

# *The Influence of Green Credit on Industrial Structure and Countermeasures*

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**Abstract:** In the process of China's reform and opening up, the contradiction between economic development mode and resources and environment becomes increasingly prominent. The transformation of production mode, the development of green economy and the construction of green financial system are inevitable ways to optimize and upgrade the society. As the main part of green finance, how to make good use of green credit has aroused academic attention. Based on the background and characteristics of green credit, this paper systematically reviews the influence mechanism and effect of green credit on industrial structure, and puts forward relevant countermeasures, so as to make green credit contribute more value to the optimization and upgrading of industrial structure.

## **1. Introduction**

Clear waters and lush mountains are invaluable assets. At present, green development has become a trend. With the proposal of green development concept and the gradual establishment of green and low-carbon economic system, green finance plays an important supporting role. Green credit is the core tool of green finance and the largest green financial product issued at present. Therefore, it is of practical significance to study the influence of green credit on the optimization and upgrading of industrial structure in the process of China's economic transformation from high-speed growth stage to high-quality development stage and in the context of China's accelerating industrial structure optimization.

## **2. Green Credit**

### **2.1 Green Credit Background**

Since the industrial Revolution in the 18th century, global ecological problems have become increasingly prominent, and green civilization emerged as a civilization that pursues harmonious coexistence between environment and man. Green civilization gives birth to green finance, and the concept of green credit develops gradually on the concept of green finance.

At present, green credit is often referred to as sustainable financing and environmental finance in foreign academic circles. The theory related to green credit first appeared in Salazar's (1998) theory, which pointed out that the innovation of financial instruments was conducive to injecting capital

into environmental protection industry. Cowan (1999) expounded the concept of environmental finance, and also believed that environmental finance mainly affects the development of green industries through financing. Then in 2003, the equator Principle, the most representative green credit criterion in the world, was formally implemented, and the fourth edition was released in 2019.

Different from developed countries, the concept of green credit in China first appeared in the mid-2000s. In 2007, China environmental Protection Administration and other three departments jointly issued opinions on Implementing Environmental Protection Policies and Regulations to Prevent Credit Risks, which marked that green credit officially entered the implementation and promotion stage. In 2012, the CBRC issued green Credit Guidelines, which further improved the definition and relevant information of green credit. Then in 2014, 2015 and 2018, the key evaluation indicators for the implementation of green credit were pointed out, and it was clear that market-oriented measures were used to promote green credit and carry out evaluation of the implementation of green credit. Since emission peak, carbon neutrality and the deployment of green development goals, the development of green credit has entered a fast lane.

## **2.2 Features of Green Credit**

To get a clear picture of green credit, first understand the concept. Although there is no consistent definition of green credit in the academic circle at present, through literature review, green credit, as a way to serve the development of green economy (G.Y. Zhu, 2021), mainly has three characteristics. First, specific goals. The main goal of green credit is to help and encourage enterprises to reduce carbon and save energy, and to provide credit funds and preferential interest rates for environmentally friendly industries to support their sustainable development. Second, rely on the bank's financial means. As one of the financial products, green credit starts from bank loans. The bank adds environmental factors to the loan review mechanism, and finally makes loan decisions through this mechanism. Third, distinguish the object. For new energy and other environmental protection industries, green credit gives preferential treatment and care, and gives strong support; On the contrary, for enterprises with high energy consumption and pollution, the green credit policy reflects the credit constraints, reducing or stopping loans or withdrawing loans already issued.

