

Optimization of the Risk Compensation Policy for "Kedai Tong" Science and Technology Loan Program in Jiangxi Province

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Abstract: Science and technology-based small and medium-sized enterprises (SMEs) are an important force in achieving high-quality economic development. In recent years, Jiangxi Province has implemented the "Kedai Tong" (Science and Technology Loan Program) Risk Compensation Policy and actively utilized innovative science and technology financial products to effectively address the difficulties faced by sci-tech SMEs, such as high financing costs and narrow financing channels. However, the current policy has not yet fully exerted its positive economic effects. There are still a series of problems, including insufficient policy precision, pressure on the operation and risk control of banking institutions, and execution difficulties for local science and technology departments. It is necessary to further optimize the policy operation mechanism by improving enterprise conditions, strengthening the support of system platforms, perfecting the provincial and municipal linkage mechanism, and promoting collaborative management between the government and banks. At the same time, the high-quality development of sci-tech SMEs should be empowered by strengthening enterprise service support through measures such as enhancing investment and financing docking services and establishing an information consulting system.

Keywords: Science and Technology-Based SMEs; Technology Finance; Kedai Tong; Risk Compensation; Policy Optimization

1. Introduction

Science and technology-based SMEs have played an irreplaceable role in promoting scientific and technological innovation and achieving regional economic growth^[1]. It is necessary to strengthen financial support for

major national scientific and technological tasks and science and technology-based SMEs, and to improve the policy of long-term capital investment in early-stage, small-scale, long-term, and hard technology projects. To this end, Jiangxi Province has vigorously implemented the "Kedai Tong" financing attack project, and coordinated the promotion of risk compensation policies to guide and motivate banking institutions to strengthen the orientation of science and technology credit, providing a new way to effectively alleviate the financing constraints of science and technology-based SMEs^[2].

Science and technology-based SMEs in Jiangxi Province mainly face financing difficulties such as high costs and imperfect channels. At present, scholars in China have carried out a series of studies on the financing of science and technology-based SMEs, mainly focusing on measurement and influencing factors. Liu defined the financing ability of science and technology-based SMEs as the dynamic fit ability between internal resources and external financing environment, the higher the fit degree, the stronger the financing ability^[3]. In terms of measurement, existing scholars mainly use the comprehensive index method to measure the financing ability of science and technology-based SMEs from multiple dimensions. Yan used a combination of AHP (Analytic Hierarchy Process) and fuzzy mathematics to comprehensively build a financing ability evaluation system^[4]. Li clarified the impact of eight indicators such as enterprise size and asset collateral value on financing ability through panel data analysis^[5]. In terms of influencing factors, the financing difficulties of science and technology-based SMEs stem from the interaction of internal and external factors. In the external factors,

the imperfection of policies and regulations, the lack of adaptability of the financial system, and information asymmetry have been widely discussed^[6-7]. Among them, information asymmetry is considered the key obstacle to the formation of financing ability, which has increased the risk perception of financial institutions and curbed the willingness to supply financing^[8]. The internal factors focus on the small size of enterprises, weak risk resistance, and irregular internal management^[9]. Studies generally believe that the attributes of enterprises themselves, such as financial status, the proportion of R&D personnel, and innovation strategy choices, also significantly affect financing ability^[10-12].

In summary, Chinese scholars have conducted relatively mature research on the financing problems of science and technology-based SMEs. However, most existing literature focuses on the national level and neglects the analysis of financing problems of local science and technology-based SMEs at the meso level. Therefore, based on the existing research, this paper systematically combs the implementation status of the "Kedai Tong" risk compensation policy in Jiangxi Province, deeply analyzes the challenges it faces in solving the financing problems of science and technology-based SMEs, and puts forward optimization suggestions for the "Kedai Tong" risk compensation policy. The marginal contribution of this paper lies in focusing on the financing difficulties of science and technology-based SMEs in Jiangxi Province, evaluating the policy implementation effectiveness from the meso level, and strengthening the important impact of regional policies on solving the financing problems of science and technology-based SMEs.

2. Analysis of the Current Status of Risk Compensation for "Kedai Tong" in Jiangxi Province

In 2024, Jiangxi Province continued to optimize the financing environment for science and technology-based SMEs and actively implemented the risk compensation policy for "Kedai Tong," achieving certain results in high-quality growth of loan scale, effective expansion of policy coverage, and

increasingly evident innovation-driven benefits.

