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Analysis of the Reasons Why Banks Issue Green Bonds

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Abstract: In recent years, with the rapid development of economy and science and technology, environmental problems are becoming more and more prominent. "Double carbon" target is an important measure to put forward by China to improve the environment. Among them, green bonds provide outstanding achievements for the achievement of the "double carbon" target, and provide funds for the implementation and development of energy conservation and low-carbon projects. This paper uses the method of case analysis, focusing on the development of Industrial Bank in green bonds; At the same time, from the theory, economic factors, efficiency factors and other aspects of the in-depth analysis of Industrial Bank issued green bond reasons. Through case analysis and research, it is concluded that national policies and the benefits brought by the issuance of green bonds are the most important factors to promote the issuance of green bonds by banks, and the theory of environmental Kuznets curve is the premise of the issuance of green bonds.

Keywords: Green bonds, Kuznets curve, Externality theory

1. Introduction

In order to give consideration to green, circular and low carbon development while accelerating economic construction and development, the state encourages the development and issuance of green bonds, the development of green bonds is the key of industrial transformation in the country, and the appearance of various green financial instruments is the impetus to promote the development of the green industry. Among them, Industrial Bank plays an important role in the field of green finance. It is a typical and successful case of issuing green bonds, which is worthy of specific analysis and reference [1].

As an important part of the green finance system, green bonds can well promote green innovation among enterprises and provide a powerful driver for green recovery and supply-side structural reform of products [2].

Domestic studies on green bonds mainly include Wang Yao and Xu Nan's definition [3]. On the other hand, studies focus on the research status, problems and countermeasures of green bonds at home and abroad, such as Wan Zhihong and Zeng Gang and Huang Jie [4-5]. Xiao Yingbo compared China and the international green trading market and summarized experience [6]. Foreign studies of green bonds have focused more on the impact of green bonds on macro or micro economies. For example, Suk Hyun used empirical analysis to demonstrate the pricing of green bond related projects [7]. Chuc Anh Tu; Tapan Sarker; Ehsan Rasoulinezhad discussed its impact on green finance on the key point of "green" [8]. The influencing factors of the green bond market are summarized [9].

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This paper makes an in-depth analysis of the reasons why banks issue green bonds from the aspects of economy and politics, so as to make the purpose of issuing green bonds more clear, fill in the shortage of the causes of bank green bond issuance, and make a more detailed analysis based on the case of Industrial Bank.

2. Background of Industrial Bank's Green Bond Issuance

2.1. Current Situation of Green Bond Issuance in China

Green bonds are the second largest component of green finance in China, second only to green credit in size. In January 2016, Shanghai Pudong Development Bank issued the first green finance bond, marking the official launch of green bond issuance in China. Since then, China's green bond market has grown rapidly, with annual issuance exceeding 200 billion yuan. It even topped 290 billion yuan in 2019.

The issuance of green bonds that meet international standards in China ranked among the top in the world from 2016 to 2020, and the first globally in 2016.China ranked fourth in terms of green bond issuance in 2020, as the country focused on fighting the impact of the pandemic. As of May 31, 2021, China had issued 1.3 trillion yuan of green bonds, with the current scale exceeding 1 trillion yuan. Today, China still ranks first in the world in terms of green bond issuance.

2.2. Development of Green Bonds of Industrial Bank

2.2.1. Initial Stage: 2006 ~ 2009

In 2006, Industrial Bank initiated energy efficiency project financing business, through which the bank made a breakthrough in the field of green finance, which became a symbol of the bank's green finance. In 2008, as the first commercial bank in China to officially adopt the Equator Principles, industrial Bank strictly adheres to international standards to promote green finance, and has issued many financial services centered on environmental protection and energy conservation based on this standard.

In 2009, Industrial Bank established a special research group on green finance development and successfully used the Equator principle to finance green finance projects for the first time.

