Research on the Impact of Green Credit on the Financial Performance of Commercial Banks in China

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Abstract: Against the backdrop of China's "dual carbon" strategy, green credit has become an increasingly important financial instrument for supporting green development. It now plays a key role in helping commercial banks optimize their credit structure and enhance financial performance. Based on the conceptual framework and theoretical foundations of green credit, this study employs data from a selected commercial bank spanning the years 2016 to 2023 to conduct a systematic analysis of how green credit affects financial performance across three dimensions: profitability, asset quality, and liquidity. The results indicate that in the short term, green credit exerts downward pressure on profitability due to the reduction of loans to high-pollution and high-energy-consuming enterprises, as well as increased initial input costs. However, in the long term, profitability improves significantly as a result of the accumulation of high-quality green projects and optimized risk management. In terms of asset quality, the expansion of green credit effectively restructures credit portfolios and reduces non-performing loan risks. Regarding liquidity, although early implementation may increase liquidity stress, the gradual phase-out of high-pollution enterprise loans contributes to better control of liquidity risk and supports improved financial outcomes. Finally, the paper proposes policy recommendations such as strengthening cost control, expanding green credit scale, optimizing loan maturities, and enhancing risk management, with the aim of providing guidance for the sustainable development of green credit in commercial banks.

***Keywords*:** Green Credit, Financial Performance, Commercial Banks

1. Introduction

China is currently at a critical stage in advancing its “dual carbon” strategy, aimed at achieving peak carbon emissions and carbon neutrality. As a key component of the green finance system, green credit has become a strategic instrument in promoting business transformation and high-quality development within commercial banks. By prioritizing the allocation of credit resources to energy-saving, environmental protection, and new energy industries, green credit not only helps to optimize resource distribution and promote sustainable development, but also exerts a profound influence on the financial performance of commercial banks. With the continuous improvement of green finance policies and the steady expansion of market demand, green credit has experienced rapid business growth. As commercial banks actively fulfill their social responsibilities, they are simultaneously confronted with new challenges and opportunities in areas such as profitability, asset quality, and liquidity management. This paper selects a representative commercial bank as the subject of study and, based on the data of the case enterprise, investigates the mechanisms and practical effects through which green credit contributes to the enhancement of financial performance. Furthermore, it proposes targeted policy recommendations with the aim of providing practical guidance for the implementation and management of green credit in the banking sector.

2. Theoretical Background and Literature Review

Green credit refers to a financial support mechanism in which financial institutions prioritize the allocation of credit resources to green industries, such as energy conservation and environmental protection. Its core objective is to promote optimized resource allocation and sustainable development. Theoretically, green credit contributes to improving banks’ asset quality, reducing environmental risk exposure, and fostering differentiated competitive advantages. The development of green credit is influenced by a combination of policy guidance, financial technology, and risk management frameworks.

In 1987, the World Commission on Environment and Development under the United Nations released a seminal report titled Our Common Future, which introduced the concept of sustainable development. This concept emphasizes that economic progress must incorporate environmental considerations to ensure that the development of human society aligns with ecological sustainability. It asserts that the needs of the present generation should not be met at the expense of future generations' resources. Guided by this principle, commercial banks have begun to integrate ecological protection goals with

economic development, embedding environmental awareness into their management practices.

Ding Lei et al. (2022) argue that green credit significantly promotes sustainable and high-quality growth among banks[1]. Lian Yonghui et al. (2023) suggest that green credit enhances banks' image of social responsibility, builds institutional credibility, and helps attract a broader customer base[2]. According to Zhang Ying et al. (2023), green credit opens access to new customer segments and expands profit channels. Through the implementation of green lending, banks can effectively improve profitability, particularly by lowering non-performing loan ratios and reducing potential credit losses, which in turn enhances asset quality[3]. Liu Zekun (2023) contends that green credit reflects a bank's commitment to social responsibility and helps attract a wider range of potential stakeholders, thereby enhancing its profit potential[4]. Empirical research by Kang Xinyue (2023), based on data from 42 commercial banks between 2016 and 2021, reveals a positive correlation between green credit and bank profitability, indicating that the development of green credit can effectively increase return on equity (ROE)[5].

