

Green Finance of Chinese Commercial Banks

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Green finance is a sustainable force in promoting green development. China's social financing structure determines the key role that green credit plays in sustainable development. Under the dual pressure of future economic downturn and huge capital gaps, it is worth exploring whether to continue promoting green credit that conforms to the long-term market mechanism.

green credit

“Two High and One Surplus”

financial results

1. Introduction

According to the Statistical Review of World Energy (70th edition) released by BP, by 2020 China's carbon emissions will account for 30.3% of the global total ^[1]. The success or failure of China's energy conservation and emission reduction projects will affect the overall global carbon neutrality. On the other hand, environmental problems are difficult for many developing countries in the world to avoid during their development process. As a developing country with a huge economic volume, how China realizes green, low-carbon, and circular development will provide a model for the economic transformation of the latecomers. Some scholars estimate that in order to achieve the goal of “carbon peak”, the whole country needs to invest an additional CNY 3–4 trillion every year, with the fiscal revenue only meeting 10–15% of the capital gap ^{[2][3]}, and investments should mainly rely on social financing. By the end of 2020, bank credit financing still accounted for 61% of total social financing. Therefore, green credit is the most important force affecting green finance in China. In fact, CIB Research estimates that green credit accounts for more than 90% of all green financing. (As of the first half of 2019, the green credit balance of China's 21 major banks was CNY 10.6 trillion, and the balance of domestic green bonds was only CNY 708.78 billion. The bank mainly issued green financial bond funds to issue green credit. Excluding the green financial bonds, the balance of the non-financial enterprise green bonds was only CNY 293.96 billion, less than 3% of the green credit scale. The balances of the other green financing scales were smaller. (Source: <http://greenfinance.xinhua08.com/a/20191227/1905011.shtml> (accessed on 16 March 2022))). On the other hand, since the beginning of the 21st century, China has faced the problem of environmental pollution during the process of the country's development. The government has always emphasized environmental protection and sustainable development and has frequently introduced policies for industrial structure adjustments, but these policies have always achieved poor results ^{[4][5][6][7]}. In essence, the massive development of high energy consumption and heavy-pollution industries has benefited from large inflows of credit funds (based on the bank loan data of the listed enterprises, Liu Xiliang and Wen Shuyang (2019) also found that “six of the top ten industries with the amount of credit are highly polluting industries, and the average emission of the top ten industries with the amount of loan is about twice that of other industries”) ^{[8][9]}. The unbalanced allocation of credit resources objectively promotes the

continuous expansion of industries with high rates of energy consumption and pollution and aggravates the environmental pollution and environmental costs incurred on the path towards economic growth. Therefore, the environmental problems caused by the industrial structure [10][11] can be attributed to the “financial mismatch” status of credit resources.

Therefore, green development must rely on optimizing the function of the financial allocation of resources, and green credit will be the most key link. In fact, the Chinese government has taken full action. For example, financial institutions, especially commercial banks, are asked to disclose environmental information, with banking financial institutions being required to regularly disclose financial information on their social and environmental responsibilities and on their support for energy conservation and emission reduction as well as to constantly refine their statistical standards for green credit information. In terms of financial discounts for eligible green credit, green credit and green bonds should become eligible collateral for re-lending by commercial banks. Local governments are also rolling out policies to support green finance. For example, Zhejiang province took the lead by issuing the Guiding Opinions on Financial Support to Achieve Peak Carbon Neutrality, established a positive list of credit supports for green and low-carbon development, and set up “zero carbon” pilot units and low-carbon industrial parks. In addition, a series of measures have been introduced, such as setting up carbon accounts for key enterprises and public institutions with carbon emissions and fostering regional environmental rights trading markets. Since 2016, Xiamen has offered different degrees of incentives, loan discounts, and risk-sharing compensation to the financial industry based on the scale of green credit.

