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How does green finance drive the high-quality development of commercial banks?

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Abstract:

In the context of China's "dual carbon" goals, green finance has entered a stage of rapid and comprehensive development. To further guide the banking and insurance industries in this transformation, the regulatory commission issued the Implementation Plan for the High-quality Development of Green Finance in the Banking and Insurance Industry, which provides both policy direction and implementation pathways for commercial banks. Taking Industrial Bank as a case study, this paper analyzes the multi-dimensional adjustments made in its financial service system during the process of green transformation. The findings suggest that the mechanism through which commercial banks achieve high-quality development in green finance can be summarized in four aspects: leading the overall direction with forward-looking strategies, expanding the customer base and market influence through innovative green financial products, ensuring operational resilience and security with scientific and technological risk control measures, and amplifying long-term value by fostering ecological cooperation with multiple stakeholders. Ultimately, these mechanisms allow commercial banks to realize coordinated growth in economic, environmental, and social benefits, while simultaneously shaping differentiated competitiveness and achieving sustainable development advantages in the financial sector.

Keywords: Commercial bank; industrial bank; high-quality development; green finance

1. Introduction

In the context of intensifying global climate change and sustainable development becoming a global consensus, China has put forward the dual carbon goal in line with the trend. Foreign medium-sized banks follow international standards and market laws more, have a relatively high degree of ESG integration, and have more diversified business models. In contrast, domestic medium-sized banks are more strongly driven by national policies and develop rapidly, but may still catch up in system construction and professional capabilities, and emphasize serving the local economy and characteristic fields in terms of busi-

ness.

As the core of the financial system, the green transformation of commercial banks is crucial. In particular, medium-sized commercial banks, as a key node serving the local economy and connecting small and medium-sized enterprises and the financial market, have an important impact on the green transformation of the regional economy.

As of 2024, Industrial Bank's green finance financing balance has exceeded 1.7 trillion yuan, and the non-performing loan ratio continues to be lower than the bank's average, forming a clear competitive advantage in green bond underwriting, carbon finance and other fields. As China's first Equator Bank, Industrial Bank's exploration and practice in the field of green finance are of important benchmarking significance.

Therefore, this paper takes the cross-border financial service system of Industrial Bank as the starting point to explore the role of green finance in promoting the high-quality development of commercial banks. Analyze its specific practices and results in the field of financial services, provide reference for various banking institutions, and enhance their confidence and motivation to participate in green finance and achieve their own high-quality development.

2. Literature review

Ozili argues that green finance refers to the provision of financial support for projects that generate economic benefits and promote environmental sustainability. The benefits of green finance include the allocation of funds to protect the environment, the flow of funds to sustainable trade and investment activities , low-risk financing, and the development of green investment and financing tools [1]. Commercial banks are important players in promoting the development of green finance Ozili. The transition of traditional banking models to green development is also conducive to its own sustainable development [2, 3].

Since the 19th National Congress of the Communist Party of China issued relevant guidance on high-quality banking industry, Chinese industry scholars have carried out research on this. Starting from the bank itself, Mai Zhiying and Han Handong believe that good corporate governance, stable business model, efficient service quality, continuous value creation, and effective risk prevention and control are the goals of the bank's high-quality development [4]. Li Jian and others believe that the high-quality development of banks should emphasize "value creation and innovation-driven" and pay attention to the improvement of the bank's own capabilities [5]. Zhang Junyi and Chen Xie added macroeconomic factors to the consideration of the high-quality development of banks. It is proposed that the high-quality development of commercial banks should achieve coordinated development, create economic value and realize social value, and at the same time assume the obligation of matching the two roles of financial intermediaries and enterprises [6].

Regarding the impact of green finance on commercial banks, a lot of research has been carried out in the industry, covering multiple dimensions such as mechanisms, paths and practical effects, and has accumulated sufficient theoretical and empirical results. In terms of financial performance, Li Haoran et al.found through empirical research that although the initial investment cost of commercial banks in the development of green finance is high, it can optimize the asset structure and improve operational efficiency in the long run [7]. Nadia Mansour found that in the short term, green credit has a positive impact on the income level of commercial banks' intermediate business, and has a moderating effect on the return on total assets and non-performing loan ratio [8].

At the risk management level, Liu Guiping pointed out that CCB has controlled the non-performing rate of green credit at a low level by establishing a systematic management and control mechanism for environmental and social risks, significantly improving asset quality [9]. Sun Hongmei and Yao Shuqi used a double difference model to study and found that green finance can reduce operational risks, and the development of green credit significantly reduces the overall risk of banks [10, 11].

