

## Research on Collaborative Development of Financial Science and Technology and Risk Supervision Based on Big Data Era

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**Keywords:** Financial Technology, Big Data, Risk Supervision

**Abstract:** with the Rapid Development of Internet Finance, Our Government Has Paid Great Attention to the Standardized Development of Internet Finance. Financial Science and Technology, through the Rapid Integration of Information Technology and Traditional Financial Services, Has Greatly Affected the Business Models and Financial Products of Financial Markets, Financial Institutions and Financial Services, and Has Become the Mainstream Trend of Current Financial Innovation. the Financial Market is a Place Where the Fund Suppliers and Demanders Who Take Financial Assets as Trading Objects Meet with Each Other to Jointly Determine the Rate of Return According to the Principle of Competition and Finally Complete the Fund Transaction. Compared with Traditional Internet Finance, Financial Technology is More in-Depth in Concept and Business. Financial Innovation Has Created Various Types of Institutional Investors. Meanwhile, the Rapid Growth of Institutional Investors Has Accelerated the Process of Financial Innovation. from the Perspective of Big Data Era, This Paper Analyzes and Discusses the Collaborative Development of Financial Technology and Risk Supervision in the Era of Big Data.

### 1. Introduction

With the Advent of the Big Data Era, New Technologies Such as Cloud Computing and Artificial Intelligence Are Changing with Each Passing Day, and More and More Science and Technology Are Applied to the Financial Field [1]. the Financial Market is a Place Where the Fund Suppliers and Demanders Who Take Financial Assets as Trading Objects Meet with Each Other to Jointly Determine the Rate of Return According to the Principle of Competition and Finally Complete the Fund Transaction. Before the Reform and Opening Up, There Was Almost No Financial Market in Our Country. the So-Called Financing or Credit Was Limited to Bank Credit and There Was No Other Financing Market [2]. in China, the Emergence of Institutional Investors is a Government-Led Process of Simulating European and American Experiences. with the Deepening of Capitalization, the Financial Market Plays an Increasingly Important Role in the Allocation of Social Resources. the Rapid Development of Information Technology Such as Big Data and Cloud Computing Has Brought Unprecedented Opportunities to the Development of Internet Finance, But Also Brought Great Risks [3]. in Recent Years, Innovative Technologies Represented by Big Data and Artificial Intelligence Have Gradually Penetrated into the Fields of Payment, Credit, Asset Management, Registration and Settlement. This Has Effectively Improved the Financial Service Capabilities and Efficiency, and Has Comprehensively Promoted the Transformation and Upgrading of the Traditional Financial Industry [4]. However, While Promoting Financial Development, the Risks Inherent in It Cannot Be Ignored.

In the Context of Globalization, Institutionalization of Investors Has Become a Prominent Feature of Global Capital Markets [5]. Classic Financial Market Theory is Based on the Efficient Market Hypothesis. under This Assumption, the Information in the Market is Fully Disclosed, and Every Investor in the Market Can Grasp Completely Symmetrical Information [6]. as Big Data Has the Characteristics of Fast Propagation Speed, Wide Penetration Area, Strong Concealment, and Difficult Supervision, the Integration of Technology and Finance in the Era of Big Data Will Also Generate Some New Risk Issues [7]. in Practice, over-Confident Institutional Investors Not Only

Failed to Play a Role in Stabilizing Market Fluctuations, They Even Exacerbated the Entire Market [8]. through the Rapid Integration of Information Technology and Traditional Financial Services, Fintech Has Greatly Affected the Business Models and Financial Products of Financial Markets, Financial Institutions and Financial Services, and Has Become the Mainstream Trend of Financial Innovation [9]. from the Perspective of the Era of Big Data, This Article Analyzes and Discusses the Coordinated Development of Fintech and Risk Supervision in the Era of Big Data.

## 2. Risks and Performance of Financial Science and Technology

Assuming that future price changes are completely similar to the past, the current price level of market factors can be combined to directly simulate the possible price level of market factors in a future period. Infantile decision makers will only be affected by the bias effect of the status quo. Although the amount of funds deposited in the payment platform of Internet finance is very considerable, it is still far from the amount of funds in the entire financial system. With the entry of new technologies such as big data and artificial intelligence into the financial field, China's initial Internet finance has been transformed into financial science and technology from some financial science and technology businesses. With the continuous emergence of innovative financial products and the rapid development of the economic environment, we will not only face greater risks, but also face more choices of risk varieties.

The strong efficient market hypothesis holds that all information in the market has been fully reflected in the price of financial assets. For example, the future expansion plan of the enterprise, the change of management mode and the personnel adjustment of the company's top management, etc. Even if the information has not been made public, investors have already obtained it through various means. Therefore, the inside information that has not been made public has long become an open secret. The relationship between effectiveness and investment analysis is shown in Table 1.

