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Enhancing the Regulatory Framework for Financial Data Sharing Between Banks and Enterprises

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Abstract: In the process of implementing data openness between banks and fin-tech companies, as the breadth and depth of cooperation between banks and enterprises continue to increase, there is a risk of "too much correlation to fail" and "too many links to fail". There are problems with the implementation of financial data openness by regulatory agencies for banks and fin-tech enterprises, such as the ambiguity of regulatory responsibilities, the emphasis on financial regulatory goals, and the lag in regulatory methods. To address these issues, it is necessary to clarify the responsibilities of financial regulatory agencies, establish a collaborative mechanism for financial regulation, coordinate the types of risks in bank enterprise cooperation, achieve the technical implementation of financial regulatory measures and the design of regulatory systems, obtain regulatory data in real time, establish a hierarchical regulatory system for bank enterprise cooperation to improve the regulatory path, and ensure the rational and legal use of financial data in bank enterprise cooperation.

Keywords: Fin-tech companies; Bank enterprise cooperation; Financial data openness; financial regulation

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1. Introduction

To achieve the digital transformation of banks, multiple banks have announced the signing of cooperation agreements with fin-tech companies and have developed fin-tech through joint innovation laboratories and other means, promoting regional joint development and application of financial data, continuously improving the risk control and prevention capabilities of financial data to cope with external changes. The cooperation between banking and financial institutions, as well as fin-tech enterprises, utilizes new generation high-tech technologies such as big data and artificial intelligence to promote innovation and application of fin-tech products, build a fin-tech ecosystem with internal circulation and even external output, and enable financial data to play an increasingly important role. With the increasing demand for building high-quality financial data, banks have chosen to cooperate with fin-tech companies due to their own technological limitations. However, the openness of financial data between both parties has brought new challenges and problems to financial regulation. The ambiguity of the

responsibilities of financial regulatory agencies leads to unclear financial data governance goals, the emphasis on financial regulatory goals makes it difficult to handle the overlapping effects of technical and financial risks, and the lag in financial regulatory methods makes it difficult to conduct comprehensive supervision in the face of two-way cooperation between fin-tech enterprises. These series of problems have triggered financial arbitrage behavior between fin-tech enterprises and banking and financial institutions. Therefore, this article points out the issue of financial data openness in bank enterprise cooperation from the perspective of financial regulation, and proposes corresponding solutions to address the problem [1].

2. The regulatory status and challenges of open financial data for banks and enterprises

2.1. The ambiguity of responsibilities of financial regulatory agencies increases the difficulty of financial data supervision

Financial data gradually exhibits the characteristic of "cross-border" in its development process. The utilization of data in bank enterprise cooperation determines the involvement of multiple financial regulatory departments and even other technical regulatory authorities in supervision. Regulatory agencies for financial data include the State Administration of Financial Supervision, the People's Bank of China, and its subordinate Financial Technology Commission, the Financial Standardization Technical Committee, and other departments. The current regulatory measures for bank enterprise cooperation by financial regulators are still mainly reflected in credit cooperation, risk management, financing services, and limitations on cooperation scope, with little emphasis on the construction of mechanisms for financial data governance. Each financial regulatory department only supervises some financial data attached to the core business of supervision, resulting in overlapping responsibilities and regulatory gaps among multiple regulatory agencies [2]. The data collection and management systems under various financial regulatory departments have different standards, among which the system responsible for collecting banking financial data is the EAST on-site inspection system, which focuses on micro prudential supervision.

The National Financial Basic Database is responsible for macro prudential supervision and has been integrated with various legal entities engaged in credit business, such as commercial banks, consumer finance companies, and small loan companies. By summarizing various financial data, it achieves targeted and accurate financial regulation. While the People's Bank of China has established a unified financial statistical database to collect and process financial statistical data reported by financial institutions, the 1104 system of the CBRC is only responsible for collecting relevant data of the banking and insurance industries. This classified data collection method conflicts with the cross-use of financial data, resulting in overlapping and omission of data collection. Some fin-tech companies that cooperate with banking and financial institutions need to submit their internal data to the financial basic database [3]. Banking and financial institutions need to submit their internal financial data to both the EAST system and the national financial basic database. This multi-head data submission method not only increases the burden on banking and financial institutions, but also makes data submission more decentralized. This limits the scope of data collection and regulatory coverage, and incomplete and incomplete data collection by various regulatory agencies directly leads to a decline in the efficiency of financial data governance [4].

