

The Development Status, Challenges and Countermeasures for China Financial Industry Data Factor Market

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Abstract: With the rapid development of new technologies such as big data, cloud computing, and artificial intelligence, data has gradually become a basic strategic resource and a revolutionary key element in the digital era. Data is a core element in conducting financial business and plays a fundamental role in the fields of marketing and risk control. Data factors have become the most important production factors for financial technology innovation activities, and the application of financial data factors has become the basis for the development of financial technology. This article elaborates on the current development status of China's financial industry data factor market, the significance and necessity of building a financial industry data factor market, and deeply discusses the current low-quality supply of China's financial industry data factor market, weak data security governance, insufficient sharing and circulation mechanisms, Challenges such as difficulty in releasing value from applications.

Corresponding countermeasures are proposed from aspects such as strengthening the supply of high-quality data factors, creating a market environment that facilitates the circulation of data factors, promoting the expansion and opening of the public market for data factors, and building a security governance system for the data factor market.

Keywords: Data Factors; Data Circulation; Data Security; Financial Data

1. Overview of Data Factors

Among national-level standards, China's "Information Technology Vocabulary Part 1: Basic Terminology" (Standard No.: GB/T 5271.1-2000) defines data as a reinterpretable formal representation of information, suitable for communication, explain or process. In

September 2023, the "Data factors White Paper (2023)" released by the China Academy of Information and Communications Technology pointed out that data factors refer to computer data and its derivative forms that are gathered, organized, and processed according to specific production needs and put into production. Original data sets, standardized data sets, various data products and systems, information and knowledge generated based on data can be included in the scope of data factors. Data has become a new factor of production, alongside land, labor, capital, and technology. The inclusion of data as a new type of production factor in China's national policy documents reflects China's current regulation and management of data. Rapidly promoting the construction of a data factor market will help transform "demographic dividend" and "cost dividend" into "data dividend" and "innovation dividend" and help seize the opportunities of global competition in the digital economy and achieve overtaking in corners. As an element participating in distribution, data will play a guiding role in the development of the digital economy, guiding enterprises to pay more attention to data factors, releasing the productivity of data resources, and thereby improving the country's economic governance in the market economy system. China's data transaction scale continues to grow, and the transaction scale exceeds 70 billion yuan in 2022 [1]. The Ministry of Finance of China recently formulated and issued the "Interim Provisions on Accounting Treatment Related to Enterprise Data Resources", which will come into effect on January 1, 2024. This provision strengthens the accounting treatment related to enterprise data resources. It has become a consensus that data is an asset, and most companies are vigorously promoting data asset management to promote corporate digital transformation. Releasing the value of data

under different industrial scenarios will inject digital "booster" into the social economy and capital market at the asset side, and bring new digital vitality [2]. The size of the data factor market has steadily increased, but the growth rate has declined. The cultivation of data factor market is a systematic project involving the whole economic and social operation, which needs to establish a set of matching economic and social rules and a new management system. With the continuous improvement of social innovation and technology capabilities, new business forms and application scenarios continue to emerge, and the data factor market has shortcomings in theoretical research, supply capacity, security and other aspects [3].

2. The Significance and Necessity of Building a Data Factor Market in the Financial Industry

Since 2019, China has listed data as an important factor of production alongside land, labor, capital, and technology for the first time. The market-oriented allocation of data factors is the general trend of the country. From a top-level design perspective, China has successively released important strategic layouts and promotion ideas for the data factor market for many years, gradually clarifying the significance of promoting the construction of Data China. Especially during the COVID-19 epidemic, diversified digital economic formats have sprung up in the digital economy, such as online shopping, takeout, live streaming and other innovative models. With the contactless transaction process, accurate push of goods and services, and real-time feedback of order information, digital economics' advantages are not affected, and its income has far exceeded normal market expectations, making a huge contribution to the development of society and becoming a model for the whole society to jointly fight the new crown epidemic, reduce people's property safety, and maintain social stability and development.