2.2.2. Innovation Stage: 2010 ~ 2016

In 2010, Industrial Bank pioneered and innovated in the field of carbon finance and issued China's first credit card themed on low-carbon economy. In 2012, the Sustainable Development Finance Department was established to gradually shift its green finance business to diversified and professional development. In 2014, In 2014, "Xing yuan 2014 Green Finance Credit Asset-backed Securities" was successfully issued by Industrial Bank. This security is the first green finance credit asset-backed bond in China, which has special significance; The bank worked with the Hubei Carbon Emissions Trading Center and Hubei Yihua Group to issue China's first carbon quota mortgage loan. In 2015, the green financial product framework was officially released and the G20 Statement on Energy Efficiency of Financial Institutions was signed. In 2016, the green financial product "Wan li bao-Green Finance" was issued for individual investors, with funds mainly invested in green and environmental protection projects. Industrial Bank invested in the country's first single non-listed company green asset support special plan was formally completed, and the raised funds were used for the purchase and operation of new energy and clean energy buses.

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2.2.3. Development Stage: 2017 ~ 2019

In 2017, the strategic cooperation agreement was jointly signed by Industrial Bank and four provinces, including Zhejiang. The agreement includes three aspects of "financing, intellectual finance and integration", with the purpose of fully supporting the above regions to build green finance innovation and reform pilot zones. With Industrial Bank as the lead underwriter, the first financial leasing green bond in the domestic interbank and exchange markets issued 1 billion yuan in the first phase, and all the funds raised were used for clean energy leasing projects related to water power, wind power, solar photovoltaic power generation and so on. In 2018, Industrial Bank was the lead underwriter of Guangzhou Metro Group's 5 billion yuan passenger ticket income right asset-backed notes successfully registered. In 2019, Industrial Bank and China Clean Development Mechanism Fund Management Center jointly reached an agreement and signed a green finance cooperation agreement to jointly build an innovative financing model for green development and facilitate the transition of various regions to low-carbon and green development. Industrial Bank signed a green finance strategic cooperation agreement with the General Administration of Coal Geology of China and its subsidiaries to provide at least 10 billion yuan in green finance support to promote the green transformation and development of the coal industry. Industrial Bank has issued a total of 130 billion yuan in green bonds through October 2019. The theoretical premise of the issue

2.2.4. Environmental Kuznets Curve

In 1991, U.S. economists Grossman and Krueger were the first to empirically study a regular link between environmental quality and per capita income. In 1993, Panayotou defined the environmental Kuznets curve. The main object of the curve was the relationship between environmental quality and per capita income, and the inverted U-shaped curve was used for reference to a certain extent The environmental Kuznets curve shows that when a country has a low level of economic development, environmental pollution is relatively light, but as per capita income increases, environmental pollution becomes more and more severe as the economy grows. When economic development reaches a certain level, environmental pollution decreases from high to low levels, gradually slows down, and gradually improves environmental quality. Thus, in the initial stage of a country's development, its economic development mainly depends on intensive human resources and limited natural resources, and the final consequence is the serious loss of resources and environmental pollution. When the country's economy improves and develops to a certain stage, the marginal effect on the environment caused by economic growth gradually decreases, and the people's living standards improve so that they pay more attention to the needs of living environment. The government focuses on environmental issues, and pays attention to the improvement and protection of the environment. At this time, the speed of national economic development has been slowed down, and the quality of the environment will gradually improve.

2.2.5. The Theory of Externalities

Pigou defines the beneficial effect that the activities of producers have on society, and called it "marginal social gain"; The adverse effect of a producer's activity on society is known as the marginal social cost. For example, the production of the enterprise make the pollution of the environment, produces adverse effect on the environment, people need to upgrade or increase the relevant environmental protection measures, it generates a certain cost expense, this is the external costs, production costs are marginal private cost, the sum of marginal private cost and marginal external cost is marginal social cost. Thus, the sum of marginal private income and marginal external income is marginal social income. In order to achieve the best state of resource allocation, marginal private cost and marginal social cost, marginal private benefit and marginal social benefit should be

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consistent, and the externality is actually the inconsistency of these four items. Governments adopt appropriate economic policies to tax sectors or enterprises whose marginal private costs are less than marginal social costs; To the marginal private income is less than the marginal social income of the sector to implement incentives and subsidies, that is external economic effects, to subsidize enterprises. Similarly, the development of green bonds and other financial instruments is also a way that the combination of government means and market mechanism is conducive to the optimization of resource allocation, which is conducive to the realization of energy conservation and green emission reduction.