Even though banks are aware that some data in fin-tech companies is obtained through theft, illegal collection, and other means, whether it is national banks or regional small and medium-sized banks and other funding institutions, due to the lack of technical and infrastructure support, customers rely more on fin-tech companies for access, and the autonomy and discourse power of banks themselves are constantly weakened. However, banks

have the advantages of long-term accumulation of financial data, credit, and capital, and can rely on financial technology enterprises to carry out comprehensive cooperation to complete their digital transformation. However, financial technology has virtuality, concealment, and the existence of financial data black boxes. Even though the "Guidelines for Data Governance of Banking and Financial Institutions" stipulate that banking regulatory authorities should continuously supervise the data governance of banking and financial institutions through off-site supervision and on-site inspections, they still cannot monitor the dynamic situation of financial data in real time [5]. Banks may give up their investigative power due to rent-seeking and other reasons. Some fin-tech companies, in the absence of financial regulation, rely on the supply of data as a key element, using their advanced technological means and advantageous market position to attract other financial institutions to cooperate and gain profits. In this process, they further expand their data assets and form barriers by increasing user conversion costs and data migration costs, thereby exacerbating the fragmentation of the financial service system.

The Commercial Bank's Application Program Interface Security Management Specification issued by the People's Bank of China specifically stipulates the access rules for the application parties (including third-party institutions), and the commercial banks are responsible for conducting multi-dimensional inspection of third-party cooperation institutions. However, due to the lack of corresponding reference indicators and specific review requirements, this has brought great convenience to the banks, and it is difficult to be fair and just to all third-party institutions applying for cooperation in practice. If the regulatory obligation of third-party review is fully entrusted to banks, driven by the competitive interests of financial technology, banks are likely to be monopolized by one of the cooperating institutions, and specific subject policies are given preferential treatment, leading to exclusivity and suppressing competition. Banks and fin-tech companies are more willing to build a financial ecosystem centered around themselves, enhance the breadth, diversity, and inclusiveness of their services, and circulate financial data internally to hinder financial data sharing [6].

Fin-tech companies lack regulation on the utilization of financial data in the banking industry. Financial technology platforms have access to a large amount of core financial data, which continuously accumulates to form financial data assets. Once there is data pollution or risk, it can be transmitted to banking and financial institutions through the data chain. Under the leadership of fin-tech companies, which aim to compete for customer resources and expand their business scope, they may engage in the misuse of financial data and give preferential treatment to proprietary products without the knowledge of banks, to maximize their own interests [7]. The big data processing technology and scenario services provided by some fin-tech companies that cooperate with banking and financial institutions have played an important role in financial activities. The compliance and stability of their operations are also closely related to the financial regulatory goals of preventing financial risks and protecting financial consumers. As financial data sharing becomes the industry norm, fin-tech companies may have more information about consumers' personal and financial lives. When personal financial data is combined with other datasets, this enormous amount of information can easily be used for unethical business purposes [8].

In the era of digital finance, data should become the core of financial regulation, but these fin-tech companies that hold financial data are rarely regulated by financial regulatory agencies. The regulatory efforts do not match the current financial situation, the uneven allocation of financial regulatory resources leaves a large space for arbitrage behavior of fin-tech companies [9]. Due to the technological differences and conflicts of interest between banks and fin-tech companies, fin-tech companies may violate contractual agreements by illegally abusing, analyzing and modeling financial data, developing products, sharing transactions, etc., to seek personal gain [10]. For example, fin-tech enterprises use the data obtained from banking financial institutions to provide user credit

risk assessment for their own Internet credit business or the business of other financial institutions, and directly obtain benefits [11].

Whether the use of financial data obtained by fin-tech companies will exceed the agreed scope of banking and financial institutions, whether the banking industry is aware of the ultimate use and depth of processing of their open financial data, and other issues may be ignored due to the complex structure, technological black box, and dominant role of fin-tech companies in cooperation with banking and financial institutions. Even though the country has introduced multiple laws and regulations to strengthen the supervision of financial data, the risks caused by financial data may not necessarily be from the banking and financial institutions as the source of risk. The existing regulatory schemes still mainly focus on market-based solutions and regulatory schemes, including behavioral constraints on individual financial institutions, seriously neglecting the supervision of fin-tech enterprises [12].

