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Research on the policy effect of the central bank giving priority to green bonds under the collateral framework

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Abstract

In order to promote the realization of the "dual carbon" strategic goals, the People's Bank of China has included green bonds in the medium-term lending facility (MLF) collateral framework and given it a priority status, marking a structural transformation of monetary policy tools in the green transformation. This paper focuses on the incentive mechanism and transmission path of this policy tool, analyzes the response behavior of commercial banks under the incentive of collateral policy and the constraint of default risk, and reveals the institutional advantages of green bonds in asset allocation and its risk boundary. On this basis, the synergy mechanism of green mortgage policy and carbon tax tools is further explored, and an optimization plan for the dual policy path of "incentive + constraint" is proposed. The study points out that while the green bond priority policy improves the efficiency of green capital investment, it needs to be combined with fiscal means to achieve a dynamic balance between policy effectiveness and financial stability. This paper has certain theoretical value and practical enlightenment for improving China's green financial system and enhancing the adaptability of policy tool combinations.

Keywords

Green bonds, collateral policy, financial structured instruments, default risk, carbon tax coordination mechanism.

1. Introduction

Driven by global warming and the goal of "carbon peak and carbon neutrality", green finance is becoming an important direction for the innovation of monetary policy tools of central banks of various countries. As an institutional carrier to guide the allocation of financial resources to sustainable fields and serve the goals of climate governance, the green finance policy system is moving from concept advocacy to mechanism embedding (Chen Dandan et al., 2025). In recent years, the green bond market has developed rapidly. The financial sector has promoted green and low-carbon transformation through tools such as green bonds and green credit, especially the positioning of structural monetary policy in green transformation has been continuously strengthened (Wang Han, 2021). Since 2018, the People's Bank of China has included green bonds in the collateral framework of the Medium-term Lending Facility (MLF), and further gave them priority status in 2023, implemented differentiated discount rate policies to increase the collateral value of green bonds, and guided commercial banks to increase their allocation of green bonds (People's Bank of China, 2023). This policy breaks through the logic of aggregate regulation of traditional monetary policy, embeds green guidance through the dual design of "collateral screening + discount rate incentives", and provides cost advantages for green enterprise financing (Liu Xiaoxin et al. , 2025). At the same time, green bonds have gradually shown a "green premium" effect, that is, they have lower credit spreads and higher price

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elasticity in the market, which also reflects their gradual institutional recognition in the capital market (Wu Hengguang et al., 2024).

However, the current academic analysis of this policy still has three deficiencies: First, there is insufficient analysis of how banks dynamically balance "collateral discount rate incentives" and "bond default risks". Banks are generally regarded as risk-neutral participants, ignoring behavioral foundations such as capital adequacy constraints and liquidity management costs (Liu Hu, 2024); Second, there is insufficient analysis of the information asymmetry, failure of the certification mechanism and potential greenwashing risks in the actual operation of green bonds . Although third-party certification can reduce credit spreads to a certain extent, it is still difficult to completely bridge the market's trust gap in green attributes (Mao Xiaoli and Xiang Hailing, 2024); Third, there is a lack of systematic modeling and marginal effect identification of the coordination mechanism between green monetary policy and fiscal tools such as carbon tax, and the optimal path of the green policy combination still needs theoretical support (Qi Yu et al., 2024).

Therefore, this paper attempts to discuss the following three core issues: (1) How can the green bond priority policy improve the efficiency of green capital allocation through the adjustment of commercial banks' asset structure? (2) Will default risk weaken the policy effect? Does its transmission mechanism have nonlinear boundaries? (3) Can green mortgage policies and carbon tax tools work together to form a better policy combination mechanism? Based on the logic of structural monetary policy, this paper constructs an analytical framework of "incentive mechanism-risk constraint-policy coordination", analyzes the institutional design, behavioral response and policy boundaries of the green bond priority policy, and attempts to provide theoretical support and institutional inspiration for improving my country's green financial policy system and enhancing the coordination and adaptability of policy tool combinations.