Green finance will benefit institutional shareholders who focus on impact investing , and Wang Mengyao demonstrates through empirical research that green finance can improve bank performance by enhancing customer trust and social reputation [12]. Guo Jing et al. analyzed from a more macro perspective and believed that green finance can effectively promote the high-quality development of commercial banks by optimizing the efficiency of credit resource allocation and improving the ability of green sustainable innovation [13].

At present, the academic community generally believes that green finance has a positive driving effect on the development of banks. However, in the existing academic research on evaluation systems, most of the literature either focuses on exploring the strategies and paths of bank development in the context of green finance, or focuses on the specific impact of a specific field of green finance (such as green credit, carbon finance, etc.) on banks. Lack of comprehensive discussion. This paper aims to fill this gap by taking Industrial Bank as an example to study the promotion of green finance for its all-round development. Combined with practical references, it provides corresponding theoretical reference for green finance to drive the high-quality development of commercial banks.

3. Green Financial Product and Ser-

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vice Innovation: Revenue Growth and Customer Stickiness

Under the drive of the „double carbon“ goal, the green and low-carbon field is releasing a massive demand for investment, which not only opens up a vast business growth space for Industrial Bank but also puts higher requirements on the breadth and depth of its financial services. Industrial Bank gives full play to the comprehensive advantages of the group, combining the characteristics of the green industry, its current development status, and the corresponding financing needs, to create a comprehensive range of green products and services for the group.

Green credit runs through the entire lifecycle of projects and is the main force driving the green finance development of Industrial Bank. By continuously reducing credit exposure in high-carbon and high-pollution industries and tilting resources towards green and low-carbon fields, Industrial Bank has achieved proactive optimization of its credit structure, enhancing the bank‘s long-term stability and anti-cyclical ability [14]. At the same time, the bank continuously expands the service scenarios of green financial products, increasing diversified income. For example, Industrial Bank combines green finance with marine economy and technological innovation to launch the first „blue + technology“ innovative bond in China. In terms of green trust, Industrial Trust introduces the „trust-rent linkage“ service model, which plays a guarantee role for lease credit rights through the „asset isolation“ function of the trust license, coordinates project management, and solves difficult problems in the new energy industry.

The characteristics of the full lifecycle of green projects have led banks to transform from a single financing supply to a comprehensive service direction. On one hand, banks can broaden the income from intermediary businesses and optimize their revenue structure. For example, through underwriting green bonds, issuing green wealth management products, carrying out carbon asset pledge financing, providing ESG consulting services, and other services, Industrial Bank has achieved rapid growth in handling fees, asset management fees, and carbon financial service fees. On the other hand, deepening cooperation allows banks to better understand the green transformation path and financial needs of enterprises, enhancing customer loyalty. For example, when Industrial Bank provided a bamboo carbon sink project loan to a Taiwanese agricultural development company in Nanping, it was deeply involved from the initial stage of the project, utilizing its professional advantages to assist the company in completing key links such as forest resource investigation, carbon sink quantity calculation, and project registration and filing. This cooperation enabled the bank to fully understand the technical path and transformation pain points of the company in ecological protection and carbon sink development. Based on this in-depth understanding, the bank provided “carbon sink loan” financial services and continued to follow up on subsequent carbon asset management and trading needs, forming a long-term and stable cooperative relationship.

Data shows that Industrial Bank’s green finance customers and green financing balance continue to grow. As of the end of 2024, the number of green finance customers increased by 23.14% year-on-year to 71,800, and the green financing balance increased by 15.88% year-on-year to 21.9 trillion yuan. (From Industrial Bank’s official website) Industrial Bank’s continuous deepening in the green field not only achieves profit growth through the scale expansion and structural optimization of green finance business, but also expands the customer base through the extension of services covering the entire industrial chain; at the same time, in the process of meeting the needs of industrial green transformation, it further drives the upgrade of its business capabilities and product innovation iteration, injecting core momentum into high-quality development.

4. Green Transformation of Risk Management System: Enhancing Core Competitiveness

Traditional credit risks are often concentrated in financial and credit indicators. Green finance requires banks to assess the carbon emissions and pollution emissions of customers or projects, which broadens the perspective of commercial banks in risk assessment and prompts them to build a more comprehensive risk view. Green risk control is the fundamental guarantee for the healthy development of green finance. Due to the technical complexity of quantifying environmental risk factors, building an efficient and systematic green risk control system has become the key to the green transformation of commercial banks; although the initial investment cost is high, it can improve the long-term risk control efficiency of banks and also make them more competitive in the market.

