Research on Financial Abnormal Transaction Model of Securities Market Based on Big Data Technology

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Abstract. Under the background of the current big data era, all walks of life in China are carrying out reform and innovation on their operating mechanism, so as to better cope with the challenges brought by the new era. The research of financial abnormal transaction model in China's securities market also needs to follow the development trend of the times. Compared with the past, great changes have taken place in the research of financial abnormal transaction model in the securities market. In order to meet the challenges brought by the new era to the research of financial abnormal transaction model of securities market, this paper puts forward the application of big data technology to the financial abnormal transaction model of securities market. This paper analyzes the research status of financial abnormal transaction model in China's securities market, and formulates a new research scheme for financial abnormal transaction model of securities market in the era of big data, so as to meet the new needs of the research on financial abnormal transaction model of China's securities market in the new era. Please. Through long-term observation, it can be found that some of the analysis methods proposed in this paper have important practical significance for the research of abnormal trading model of securities market based on big data technology.

Keywords: Big Data Technology, Reform and Innovation, Securities Market, Financial Anomalies

1. Introduction

Big data technology¹⁻³ includes data management, storage and data processing, analysis and processing visualization and other important technologies, among which big data analysis and visualization technology has always been its core technology. By using the method of big data analysis, our users can quickly extract and mine some hidden, unknown and useful technical information and basic knowledge from noisy, fuzzy and random data. The research method of big data
In recent years, China's securities market\cite{7-8} has continuously improved, expanded and innovated the original trading system. However, in line with the international mature market, the abnormal changes of China's stock market are still frequent. This paper points out that the serious deviation between the stock market and the real economy implies the defects of the transaction mechanism and the supervision mechanism of the capital market. The continuous innovation of financial products and trading mechanism is an important factor to improve the quality of China's securities market. However, the implementation and adjustment of the trading mechanism\cite{9-10} by the regulatory authorities aggravates the instability of the securities market.

This paper studies the research on financial abnormal transaction model of securities market based on big data technology. In order to meet the challenges brought by the new era to the research of financial abnormal transaction model of securities market, this paper puts forward the method of integrating big data technology with the research of financial abnormal transaction model of securities market, and divides the research status of financial abnormal transaction model of securities market in China According to the new requirements of the big data era on the research of financial abnormal transaction model of China's securities market, a new research scheme of financial abnormal transaction model of securities market is formulated, so as to meet the new demand of the research on financial abnormal transaction model of China's securities market in the new era. Through long-term observation, it can be found that some of the analysis methods proposed in this paper have important practical significance for the research of abnormal trading model of securities market based on big data technology.

2. Research Method of Financial Abnormal Transaction Model in Securities Market Based on Big Data Technology

2.1. Big Data Technology

The 4V characteristics of big data are volume (massive data scale), velocity (fast data flow and dynamic data system), variety (data type diversity), and value (big data value). With the rapid development of information technology and communication technology, a variety of computers and terminal equipment have achieved unprecedented interconnection, and educational content has achieved free circulation across time and space. Real time analysis and processing of big data, non-relational data management and analysis technologies, such as Hadoop (open source implementation of MapReduce technology, based on Java) and Hadoop dB (integration of MapReduce technology and RDBMS), can accelerate data query and analysis, and have good scalability and fault tolerance. Intelligent software can guide students to track and evaluate their online learning in real time. Relational database mainly processes structured data. Now unstructured data (such as user
comments, applications, location information, pictures, music, video, etc.) has accounted for a large proportion (about 85%), and the relational big data that can generate human intelligence is also these unstructured data.

2.2. Research on Financial Abnormal Transaction Model in Stock Market

So far, the stock market has developed into a highly technical, systematic and sensitive system. The "Oolong finger" event caused by increasingly frequent technical system failure and human technical error has gradually become the main cause of abnormal securities trading, seriously damaging the normal function and market order of China's securities market. Therefore, the relevant legal system and regulatory measures and policies of the securities market are facing serious risks and challenges. In other words, in the increasingly rapid and large-scale securities market, we can find an effective way to prevent and deal with the abnormal situation of securities trading, effectively maintain the market order, and protect the interests of investors and social public interests.