2. Structural transformation and green orientation of central bank collateral policy

2.1. The evolution of the MLF collateral system

The Medium-term Lending Facility (MLF) is a structural monetary policy tool created by the People's Bank of China in 2014. Its original design was to provide medium-term liquidity support to commercial banks and alleviate financing pressure in the context of credit tightening. Initially, the collateral system of MLF was centered on government bonds and policy financial bonds, emphasizing the security and liquidity of assets and the "prudent neutral" aggregate control function. However, as China's economy shifts from a high-speed growth stage to a high-quality development stage, monetary policy has also evolved from a quantitative-based extensive adjustment model to a more structural and targeted precise control model.

One of the most direct manifestations of this evolutionary trend is the structural adjustment of the MLF collateral system. Since 2018, the central bank has begun to include green financial bonds in the scope of eligible MLF collateral, indicating that the "green orientation" has been embedded in the central bank's operating framework for the first time. This change not only reflects the policy's re-recognition of the strategic position of green finance, but also means that the central bank has begun to use the asset selection mechanism to guide commercial banks to optimize the asset allocation structure and achieve the dual goals of "structural optimization" and "market guidance".

In recent years, the central bank has continued to promote the diversification of MLF collateral types, including the introduction of AA+ private enterprise bonds, small and micro enterprise loan support tools, and green, inclusive, and technology-related financial assets, making the MLF collateral system gradually move from "single screening based on credit rating" to a new dual standard of "credit rating + policy guidance". This institutional evolution process is

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essentially the internalization of the central bank's policy intentions, giving monetary policy a stronger structural guidance capability.

2.2. The incentive logic of the discount rate mechanism

One of the core technical paths of the green bond priority policy is to reduce the collateral discount rate of green bonds under the same rating premise, so as to increase their value in the collateral system. Taking policy practice as an example, the central bank lowered the discount rate of green bonds by 5-10 percentage points, which means that when banks use green bonds to exchange for MLF liquidity, they need to submit less nominal amount, thereby releasing more asset space. This discount advantage is essentially equivalent to the "institutional liquidity premium" and is an indirect interest rate discount. The institutional design of the discount rate mechanism reflects the logic of combining "targeted incentives" with "risk adjustment". On the one hand, it sends a clear incentive signal to commercial banks, prompting them to give priority to green bonds in asset allocation; on the other hand, the mechanism retains the risk control function and still sets basic collateral requirements based on the credit rating system to ensure the security and robustness of the policy.

In addition, the discount rate mechanism has the dual effects of price signal and value guidance. For green enterprises, the entry of bonds into the MLF mortgage system means that their financing tools have stronger secondary market activity and policy recognition; for banks, holding green bonds not only meets the income and compliance requirements , but also can obtain higher collateral value, thereby improving the liquidity management cost structure. This structural incentive is transmitted to the credit issuance end through the adjustment mechanism of the bank's asset side, and ultimately affects the financing availability of green projects.

2.3. Policy Implications of Institutional Transformation

The green reform of the MLF collateral system is not only a technical fine-tuning, but also a profound transformation of policy concepts. The shift from the traditional "collateral screening tool" to the "structural guidance mechanism" reflects the change in monetary policy concepts, that is, from macro-quantity targets to micro-structure optimization, and from liquidity neutral operations to targeted resource allocation.

First, this institutional transformation shows that the central bank is actively guiding the financial market to participate in the realization of national strategic goals based on the chain logic of "collateral-asset preference-resource allocation". In the context of "dual carbon", green assets are given higher policy weights, and their scarcity and premium in the financial system continue to increase. This institutional guidance helps to build a "green priority" financial preference at the social level. Secondly, this policy arrangement has a significant signal guidance function. As a "signal maker", the central bank clearly expresses its policy preferences for the green economy through institutional tools, thereby influencing market expectations and driving the gradual maturity of the green asset price discovery mechanism. In the long run, this will enhance the pricing independence of green bonds in the financial market, reduce their excessive reliance on traditional credit ratings and government credit, and enhance their market-driven capabilities. Finally, institutional reforms have also established a virtuous interactive pattern of “government guidance – market response” in the green financial ecosystem. Through the optimization of the central bank's institutional arrangements, the asset allocation logic of commercial banks has been reshaped, green projects have obtained more credit support, and the availability of financing for green enterprises has been significantly improved, thus forming a green resource allocation mechanism with coordinated efforts among the three ends of "policy-finance-entity". The gradual maturity of this mechanism will lay a solid foundation for the institutionalization and systematic construction of my country's green financial system.