2.1 High-Quality Growth of Loan Scale

The loan scale of "Kedai Tong" in Jiangxi Province has been continuously expanding, with beneficiary enterprises mainly concentrated in emerging industries, a reduction in non-performing loan compensation cases, and the realization of high-quality growth. Firstly, the balance of credit loans under "Kedai Tong" in Jiangxi Province has exceeded 22.9 billion yuan, with the loan balance covered by the risk compensation policy reaching 4.9 billion yuan, an increase of 47% compared to the end of the previous year. The scale of the risk compensation fund pool for "Kedai Tong" in Jiangxi Province has also been continuously expanding, among which Yichun City has the largest risk compensation fund pool in the province, amounting to 97 million yuan (as shown in Figure 1).

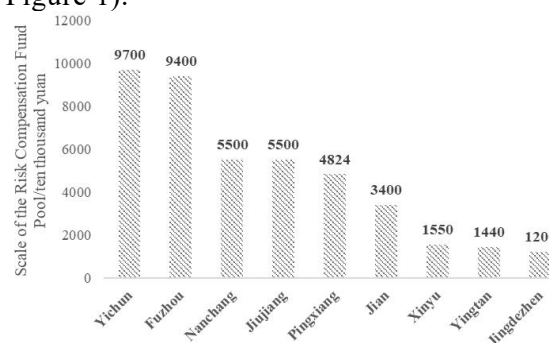


Figure 1. The Scale of the Risk Compensation Fund Pool for "Kedai Tong" in Jiangxi Province in 2024

Secondly, the current policy provides loan support to science and technology-based SMEs in their start-up phase through the "Revelation and Appointment" mechanism. More than 1,400 enterprises have benefited, with small and medium-sized micro-enterprises accounting for 90%, mainly distributed in strategic emerging industries such as electronic information, new materials, biomedicine, and new energy (as shown in Figure 2), showing a favorable trend of tilting towards small and medium-sized micro-enterprises and emerging industries. Thirdly, there have been a total of 13 cases of non-performing loan compensation in the province, involving an amount of 229.69 million yuan, with a non-performing rate of less than 1% in all cases, achieving high-

quality supply of financial credit resources.

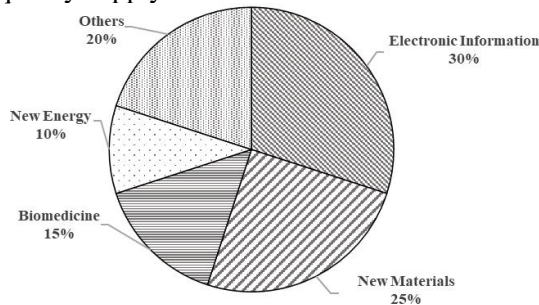


Figure 2. The Distribution of Beneficiary Enterprises of the "Kedai Tong" Policy in Jiangxi Province in 2024

2.2 Effective Expansion of Policy Coverage

In terms of policy coverage, the scope of the joint action area has been continuously expanded, the enthusiasm of banks to participate has increased, and the government-bank cooperation model has been effective. Regarding the joint action area, 62 cities and counties in Jiangxi Province have joined the "Kedai Tong" policy linkage in 2024, covering all science and technology-based SMEs in the province and achieving full regional policy coverage. In terms of bank cooperation, a total of 19 banks and 282 branches in the province have participated in the "Kedai Tong" policy linkage, including six state-owned banks (such as the Agricultural Bank of China, Bank of China), eight joint-stock banks (such as China Merchants Bank, CITIC Bank), and four local city commercial banks (such as Ganzhou Bank). State-owned banks and joint-stock banks undertake the main loan share, accounting for 73.7% (as shown in Figure 3), indicating that large banks have a high level of enthusiasm for policy participation. In addition, Yichun City has the largest investment in science and technology credit (as shown in Figure 4). The credit system and product policy advantages of various banks have been complemented, and the government-bank cooperation model is positive and improving.