Industrial Bank adopted the Equator Principles in 2008, laying out in the green field 10 to 20 years earlier than peers. The practical experience accumulated from this first-mover advantage has laid a solid foundation for the construction of subsequent risk control models. Focusing on key industries and key regions, Industrial Bank implements a comprehensive risk control strategy of “protection, control, and pressure,” and, in combination with regulatory policies and industry characteristics, has formulated special ESG credit systems for 23 industries such as agriculture, forestry, and thermal power. These systems not only specify the environmental and social risk points in each industry in detail but also clarify the corresponding risk control measures and entry standards, providing a sol-

id institutional guarantee for Industrial Bank's green risk control.

Based on the complexity of green finance environmental data and the scenario characteristics of risk control calculations, Industrial Bank integrates financial technology with the logic of green finance business, establishing the "Green to Gold" overall system. This system can automatically identify and judge business attributes according to preset "green standards". The system is built-in with more than 40 self-developed environmental benefit calculation models, covering more than ten industries such as wastewater treatment, hydropower, and photovoltaic, achieving precise assessment of environmental benefits. By applying big data analysis technology and artificial intelligence, deep mining and analysis of massive data can automatically generate corporate ESG ratings and implement customer classification and management accordingly. At the same time, it has an Equator Principles review module, which can classify projects and formulate plans according to project characteristics, effectively preventing environmental risks. By using technical means to access multi-dimensional data sources such as corporate energy management systems, online monitoring of pollution emissions, and satellite remote sensing images, it can master corporate energy consumption, emissions, and resource utilization information, and achieve dynamic management of the entire process.

In response to the issue of information asymmetry in green finance, Industrial Bank has also designed corresponding solutions. Taking the Shenzhen Mangrove Carbon Sink Collateral Financing Project as an example, the project faces difficulties such as the lack of traditional collateral for mangrove protection, the difficulty in quantifying carbon sink value, and the lack of evidence for financial institutions to assess. In this regard, Industrial Bank uses its "Mangrove Protection Project Carbon Sink Methodology" as the accounting standard, combined with satellite remote sensing data, to accurately predict the project's carbon sequestration of about 120,000 tons over the next 10 years, achieving the quantified expression of ecological value. At the same time, the system dynamically links the carbon sink value with the loan amount; once the carbon sink value is significantly reduced due to natural disasters or other factors, it automatically triggers risk warnings and early repayment mechanisms, effectively reducing risks. At the same time, the system integrates monitoring data from the ecological environment department, third-party verification reports, and risk assessments from insurance institutions, cross-verifying multi-party data to greatly enhance information transparency and credibility.

Industrial Bank has taken the localization of the Equator Principles as a breakthrough, optimizing the project financing business process and upgrading the risk control concept, ultimately forming an advanced environmental and social risk management system. By the end of 2024, the non-performing loan rate of green loans at Industrial Bank was only 0.41%, significantly lower than the industry average (the non-performing loan rate of commercial banks nationwide in 2024 was about 1.6%). Green finance, through broadening the evaluation dimensions, driving technological empowerment, and innovating risk control models, has made the risk management system of commercial banks more comprehensive, forward-looking, and intelligent, ultimately enhancing the bank's own risk resistance and sustainable development capabilities.

5. Ecosystem Co-construction: Policy-Bank Collaboration, Industry-Finance Integration, and International Cooperation

5.1 Deepening Government-Bank Cooperation

Industrial Bank actively applies for qualified carbon emission reduction loan projects, making full use of policy tools to reduce financing costs. In 2022, the bank successfully obtained over 200 billion yuan in low-cost funds through the People's Bank of China's carbon emission reduction support tool, corresponding to supporting the issuance of about 400 billion yuan in carbon emission reduction loans. The low-cost funds provided by the People's Bank of China significantly reduced the bank's capital costs, enabling it to support green projects with more competitive interest rates under the premise of risk control, enhancing the accessibility and commercial sustainability of green credit.

The difficulty in measuring green finance, its highly scenario-based characteristics, has prompted government-bank cooperation. (Amended) Banks have also shifted from passive response to policy to active participation in the construction of the system. Industrial Bank seized the opportunity to actively participate in the construction of the national green financial innovation and reform pilot areas, establishing green financial specialized institutions in many places such as Zhejiang, Jiangxi, and Guangdong. In 2017, Industrial Bank conducted its first cooperation with the local government in Huzhou, Zhejiang. Both parties conducted green project selection and evaluation through regular consultation mechanisms, with the government providing industrial guidance and policy coordination, and the bank matching differentiated credit resources and interest rate preferences, effectively promoting local sustainable development. In this cooperation model, Industrial Bank accumulated rich green financial methodologies and replicable operational experience, laying a solid foundation for subsequent development. In addition, the government's endorsement significantly

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enhanced market trust. With the credibility of cooperation with the government, Industrial Bank has more advantages in attracting social capital, issuing green bonds, and conducting syndicated loans, effectively broadening its sources of funding. At the same time, the successful implementation of a batch of iconic green projects, such as the transformation of ecological parks and the construction of renewable energy power stations, has greatly enhanced Industrial Bank's brand influence and market competitiveness.