3. Experimental Correlation Analysis

3.1. Experimental Background

With the development of the globalization of the securities market, it is difficult for the general bilateral memorandum of understanding to adapt to the changing market regulatory requirements. Therefore, many countries in the world strengthen the legal supervision of cross-border securities issuance and trading by signing multilateral regulatory cooperation agreements. At present, multilateral regulatory cooperation agreements mostly exist in the form of joint statements.

3.2. Experimental Design

From the experience of overseas cross-border regulatory cooperation, international securities organizations play an increasingly important role. The China Securities Regulatory Commission (CSRC) is a member of the International Securities Regulatory Commission (IOSCO). The Shanghai and Shenzhen stock exchanges have joined many international securities organizations, such as the world stock exchange. This paper investigates and studies the international securities organizations that Shanghai Stock Exchange has joined. The results are shown in Table 1.

| Name of organization                          | Joining time | Participation status |
|-----------------------------------------------|--------------|----------------------|
| International organization of Securities Regulatory Commission (IOSCO) | September 1996 | Joint members        |
| Asian Federation of exchanges (AOSEF)         | April 2000   | member               |
| World Federation of                           | October 2002 | member               |
4. Discussion

4.1. Analysis on the Research Status of Financial Abnormal Transaction Model in Securities Market Based on Big Data Technology

The rapid development of electronic trading platform and the change of trading technology have a great impact on the pattern of trading market. The traditional manual trading mode gradually lost its advantages and was replaced by the increasingly prosperous electronic trading matchmaking system. This kind of constant challenge and innovation to the tradition intensifies the competition between exchanges. In this case, "the attribute differences and geographical distance of the securities market are gradually blurred. Investors and securities issuers have to transfer to the stock exchanges with high market transparency, high market liquidity, low risk and transaction cost at any time. The market competition between exchanges has expanded from domestic market scope to international scope.". In the past, the market monopoly advantage caused by the competition among various factors such as global geographical and economic environment has gradually disappeared. Even the most developed stock market and stock exchange place in China have also felt the huge survival risks and threats brought by the intensified market competition.

Take the United States as an example; the competition between the American stock exchanges has reached a white hot degree, which can be said to be the most intense period of modern trading market competition. The emergence of directededge and bats broke the dominance of NYSE and NASDAQ. Although it is only a few years old, the market share of directededge and bats has increased exponentially every year, while the market share of NYSE and NASDAQ has been declining. The results of a survey of stock trading on major U.S. stock exchanges are shown in Figure 1:

![Figure 1. Changes in market share of major U.S. exchanges](image)

As shown in Figure 1, the chart shows the changes in the proportion of trading shares to market shares of the four major stock exchanges in the United States from November 2018 to August 2019. As can be seen from the figure, the market share of the New York Stock Exchange and NASDAQ shows an obvious downward trend, while the trading shares of directededge and bats show an upward trend. The NYSE's trading share fell from 35% in November 2018 to 26.5% in August 2019, while
NASDAQ’s market share fell from 31% to 19%. In contrast, the market share of directededge increased from 3% in November 2018 to 13% in July 2019, and the market share of bats increased from 9% in November 2018 to 10% in August 2019. Therefore, from the perspective of market share, directededge and bats pose a threat to the market dominance of NYSE and NASDAQ.