In summary, green credit encourages pollution-intensive enterprises to optimize production structures and transition toward greener operations, thereby reducing environmental damage and advancing ecological protection. At the same time, green credit has a demonstrably positive effect on the financial performance of commercial banks: it reduces credit risks, lowers the likelihood of bad debts, improves asset quality, and strengthens the bank's social responsibility image, which in turn helps attract more clients. Moreover, it enables banks to explore new revenue channels, supporting their long-term development and enhancing competitiveness in the financial marketplace.

3. Analysis of the Impact of Green Credit on the Financial Performance of Commercial Banks

3.1 Motivations for Commercial Banks to Develop Green Credit

3.1.1 External Drivers of Green Credit Development

(1) Alignment with National Policy Initiatives.

In July 2007, China's former State Environmental Protection Administration, together with the People's Bank of China and the China Banking Regulatory Commission, jointly issued the Opinions on Implementing Environmental Protection Policies and Preventing Credit Risks. This marked the official launch of China's green credit policy framework[6]. Subsequently, in 2012, the Green Credit Guidelines were formally introduced. In 2020, China explicitly proposed its "dual carbon" goals of peaking carbon emissions and achieving carbon neutrality. Since then, the government has issued a series of regulatory documents aimed at promoting the development of green credit. In response to these national policy directives, commercial banks have actively expanded their green credit portfolios to support the growth of the green economy.

(2) Strong Market Growth Potential.

As national attention to environmental protection continues to intensify, regulatory authorities have strengthened enforcement measures against polluting enterprises while offering financial support to eco-friendly and high-tech firms. However, despite such fiscal assistance, many green enterprises still face substantial funding gaps. According to a research report by the Green Finance Task Force of Renmin University of China, the demand for green financing in China is expected to reach 150 trillion yuan between 2015 and 2030[7]. This enormous capital requirement cannot be met solely through government subsidies, highlighting the crucial role of commercial banks in bridging the funding shortfall. Furthermore, a study released by Tsinghua University titled Research on China's Long-Term Low-Carbon Development Strategy and Transition Path estimates that achieving the dual carbon goals will require investments ranging from 127.2 trillion to 174.4 trillion yuan. These projections collectively underscore the immense funding gap in the green sector and reflect the urgent market demand for green credit.

3.1.2 Internal Drivers of Green Credit Development

(1) Pursuit of Differentiated Competition and New Profit Channels.

In 2009, the China Banking Regulatory Commission (CBRC) implemented a policy adjustment that relaxed market entry requirements for branch establishments of joint-stock commercial banks and city commercial banks[8]. This regulatory change intensified market competition, especially in an environment where the majority of banks continued to rely on traditional deposit-loan models. As a result, homogeneity across banking products and services became increasingly evident, leading to heightened pressure among industry peers. To break out of this competitive deadlock, commercial banks must expand their service offerings, introduce differentiated products, and identify new sources of profit. The proactive development of green credit represents an effective strategic approach to achieve this transformation.

(2) Need to Reduce Operational Risk.

According to data released by the China Banking and Insurance Regulatory Commission (CBIRC), in 2017, the non-performing loan (NPL) ratio of green credit across 21 major commercial banks in China was only 0.37%, significantly lower than the overall banking sector's NPL ratio of 1.74%. This considerable difference indicates that green credit presents a much lower credit risk compared to conventional lending activities. Consequently, by increasing their investment in green credit, commercial banks can effectively improve the quality of their credit assets and reduce overall operational risk exposure.