As financial services gradually become scenario-based and online, rapid response to customer needs has become the development goal of big data applications. Focusing on the development principle of "customer-centric", financial enterprises need to make overall plans for data applications from an enterprise-level perspective based on business

needs, then formulate unified standards, improve and streamline processes, build underlying infrastructure, build integrated service platforms as to improve services and achieve efficient low-cost reuse of data services, give full play to the core capabilities of the enterprise, and better provide customers with high-quality services. In order to cope with the challenges in the new situation, the financial industry has strengthened the construction of data diversification, data association, data security and compliance, etc., as to provide intelligent, real-time, product-based and platform-based data services for business scenarios, and continues to improve the basic capabilities of the platform to help advance digital transformation tasks.

At present, the research on data factor market is mainly carried out for the whole industry [4,5], and the research on financial industry segmentation mainly focuses on the business opportunities of banks [6], but there is no systematic research on financial industry segmentation. From the perspective of data trading business, the data trading that has landed has the largest number of listed products and the highest transaction volume in the financial industry [7]. Therefore, it is of great significance and reference value to study from the financial subsector and drive the healthy development of the whole data factor market with the development of the financial industry data factor market. This paper mainly focuses on the research of the data element market of the financial industry. Based on the research reports, development reports and white papers of relevant scientific research institutions and data exchanges, this paper analyzes the current market status and challenges faced by them and puts forward corresponding countermeasures.

3. Current Status of the Data Factor Market in The Financial Industry

3.1 Annual Trends in the Number and Scale of Procurement Projects

The scale of data factor procurement in the financial industry is growing exponentially. Public bidding information shows that in the past five years, the compound annual growth rate of the number of data factor procurement projects in the financial industry has reached

40%, far exceeding the compound annual growth rate of 26% in the number of total financial industry procurement projects, showing that the scale of financial industry data trading market is developing rapidly.

Judging from the size of the data procurement amount, the data procurement amount is mainly distributed between 100,000 yuan and 1 million yuan, and the data procurement projects here account for about half of all data procurement projects; followed by million-level data procurement projects, accounting for about half of the total one-third of data procurement projects.

3.2 Regional Distribution of Procurement Projects

From the analysis of the implementation places of data procurement projects, data procurement activities are mainly carried out in Beijing, Shanghai, Guangdong province, Jiangsu province, Henan province and other regions. Among them, the largest number of data procurements are carried out in Beijing, accounting for 27.18%. The total number of data purchases carried out by in Beijing municipality, Shanghai municipality and Guangdong province accounted for 47.85%.

3.3 Industry Segmentation Data Procurement Analysis

The industry with the most data procurement projects is the banking industry, accounting for 69.22% of all data procurement times. Insurance and securities data procurement accounts for 14.74% and 7.7% respectively, as shown in Figure 1.

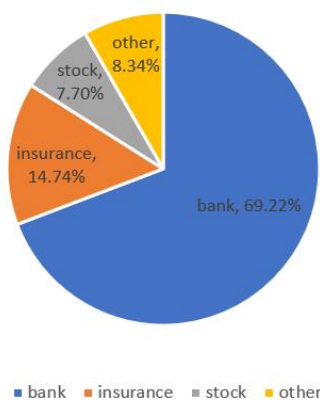


Figure 1. Number of Data Procurement Items Industry Distribution

In terms of data purchase amount, the banking department has the largest amount of data

purchase, accounting for 76.86% of the total data purchase amount. The insurance department and securities department are accounting for 12.22% and 4.38% of the total data purchase amount respectively. And 6.54% of the data purchase amount comes from other departments, as shown in Figure 2.