2.2. The emphasis on financial regulatory objectives is difficult to cope with the combined effects of financial and technological risks

Fin-tech companies themselves have strong professionalism and technicality, as banks have massive undeveloped financial data and weak financial data development capabilities, making it difficult to achieve deep data mining. Therefore, cooperation between banks and fin-tech companies can make up for the shortcomings by relying on emerging technologies such as cloud computing, artificial intelligence, and block-chain from fin-tech companies to develop algorithms to guide financial consumers in implementing financial behavior. But algorithms are not only based on technical rationality, but also mixed with the irrational thinking of algorithm designers. If algorithm designers fail to consider other key factors or have serious biases, it may cause technical defects, financial data abuse, algorithm bias, and other problems, leading to erroneous trading behavior of financial consumers. For example, in big data credit reporting, due to deviations in data quality or design flaws in algorithms, discriminatory or erroneous credit evaluation conclusions may be generated, which increases the burden on financial consumers to distinguish the authenticity of information [13].

In the context of financial technology, banks and financial technology enterprises are more focused on cooperation in financial data and other aspects. Based on the current technological level of financial technology enterprises, financial data can be efficiently processed in real-time. However, if there are risks in data processing, cross industry transmission effects will occur more quickly, causing new real-time risks. Due to the closer connection between banks and fin-tech companies in terms of technological connectivity, financial business intersection, and inter-connectivity of financial data, technical vulnerabilities or programming errors in fin-tech companies can quickly ripple through the banking and financial institutions, thereby generating new systemic risks to the entire financial market [14]. Defects in internal controls and data systems may also lead to unforeseeable losses. Financial technology companies cooperate with multiple banking and financial institutions. Once the financial technology system built by both parties is breached, the related financial business system will be paralyzed in a short period of time. Technical risks may escalate from quantitative changes to qualitative changes in specific situations, and may even trigger potential systemic risks, affecting financial stability. The business of banking and financial institutions has begun to shift significantly from offline to online.

Financial technology companies can provide software and hardware facilities with higher performance and stronger technical level as support. If a system node fails, under the influence of data, it will quickly spread from financial technology companies to the banking system, increasing the difficulty for regulatory agencies to handle

[15]. At present, the goal of financial regulation still remains in the traditional financial business field, with a focus on regulating enterprise financing, payment settlement, fund management cooperation, and other aspects. Due to the rise of financial technology, in addition to traditional financial risks such as market risk, credit risk, and systemic risk, financial risks accompanied by technological risks have made financial regulation more complex. However, the current means of financial regulation are difficult to cope with the combined effects of technological and financial risks. The cooperation between banks and enterprises has increased the risk correlation between fin-tech companies and banks, especially when fin-tech companies with the same or similar business models provide fin-tech services to multiple banks simultaneously, the risk correlation between different banks will increase [16]. fin-tech platforms use financial data to create a technological chain that links multiple banking and financial institutions with other fin-tech companies, forming a financial ecosystem that makes it easier for a certain institution's risks to spill over and spread faster through the financial ecosystem [17].

2.3. The lag of regulatory methods makes it difficult to cope with arbitrage risks in two-way cooperation between enterprises

The continuous innovation of financial technology has increased the difficulty of financial data regulation, which requires continuous improvement and enhancement of regulatory technology. The business of financial technology enterprises has expanded from cooperation with banks in financial business to cooperation with financial regulatory agencies in regulatory technology, resulting in a situation of two-way cooperation among the same financial technology enterprise. Regulatory technology products have also been introduced into the technology information system of financial institutions to reduce compliance costs. This two-way cooperation model directly increases the occurrence of moral hazard in financial technology enterprises. Bank enterprise cooperation may lead to fin-tech companies reserving regulatory gaps for their cooperative businesses in order to achieve regulatory arbitrage. fin-tech companies gain the identity of implicit regulators by collaborating with financial regulatory agencies [18].