The essence of green credit is to solve the externalities of the environment and finance for the green transformation of the economy. Its role in environmental protection is self-evident, and the relevant economic research focuses more on the market mechanism of green credit. In the short term, green development policies will have a certain impact on the national economy, especially in some traditional industries with high levels of pollution and energy consumption. For developing countries, such industries are the pillar of their national economy in the early stages of development. Additionally, the role of green credit through financial leverage has further increased the influence of this impact. On the other hand, the global economy is under downward pressure due to the impact of COVID-19, while it is also being buffeted by various extreme events that have severely affected financial stability.

2. Related Content of Green Finance in Line with the Long-Term Market Mechanism

The so-called green credit policy refers to a series of policies that allow commercial banks, policy banks, and other financial institutions to offer preferential interest rates for loans to enterprises or institutions that are engaged in ecological protection and the development and utilization of new sources of energy and that develop and produce anti-pollution facilities; meanwhile, the policy also includes a high, punishment interest rate that is implemented to limit loans for the investment and working capital of new projects carried out by polluting means of production and enterprises. The purpose is to guide the flow of funds and loans into the enterprises and institutions that promote the national environmental protection cause and to appropriately withdraw from the enterprises and projects that

destroy and pollute the environment to realize the “green allocation” of funds [12]. The capital allocation function of green credit means that the role of environmental governance can be carried out from the initial stages of the production process and can run through the whole production stage; that is, the incentive and restraint effect of green credit has the characteristics of initial governance and whole-cycle governance [13]. The earliest official proposals for green credit date back to the early 1990s, when the United Nations Environmental Program Finance Initiative (UNEPFI) issued the “Statement by Financial Institutions on the Environment and Sustainable Development” [14], which stressed the need to incorporate environmental factors into standard risk-assessment processes. Its main goal was to require the banking industry to consider environmental factors in its management activities and to encourage the private sector to invest in environmentally beneficial technologies and services. The Equator Principles, advocated for by the World Bank Group, provide a framework for environmental and social-risk assessment in project financing, including the risk classification of different types of projects, and list topics related to environmental assessment processes, monitoring, and follow-up guidance. At present, 56 financial institutions around the world, including Citigroup, Standard Chartered, and HSBC, have become Equator Principle Financial Institutions (“EPFIs”), accounting for more than 90% of the global project financing market. By the end of 2021, nine Chinese mainland commercial banks had incorporated the Equator Principles, which are also the practical blueprint for green credit in China’s banking industry (From the Preamble of the Equator Principles, www.equator-principles.com (accessed on 16 March 2022)).

Much of the research on green credit is based on a corporate perspective. Chinese enterprises are usually highly dependent on external financing, and credit resources are the “blood” of enterprise development. There is a long-term “financial mismatch” in China, where financial resources are concentrated in state-owned enterprises, large enterprises, and hot industries [15][16], and the enterprises with high levels of pollution and energy consumption mentioned above are mainly subject to government intervention [17][18] and credit rationing [19][20]. The green credit policy tries to change this “financial mismatch” phenomenon by introducing high-pollution investment into higher financing constraints and by internalizing the negative externality of corporate pollution emissions, thus having a profound impact on China’s industrial patterns.

From the implementation effect, there is a lot of evidence that green credit boosts the green and high-quality development of the economy. For enterprises in high-polluting industries, the green credit policy significantly reduces the credit financing of enterprises in heavy-polluting industries, which not only redirects the resources from low-efficiency enterprises to high-efficiency enterprises [21], but also promotes the green innovation in high-polluting enterprises [13][22]. Green credit has a significant effect on reducing the friction costs and risk coefficients in various industries [23]. On the other hand, the national conditions result in green credit having policy effects that cause enterprises to show certain Chinese characteristics. For example, the credit-approval features of Chinese commercial banks that emphasize mortgages [24] cause green credit policies to have less of an impact on highly polluting enterprises with high fixed assets [25]. Sun et al. [26] found that green credit policies can motivate Chinese enterprises to focus on front-end prevention and control rather than on terminal emission reduction.