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3. Bank Response and Risk Trade-offs of Green Bond Priority Mechanism

3.1. Policy Transmission Path: How Green Bonds Are Embedded in the Financial System

The basic logic of the green bond priority policy is to guide financial resources to the green economy by adjusting its status and value in the central bank's collateral framework. The transmission path of this mechanism can be summarized as a "three-stage" logical chain: institutional incentives → bank asset structure adjustment → corporate financing improvement. First, on the institutional incentive side, the central bank increases the collateral value of green bonds in the assets held by financial institutions by setting a lower discount rate. This incentive changes the "policy gold content" between different assets, making green bonds have stronger collateral advantages than ordinary bonds with the same rating. Secondly, at the bank behavior level, this preferential treatment mechanism prompts commercial banks to prefer green bonds when allocating liquidity management assets, driving up their holding ratio, thereby achieving a "structural improvement" of green assets in the bank's balance sheet. On the financing side, this asset preference is transmitted downward to the bond issuance market, so that the financing needs of green enterprises receive stronger policy endorsement and market response. As banks' willingness to hold increases, the market demand for green bonds increases, which in turn pushes up their prices, reduces credit spreads, and significantly improves the financing costs and availability of green enterprises. It can be said that this policy, with “collateral value” as the mediating variable, indirectly reshapes the risk-return structure of green finance, enabling policy preferences to adjust the direction of resource allocation through market mechanisms.

3.2. Bank Behavior Mechanism: Asset Preference and Liquidity Management Logic

As the intermediary core of financial resource allocation, banks' response to green bonds is not entirely based on the motivation of maximizing profits, but is jointly influenced by a series of institutional constraints and cost considerations . Whether green bonds can obtain priority allocation status in the bank's asset portfolio depends on three key factors: capital constraints, liquidity management costs, and policy compliance incentives . First, from the perspective of capital supervision, the rating structure, credit risk and capital adequacy ratio of green bonds are linked. If policies grant green bonds special regulatory exemptions or risk weight preferences, their capital utilization costs will drop significantly and banks' willingness to allocate funds will increase. Secondly, at the liquidity management level, if holding green bonds can obtain higher mortgage financing capabilities, it will directly improve the bank's capital allocation efficiency and reduce liquidity costs. Especially in the context of high-frequency MLF operations, green bonds have become a high-quality tool in banks' "collateralized fund management." In addition, banks in institutionally oriented markets also consider policy preferences as part of their allocation logic. The mortgage preferential treatment of green bonds not only represents higher financing capabilities, but also symbolizes stronger policy compliance attributes , which is of practical significance for enhancing the ESG image of banks and participating in green finance incentive programs. Driven by both policy guidance and regulatory incentives, banks’ green asset allocation behavior is not only based on risk-return comparisons, but also reflects a certain “policy-responsive behavioral preference.”