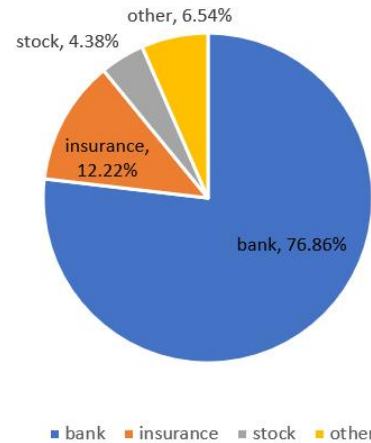


Figure 2. Data Procurement Expenditure of Financial Sub-Departments

3.4 Analysis of Financial Industry Data Suppliers

A total of 2,216 data suppliers in the financial industry were collected through the collection of public information such as bidding and tendering. As of 2022, there are 987 data suppliers under 10 years old, accounting for 44.54% of the total number of data suppliers; there are 1,774 data suppliers under 20 years old, accounting for 80.05% of the total data suppliers; There are 410 data suppliers with more than 20 years and less than 30 years, accounting for 18.50% of the total number of data suppliers; while there are 32 companies with more than 30 years of age, accounting for 1.44% of the total data suppliers, as shown in Table 1. In terms of age structure, nearly half of the data suppliers have been established for less than 10 years, so the industry as a whole shows a thriving trend.

Table 1. Age Distribution and Cumulative Proportion of Data Providers

Age range	the number of suppliers	Cumulative proportion
<=10 years	987	44.54%
10-20 years	787	80.05%
20-30 years	410	98.56%
30-40 years	30	99.91%
>40 years	2	100%

3.5 Location Distribution of Data Suppliers

Analyzing the provinces where data suppliers belong, data suppliers mainly come from Beijing, Shanghai, Guangdong province, Zhejiang province, Jiangsu province and other regions. Among them, the largest number of data suppliers from Beijing, Shanghai, and Guangdong province account for a total of 55.43%.

3.6 Financial Industry Data Product Transactions

In terms of financial industry data trading products, financial industry data trading products can be divided into personal information, corporate information and other information. Personal information data product transactions, represented by personal credit reporting, identity authentication, and real estate data, dominate the market, accounting for approximately 70% of the entire financial industry data transactions. Enterprise information data products are relatively rich, covering basic enterprise information, enterprise operating activities, enterprise investment and financing, enterprise portraits, affiliated enterprises, as well as enterprise-based industry information and industry chain information. According to comprehensive calculations, public data accounts for approximately 90% of the data products traded in the financial industry.

4. Challenges in Developing Data Factor Markets

4.1 Challenges in Supply Quality of Data Factor Market

In terms of data supply and quality challenges, the diversity of data determines the complexity of data sources. Valuable data is the production factor. The current data quality is not optimistic. For example, governments, enterprises, institutions, and the public are all producers of data. Whether it is government public data or social data, inefficient data wastes time and costs. Due to the large scale and increasing amount of data generated, more errors may occur during the acquisition, storage, transmission and calculation of big data. Large amounts of data updates can lead to the rapid generation of outdated data and make it easier to produce inconsistent data.

Data sources are diverse, structures are diverse, and conflicts, inconsistencies or contradictions exist between a large number of different data sources. Financial institutions need to constantly use the alternative data of enterprises in the fields of tax, real estate, utility and electricity payment to evaluate enterprise credit. If such data is not guaranteed in terms of quality, there will be a potential disruption of relevant services and a credit crunch [8]. It is especially necessary to ensure the integrity of data definition and the reliability of data quality during the data acquisition stage.

4.2 Challenges in Security Governance of Data Factor Market

The market-oriented allocation of factors requires the improvement of data security capabilities. However, China data security is based on the strengthening and improvement of the original information security system. The core of the digital economic governance system is data, data objects, and data-based thinking and methods. Data security issues are everywhere. The accumulation of data security early warning and abnormal behavior detection technology is weak and cannot meet security risk prevention requirements such as monitoring, early warning, positioning, and disposal. It is difficult to meet the security protection needs in scenarios with large data volumes and fast flow speeds. Solutions such as data desensitization and leakage prevention for complex multi-source data scenarios in converged businesses are immature. The imperfect cross-border data flow system makes it difficult to maximize the value of data [9].