The cooperation between fin-tech companies and banking and financial institutions directly increases the possibility of fin-tech companies becoming data thieves and regulatory arbitrageurs, becoming potential drivers of financial data risks and regulatory loopholes. Especially in terms of regulatory data security protection, once the loopholes in regulatory data and regulatory technology are mastered by fin-tech companies, the difficulty of financial data regulation in bank enterprise cooperation will significantly increase. Whether it is banking and financial institutions or financial regulatory agencies, their financial technology innovation and application, as well as the iterative upgrading of technology, rely more on financial technology enterprises. Therefore, financial technology enterprises have stronger advantages in the cooperation process. Currently, there is still a lack of disclosure of shared financial data and the scope of data use in bank enterprise cooperation. Deviations in the focus direction and regulatory measures of regulatory agencies can easily lead to regulatory mismatches.

3. International experience in regulating the opening of financial data between banks and enterprises in cooperation

3.1. Regulatory measures taken abroad for financial data openness in cooperation between banks and enterprises

The European Union's Payment Services Directive (PSD2) requires banks to open customer data to third parties, but fully regulates payment initiation service providers (companies that initiate online payments using customer

accounts) and account information service providers (companies that aggregate account data from financial institutions and use this data to provide services), filling the regulatory gap for emerging financial technologies. PSD2 requires that when banks cooperate with third-party institutions, financial institutions can only grant access to third-party service providers with the personal consent of account holders and cannot refuse [19]. The law grants individuals great freedom in the disposal of financial data. The Payment Services Directive II requires third-party institutions to register with regulatory authorities in their member states and meet certain prudential and security requirements, but prohibits third-party institutions from accessing, storing or using any services unrelated to customer data, and guides the European Banking Authority and the European Central Bank to develop supplementary regulatory standards for data security, data access and transaction monitoring [20].

The UK has developed the Open Banking Standards Framework and put forward specific requirements. One is API standards, which suggest using open APIs for bank transactions, but only with the consent of the data owner can private data in the open APIs be accessed, and technical and security standards must also be followed. The second is to classify the data and grant different data sharing permissions to third-party institutions based on the type of financial data and the nature of bank enterprise cooperation. Thirdly, establish safety standards. The process of sharing data between banks and third parties must obtain user consent. The fourth is to establish independent institutions to track and supervise the implementation of open banking standards, granting them the power to review third parties. The British Standards Institute has released the "Guidelines for Supporting Cooperation between fin-tech Companies and Financial Institutions" standard, which proposes that financial institutions and fin-tech companies should conduct due diligence on the feasibility and safety of cooperation before starting cooperation. fin-tech companies should provide relevant information on whether they have regulatory authorization. If they are punished by regulatory agencies, they should promptly disclose the specific reasons for the punishment and other details. Both parties should work together to ensure that cooperation is carried out in a legal and compliant manner. The Financial Conduct Authority is responsible for certifying and licensing all financial service providers involved in bank cooperation. If a partner wants to obtain financial data from a bank, they need to register with the Financial Conduct Authority. Only by passing the testing system of the Financial Conduct Authority and obtaining regulatory permission can they obtain the qualification to access bank customer data [21].

The Australian Treasury Department suggests that regulatory agencies classify bank data and set different open requirements, clearly stipulating that customer provided data, transaction data, etc. fall within the scope of data sharing, while high-risk data cannot be included in the scope of bank data sharing. The Australian Prudential Regulation Authority indirectly regulates fin-tech companies, primarily banks. If a bank's deposit or wealth management business uses fin-tech, the fin-tech companies it collaborates with are also included in the regulatory scope. Hong Kong's financial management has granted banks the autonomy to choose which fin-tech companies can access their internal data unilaterally, and contractual terms should be established between banks and companies to mitigate the risk of customer data being abused.