The research results on the impact of green credit on commercial banks are divided. Many scholars believe that green credit has a positive effect on commercial banks. First, the implementation of a green credit policy can

improve the social image of commercial banks from the perspectives of media attention and recognition from customers, employees, and partners. For example, more social reports on green credit [27] and the disclosure of public announcements [28] can enable commercial banks to gain more public trust by improving their reputation. In contrast, there is evidence that commercial banks regard some major polluting enterprises as important loan-provision objects that will affect their green reputation, lead to the loss of high-quality customer resources, and result in reductions and fluctuations in the financial performance level [29]. Second, the implantation of a green policy can reduce the environmental risks of the loan customer. In the literature, environmental risk generally includes climate risk and environmental-regulation risk. China's current credit resources flow into industries with high energy consumption, high pollution, and excess capacity (hereinafter referred to as the "Two High and One Surplus") [8][9]; this process makes the value of the credit assets of commercial banks more sensitive to environmental regulations, energy price fluctuations, and market demand changes. There is evidence that green credit can effectively reduce the probability of loan losses caused by environmental regulations [30][31]. Climate risk affects the ability for loans to be repaid by changing the business cash flow of borrowers [32].

Scholars with the opposite point of view believe that green credit increases business costs (Ma and Liu, 2013; Hu and Zhang, 2016) and squeezes out the "Two High and One Surplus" loans (Chen and Lu, 2011). Even the decision by commercial banks to adopt the Equator Principles will bring a double blow to operating costs and profits (Scholtens and Dam, 2007). However, Maya et al. (Finger and Gavious et al., 2018) showed that most of these results occurred in developing countries, while the situation was reversed in developed countries. The study of Cao Junxin and Yao Bin (Cao and Yao, 2014) found that carbon emission reduction measures would reduce industry profits and affect the quality of bank credit assets.

Scholars who hold a neutral view emphasize case-by-case analysis. The impact of green credit on commercial banks is moderated by several factors, such as bank size: large banks have advantages such as cost amortization and customer resources and can benefit more from increasing the proportion of green credit [33]. However, the research results of Zhang Lin and Lian Yonghui [34] are in contrast to this. Tong Menghua et al. [35] believe that commercial banks will lose customers due to "one-size-fits-all" carbon emission reduction policies and advocate for the establishment of a "carbon emission reduction credit risk warning system for industrial enterprises" to ensure that commercial banks can maximize their interests when implementing green credit policies.

In terms of methods, most of the research in the literature takes the financial index of commercial banks as the explained variable and the proportion of green credit as the core explanatory variable to establish panel data linear regression. In terms of the explained variables, many scholars take return on total assets as the explained variable [34][36]. Some scholars have also used self-built comprehensive indexes as the explained variables, such as the bank competitiveness index [37] or the comprehensive evaluation index [38][39].

3. Financial Comparison between "Green" and "Two High and One Surplus" Enterprises

The main purpose of green credit policies is not only to increase the proportion of credit for green projects, but also to reduce the loans to “Two High and One Surplus” enterprises. Changing the credit structure of commercial banks is reflected in the proportion of these two types of corporate loans. Financial analysis is the most important link in the loan approval process of commercial banks. According to the financial analysis , it was found that, compared to the “Two High and One Surplus” industries, the environmental protection industry is better, but its financing costs are high (Figures 1-3).