3.2 The Impact of Green Credit on the Financial Performance of a Selected Commercial Bank

3.2.1 Impact of Green Credit on Bank Profitability

Return on Equity (ROE) is one of the key indicators used to assess the profitability of commercial banks. A higher ROE value indicates stronger earnings performance. As shown in Figure 1, from 2016 to 2023, the green credit balance of the selected commercial bank exhibited a steady upward trend. During the period from 2016 to 2019, the bank's ROE also increased gradually. This improvement was partly attributable to the bank's efforts in promoting low-carbon operations, enhancing control over high-pollution and high-energy-consuming sectors, and actively phasing out legacy business portfolios. The bank's continued investment in green credit and optimization of its asset structure contributed significantly to enhanced profitability.

In 2020, however, the ROE declined, mainly due to the widespread impact of the COVID-19 pandemic on global industries. In response, the bank proactively fulfilled its corporate social responsibilities by establishing a fast-track approval process for key enterprises involved in pandemic prevention and control, and by offering loan repayment deferrals to clients adversely affected by the pandemic.

From 2021 to 2023, as the bank further expanded its investment in green credit, ROE steadily recovered. This upward trend provides evidence that green credit can effectively enhance the profitability of commercial banks over time.

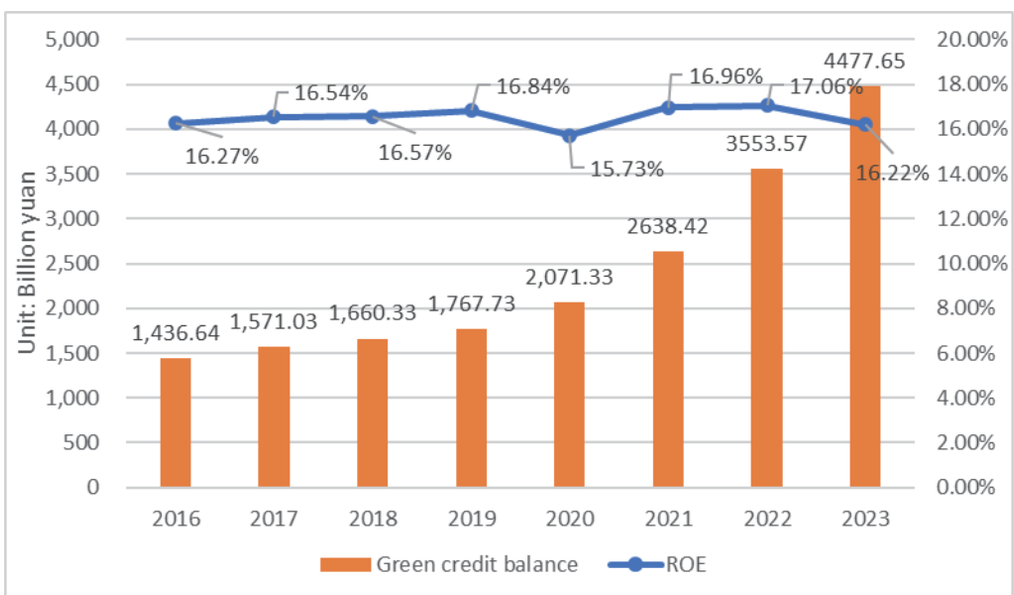

Figure 1. Green Credit Balance and Return on Equity (ROE) of a Commercial Bank, 2016–2023 (Source: Annual Reports of the Selected Commercial Bank, 2016–2023)

3.2.2 Impact of Green Credit on the Asset Quality of Commercial Banks

The non-performing loan (NPL) ratio is one of the key indicators used to assess the safety and quality of a commercial bank's credit assets. A higher NPL ratio indicates an increased risk of bad debts, deterioration in asset quality, and a potential negative impact on profitability. As shown in Figure 2, between 2016 and 2023, the green credit balance of the selected commercial bank followed a steady upward trend, while its NPL ratio showed a consistent downward trend. This suggests that the bank's sustained and stable expansion in green credit has effectively contributed to lowering the NPL ratio. Consequently, asset quality improved, bad debt risk was reduced, and operational risk was mitigated. Furthermore, the expansion of green credit helped the bank attract higher-quality and more creditworthy clients, thereby enhancing overall financial stability and institutional security.