2.3. Analysis of Economic Factors

2.3.1. Social Development Needs

With the rapid development of Chinese economy, in the process of its growth China depletion of resources and serious pollution of the environment problem has attracted the attention of the government and the masses, in the 16th national congress of the communist party of the Chinese government put forward the scientific development strategy, asking people to meet their material needs at the same time pay attention to the resources exploitation and the degree of environmental damage, Once the ecological balance is broken by over-exploitation or environmental damage, species extinction and extreme environment will occur.

The Fifth Plenary Session of the 19th Central Committee of the Communist Party of China has proposed the development of green finance, and the Central Economic Work Conference has explicitly called for greater financial support for green development. Currently, China is in an important phase of energy and industrial restructuring, pollution prevention and control, and ecological restoration. Green finance has also emerged as an important force in promoting green economic and social development.

The government guides and supports relevant green financial institutions to issue bonds, which ultimately flow to various green projects, and the green projects ultimately serve for environmental optimization. At the same time, they will communicate with relevant green bond management departments for cooperation, and continue to promote the unification of the underlying system of the green bond market and the convergence of the standards of Chinese and foreign green bonds, so as to better serve the targets of carbon peak and carbon neutrality. Under this factor, Industrial Bank actively develops green bonds to invest in green projects.

2.3.2. Government Policy Call

Table 1 shows the improvement of green finance and green bond-related policies in China from 2013 to 2021 and the improvement process.

Table 1: Review of major green finance policies in China.

Time	Policy
In July 2013	The former CBRC required policy banks and major financial institutions to conduct green credit statistics.
In September 2015	The State Council issued the "Overall Plan for Ecological Civilization System Reform", which proposed the green finance system strategy for the first time.

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Table 1: (continued).

In August 2016	The Guidelines on Building a Green Finance System were issued, clarifying the definition, incentive mechanism, development direction and risk monitoring measures of green finance in China, and establishing a top-level framework system for green finance in China.
In June 2017	The establishment of the green finance reform pilot zone is an important measure taken by The State Council to promote green bond issuance and innovation in five provinces-Zhejiang, Guangdong, Xinjiang, Guizhou and Jiangxi - to promote regional exploration of green finance.
In November 2018	Green Investment Guidelines (Trial) clarified the connotation, objectives, principles and basic methods of green investment, guided the design of green investment information disclosure system and the quantification and design of green indicators, and provided guiding guidance for investors in green investment.
In March 2019	The Green Industry Guidance Catalogue (2019 edition) was issued, clarifying the definition and classification of green industries.
In September 2020	China aims to peak its carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060, it said at the UN General Assembly.
In October 2020	The Guidelines on Promoting Investment and Financing in Response to Climate Change were issued, which clearly defined the scope of investment and financing for climate change and provided support and promotion.
In January 2021	The Measures for the Performance Evaluation of Commercial Banks included the proportion of green credit in the assessment.
In February 2021	The Guideline on Accelerating the establishment and improvement of a green, low-carbon and circular development economic System was released, proposing to vigorously develop green finance and green trading market mechanisms, improve green standards, and ensure the realization of dual carbon goals.
In April 2021	The Catalogue of Projects Supported by Green Bonds (2021 edition) was issued, which clearly defined the green industry from four levels.

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Table 1: (continued).

In May 2021	The Green Finance Evaluation Scheme for Banking Financial Institutions proposes a comprehensive evaluation of green finance business and implementation of incentives and constraints. The Guiding Opinions on Strengthening Ecological and Environmental Protection and Promoting High-quality Development in Pilot Free Trade Zones were issued, encouraging the development of emission rights trading market and the exploration of green bonds and green equity investment and financing business, and supporting and improving the mechanism for realizing the value of ecological products with green financial means.
In October 2021	The "Carbon Peak by 2030 Action Plan" pointed out that green finance should contribute to the "double carbon" work in three aspects: international cooperation, the Belt and Road Initiative and economic policies.
In December 2021	The Notice on Carrying out the Pilot Work of Climate Investment and Financing was released simultaneously with the Work Plan of the Pilot Work of Climate Investment and Financing, officially launching the declaration of local pilot projects of climate investment and financing in China, guiding market funds to invest in the climate sector and achieving the "double carbon" goal.