3.2. Summary of foreign experience

One is to focus on conducting prior censorship of bank cooperation partners. Due to the diverse types of partners involved in bank cooperation and their involvement in various financial businesses, it is difficult to control the purpose and scope of financial data usage. Therefore, it is necessary to conduct a feasibility review of the cooperation partners and their contents beforehand to ensure that the cooperation is legal and compliant. The

second is to grant individuals great freedom of data disposal. The EU requires that anyone who intends to access financial institution-related data should obtain permission from the account holder. Even if the financial institution is a data holder, its disposal authority over financial data is still limited. The data disposal authority of financial institution account holders is much greater than that of financial institutions as data holders, ensuring the security and legality of financial data use. The third is to classify financial data, set different regulatory standards, and clarify the scope of data sharing. Fourthly, financial technology companies participating in cooperation will also be included in the scope of financial regulation, with the aim of achieving comprehensive supervision of banking and financial institutions and ensuring the security of financial data.

4. Suggestions for improving the supervision of financial data openness between banks and fin-tech enterprises

4.1. Establish a multi departmental vertical financial regulatory coordination mechanism to expand regulatory scope

Establish a vertical linkage regulatory model between financial data centers and the State Administration for Financial Regulation. The People's Bank of China has set up a national financial basic data center to provide core data support for the macro-control of financial regulators and establish a unified national financial basic database. In the Plan for the Reform of Party and State Institutions, it is proposed to establish the State Financial Supervision and Administration to take unified responsibility for the supervision of the financial industry except the securities industry. The decentralization of responsibilities among financial regulatory agencies has led to a fragmented state of financial data supervision. Therefore, it is necessary to build and operate a unified financial data supervision platform. The national financial basic database established by the financial basic data center integrates EAST on-site inspection system, 1104 system, People's Bank of China financial statistical database and other financial data collection systems, collects financial data from all financial institutions and their partners, achieves the goal of "collecting the same data only once for supervision", and classifies and manages all data. The financial data center constructs a model for data analysis and risk monitoring rating.

The "Data Article 20" points out the need to promote cross-regional, cross-departmental, and cross-level collaborative linkage. However, at the horizontal regulatory level, multi-departmental regulation leads to overlapping or regulatory gaps in financial regulation. Based on the experience and lessons learned from the UK regulatory collaboration practice, relying solely on informal cross-departmental collaboration mechanisms is not sufficient to promote effective cooperative regulatory actions. Therefore, it is extremely necessary for the Financial Basic Data Center to cooperate vertically with the State Administration of Financial Supervision and Administration. The Financial Basic Data Center manages the financial basic database, collects data uniformly, and classifies and grades the data to ensure data continuity and consistency, establish unified financial data management standards, and achieve dynamic supervision of data.

The State Administration of Financial Supervision and Administration has an internal department for non-bank institution supervision and a department for bank supervision, which is responsible for coordinating and overseeing the cooperation between banks and fin-tech enterprises. The Financial Basic Data Center has established an information sharing mechanism with the State Administration for Financial Regulation to ensure the timeliness and effectiveness of information acquisition by the State Administration for Financial Regulation. Open financial data will be applied to financial technology research and development, financial product innovation, and various cooperative financial businesses. Therefore, in the digital economy era, financial regulatory agencies

not only supervise financial data, but also need to fully cover cooperative businesses. The State Administration of Financial Supervision and Administration can achieve cross-regional and cross-industry supervision of financial products and financial technology. In the context of financial technology, the focus should be on building technology and business compliance systems to achieve automation and intelligence of supervision. The financial basic data center should use network and data security facilities and management systems, such as data encryption protection and post-disaster data recovery to prevent data security risks and prevent data flow risks caused by cross-industry financial data.

Due to the complex nature of fin-tech companies, the State Administration for Financial Regulation should define the scope of enterprises that cooperate with banks, establish a blacklist system to limit banks' choice, blacklist fin-tech companies that violate regulatory regulations or pose operational risks, and regularly publicize them to the market. Banks should conduct risk assessments with cooperative enterprises on their own and file them with the State Administration of Financial Supervision and Administration. Financial technology enterprises that cooperate with banks should be included in the regulatory scope of the Financial Supervision and Administration. Financial technology enterprises that participate in cooperation are required to submit data reports to the financial data center on a regular basis to ensure the comprehensiveness of the coverage of the financial basic database. The financial regulatory authority should establish a specific due diligence process for bank-enterprise cooperation and require both banks and fin-tech companies to jointly establish a comprehensive financial risk control system. A continuous monitoring plan should be established for the use of financial data to ensure the legality, completeness, and predictability of the cooperation between the two parties.

