the green transformation of enterprises.

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