2.3 Increasingly Evident Innovation-Driven Benefits

In 2024, the service efficiency of the "Kedai Tong" risk compensation policy in Jiangxi Province has accelerated, significantly enhancing the innovation capabilities of SMEs and increasingly evident social and economic benefits. First, the current policy implementation has driven corporate

innovation. In 2024, the R&D investment of "Kedai Tong" loan enterprises reached 5.44 billion yuan, accounting for 4.3% of operating revenue, an increase of 6.3% year-on-year; the number of new patent applications for invention was 2,376, and the number of new authorized invention patents was 1,122, among which the number of transformed scientific and technological achievements reached 1,711, the number of provincial-level and above science and technology projects and platforms undertaken was 172, and 152 obtained provincial-level and above science and technology awards, all higher than the average level of SMEs in the same period. Second, the current policy implementation effectively ensures the positive growth of enterprises. In 2024, the operating revenue of "Kedai Tong" loan enterprises reached 126.03 billion yuan, an increase of 11.5% year-on-year; the total profit reached 5.7 billion yuan, an increase of 8.4% year-on-year. Third, the current policy implementation has driven employment and talent development in SMEs. In 2024, the total number of employees in position in "Kedai Tong" loan enterprises reached 119,000, with 15,000 new job positions added, and the proportion of R&D personnel reached 15%, achieving good social and economic benefits.

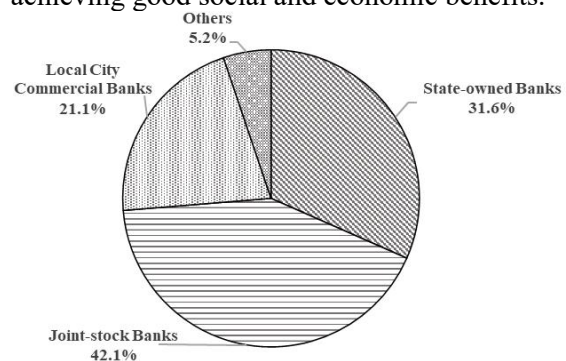


Figure 3. The Distribution of Partner Banks for the "Kedai Tong" Policy

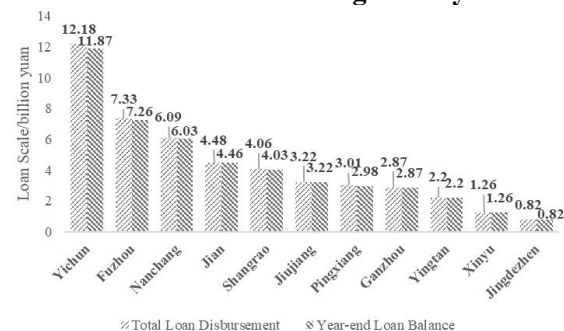


Figure 4. The Distribution of Total Loan Disbursement and Year-end Balance of "Kedai Tong" in Jiangxi Province in 2024

3. Challenges Faced by the "Kedai Tong" Risk Compensation Policy in Jiangxi Province

The "Kedai Tong" risk compensation policy in Jiangxi Province has achieved significant results in promoting the financing of science and technology-based SMEs. However, there are still shortcomings in the policy's top-level design, the efficiency of financial resource allocation, and the implementation capacity of local departments. During the implementation process, it still faces challenges such as insufficient policy precision, great risk control pressure on banks, and difficulties in the execution of local departments.

3.1 Insufficient Precision of Current Policies

The "Kedai Tong" risk compensation policy clearly supports science and technology-based SMEs, but there is an obvious phenomenon of insufficient policy precision in its implementation, mainly reflected in the misallocation of financial credit resources and the mismatch between policy tools and the financing needs of science and technology enterprises.

In terms of the misallocation of financial credit resources, firstly, credit resources flow to "pseudo-science and technology" enterprises, and the definition criteria for the scientific and technological innovation attributes of enterprises are relatively vague. Taking the 2024 data of "Kedai Tong" in Jiangxi Province as an example, among the beneficiary enterprises, strategic emerging industries such as electronic information and new materials account for 70%, but it is found that there are many "pseudo-science and technology" phenomena in the sub-industry fields. For example, Jingdezhen Green and Happy Food (traditional food processing) only entered the shortlist by packaging the concept of "food preservation technology". Its core technology is only a conventional food additive formula. This reflects that the current policy entry review is formalistic in assessing the originality of technology and the prospects for industrialization, overly relying on superficial indicators such as the number of patents and revenue scale, and neglecting the substantive review of technological barriers and market transformation capabilities. Secondly, credit

resources mainly flow to enterprises in the growth stage, resulting in a low coverage rate of early-stage growth enterprises among the beneficiary enterprises, making it difficult to alleviate the financing difficulties of early-stage science and technology enterprises. For example, among the 301 enterprises registered in Yichun City, mature enterprises established for more than five years account for as high as 78%, while start-up enterprises established within three years only account for 12%, and the loan amount per transaction is generally less than 500,000 yuan, which is difficult to support the high R&D investment needs of hard technology projects. The reason for this policy bias is that banking institutions prefer to lend to low-risk mature projects, which is also closely related to the local science and technology departments' tendency to seek stability and avoid responsibility.