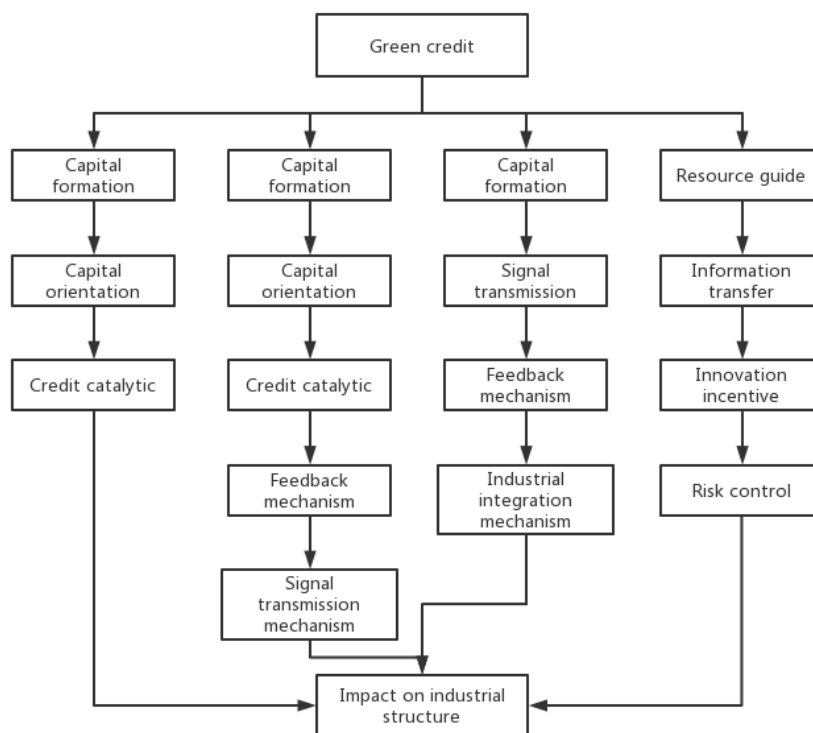
## **3. The Influence of Green Credit on Industrial Structure**

In recent years, green credit has attracted the attention of scholars at home and abroad. The research mainly focuses on the implementation effect of green credit policy, and the impact of green credit policy on the social economy, commercial banks, corporate debt, etc. With less focus on the impact of green credit policy on industrial structure. This paper systematically analyzes the impact of green credit on industrial structure from the aspects of influence mechanism, effect and heterogeneity by combing relevant literatures at home and abroad, and then puts forward relevant suggestions on this basis.

### **3.1 The Effect Mechanism of Green Credit on Industrial Structure**

The existing researches on the mechanism of green credit on industrial structure have also experienced a process of exploration and development. At present, most scholars represented by J. H. Fan (2021), S. Xu (2018) and H. J.Cai (2015) study the influence mechanism of green credit on industrial adjustment and upgrading through three mechanisms: capital formation, guidance and credit catalysis. First of all, capital is the foundation of industrial development, and sufficient capital is a prerequisite for the sustainable development of the industry. Green credit collects part of

the capital in the form of savings through the financial system. Under the guidance and support of policies, banks can concentrate a large amount of capital in a short period of time, thus supplementing the development of enterprises with sufficient cash flow and promoting the accelerated development, adjustment and upgrading of industries. Next, green credit policies guide the flow of capital. Commercial banks affect capital orientation in two main ways. First, pressure should be exerted on industries with high pollution, high energy consumption and excess capacity to implement credit policies with high interest rates to encourage such enterprises to adjust their production mode and economic development mode. The second is to protect high-tech and environment-friendly industries, and to implement low-interest-rate credit policies to support and encourage such enterprises to expand their scale and accelerate their development, so as to drive the upgrading of the industrial structure. Finally, under the action of the credit catalysis mechanism, commercial banks make predictions on the development trend of the industry, implement credit policies with a broader and forward-looking perspective, and it is no longer limited to invest in industries with obvious returns, but focuses on industrial projects with diffused effects, and at the same time gives play to demonstration effects to promote the construction and development of a reasonable industrial system.



