



# Research on the Risk Control System of Securities Companies Under the Background of Big Data

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## Abstract

Practices at home and abroad have proved that the Internet financial risk control system with big data technology as the core plays a huge role in preventing financial risks. Therefore, it is necessary to strengthen and improve the risk control system based on big Internet data. As an essential part of financial institutions, securities companies should make full use of the advantages of market data obtained to develop more diversified Internet financial services and improve risk control systems. At present, various financial institutions have relatively complete risk control during and after the event, but there are certain shortcomings in the risk control before the event. Securities companies can strengthen the risk control system from the data and model level by building a risk control platform. Based on this, this article will start with pre-risk control, specifically expounding the necessity and feasibility for securities companies to improve the risk control system under the wave of Internet finance.

**Keywords-** *Big Data Technology; Internet Finance; Risk Control*

## 1. INTRODUCTION

### 1.1. Internet finance and business model

The emergence of Internet finance stems from the active involvement of Internet companies in financial services on the one hand and the traditional financial industry's increasing emphasis on the Internet on the other. From a definition point of view, Internet finance refers to an economic model that uses Internet technology and mobile communication technology to realize financial intermediary payment and information intermediary functions. Its business formats include third-party payment, P2P network lending, and Internet wealth management [1]. From the actual connotation point of view, the current Internet finance is essentially manifested in two aspects: the financial Internet and Internet finance. The financial Internet, that is, traditional financial institutions use network technology to break through the limitations of time, space, and physical outlets, achieve comprehensive business upgrades, and provide a variety of financial services through the Internet; Internet finance refers to the Internet that has nothing to do with finance [2]. When enterprises develop financial business, external forces are irreversibly beginning to act on the financial industry through the

Internet, leading to tremendous changes in the financial industry's ecology. From the perspective of business models, Internet finance mainly includes online financing models represented by P2P and crowdfunding.; Network channel model represented by brokerage and fund financial online sales; payment and settlement model represented by third-party payment; virtual currency model represented by electronic currency and support service platform model represented by credit investigation and data mining. On the whole, Internet finance marks the in-depth development of the Internalization of the traditional financial industry. At the same time, due to the advantages of technology and innovation, the business model of Internet finance will continue to be enriched and deepened, thereby promoting the innovative development of the financial industry [3].

### 1.2. The status and role of risk control in Internet finance

Internet financial supervision is one of the prerequisites for the healthy development of Internet finance. Therefore, risk control as an essential part of financial supervision is crucial in developing Internet finance. First, from the perspective of the nature of internet finance, internet finance still belongs to the

financial category. Therefore, the development of Internet finance must follow the laws of financial development. Credit is the core and foundation of modern finance, so a sound financial risk control system is the cornerstone of financial development. According to this logic, credit is still the core of Internet finance. The current major issue in the development of Internet finance and even the entire Internet is to build Internet financial credit investigation and form a relatively complete Internet financial risk control system [4].

Second, from a strategic perspective, after the reform and opening-up, China's financial industry did not establish risk control awareness at the beginning of its development. The risk control system is gradually enriched and perfected during the development of the financial industry. This has led to a relatively slow process of marketization in China's financial industry. From a strategic perspective. The development of Internet finance must absorb the lessons and experience of "development before governance" in the traditional sense. At the beginning of development, it is necessary to construct an Internet financial credit investigation system in a forward-looking manner [5].

Third, from the perspective of the Internet finance platform, the current regulatory authorities are not strong enough to supervise Internet lending companies. For example, China's online loans have seen mixed results. In some platforms, customer funds and platform funds are not effectively isolated, and there have even been cases in which the person in charge of some platforms did not collect funds from "Pan Lu". Some platforms have aggressive marketing, selling high-risk products to people who cannot identify and bear risks.

Fourth, from the perspective of the audience of Internet finance, because Internet finance expands the boundaries of transaction possibilities, it serves a large number of people who are not covered by traditional finance (i.e. "long tail" characteristics), and has risk characteristics different from conventional finance. First of all, the Internet financial services population lacks financial knowledge, risk identification, and affordability.

They are disadvantaged groups in the financial sector and are prone to misleading, fraud, and other unfair treatment. Secondly, their investment is small and scattered. The cost of investing energy in monitoring Internet financial institutions as individuals is much higher than the benefits, so the "free-riding" problem is more prominent, and market discipline for Internet finance is more likely to fail.

Fifth, judging from the actual effect of risk control, risk control and credit management systems based on big data will continue to increase their accuracy as data is obtained. Therefore, it can not only play a role in managing risks after the fact, but also play a role in pre-warning, which can better prevent financial risks.