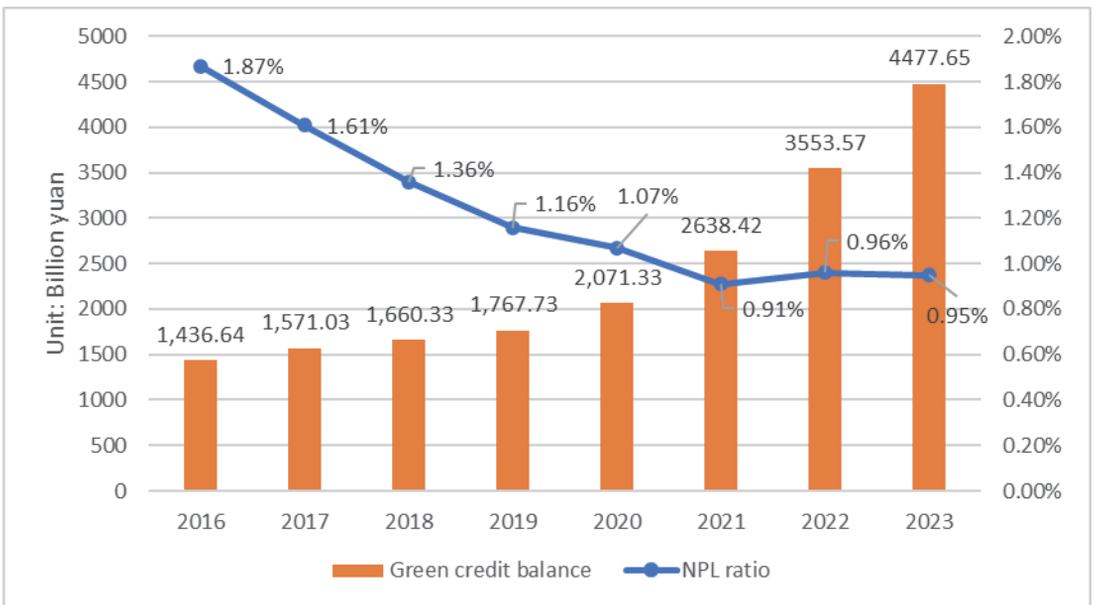

Figure 2. Green Credit Balance and Non-Performing Loan (NPL) Ratio of a Commercial Bank, 2016–2023 (Source: Annual Reports of the Selected Commercial Bank, 2016–2023)

3.2.3 Impact of Green Credit on the Liquidity of Commercial Banks

The loan-to-deposit ratio (LDR) is a key indicator used to evaluate a commercial bank's liquidity risk. It is calculated by dividing the total amount of loans by the total deposits. Effective liquidity management enables banks to maintain sufficient solvency to meet customers' withdrawal demands and fulfill debt obligations on time.

In terms of liquidity, green credit exerts a dual influence on commercial banks. On one hand, green credit projects often have relatively long operational cycles and require sustained capital input, which may constrain the liquidity of bank funds to some extent. Figure 3 illustrates the LDR of the selected commercial bank compared with the industry average from 2016 to 2023. The data show that from 2016 to 2017, the bank's LDR was above the industry average. However, from 2018 to 2023, the LDR dropped below the industry average and continued to decline.

This trend suggests that in the early phase of green credit implementation, the bank experienced elevated liquidity risk due to the long cycle and continuous funding needs of green projects. However, as investment in green credit increased and the bank gradually phased out legacy business from high-pollution and high-energy-consuming sectors, it managed to bring its LDR within a reasonable range. This adjustment effectively mitigated liquidity risk and had a positive impact on the bank's overall financial performance.