*Fig.1 Main Types of Action Mechanism of Green Credit on Industrial Structure*

In addition, some scholars have enriched the above mechanisms or put forward different mechanisms, as shown in Figure 1. For example, On top of the three main mechanisms, C. Shao (2020) further puts forward the feedback mechanism and signal transmission mechanism, that is, green credit has the mechanism of expanding the positive feedback effect and can convey the signal that the country vigorously develops green economy, so as to provide reference for producers and investors, and then realize industrial optimization. G. Y. Zhu (2021) argues that the effects of green credit to promote industrial structure transformation mainly include four kinds of mechanism, in addition to the capital formation, signal transmission and feedback, also joined the industry

consolidation mechanism, main performance for the green credit policy to break the barrier of the original industry, space, realize the reconfiguration of production elements and flow to the green industry, and promote industrial upgrading. Y. Liang and Y. Zhao (2017) analyzed the influence mechanism of green credit on industrial structure from four aspects: resource guidance, information transmission, innovation incentive and risk control. Although it is not exactly the same as what the above scholars put forward, its main idea is still to guide the allocation of funds and optimize investment choices, etc. At the same time, it also proposes that green institutions can make use of the good risk control ability of green credit to comprehensively guarantee the smooth progress of industrial transformation and upgrading.

### 3.2 The Effect of Green Credit on Industrial Structure

The research on the positive effect of green credit on industrial structure in the existing literature is mainly based on three forms: theoretical significance, empirical analysis and case explanation.

From the theoretical perspective, the implementation of green credit policy guides the asymmetric investment of social capital resources among different types of enterprises, strictly controls the promotion of industrial projects that harm the environment (Anderson, 2016), and forces polluting enterprises to change their production mode, upgrade their industrial structure, and promote their transformation to low energy consumption and low emission enterprises (Nandy, Lodh, 2012). Y. Y. Li (2015) studied the impact of green credit on industrial structure adjustment from direct and indirect paths. X. T. Shu (2017) believes that the construction of a legal system for green credit and the cultivation of professionals are conducive to the adjustment of industrial structure. In general, the current literature on the impact of green credit on the industrial structure of theoretical research has been relatively rich and mature.

In the aspect of empirical analysis, Y. Li et al. (2020) took green credit policy as a dummy variable to build a fixed-effect panel regression model and found that green credit could significantly promote the upgrading of China's industrial structure. Y. Liu (2021) selects panel data of 31 provinces, autonomous regions and municipalities from 2008 to 2019 to conduct multiple linear regression, and the empirical results prove that green credit has a positive effect on the optimization and upgrading of industrial structure. Levine (2000) constructed a general equilibrium model and found that green credit could promote the optimization and upgrading of industrial structure by promoting technological innovation. In addition, many domestic scholars use space as a division to study the relationship between green credit and industrial structure in different regions. Y. M. Wang (2021) and Y. P. Tian (2021) focus on the Yangtze River Economic Belt and northeast China respectively and make empirical analysis on the relationship between green credit and industrial structure optimization by using spatial panel model and gray correlation model. All confirm that green credit is beneficial to promote the rationalization of industrial structure.

In terms of cases, T. Y. Ma (2010) took the Bank of China as an actual case to demonstrate that reducing loans to high-polluting enterprises through green credit policies can effectively curb the expansion of high-polluting enterprises. X. C. Wang (2021) took a branch of the Agricultural Bank of China, which takes green credit business as one of the key directions of business development, as an example, introduced its green credit development environment and overview, and the benefit analysis of a wind power company's green credit project was made.

Similarly, just as things have both advantages and disadvantages, green credit policy also faces some problems in the implementation process, which are mainly manifested in three aspects. Firstly, the implementation process is not flexible and information is not updated in a timely manner. High-quality green loans may be neglected because of delayed and one-sided information and evaluation. Secondly, there is a gap in the development of green credit in different regions, which further

aggravates the uneven development of different regions. At the same time, the lack of professional talents is not conducive to the innovation and professional development of green credit to a certain extent. Thirdly, there is a certain conflict between the green credit policy and the profit-making purpose of commercial banks, and the incentive measures are not perfect, which inhibits the maximization of the positive role of green credit.

To sum up, the effect of green credit on industrial structure is mainly reflected in: deepening the concept of environmental protection, inhibiting the development and expansion of environmentally unfriendly enterprises, and promoting the development of green industry. However, green credit also has some disadvantages to the industrial structure, this paper also puts forward specific suggestions on this basis.