3.3. Risk Constraint Effect: Nonlinear Inhibition of Policy Effects by Default Probability

Although the green bond priority policy has clear advantages in terms of incentive mechanism, the policy effect may still be asymmetrically suppressed by the bond default risk during the

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actual transmission process. Compared with traditional government bonds or high-grade corporate bonds, green bonds face a more complex risk structure, mainly manifested in long project cycles, large returns fluctuations, difficulty in green attribute audits, and weak secondary market liquidity. If the default rate rises, even if the mortgage discount rate is low, banks may reduce their willingness to hold due to risk concerns, resulting in a "frictional weakening" of the policy effect. In addition, there is a mismatch risk between the "nominal green" and "actual returns" of green bonds. Although some green projects meet the certification standards, they do not have obvious advantages in terms of economic benefits and repayment capacity. In particular, in the absence of effective information disclosure and rating differentiation pricing mechanisms, it is difficult for banks to accurately assess their true default probability, thereby reducing their allocation enthusiasm. This "greenwashing" behavior further amplifies the valuation uncertainty of green assets and undermines the signal function of policy incentives. More importantly, the impact of default risk on policy effectiveness has nonlinear characteristics: within the low default rate range, the decline in discount rate has a significant impact on bank behavior; once the default rate exceeds a certain threshold, the marginal effect of policy incentives decreases rapidly, and even a reverse incentive effect may occur. Therefore, the effectiveness of the green bond priority policy is highly dependent on the controllability of default risk and the completeness of the risk compensation mechanism. How to build a "risk mitigation mechanism" while maintaining the intensity of incentives is the key to improving policy stability and sustainability .

4. The synergy space and optimization design of green currency and carbon tax mechanism

4.1. Institutional division of labor between incentives and constraints

The green bond priority policy and the carbon tax system represent the incentive policy tools and constraint policy tools in the green transformation, respectively. The two have their own characteristics in terms of target orientation, transmission mechanism and impact path, forming a policy combination pattern with complementary functions and different positioning. The green monetary policy focuses on reducing the financing cost of green projects. Through structural incentive mechanisms such as liquidity preferential treatment and collateral pricing adjustment, it guides commercial banks to increase the proportion of green asset allocation, thereby improving the capital availability of green enterprises. Its policy advantage lies in releasing policy signals through market mechanisms and enhancing green investment willingness. It is suitable for implementation at the stage when the green financial system is initially formed and the funding gap of green projects is prominent. In contrast, the carbon tax policy focuses on increasing the production costs of polluting enterprises, strengthening their internalization of external costs through price mechanisms, and guiding high-carbon enterprises to transform or exit, thereby achieving emission reduction targets. As a "punitive incentive" mechanism, carbon tax has a clear constraint effect, and emphasizes the mandatory adjustment of industrial structure and the quantitative compression of external negative effects. It is suitable for dealing with traditional industries with serious "path dependence" and insufficient motivation for green transformation. From the perspective of policy design, green monetary policy and carbon tax system constitute a dual system platform of "incentive-constraint": the former "push" and the latter "pull"; the former lowers the entry threshold for green enterprises and the latter increases the exit cost for high-carbon enterprises. If the two work together, a more flexible green transformation support system will be formed, avoiding the limitations of a single tool in terms of scope, sustainability and marginal effect.

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4.2. The complementary logic of policy mix

In terms of policy targets, the two are aimed at different corporate groups: green bonds support low-carbon enterprises with green certification and clean technology, while carbon taxes impose constraints on traditional enterprises with high emission intensity and weak willingness to reduce emissions. This differentiated positioning makes the policy effects non-overlapping and non-conflicting, and can work together from both ends of "positive guidance" and "reverse regulation" of resources. At the same time, carbon taxes increase the financing risks and costs of polluting enterprises, making the advantages of green bonds in relative returns and credit risks more prominent, and indirectly strengthening its policy incentive effect. When the marginal return of green investment weakens, the intervention of carbon taxes will help to enhance the relative attractiveness of green investment and achieve the re-optimization of marginal effects. In addition, carbon tax revenue can be partially used to establish financial instruments such as green funds and guarantee mechanisms, provide risk mitigation and credit enhancement means for the green bond market, and further strengthen the implementation basis of green monetary policy.