4.3 Challenges of the Data Factor Market Sharing and Circulation Mechanism

In order to realize cross-department, cross-level, cross-region, and cross-business data sharing and exchange, the government has established vertical and horizontal data barriers, making it more difficult to share and circulate data resources. The opening of public data and social data, and the flow of public data on the market, involve a large number of constraints and challenges from institutional rules, technologies, platforms and industrial markets. In the long run, after companies obtain sufficient returns from the collected

data, the data needs to be shared with society in a specific form, which can not only generate social benefits but also reduce the possibility of companies adopting data monopoly behaviors. Data openness focuses on public data, and this type of data still has problems such as low quality and low use value. However, non-public data is often owned by individual platform companies due to privacy and business secrets. The data owned by financial institutions may involve customer, industry or even national secrets, and once shared, it is likely to lead to data leakage and bear legal responsibilities, which also makes financial institutions discouraged from data sharing [10].

5. Countermeasures for Building a Data Factor Market in the Financial Industry

5.1 Strengthen the Supply of High-Quality Data Factors

The value of data factors is closely related to data quality. The amount and quality of data determine the value of data. On the supply side, there is an urgent need to promote the construction of a data resource standard system and improve the level of data resource management and processing capabilities to ensure data quality. Only big data that has been compiled through data collection or high-quality annotated data can exert its due value. Therefore, for government data resources, social data resources, and public data resources, we mainly rely on the enthusiasm of market entities to improve the quality of supply, provide common support services and a safe and trustworthy circulation environment for public data circulation, and deepen the cross-level and cross-regional government data, orderly sharing across departments to better improve the level of public data openness and release data dividends.

5.2 Establish a Security Governance System for the Data Factor Market

With the formal implementation of the "Cybersecurity Law", "Data Security Law" and "Personal Information Protection Law", the "Troika" in the field of security regulations has been formally formed to further promote the healthy development of the data security industry and enhance industry data security. In

the field of data security, with the goal of preventing data leakage and data abuse, with reference to international norms and national standards, a big data security system covering the entire life cycle of data is established from the four levels of organizational personnel, security strategy, security technology and security operations. Financial institutions should raise data security to a high level to ensure the effectiveness of macro-control and financial supervision, understand and grasp, implement substantial preventive measures against data security risks, and promote the safe use and flow of data [11].

5.3 Create a Market Environment that Facilitates the Circulation of Data Factors

The market circulation of data factors is inseparable from the cultivation of data trading platforms, and the market-oriented pricing system is an important part of building data trading rules. In addition to building market transaction rules, the service quality of the data trading platform should also be improved, and the market operation and governance system should be improved through the development of supporting services such as registration and settlement, asset evaluation, transaction matching, and dispute arbitration, so as to realize and safeguard the legitimate rights and interests of all participating entities. In particular, entities such as enterprises and scientific research institutes can be encouraged to explore the application of various digital technologies such as blockchain and privacy computing to create a safe and orderly market environment and improve the efficiency of data transaction circulation.

6. Conclusion

On the basis of elaborating the current development status of the data factor market in China's financial industry, the significance and necessity of the data factor market in China's financial industry, this paper makes an in-depth analysis of the current challenges of the data factor market in China's financial industry in terms of low supply quality, weak data security governance, insufficient sharing and circulation mechanism, and difficult release of application value. The corresponding countermeasures and ideas are put forward from the aspects of strengthening the supply of high-quality data elements,

creating a market environment conducive to the circulation of data elements, promoting the expansion and opening of the public market of data elements, and building a security governance system of data elements market.

As a new factor of production, data is the foundation of digitization, networking, and intelligence. It has been rapidly integrated into all aspects of production, distribution, circulation, consumption, and social service management. The explosive growth and massive aggregation of data contain huge value and provide the basis for intelligence. Globalization has brought new opportunities. The financial industry is a data-intensive input industry. As an industry with the most complete digital infrastructure, the highest demand for cross-institutional data collaboration, and the strictest compliance requirements, the financial industry will inevitably become the first-choice scenario for the implementation of the data factor market. Taking financial industry data transactions as an entry point, it will drive data transactions from off-site to On-site transition, exerting a model effect on on-site trading. In the wave of vigorous development of the data factor market, the financial industry has stood out and been deeply applied in financial business, promoting the digital and intelligent transformation and upgrading of China's financial industry, and helping finance better serve entities and society.

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