In terms of the mismatch between policy tools and the financing needs of science and technology enterprises, the current loan ceiling is difficult to meet the capital needs of long-cycle and high-cost fields such as semiconductors and biomedicine. For example, an innovative drug research and development enterprise in Ganzhou City needs to invest more than ten million yuan in the preclinical research stage, but due to the limitations of loan amount and term, the enterprise is forced to fill the gap through private lending, resulting in its actual financing cost being 4-5 percentage points higher than the policy loan. In addition, the extensive funding allocation method of the risk compensation policy weakens the policy's support for key areas, inducing science and technology enterprises to use funds for short-term revenue projects instead of core technology breakthroughs, further reducing the policy's precision.

3.2 Banks Face Significant Business and Risk Control Pressures

When serving science and technology-based SMEs, banks face dual pressures of ex-ante business risk assessment and ex-post risk control due to problems such as information asymmetry, risk-reward imbalance, and complex internal management mechanisms.

Science and technology-based SMEs have high technological barriers and business risks, leading to serious information asymmetry between commercial banks and enterprises^[13].

The core value of science and technology enterprises lies in technological assets and human capital, but the traditional risk control models of banking institutions still focus on financial statements and collateral, lacking a credit evaluation mechanism adapted to the characteristics of science and technology-based enterprises. Especially for start-up science and technology-based SMEs with low information quality, it is difficult to obtain their complete and true innovation capability information. For example, an integrated circuit design company in Ji'an City has five invention patents, but due to continuous losses for two years, it was automatically rejected by the bank system. It finally obtained a loan of 3 million yuan through the whitelist mechanism of the science and technology department. This reflects the insufficient ability of banking institutions to mine non-financial data, especially the lack of effective evaluation tools for key risk indicators such as technology maturity and team stability.

The risk-reward mismatch of science and technology-based SMEs further weakens the willingness of banking institutions to participate. Although the current policy's interest rate cap reduces the financing cost of enterprises, it puts banking institutions into a dilemma where income cannot cover risks. It is estimated that the net interest margin of a city commercial bank's "Kedai Tong" business in Nanchang is only 1.2%, 1.8 percentage points lower than the bank's average level. At the same time, the lag of risk compensation exacerbates the liquidity pressure of banking institutions. A compensation of 303,000 yuan in Pingxiang City took 14 months to be paid, during which the bank had to cover the loss on its own, directly affecting the profit assessment of the branch. This "high-risk, low-reward" characteristic leads banking institutions to prefer to allocate resources to mature enterprises with strong pricing power and sufficient collateral, creating an adverse selection effect.

The complexity of the internal management mechanism of banking institutions restricts the implementation of policies at the operational level. State-owned large banks generally centralize the approval authority for non-performing loan write-offs to the provincial branch level. The cumbersome process makes grassroots customer managers more willing to

undertake standardized businesses such as housing loans. At the same time, the current management system of some banks' front, middle, and back offices is not compatible with the policy, resulting in risk compensation hanging on the books for a long time due to the complexity of judicial procedures, occupying credit quotas. This strict condition for non-performing loan disposal makes risk clearance slow and easily forms risk stagnation^[14], making it difficult to write off non-performing loans internally, which further affects the enthusiasm of the staff in charge.

3.3 Difficulties in the Implementation of Local Science and Technology Departments

Grassroots science and technology departments are caught in the dilemma of "promoting inclusive benefits while avoiding risks" in policy implementation. This is mainly reflected in the following two aspects:

On the one hand, the local science and technology departments' risk-averse mentality makes it difficult for the risk compensation policy to be fully implemented. Due to insufficient understanding of the policy positioning and loan risks, coupled with work pressure from external audits, inspections, and higher-level leaders, local science and technology departments have a sense of difficulty and fear. They find it hard to accurately position their own responsibilities, and there are overreaching (unreasonably adding conditions, processes, and intervening in loan amounts, etc.) and dereliction of duty (not doing or doing less business) phenomena. They generally regard not having or having fewer compensations as their work goal. This audit accountability pressure forces local governments to adopt conservative strategies, making them tend to recommend larger and relatively mature local enterprises, which invisibly adds unnecessary thresholds for technology companies and indirectly excludes startups, deviating from the policy goal of supporting early-stage financing difficulties for enterprises.