Table 1 Relationship between Market Effectiveness and Investment Analysis

	Technical analysis	Basic analysis
Invalid market	Invalid	Effective
Weak and effective	Effective	Invalid
Semi-strong and effective	Invalid	Effective
Strong and effective	Invalid	Effective

With the continuous development of economy and Internet technology, the business scope of Internet payment platform is also expanding. Information technology has given birth to new financial services and formats. While improving the quality and efficiency of financial services, its cross-border operation, complex business model and other characteristics often lead to the constant renovation of financial risk forms and connotations. In the field of financial investment, investment is a process of preserving and increasing the value of capital. Investment is the choice behavior of making the best decision in balancing the relationship between investment income and investment expenditure, short-term return and long-term value. In the service of the real economy, finance should not only develop within the industry, but also integrate financial funds into the development of the real economy [10]. Different fund uses need to adopt different financing methods, and the real economy of financial services should understand this in many aspects. In our country, the status of financial consumers and financial institutions is not equal. Consumers are often in a weak position, and their awareness and ability in information acquisition and application are relatively poor. Big data can help insurance products out of their own limits.

## 3. Coordinated Development of Financial Science and Technology and Risk Supervision

Nowadays, the number of Internet financial payment transactions is increasing and the number of transaction groups is increasing. The hardware and software used in the Internet financial trading platform are lagging behind. Once there is a hardware and software failure, payment will be delayed or even lost. In reality, the preferences of decision-makers will change in irregular forms over time. When the fund manager changes, the new fund manager's judgment on macro-economic changes,

changes in the competitive environment within the industry and other factors is definitely different from that before the change. If the original time series has long-term memory, the order of the data is very important. After randomly disturbing the data, the sequence characteristics of the original sequence will be changed, thus the structural characteristics of the original time sequence will be destroyed, and the obtained new sequence characteristics will approach random walk. With the rapid expansion of electronic money such as Internet payment, the estimation of money multiplier, circulation speed and demand function faces more uncertainties, thus reducing the effectiveness of traditional monetary policy intermediary objectives. When consumers choose certain financial products or services, they should give full play to the functions of financial industry associations and consumer associations, and earnestly safeguard and protect the legitimate rights and interests of financial consumers.

Inconsistency of expected rate of return leads to inconsistency of time discount rate of financial institutions. The discount rate of time decreases continuously, and hyperbola is steeper than hyperbola, which means that the degree of inconsistency of time preference is obvious. As shown in Figure 1.

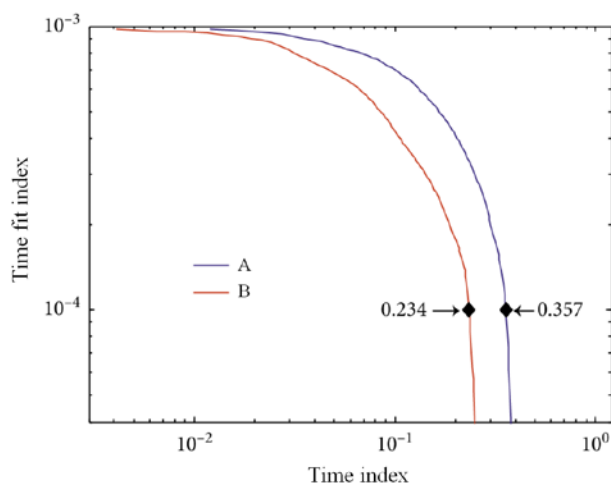


Fig.1 Time Inconsistency Curve

In the process of payment, the trader must transfer the entity funds from the bank account to the account of the internet financial payment platform, which is one of the important links to complete the payment of funds. In order to obtain definite results, it is further assumed that investors have logarithmic utility function and the return rate of risk-free assets is constant. All intertemporal selection theories assume diminishing marginal utility and positive time preference rate. In the transmission path of monetary policy, the influence of bank liabilities and assets will be less dominant, and some financial science and technology companies that affect the creation and derivation of money will also enter the transmission path of monetary policy. The greater the price volatility of risk-free assets, the smaller the information value. All these are consistent with intuition, but intuition cannot give an accurate quantitative relationship between them. An indefinite investment plan cannot be drawn up, and the individual investment objectives of asset managers must be achieved in a short period of time. Since the market benchmark return rate and inflation rate fluctuate constantly in different periods, financial institutions will constantly adjust their expected return rate. Financial institutions should strengthen the awareness of information protection and data security, strengthen the basic management of financial information, and improve the refinement level of information management.

#### 4. Conclusions

Financial science and technology is an irreversible trend. How to find the balance between innovation and risk control is the key to the healthy and sustainable development of financial science and technology. With the rapid development of economy and Internet technology, the development speed of Internet finance has amazed the world. Enterprises are the economic entities

whose aim is to make profits. Making as much profit as possible is their main pursuit. As an individual investor, what he pursues is to maximize the utility function that reflects his satisfaction. The development of the financial industry must be premised on satisfying the diversified services of the people in the real economy. Financial technology is not a simple combination of finance and technology, but an organic integration of finance and technology. The core of the financial industry is to serve the real economy. The arrival of the big data era has played a decisive role in serving the development of the real economy and provided indispensable opportunities for its development. The risk prevention problems in the development of financial science and technology in China's big data environment are prominent, and the lack of financial supervision has led to a series of financial risks. The risks of Internet finance are showing a rapid growth trend. Therefore, it is of great practical significance to formulate and implement effective strategies for monitoring the risks of Internet finance payment.

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