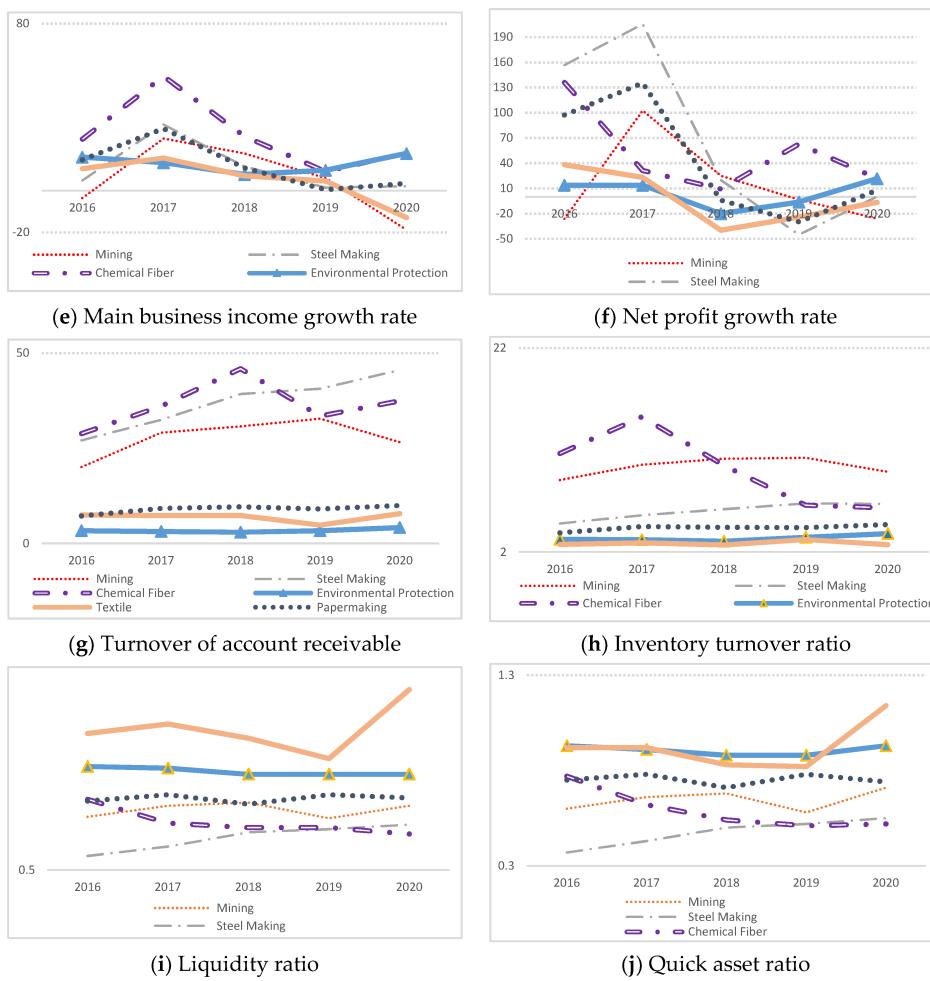


Figure 1. Financial comparison

between green industries and the “Two High and One Surplus” industries.