On the other hand, the regional imbalance of local government fiscal funds limits the inclusiveness of the risk compensation policy, resulting in a serious mismatch between the scale of risk compensation funds and financing needs in economically weak areas. For example, Lianhua County has a risk

compensation fund of only 2.545 million yuan. According to the 1:10 leverage ratio, the maximum loan support amount is only 25.45 million yuan, which is far from enough to cover the funding gap of the 37 science and technology enterprises in the county. At the same time, some areas use budgetary arrangements for compensation funds but do not establish a cross-year smoothing mechanism. Among the 9.4 million yuan risk compensation funds in Fuzhou City, only 3 million yuan was actually allocated in 2024. If there is a concentrated compensation in the future, it may trigger a payment crisis, weakening the policy's sustainability and further exacerbating the local science and technology departments' sense of difficulty. In addition, local science and technology departments lack incentive mechanisms when implementing policies. The current policy does not reward regions that exceed their targets but strictly holds accountable for compensation actions, leading to a negative mentality of "the more you do, the more mistakes you make; the less you do, the fewer mistakes you make". This unequal system of rights and responsibilities makes local science and technology departments lack internal motivation when promoting policies, often choosing conservative strategies that prioritize compliance over effectiveness.

4. Optimization Suggestions for the "Kedai Tong" Risk Compensation Policy in Jiangxi Province

To achieve the effective operation of the "Kedai Tong" risk compensation policy in Jiangxi Province, it is necessary to further optimize the policy operation mechanism from aspects such as optimizing enterprise conditions, strengthening system platform support, improving the provincial-city linkage mechanism, and promoting government-bank collaborative management. Meanwhile, it is important to enhance enterprise service support through measures like strengthening investment and financing docking services and establishing an information consulting system, in order to form a synergy for the high-quality development of science and technology-based SMEs.

4.1 Optimizing Enterprise Conditions and

Strengthening System Platform Support

Firstly, enhance the policy's precise support capability for science and technology enterprises by establishing multi-dimensional criteria for assessing scientific and technological innovation attributes. Strengthen the screening of core innovation capabilities, focusing on the originality of enterprise technology, the strength of technological barriers, and the potential for industrialization. Prioritize supporting enterprises with strong innovation capabilities, high growth potential, and financing difficulties, especially those that fill gaps in the industrial chain or break through "bottleneck" technologies. Introduce a technology maturity model to refine the stages of technology research and development into laboratory validation, pilot-scale production, and industrial application, clarifying the R&D investment intensity, patent layout requirements, and market validation standards for each stage. Pay attention to the technical background and industrialization experience of core team members, and provide preferential support to teams with national-level science and technology talents or leaders of major science and technology projects. Meanwhile, establish a dynamic exit mechanism to regularly review the technical progress and market transformation capabilities of enterprises that have obtained loans. Terminate the loan renewal qualifications for enterprises that fail to achieve technological breakthroughs over the long term or deviate from the declared direction, ensuring that policy resources continue to focus on high-potential innovative entities and steadily enhance the enterprises' scientific and technological innovation attributes.

Secondly, break through the constraints of information silos on policy effectiveness by constructing a provincial science and technology finance data hub. By connecting data interfaces from multiple departments such as business registration, intellectual property rights, science and technology projects, and tax declarations, form a comprehensive portrait of enterprise innovation capabilities, focusing on integrating core indicators such as R&D investment intensity, patent quality, and

technology contract fulfillment rate. Upgrade the business system to enhance the digital intelligence of business review processes, and establish data connectivity channels with external business information, science and technology innovation information, tax information, and information on dishonesty penalties. This will provide data support for policy operation reviews and banking business reviews as well as related risk prevention and control.