## 2. DATA ADVANTAGES OF SECURITIES COMPANIES

### 2.1. The role of securities companies

With the continuous deepening of innovation in credit transactions in the securities market, securities companies have successively launched margin trading and securities lending and refinancing businesses. These two businesses have expanded the business scope of securities companies, and at the same time strengthened securities companies, listed companies and other financial institutions. For example, the connection between fund companies and insurance companies has dramatically improved the quantity and quality of market information of securities companies, and has obtained abundant market data resources for securities companies.

### 2.2. The securities industry has a lot of essential data

As of December 2020, the total number of A-share accounts at the end of the period has reached 225,787,500, of which personal accounts account for the vast majority, and the total number of personal accounts has reached 225,026,703, accounting for 99.65% (see Table 1).

**Table 1** Number of personal and institutional accounts (unit: ten thousand)

	personal		mechanism	
	Total number of A-share accounts at the end of the period	Percent age	Total number of A-share accounts at the end of the period	Percent age
2015	15146.04	99.62%	58.03	0.38%
2016	16233.42	99.62%	61.32	0.38%
2017	16748.51	99.63%	62.91	0.37%
2018	17197.84	99.62%	65.53	0.38%
2019	18075.64	99.61%	69.98	0.39%
2020	22502.67	99.67%	76.08	0.33%

Source: original achievement

From the perspective of the distribution of holders' market value, the market value of A-shares in personal accounts below 10,000 accounts for 24.70%; the market value of A-shares from 10,000 to 100,000 accounts for

49.07%; A-shares circulate The market value of 100,000 to 500,000 accounted for 20.36%. The total proportion of the three is as high as 94.13% (see Table 2).

**Table 2** Distribution of market value of A-share account holders as of February 2020 (unit: 10,000)

	personal		mechanism	
	Number of accounts	Percentage	Number of accounts	Percentage
Market value of A-shares in circulation: less than 10,000 yuan	1231.51	24.70%	0.42	6.51%
Market value of A-shares in circulation: 10,000-100,000 yuan	2446.75	49.07%	0.83	12.97%
Circulating market value of A-shares: 100,000 to 500,000 yuan	1015.05	20.36%	1.05	16.36%
Market value of A-shares in circulation: 500,000-1 million yuan	165.97	3.33%	0.55	8.66%
Market value of A-shares in circulation: 1 to 5 million yuan	112.85	2.26%	1.21	18.88%
Market value of A-shares in circulation: 5-10 million yuan	9.07	0.18%	0.44	6.86%
A-share market value: more than 10 million yuan	4.9	0.11%	1.9	29.75%
Market value of A-shares in circulation: 1000-100 million	4.9	0.10%	1.08	16.89%
A-share market value: more than 100 million	0.38	0.01%	0.82	12.86%
total	4986.52	100%	6.4	100%

Source: original achievement

From the perspective of transaction volume, in 2018, 2019, and 2020, the average daily stock-based turnover reached 2014 billion yuan, 320.7 billion yuan and 112.8

billion yuan, respectively, an increase of 53%, 59%, and 252% (see Table 3).

**Table 3** Average daily turnover of equity funds (unit: 100 million yuan)

Year	Average daily equity fund turnover	Year-on-year
2015	2284	3%
2016	1745	-24%
2017	1320	-24%
2018	2014	53%
2019	3207	59%
2020	11280	252%

Source: original achievement

From the perspective of the balance of the two financial institutions, at the end of 2018, the end of 2019, and December 31, 2020, the total balance of the two

financial institutions in Shanghai and Shenzhen reached 3465.27, 10,256.56, and 1,098.210 billion yuan (see table). 4).

**Table 4** Balance of margin financing and securities lending (unit: 100 million yuan)

	total	Shanghai and Shenzhen financing balance	Shanghai and Shenzhen securities lending balance
2020-12-31	11982.1	11952.41	29.69
2019-12-31	10256.56	10173.73	82.83
2018-12-31	3465.27	3434.7	30.57
2017-12-31	895.16	856.16	38.21
2016-12-31	382.07	375.48	6.59
2015-12-31	127.72	127.61	0.11

Data source: original achievement

### 3. METHODS TO STRENGTHEN THE RISK CONTROL SYSTEM

At present, the Internet has developed to a certain stage, and all behaviors of individuals have been digitized and online. Therefore, the development of risk control in the field of Internet finance to the advanced stage must be based on all behavioral data of behavioral individuals. This needs to rely on big data technology to build a risk control model for analysis. Currently, online data is relatively easy to obtain, while offline data has natural barriers, such as personal privacy. Therefore, these barriers need to be legally eliminated one by one to achieve the purpose of obtaining all the data of the individual. Consequently, we must start with the following aspects.

First, we must cooperate with offline consumers. Securities company accounts are connected with third-party online payment platforms, and securities companies can rely on third-party online payment platforms in the field of mobile payment. Securities companies can cooperate with third-party online payment platforms to obtain offline consumption data. Since the scale of offline commerce is much larger than the scale of online transactions, offline consumption data can better reflect the consumer transaction behavior of actors. After obtaining this data, the risk control model can be better optimized at the consumption level.