At present, under the global financial regulatory framework, there are two main regulatory models for third-party institutions. The first is for bank regulatory authorities to directly supervise third-party institutions, and the second is for financial regulatory authorities to sign contracts with third-party institutions. Regardless of the method, financial regulatory authorities require banks to conduct continuous risk monitoring of third-party services. At the international level, the authorization for third-party institutions has been granted to banks, which provides great convenience, comprehensiveness, and efficiency for banks to supervise their partners. The financial regulatory authority should grant banks regulatory authority over their partners and require banks to regularly report to the financial regulatory authority.

Financial data combines privacy and publicity. Privacy is because the financial data of banks and fin-tech companies can reflect an individual's financial status, consumption level, etc. While publicity stems from the full release of the value of financial data, which can promote digital transformation and improve the research and development capabilities of fin-tech products between banks and enterprises to better serve financial consumers. Therefore, the concept of classification and layering should be upheld for financial data, and different protection rules should be constructed from different data types. For sensitive data that may endanger personal and property safety in case of leakage, illegal provision or abuse, strict protection should be adopted, while for general data outside of sensitive data, loose authorization rules should be adopted to promote the interconnection and intercommunication of financial data. If both parties open up financial data, fin-tech companies and banking financial institutions should prominently inform users of the frequency, scope, and retention period of data sharing on their website homepage, and also allow users to authorize data sharing by implication. The financial regulatory authority should require banking and financial institutions to establish a data intelligence risk monitoring system, implement data quality monitoring of data within the scope of cooperation, and focus on monitoring the continuity, authenticity, and accuracy of data. Regularly conduct risk monitoring on bank partners to prevent systemic

financial risks caused by legal and regulatory risks.

4.2. Coordinate risk types and improve the technical level of financial regulation

Due to the diversified regulatory targets and heavy regulatory tasks of the State Administration of Financial Supervision and Administration, there is a lack of sufficient technical level and ability to supervise all business in bank enterprise cooperation. In order to improve regulatory efficiency, it is necessary to centrally coordinate the risk types of bank enterprise cooperation, establish a risk rating system, and determine regulatory priorities based on the development laws of various risks. In the current era of rapid development of financial technology innovation, various financial businesses between banks and enterprises are becoming more ambiguous in terms of transaction objects, time, and methods. The transaction process and content lack sufficient transparency, making it easy for regulatory deviations to occur. Even if risk monitoring is automatically carried out by banks, ethical risk issues may still arise. Therefore, regulatory authorities should adopt irregular supervision methods such as non-site inspections, and comprehensively use technical risk internal control and other regulatory tools to supervise the cooperation between both parties. Due to certain differences in format, standards, and storage methods between data from fin-tech companies and data from banking and financial institutions, it is necessary to use multiple technologies for re-cleaning and integration, including standardized code value conversion, data standardization, formatting, and other operations. In addition to the traditional financial risks, regulators should focus on the financial problems caused by technical risks.

The Notice on Strengthening Network and Data Security Management in Third Party Cooperation issued by the State Financial Supervision and Administration pointed out the financial risks caused by technical defects, such as the failure of an Internet domain name agent to change without permission, which led to the failure of a bank's Internet domain name resolution, affecting financial transactions for up to 68 minutes at the peak of business. The Financial Institutions Review Board of the United States has developed a unified information technology risk rating system, mainly used to identify technology risk exposure situations. Through comprehensive and individual ratings, it quickly identifies financial institutions and technology service providers with significant technology risks, and determines corresponding regulatory strength based on this. To prevent financial problems caused by technological risks, financial regulatory authorities should also adopt risk rating methods, using machine learning, artificial intelligence, big data, and other methods to systematically evaluate the distribution of major technological risks when banks cooperate with fin-tech enterprises, effectively identify potential risk hazards, and take corresponding regulatory measures.