2.4. Effect of Internal

The image of the enterprise can through the mass like play to brand effect, by satisfying the expectations of the public, to build good image of enterprises, pay close attention to public welfare undertakings, take the initiative to assume social responsibility in order to improve enterprise's core competitiveness, Industrial Bank to carry out all kinds of green finance business, by the middle of December 2021, Fujian golden dress cloud platform to solve financing needs a breakthrough 100 billion yuan; On December 20, 2021, Industrial Bank reached the country's first single linked "carbon neutral debt" credit risk mitigation contract transaction; As early as in 2010, Industrial Bank issued the first low carbon theme credit card in China. Combined with the consumption habits of card holders, Industrial Bank credit card also takes the initiative to create all kinds of green consumption scenarios and vigorously promotes customers to form a healthy and environmentally friendly lifestyle. In 2021, Industrial Bank credit card won the "ESG - Social Innovation Contribution Award". The implementation of these green projects is not only the embodiment of the core competitiveness of enterprises, more importantly, it is conducive to the improvement of the environment, but also its response to the call of the government, to promote economic green development of the embodiment of responsibility.

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Table 2 shows the number of green bonds issued by Industrial Bank from 2018 to 2019, the interest rate and the maturity time of the bonds.

Table 2: Basic situation of Industrial Bank's Green finance bonds in 2018 and 2019 [10].

Bonds are referred to as"	Amount raised (100 million yuan)	Interest rate（%）	Bond maturity (years)
18 Industrial Green Finance 01	300.00	3.99%	3
18 Industrial Green Finance 02	300.00	3,89%	3
19 Industrial Green Finance 01	300.00	3,55%	3

Table 3 shows the projects and the number of projects invested by Industrial Bank in the green sector at the end of 2021.

Table 3: Distribution of Industrial Bank's green project categories in 2021 [10].

Project Category （Level 1）	Balance of delivery（100 million yuan	Number of projects （each）
Energy saving	23.1744	4
Pollution prevention and control	41.4299	8
Resource conservation and recycling	8.6140	3
Clean the traffic	98.3197	7
Clean energy	11.5144	3
Ecological protection	14.8878	3
A total of	197.94	28

Table 4 summarizes the amount of funds invested in the green sector by Industrial Bank in each year from 2019 to 2021, including the amount of funds, the number of projects and the balance of funds.

Table 4: Industrial Bank Green Industry Project [10].

Year	Balance of funds raised（100 million yuan）	Idle funds（100 million yuan）	Green projects（each）
2019	200.03	/	107
2020	790.22	/	629
2021	197.94	2.06	28

2.5. External Effect

2.5.1. Promoting Green Transformation of The Energy Structure

In recent years, China has made great efforts to adjust and upgrade its energy structure. According to the authority's prediction, photovoltaic power generation will overtake coal power to become the

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largest type of power generation in 2035, accounting for 31 percent of the installed scale, and wind power will become the second largest clean energy.

Wind power generation is an important part of the green transformation of the energy structure, with significant social benefits, energy conservation, environmental protection, and low-carbon emission reduction, and is a key support area for Industrial Bank. In July this year, Industrial Bank landed a large group 600MW onshore wind power project loan, this project is a national key wind power base project, through efficient examination and approval, lending, timely meet customer needs, to ensure the orderly progress of project construction.

2.5.2. The Green Project has Significant Environmental Benefits

In 2021, Industrial Bank concluded the green environmental benefits based on the summary of the relevant data of the projects launched: Annual saving standard coal 3.81 million tons, annual water saving 7.96 million tons, annual on-grid electricity 17.76 million KWH, annual emission reduction of carbon dioxide 5.3 million tons, annual emission reduction of sulfur dioxide 0.7 million tons, annual emission reduction of nitrogen oxide 0.4 million tons, annual emission reduction of soot 1,892 tons, annual emission reduction of ash 1.12 million tons, The annual sewage treatment volume is 462.82 million tons, sludge treatment volume is 100 thousand tons, and BOD reduction is 0.8 thousand tons. These are the major environmental benefits obtained after the launch of green projects. Commercial banks join the issuer of green bonds, which not only increases the supply of green bonds, but also more importantly, the implementation of green projects is more powerful and the protection of ecological environment is more comprehensive.