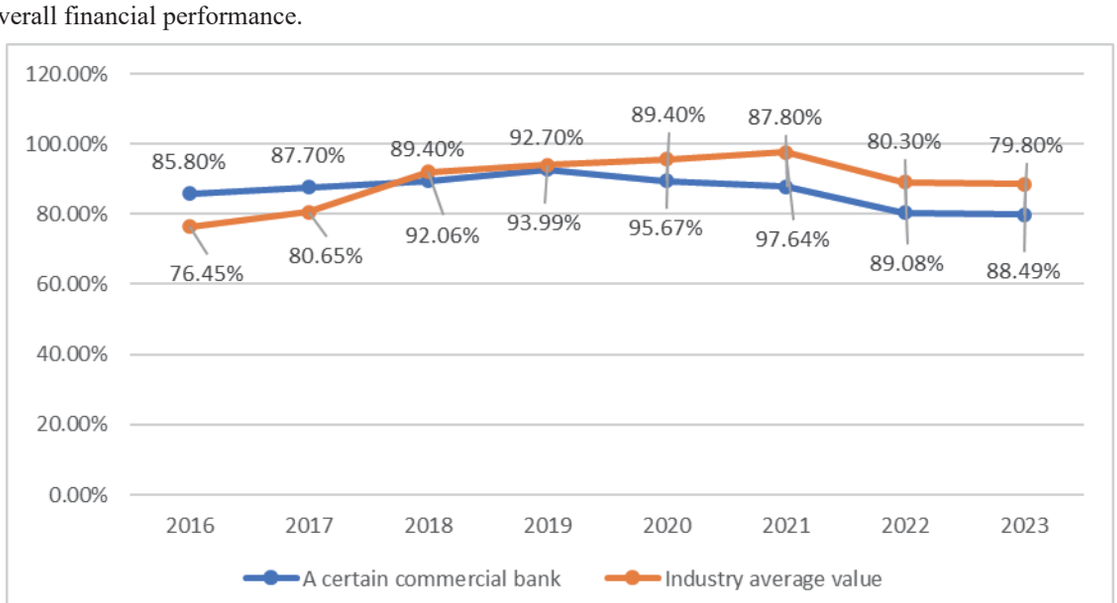

Figure 3. Loan-to-Deposit Ratio (%) of a Commercial Bank vs. Industry Average, 2016–2023 (Source: Eastmoney.com, iFinD (Tonghuashun))

4. Conclusions and Recommendations

4.1 Research Conclusions

The implementation of green credit has a significant impact on the profitability, asset quality, and liquidity of commercial banks. In terms of profitability, the short-term performance of banks may be constrained due to reduced lending to high-pollution and high-energy-consuming enterprises, as well as increased costs related to project approval, human resources, and risk control. However, over the long term, the accumulation of high-quality green projects and improvements in risk management contribute to the formation of stable revenue streams.

Regarding asset quality, the development of green credit has helped optimize the credit structure, lower non-performing loan (NPL) ratios, and enhance the safety of credit resource allocation. As for liquidity, although green credit projects often have longer cycles and higher technological risks — which may increase repayment pressure and credit risk — the gradual exit of loans to high-pollution enterprises has facilitated better control of the loan-to-deposit ratio. This has, in turn, strengthened liquidity management and contributed positively to overall financial performance.

4.2 Policy Recommendations

In terms of cost management, commercial banks should streamline approval procedures and enhance staff expertise to reduce operational costs. At the same time, they should take full advantage of government subsidies and tax incentives to alleviate cost pressures. In terms of credit expansion, banks should continue to channel funds toward green industries while strictly regulating the credit access of high-pollution enterprises, thereby lowering the risk of bad debts and improving asset security.

With respect to credit maturity structures and risk control, banks should scientifically design credit terms that align project cycles with funding arrangements. A robust risk assessment framework should be established to strengthen pre-loan due diligence and post-loan supervision of fund utilization. These measures will ensure that green credit is allocated to appropriate targets, providing long-term support for the financial performance of commercial banks.

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