5.2 Industrial and Financial Integration

Industrial Bank has delved into the green industrial chain, integrating resources upstream and downstream to achieve ecological synergy. To facilitate the allocation of new energy sources, Industrial Bank has established strategic cooperative relationships with energy central enterprises such as State Power Investment Corporation, Three Gorges Corporation, and Huaneng Group, and jointly initiated the "Green Industrial and Financial Alliance". On one hand, Industrial Bank can rely on the industrial resources within the alliance to deeply understand the direction of technological iteration in the new energy industry, the construction period of projects, and changes in market demand, thereby making financial services more in line with the actual operation rhythm of the industry; on the other hand, energy central enterprises within the alliance can also leverage Industrial Bank's financial network, cross-regional service capabilities, and customer resources along the industrial chain to promote the development of projects.

5.3 International Cooperation and Cross-border Financial Services

Commercial banks, as key drivers of the green financial system, not only provide financing support to the market but also play an irreplaceable role in promoting the internationalization of green standards and the sustainable development of projects. At the same time, commercial banks have also enhanced their market competitiveness and international influence through international green practices.Industrial Bank, through its cooperation and exchanges with multilateral international institutions, has not only achieved a systematic upgrade of its own capabilities but also promoted the alignment of China's green financial standards with the international system.

The green demand in emerging markets is strong, and there is an urgent need for energy structure transformation in countries along the Belt and Road in Southeast Asia, the Middle East, and Africa. According to the joint analysis data of the International Energy Agency (IEA) and the International Finance Corporation (IFC), the investment gap in the field of renewable energy in emerging markets and developing economies in 2023 is as high as hundreds of billions of US dollars, with photovoltaic, wind power, and energy storage becoming key areas for development. This trend has opened up a vast space for cooperation for green manufacturing enterprises in our country and others. However, Chinese enterprises generally have insufficient cross-border credit qualifications, and foreign projects usually have high requirements for performance guarantees,

which has kept the cost of financing high. Thanks to its rich experience in green finance and a timely agency network, Industrial Bank has integrated its resource advantages and innovatively launched green letter of guarantee services. For example, in 2024, the Hefei Branch of Industrial Bank actively took action and issued an international letter of guarantee of 2.09 billion US dollars for a listed company in Anhui Province, successfully helping the company sign a 7.8GWh energy storage project with Saudi ACWA Power Company. This initiative set a new record for the amount of a single green letter of guarantee by Chinese banks.

Industrial Bank has helped enterprises win large-scale projects in fierce international competition by providing credit enhancement services. More importantly, it has achieved precise alignment of green financial resources with the real economy. This initiative not only promotes the internationalization of high-end manufacturing capacity of Chinese enterprises, enhances the influence and competitiveness of Chinese enterprises in the international market, but also fully demonstrates the responsibility and commitment of financial institutions in supporting the global green and low-carbon transformation process, achieving the organic unity of corporate value and social responsibility.

6. Conclusion

With a forward-looking strategic vision, Xingye Bank has seized the priority in the green market and accumulated a series of practical experiences. As green finance continues to develop, its strategic position in Xingye Bank has also gradually increased. From the green department to the green bank, Xingye Bank has gradually established a complete and effective green financial system, achieving significant development in products, risk control, and ecological cooperation.

From the practical results of Xingye Bank‘s development, it can be concluded that the in-depth development of green finance has brought multiple-dimensional development opportunities and positive impacts to the banking industry, promoting the high-quality development of commercial banks. Firstly, at the product level, green finance helps to promote the optimization of business structure, enrich the bank‘s sources of income, and enhance the connection

between the bank and its customers. Secondly, at the risk control level, green finance helps to broaden the breadth and depth of the bank‘s risk view, drive technological innovation related to green technology, and achieve the transformation and upgrading of risk control models. Thirdly, in terms of cooperation, green finance deepens the relationship between commercial banks and the government, building many bridges for cooperation. At the same time, the environmental protection concept conveyed by green finance helps banks to better communicate and interact internationally, promoting the high-quality development of banks.

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