2.6. Discussion

Banks actively green bonds at present stage, the aim is not only in order to response the government called for, is also a higher level of strength, the spread of green financial markets and government policy support is Banks to issue green bonds of external factors, its and enhance competitiveness, to shape a good public image have inalienable relations [11]. Government policies continue to improve and adjust the issues of green bonds, and banks also innovate on green bonds and related projects, which greatly promote the development of Chinese enterprises and the realization of the "double carbon" goals. But at the same time, this paper does not propose that there are problems such as imperfect information disclosure mechanism and high cost of green finance in the issuing process of green bonds, and there are still shortcomings in the problems caused by the issuance of bonds and their solutions. And, in terms of data collection, the comparison of returns before and after the issuance of green bonds by Industrial Bank is not fully presented, so as to more intuitively reflect the benefits to the bank from the issuance of green bonds.

3. Conclusions

China should strengthen on measures to promote and perfect the policy of green financial development, in addition, companies and Banks for green bonds attaches great importance to and, for the green financial to promote China's industrial upgrading and provide a good environment, promotion at the same time, the industry also by means of the green financial guidance, to upgrade equipment, make its more evident in the aspect of energy conservation and emissions reduction, It can make significant contribution to the development of green economy in China. Therefore, to raise the enthusiasm of various industries and enterprises, China should also properly handle the issue of resource allocation and its benefits while implementing policies to guide the transformation and development of various industries. At the same time, the disclosure business of banks is particularly important to establish a more secure and convenient green bond business. As a result, the government

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can call on the public to supervise while it enforces supervision, thus making the issuance of green bonds more smooth.

References

[1] *Lu Yaqing. Case Analysis of Green Bonds of Industrial Bank. Hebei University of Finance,2022.000107.*

[2] *Wang Ying, Feng Jiahao. Research on the promotion of green innovation by green bonds. Finance Research,2022,(06):171-188.*

[3] *Wang Yao, Xu Nan. Research on the current development of green bonds in China and comparison of green finance between China and foreign countries. Journal of financial BBS, 2016, 21 (02) : 29-38. DOI:10.16529/j.cnki.11-4613/f.2016.02.004.*

[4] *Wang Zhihong, Zeng Gang. The International Green Bond Market: Current Situation, Experience, and Revelations. Journal of financial BBS, 2016, 21 (02) : 39-45, DOI:10.16529/j.cnki.11-4613/f.2016.02.004.*

[5] *Huang Jie. Problem of issuing green bonds in our country and suggestion. Journal of international finance, 2018(08):52-56.DOI:10.16474/j.cnki.1673-8489.2018.08.011.*

[6] *Xiao Yingbo. Green bonds abroad research and enlightenment to our country development. Journal of developmental financial research, 2015,4(04):82-86.DOI:10.16556/j.cnki.kfxjr.2015.04.012.*

[7] *Suk Hyun and Donghyun Park and Shu Tian. The cost of going green: the role of green factors in the green bond market. Accounting & Finance, 2020, 60(1) : 73-95.*

[8] *Chuc Anh Tu and Tapan Sarker and Ehsan Rasoulinezhad. Analysis of multidimensional evidence on the impact of various factors on the expansion of the green bond market. Journal of Risk and Financial Management, 2020, 13(6).*

[9] *Hu Zhongwen. Research on the economic effect of green bonds under carbon neutral target. Productivity Research,2022,(06):138-144.*

[10] *Open data of China Money Network, Retrieved from https://www.chinamoney.com.cn/, 2022.9.12.*

[11] *Wu Yilun. Analysis of Industrial Bank's green finance business under the background of "carbon peak and carbon neutrality". Tutor: Yang Zhaoting. Hebei University of Finance,2022.*