4.2 Improving the Provincial-City Linkage Mechanism and Promoting Government-Bank Collaborative Management

Firstly, optimize the arrangement of municipal compensation funds, improve policy coordination mechanisms, and strengthen cross-departmental cooperation and linkage at the provincial and municipal levels. At the provincial level, establish a comprehensive budget performance management mechanism for the provincial science and technology loan compensation fund. Strengthen performance target management by scientifically and reasonably setting performance targets. Allocate compensation responsibilities based on regional science and technology innovation foundations and financial capabilities. Increase the provincial fiscal sharing ratio for regions with weak science and technology resources but urgent innovation needs to alleviate the financial pressure on grassroots governments. At the same time, build a cross-regional fund adjustment mechanism to achieve dynamic balanced allocation of risk compensation funds through provincial coordination. In terms of management coordination, integrate data resources from departments such as science and technology, finance, and financial supervision to establish a joint recommendation and dynamic monitoring platform. Implement a list-based management system for provincial-level and above key science and technology projects and specialized, refined, unique, and innovative enterprises to reduce policy target deviations caused by local discretionary space. Moreover, optimize the performance assessment system by incorporating indicators such as the coverage rate of early-stage technology enterprises and the success rate of technology transformation into the local government's

science and technology management assessment scope. This will guide grassroots departments to accurately implement the policy's original intention.

Secondly, promote the in-depth adaptation of bank credit mechanisms to the characteristics of science and technology enterprises, and deepen collaborative reforms in evaluation systems, risk-sharing, and internal management. Credit evaluation models should break through the dependence on traditional financial indicators and include non-financial indicators such as the value of intellectual property rights, the scale of technology contract transactions, and the stability of R&D teams in the assessment system. In response to the long-cycle and high-risk characteristics of science and technology projects, design a step-by-step risk compensation mechanism to increase the risk compensation ratio for longer-term hard technology projects. Meanwhile, explore the feasibility of banks participating in the revenue-sharing of technology industrialization to achieve a rebalancing of risks and rewards. At the bank's internal management level, establish a special assessment system for science and technology credit, increase the tolerance for non-performing loans, and optimize the write-off approval process. Allow accelerated risk clearance based on third-party technical evaluation reports for losses indeed caused by the failure of technical routes. Establish an internal risk early warning mechanism for "Kedai Tong" loans, and promptly suspend new business when the non-performing loan rate reaches a certain proportion to control credit risks. In addition, improve the customer manager incentive mechanism by incorporating loan quality and technology transformation effectiveness into performance assessments, stimulating grassroots personnel's enthusiasm for serving innovative entities.

4.3 Strengthening Investment and Financing Docking Services and Establishing an Information Consulting System

Firstly, build a multi-level, precise docking service system to break through the financing information barriers of science and technology enterprises. Organize special roadshow activities according to strategic emerging industry chains, focusing on sub-sectors such as semiconductors,

biomedicine, and new energy. Jointly form a review community with upstream and downstream enterprises in the industry chain, scientific research institutes, and investment institutions to select high-quality projects through multi-dimensional assessments of technical feasibility, commercial value, and team capabilities. At the same time, establish an online docking platform to enable banks to intuitively observe the enterprise's R&D scenarios and technical operations, reducing due diligence costs and improving efficiency to promote information intercommunication. Moreover, deepen the innovation of investment-loan linkage models by providing credit loan quotas for enterprises that have obtained venture capital. Investment institutions should provide technical value endorsements and participate in risk-sharing to form a collaborative support mechanism of "equity financing guidance + debt fund follow-up".

Secondly, make up for the shortcomings in banks' understanding of technology by establishing a dual support system of "expert think tank + information sharing". Assemble a tiered expert database covering academicians, industry technology experts, and science and technology finance scholars. Subdivide the technical review committee according to professional fields, formulate standardized guidelines for science and technology credit, clarify the risk assessment points and monitoring indicators for different technical routes, and establish a credit evaluation system for science and technology-based SMEs. This will provide expert consultation and innovation information support for bank credit reviews, helping banks deeply evaluate the enterprises' technological innovation and technology transformation capabilities. At the same time, build a science and technology innovation intelligence platform to real-time capture dynamic information on global technological breakthroughs, policy adjustments, and market competition. Through data mining, generate industry risk maps to assist banks in predicting the risks of technological iteration and market fluctuation trends. For significant changes in technical routes or industrial chain restructuring events, establish a rapid

response mechanism to enhance banks' ability to identify and control risks, balance business risks and rewards, and provide decision-making basis for banks to adjust their credit strategies.

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