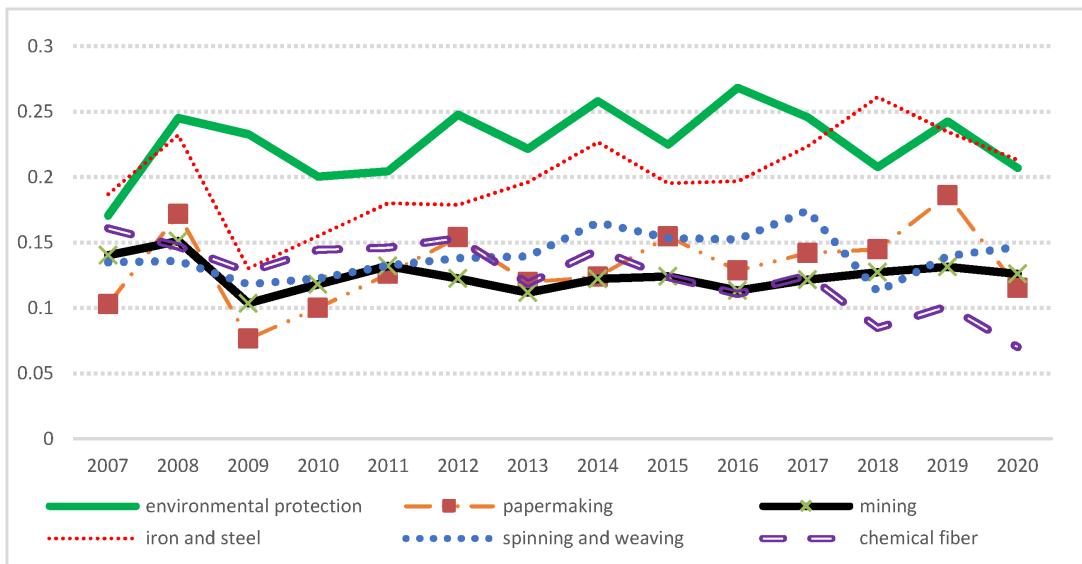


Figure 2. Interest-

bearing debt interest rate: environmental protection industry and “Two High and One Surplus” industries.

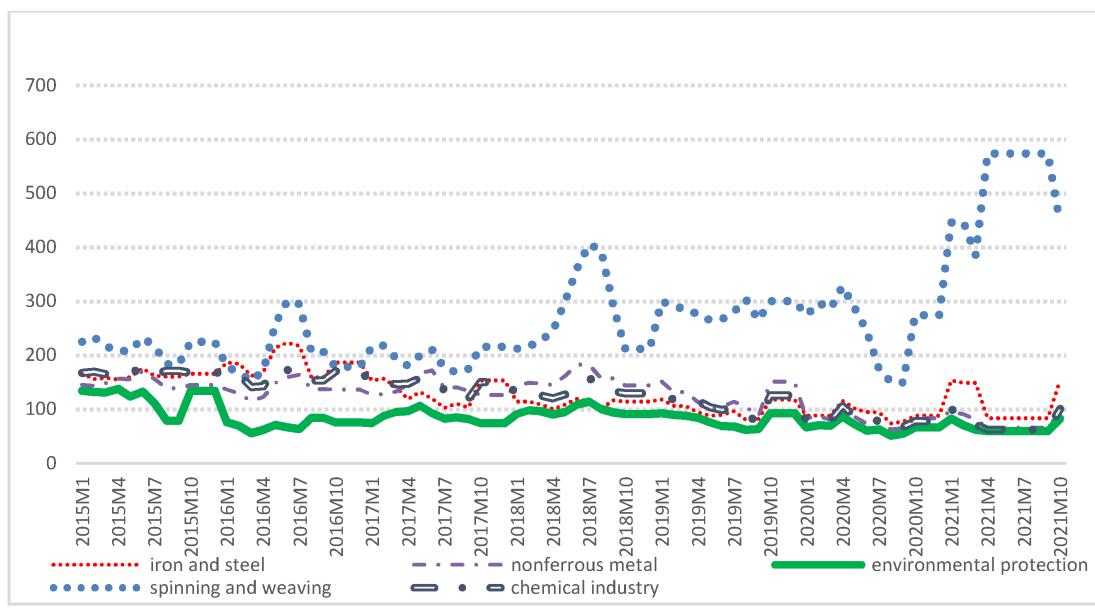


Figure 3. Credit spread

(median): industrial debt.

4. Do Green Credit Policies Boost Profits?

This section analyzes the influence of green credit ratio on the financial indicators of Chinese commercial banks through regression method. It is pointed out that the differences in conclusions from the literature are due to the selection of model variables. The root cause of these differences may be the rapid expansion of the capital of commercial banks in the sample period, resulting in a decline in the internal factor allocation efficiency. The empirical analysis proves that increasing the green credit ratio can increase the total profits of commercial banks and puts forward that green credit policies can solve the “overcapacity” problems that are experienced by commercial banks to a certain extent.