### **3.3 Heterogeneity of the Impact of Green Credit on Industrial Structure**

#### **3.3.1 Regional Heterogeneity**

The key to industrial structure upgrading lies in the reorganization of production factors and the continuous optimization of resource allocation. China has a vast territory, and there are objective differences in economic development level, resources and policies among different regions, which may lead to different impacts of green credit on industrial structure in different regions.

Generally speaking, the eastern region provides favorable conditions for the development of green credit due to its leading economy, developed financial industry, abundant talents, information and other factors. The financial industry in central China has a large space for development and green credit is in a good state of development. In western China, due to the relatively backward geographical environment and transportation conditions, the role of green credit is limited. Some industries lack sufficient funds for transformation, and the adjustment and upgrading of industrial structure is relatively slow. The empirical analysis of H. Y. Zhu (2021) and Z. T. You (2021) et al proves that there is regional heterogeneity in the impact of green credit on industrial structure.

#### **3.3.2 Industrial Heterogeneity**

Among the three major industries, different industries contain different objects and reflect different characteristics. The tertiary industry is mainly information technology and service industry, which can fully meet the environmental protection standards in the process of green credit delivery. The secondary industry mostly includes energy-consuming and polluting enterprises, but this also means that there is a large room for improvement under the guidance of green credit policies, so the effect of green credit on upgrading the industrial structure of the secondary industry is also obvious. As for the primary industry, most of them are agriculture, forestry, fishing and animal husbandry, which are less affected by green credit. S. S. Qian, W. Z. Wang et al. (2019) empirically analyzed the correlation between green credit and different industries by using the grey correlation model, and the conclusion showed that the correlation of green credit policies decreased from the tertiary industry to the primary industry.

## **4. Relevant Countermeasures to Promote Industrial Structure Optimization and Upgrading with Green Credit**

### **4.1 Training of Professional Talents, Coordinated Development of Various Regions**

Different regions in China have different starting times and development bases for green credit, and their current development status also varies greatly. In the western region, for example, in the western region green credit one of the reasons for weak influence of industrial structure is in the

financial industry is relatively weak, lack of talent pool, and the implementation of green credit requires higher professional quality of employees, such as the need to comprehensively evaluate corporate credit and risks, and provide customers with comprehensive services. Therefore, it is necessary to cultivate green credit professionals. On the other hand, although the development level of green credit in the eastern region is relatively high, if we want to further expand the scale, enrich the results, and be in line with international standards, we still need the steady stream of high-quality professionals to promote the innovative development of green credit products.

## 4.2 Establish a Sound Incentive and Supervision Mechanism for Green Credit

As a part of financial products, green credit requires commercial banks to take into account social responsibilities while making profits, and guide the flow of capital to green industries. This may lack sufficient motivation for financial institutions whose main purpose is profit to continue. Therefore, it is necessary to establish a more A sound green credit incentive and supervision mechanism, on the one hand, enhances the initiative of banks to actively implement green credit policies. On the other hand, strengthen supervision and management, do a good job in security, and take multiple measures to further promote the positive effects of green credit.

## 4.3 Strengthen Innovation in Financial Instruments Such as Green Credit Products

Improve green financial market and related services, enrich green financial instruments, provide more diverse green financial services for fundraisers with different situations and risk preferences, gradually deepen their green and environmental awareness, and promote the optimization and upgrading of industrial structure.

## 5. Conclusion

To sum up, the green development path is China's unswerving development path, and it is also an irreversible and inevitable development process in the world. As an important part of green finance, green credit plays an important role in the future development of the financial industry and green industry. Green credit not only has a positive impact on economic development, commercial bank operations, environmental governance, etc. But also plays a positive role in optimizing and upgrading the industrial structure. But at the same time, as green development methods become more and more social consensus and sustainable economic development needs, the development of green credit also needs to be more scientific and rational, so as to have the guarantee of long-term development.

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