4.3. Optimization suggestions for collaborative paths

To achieve the synergy between green currency and carbon tax policies, attention should be paid to the linkage of institutional design and the coordination of policy rhythm. On the one hand, a parameter linkage mechanism between discount rate differences and carbon tax rates can be established. According to indicators such as industry carbon emission intensity and corporate green ratings, the mortgage preferential level of green bonds and carbon tax standards can be dynamically adjusted to achieve differentiated guidance of the combined policy. On the other hand, overall arrangements should be made in terms of policy rhythm: in the period of economic downturn, green financial support should be strengthened to stabilize investment and expectations, and the intensity of carbon tax regulation should be increased when the economy is overheated or carbon emissions rebound, so as to form a "counter-cyclical green regulation" mechanism. In addition, differentiated synergy pilot projects at the regional level can be explored, such as establishing a "carbon tax + green credit rediscount" policy combination in carbon emission-intensive areas, and piloting a "green bond discount rate incentive + green fund direct investment" mechanism in regions with a good foundation for green transformation, so as to improve the accuracy and adaptability of the synergy mechanism. In summary, the synergy between the green bond priority policy and the carbon tax system can not only give play to their respective advantages, but also enhance the coordination and effectiveness of green governance through institutional coupling, promote China's green financial policies from decentralized operation to integrated linkage, and achieve the organic unity of environmental goals and economic development.

5. Research conclusions and policy recommendations

5.1. Conclusions

Against the backdrop of the continuous deepening of the “dual carbon” goal and the green finance policy system, this paper analyzes the institutional logic and mechanism of the central bank’s green bond priority policy and puts forward the following main conclusions: First, from the perspective of the policy transmission mechanism, the preferential green bond discount rate, as a structural incentive tool, guides commercial banks to optimize asset allocation by increasing the collateral value of green bonds, and increases the proportion of green assets in the bank’s balance sheet, thereby improving the financing environment for green enterprises and increasing the capital availability of green investment. Second, at the level of bank behavior, the incentive effect of the green bond priority policy is subject to factors such as default risk

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and capital constraints. When default expectations are too high and liquidity management costs are too heavy, banks may weaken their allocation response to green bonds, resulting in marginal diminishing returns or “reverse incentives” in policy effects. Third, in terms of policy coordination, the green bond policy and the carbon tax mechanism have good complementarity. Green bonds focus on incentive guidance, while carbon taxes provide external constraints. Through the combination of “financing concessions + cost increases”, the efficiency of green investment can be maximized and high-carbon industries can be orderly withdrawn, promoting the upgrade of green transformation policies from “tool juxtaposition” to “system coordination”. In summary, the green bond priority policy has clear institutional advantages, but its policy effectiveness depends on default risk control, incentive structure design, and coordination with other policy tools. Building a multi-level and complementary green policy system is a key path to improving the effectiveness of green financial support and ensuring the coordination and unification of financial stability and environmental goals .

5.2. Policy recommendations

Based on the above analysis, this paper proposes the following policy recommendations, aiming to optimize the green bond priority mechanism and improve policy stability and implementation effect: First, improve the incentive structure. Dynamically set the discount rate difference range to avoid arbitrage space while ensuring the policy incentive strength, and improve the robustness and adaptability of the system. Second, strengthen the risk mitigation mechanism. Establish a green credit guarantee fund and improve the environmental information disclosure mechanism to reduce banks' default concerns about green bonds through risk sharing and enhance the market's trust expectations for green assets. Third, promote policy coordination and linkage. Strengthen the coordinated design between green monetary tools and carbon tax policies, promote the formation of a "fiscal-financial" dual-channel support structure, and improve the coordination and implementation flexibility of the policy system. Fourth, encourage regional differentiated exploration. According to the regional green transformation foundation and industrial structure characteristics, encourage local governments to carry out combined policy pilots such as "green bonds + carbon tax" and "mortgage policy + fiscal subsidies" to accumulate institutional experience and enhance policy replicability. Fifth, strengthen institutional adaptation and regulatory coordination. Incorporate green mortgage policies into the top-level design of green finance, strengthen cross-departmental policy coordination mechanisms, establish evaluation and feedback mechanisms, and improve the sustainability of green policy implementation and the coordination efficiency between policy tools .

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