Due to the formation of a multi-node, high-density social network between banking and financial institutions, as well as fin-tech enterprise entities, the risk of any node default or algorithm code errors can be easily transmitted to other platforms through technology and networks, leading to systemic risks such as too fast to fail and too many links to fail. Therefore, banking and financial institutions should establish and improve their overall risk isolation mechanism with fin-tech enterprises, including risk isolation between banking and financial institutions and other banking and financial institutions, as well as between fin-tech enterprises. Strengthen the construction of "firewalls" in risk prone areas such as data, finance, and related party transactions, reasonably isolate behaviors in information technology systems, operation back-ends, and other fields, and prevent the mutual transmission of financial and technical risks caused by close ties between fin-tech enterprises and banking and financial institutions. The cooperation between banking and financial institutions, as well as fin-tech companies, involves a large amount of sensitive and personalized customer data.

Therefore, by introducing privacy computing technology, the goal is to achieve cross regional cooperation of data while protecting data security and circulation, and solving the difficulties of data protection and integrated applications. To ensure the security of financial data in the process of financial data openness, the standardization of privacy technology interconnection technology should be improved. However, due to inconsistent technical standards among partners, difficulty in determining responsibilities of all parties, and compatibility of rules between banking industry financial institutions and fin-tech enterprises in the process of financial data openness, the Technology Supervision Department of the State Administration of Financial Supervision should act as a neutral organization to coordinate and promote the collaboration of privacy computing technology. This not only ensures that both parties follow up with the requirements of financial regulators, but also achieves a balance of interests among all parties at multiple levels with minimal impact scope and cost.

Currently, some banking and financial institutions have started to practice. For example, in 2023, China Construction Bank built an enterprise-level privacy computing platform - a multi-party data security sharing platform. In addition, CCB and fin-tech companies such as Meitnerium are jointly exploring data sharing models through federated modeling, anonymous queries, and secure computing. Financial regulatory agencies should require participating banking and financial institutions to establish a comprehensive data management platform, incorporating all data involved in the cooperation between banks and fin-tech enterprises into the management scope of the bank's data assets. The Technology Supervision Department of the State Administration of Financial Regulation should establish an automated data collection system to achieve full process supervision of cooperation through system embedding and other methods, ensuring that the operation of data complies with legal regulations.

4.3. Real-time acquisition of regulatory data to establish a hierarchical regulatory system for bank enterprise cooperation

In order to prevent the occurrence of moral hazard in fin-tech companies, financial regulatory authorities should upgrade and iterate their regulatory measures, actively introduce regulatory technology to improve the technological and intelligent level of regulation. The financial data collection system should be connected to the data systems of banking and financial institutions, as well as fin-tech enterprises. The Technology Supervision Department of the Financial Supervision Bureau will complete regulatory reports and compliance management through tools such as data visualization analysis. In the technology-driven regulatory model, the regulatory subject and object establish a data sharing mechanism, forming a tripartite data exchange system through data sharing among regulatory agencies, banking and financial institutions, and fin-tech enterprises. This transforms the traditional single regulatory model into a multi-party governance supported by technology, promoting regulatory agencies to follow up on the dynamic development of bank enterprise cooperation in real time. At the same time, regulatory agencies use automated and technological means such as data mining, analysis, and processing to manage financial data related to bank enterprise cooperation. They utilize the intelligent judgment function of emerging technologies to lock in risks and greatly improve the automation level of supervision through intelligent dynamic regulatory mechanisms, thereby enhancing the efficiency of financial supervision. Empowering financial regulation through technology, accurately tracking data from regulatory partners, and continuously improving the technological level of financial regulation.

In order to prevent the occurrence of systemic risks, a hierarchical regulatory system for bank enterprise cooperation is established based on the cooperation partners, cooperation content, and number of partners of fin-tech enterprises. Because some fin-tech companies are currently not included in the scope of financial regulation,

the main body responsible for fulfilling reporting obligations is the banking and financial institutions. This requires banking and financial institutions to investigate the relevant backgrounds of cooperating fin-tech companies and effectively fulfill their substantive review responsibilities. The State Administration of Financial Supervision and Administration has established a hierarchical supervision system based on the cooperation situation of fin-tech enterprises, focusing on tracking the financial data of fin-tech enterprises and conducting comprehensive supervision of business cooperation to ensure the comprehensiveness and timeliness of financial supervision.

5. Conclusion

To summarize, when banks and fintech companies engage in financial cooperation, they should strengthen supervision in various aspects such as data transmission, data use, and data protection during the cooperation process, maintain financial data security, and promote the circulation of financial data on the basis of financial supervision.

Disclosure statement

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