Second, we must cooperate with administrative data to realize the collection of behavioral data. First, it needs to cooperate with the traffic supervision department to implement the data platform to integrate the behavioral individual's illegal payment records and accident record data; secondly, it needs to cooperate with the judicial department data platform to record the behavioral individual's litigation records, illegal records, and civil dispute records. And other data fusion; finally, it is necessary to integrate other data of the individual's daily life (such as water, electricity and coal payment, social security information, tax data, etc.).

Third, after the platform mentioned above is established, a data fusion platform can be built to collect and integrate all data. In the future, after the data system and account system are constructed, individual behaviors can be analyzed and predicted from various dimensions. Individual risk assessment will be carried out from all dimensions.

At this stage, the biggest obstacle is the data fusion of different systems on each platform. Securities companies have become a small part of the big data system at this stage. The amount of data is also relatively small so that securities companies will lose their dominant position at this stage. At this stage, securities companies exist as functional entities. After this stage is completed, the amount of data will be huge. The credit investigation

model, risk control model, and anti-fraud model in the Internet financial risk control system will be extremely mature.

The establishment of the social big data risk control system will lay the foundation for all-around product innovation. At the investment product level, securities companies can use customer data to develop customized products, and accurately push and market them. It can also cooperate with third-party Internet platforms for Internet-based product design and marketing. At the financing level, in addition to financing for the pricing of securities transactions, it can also establish a fund lending platform between the company's internal customers. Then, the securities company uses the big data risk pricing model to price the lending rate and charge service fees.

### 4. REGULATORY RESPONSE STRATEGIES

The trend of the integration of the securities industry and the Internet is already obvious. Behind it is the continuous exploration of the concept of Internet finance, and it is also a game of Internet thinking under the policy ceiling. Faced with the changes brought about by the Internet on payment habits, borrowing methods, investment and wealth management channels, and credit risk control, the advent of the era of Internet integration with the securities industry is unstoppable. For the development of new things, we need not only bold attempts, but also the determination of the regulators to change existing policies, as well as an open mind and market-oriented regulatory methods.

Given the characteristics that the integration of the Internet and the securities industry has just started at this stage, under the new technological situation, Internet securities risk control will make it difficult for the original regulatory means to adapt to the new requirements. In particular, the cross-border operation of Internet securities requires the establishment of a corresponding coordination mechanism between various regulatory agencies. It is necessary for various regulatory departments to clarify their regulatory responsibilities. At the same time, it is necessary to introduce corresponding Internet securities protection legal systems promptly to improve the Internet securities regulatory system at one time. In addition, one should also realize that the development process of new things is actually a process of constant trial and error. In the process of specific supervision and implementation, the one-size-fits-all administrative intervention must be avoided.

Judging from the existing securities model, in the field of securities big data risk control, whether for securities companies to obtain information from the outside or provide information to other parties, there are no suitable channels to achieve it. Therefore, there is no

way to talk about the corresponding supervision. This virtually cut off an essential channel for the integration and expansion of the securities industry and the Internet. Therefore, we can start with data supervision, and based on allowing the brokers to further liberalize the development rights of customer information and transaction data, real-time monitoring of the sources and channels of the brokers themselves or third-party companies to obtain customer-related information. In addition, it is necessary to further carry out the process of deep internal processing of data and the subsequent construction of a database including customer transaction habits and credit information. to realize the whole-process supervision of the internalization of securities. In this process, for products such as data reports and analysis formed by shielding personal specific information, it is necessary to complete a series of specifications and filings before allowing brokers to provide other industries with information with similar characteristics such as credit reporting and habits. At the same time, it is also necessary to supervise the process by which brokerages obtain information such as customer credit from banks or other industry institutions to determine the controllability of information exchanges in different industries.

## 5. CONCLUSION

In short, in the face of the Internet-based innovation wave of the securities industry, the following issues need to be paid attention to. The first is the procedural, process, and object issues related to Internet securities-related legal supervision. The second is whether the regulation of Internet securities business redefines a new framework. The third is the Internet risk management issue, which involves credit risk issues and the technical risks of the Internet itself. The process of solving the above problems is the issue of the regulatory guidelines that need to be adopted in the Internalization of securities. Specifically, the following methods can be used to solve the problem. One is appropriate supervision. We need to focus on the long-term feasibility of the Internalization of securities. The second is to coordinate supervision. Because the Internalization of securities will involve multiple departments, trading, investment advisory, and back office, or it will affect the Securities Regulatory Commission. The third is innovation supervision. The Internet needs to be tolerant, and a certain space needs to be provided for the Internalization of securities. Because the industry itself still has a lot of irregularities and immaturity, it is still necessary to do an excellent job of communication and coordination to avoid regulatory gaps or low regulatory efficiency that affect the normal development of the securities industry.

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