In recent years, China's securities market continues to improve, expand and innovate the original trading system. In 2010, the introduction of major trading mechanism innovation in the securities market, trading stock index futures by margin trading improved the situation of serious internal segmentation and single transaction, which means that for a long time in the securities market, the information of pessimistic investors can be reflected in the stock price more timely, providing investors with a richer risk dispersion channel, which helps to reduce the long-term overvaluation of A-share market. Improve the function of market price discovery, improve the efficiency of market operation and enhance the stability of the market. This paper examines the macroeconomic situation and stock market trend in China in recent years, the survey results are shown in Figure 2:

![Figure 2. Macroeconomic situation and stock market trend](image)

As shown in Figure 2, in general, China's stock market is still more frequent while integrating with the international mature market. From 2016 to the first half of 2017, when China's economy was in the downward shock stage, the stock market rose sharply, and the rapid rise in a short period of time triggered the subsequent sharp decline of the stock market. Although regulators pointed out that the root cause of China's stock market turmoil is the revaluation of Chinese assets. During the transition period and the fundamental reason for the stock market changes in 2017 is the contradiction between investors, the high expectations of reform and short-term economic performance did not meet the expectations, but the defects of serious deviation between the stock market and the real economy also mean that the capital market trading mechanism and regulatory mechanism, In particular, the market operation mechanism does not keep up with the pace of financial innovation, and the administrative color of supervision is too strong. The research on financial abnormal transaction model of securities market based on big data technology still needs to be developed.
4.2. Suggestions on the Research and Development of Financial Abnormal Trading Model in Securities Market Based on Big Data Technology

Based on the deficiency of relevant provisions on abnormal transactions, it is suggested to formulate and improve the securities laws on the specified conditions of abnormal transactions, formulate emergency response measures for emergencies in the securities market, and formulate relevant business rules and emergency plans. For possible abnormal transactions, ensure timely and effective handling of abnormal transactions.

We will improve the relevant agreements on securities trading, and establish a mechanism for prompting trading technical risks and legal exemption from liability. One is to establish technical risk control mechanism between exchanges and securities dealers. Sign an agreement with securities dealers on the use of trading places and facilities, and make reasonable agreement on the handling responsibility and handling responsibility of abnormal risks caused by technical failure through agreement arrangement. It should be emphasized that if it is not the fault of technical negligence, the exchange shall not be liable for compensation. The second is to establish the technical risk control mechanism between securities dealers and customers. It is necessary to emphasize and list the specific conditions and corresponding consequences of the agreement signed between the principal and agent sides of securities trading. The failure of abnormal trading may be due to the technology exchange system, which reveals the technical risks of securities trading, and reasonably allocates and limits the responsibilities arising therefrom.

The performance and stability of securities trading system largely depends on the product quality and service level of equipment and service providers. Especially in the case of abnormal securities trading caused by technical failure, the fault response speed of suppliers is very important. Therefore, the supervision of suppliers has entered into the vision of securities regulatory agencies, and is supervised in the form of administrative regulations. Through the contract, determine the responsibilities and obligations of the supplier, and agree on the service requirements and scope. Stock exchange, abnormal handling of securities trading can be related to software and hardware procurement and service in commercial contracts, as well as suppliers of equipment and software programs and services for the exchange and trading of rights and obligations, especially in the prevention and response of technical risks and elimination of technical shortcomings, how to cooperate closely and act quickly, It should be expressed in a relatively independent, centralized and clear way to form a practical fault response mechanism and emergency treatment scheme, so as to make it a part of the business contract.

5. Conclusion

This paper mainly introduces the research on financial abnormal transaction model of securities market based on big data technology. Compared with the past, the research on financial abnormal transaction model of securities market has also changed greatly. In order to meet the challenges brought by the new era to the research of financial abnormal transaction model of securities market, this paper puts forward the application of big data technology in securities market financial abnormal transaction model The new era brings great challenges to the research of financial abnormal transaction model in the securities market. In order to better study the financial abnormal transaction model of China's securities market in this era of big data, we must withstand the impact of the
challenges brought by the times, and make great efforts to turn the tide back, so as to achieve deepening reform and innovative development. Combined with the new requirements of the big data era on the research of financial abnormal transaction model of China's securities market, a new research scheme of financial abnormal transaction model of securities market is formulated, so as to meet the new demand for the research of financial abnormal transaction model of China's securities market in the new era.

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