5. Green Credit and Bank Operating Efficiency

Section 5 analyzes the allocation efficiency of the internal resources of commercial banks from the perspective of input-output efficiency to prepare for the fourth part of the research. In terms of methods, an SBM-DEA model containing undesirable output (the non-performing loan ratio) was established, and the weights of the output variables were innovatively and dynamically coordinated. The results (Figure 4) show that the efficiency measurements for China's commercial banks largely conform to the economic reality, and the analysis of the slack variables effectively revealed the main reasons for the changes in the operating efficiency of commercial banks at various stages.

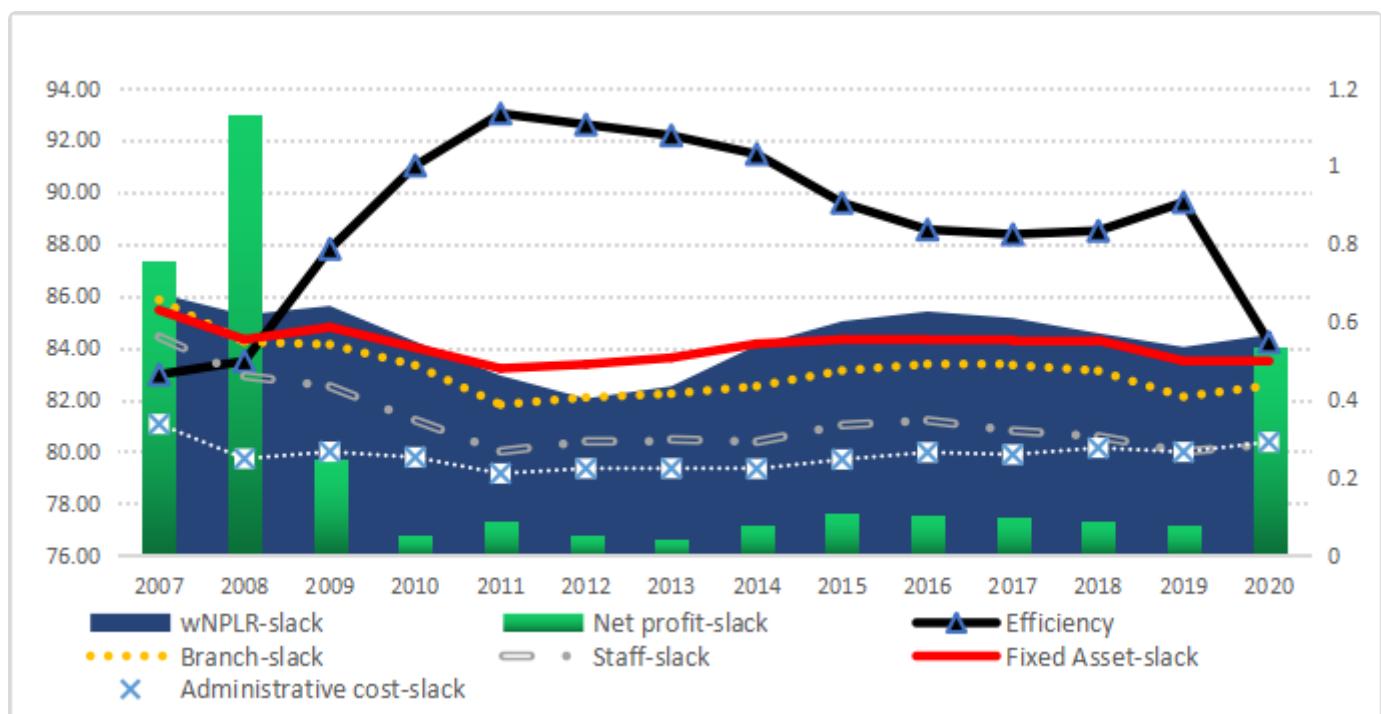


Figure 4. Average operating efficiency and slack variables.

Through regression analysis, it is found that green credit policies mainly improve the overall operating efficiency of commercial banks from two aspects: (1) it improves the utilization efficiency of various internal resources, and (2) it improves the overall allocation efficiency of resources.

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