Design of Financial and Economic Monitoring System Based on Big Data Clustering

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Abstract. Aiming at the problem that the selection of financial and economic risk indicators is not comprehensive, resulting in excessive financial and economic operational risks, a financial and economic monitoring system is designed based on big data clustering. Financial and economic risks are risks that are formed and accumulated in the financial system in the process of economic cyclical and financial unbalanced development. According to its formation mechanism, complex network models are used to analyze the dynamic correlation of financial and economic risks. Select financial and economic risk indicators based on big data clustering, and strengthen the supervision of high-risk financial sub-markets such as stocks and foreign exchange markets. Establish a financial and economic monitoring system from three aspects of financial and economic revenue and expenditure, debt and external risks, and jointly determine the development trend of financial and economic risks. The test results show that the financial and economic monitoring system based on big data clustering can reduce the value at risk of operational risk, namely VaR value, and promote the balanced development of the financial market.

Keywords: Big data clustering · Financial economy · Monitoring system · Financial risk · Financial network · Dynamic correlation

1 Introduction

With the increasingly obvious trend of economic globalization and the gradual deepening of financial liberalization, the international capital flows between financial markets are more frequent and closer. The continuous optimization of industrial structure, demand structure, and regional structure has led to the optimization and upgrading of the economic structure, and the coordination and sustainability of economic development have been significantly improved. Economic development has broken through the original single development path, the level of opening to the outside world has been comprehensively improved, the scale of trade and foreign investment has steadily expanded, and the trade structure has been continuously optimized, forming a new economic pattern of economic diversification and globalization. The higher the repercussions caused by the risk fluctuations of one market being transmitted to other markets, the more likely one

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market is to cause shocks to other markets to varying degrees, and the interdependence between markets increases the uncertainty of the financial system and increases the occurrence of financial probability of crisis. Therefore, in the context of globalization, how to effectively manage risks has gradually attracted the close attention and research interest of financial market regulators and practitioners.

As an important core issue of finance, the systemic risk of the financial system has once again become a hot topic concerning the financial security and core competitiveness of various countries. China's financial and economic risks are multifaceted and wide-ranging, with prominent structural imbalances, many hidden risks of various types, and significantly increased financial system vulnerability. There are four main reasons for the frequent occurrence of financial risks in China: First, China's economy and finance entered a downward cycle after the last round of expansion, posing major challenges to financial development; The phenomenon is serious; third, financial supervision is not suitable for the financial industry, especially the fast-growing technology finance and Internet finance; fourth, it is affected by the spillover effect of loose monetary policies in major developed countries. In order to facilitate the regulatory authorities to track and control the risks of various financial sub-markets in a timely manner, and to better grasp the direction of financial risk management, the most important thing is to choose appropriate measurement methods to identify and evaluate risks, otherwise inaccurate risk measurement will greatly affect the market. Risk management effect. Exploring the correlation and interaction mechanism of risk fluctuations in various financial sub-markets based on accurate risk measurement results will help relevant risk management departments formulate differentiated regulatory strategies in a targeted manner according to the propagation path of market risks, so as to prevent and resolve major financial risks in a timely manner.

At present, relevant scholars have made research on the design of financial and economic monitoring system. For example, the financial and economic monitoring system based on BP neural network [1]. Combined with the operation mode of supply chain finance, it summarizes the risk factors of supply chain finance business, establishes a risk index system with good consistency and stability, introduces the general principles and steps of BP neural network, and uses mat-lab The BP neural network tool builds a risk assessment model, and the validity of the model is proved by establishing a supply chain financial risk assessment model. Financial and economic monitoring system based on Bayesian network [2]. Based on the Bayesian network, the inference analysis and diagnosis analysis of operational risk was carried out, the influence of each key risk inducement on operational risk was evaluated, and prevention strategies were proposed for the key risk inducement, which provided a reference for the financial and economic monitoring system.

This paper designs a financial and economic monitoring system based on big data clustering, selects financial and economic risk indicators based on big data clustering, and strengthens the supervision of high-risk financial sub-markets such as stocks and foreign exchange markets. Establish a financial and economic monitoring system from three aspects of financial and economic revenue and expenditure, debt and external risks, to provide a guarantee for the relationship between economic development and risk prevention, to create a stable and transparent financial market system, and to promote high-quality economic development.

2 Design of Financial and Economic Monitoring System Based on Big Data Clustering

2.1 The Formation Mechanism of Financial and Economic Risks

Financial and economic risks are risks that are formed and accumulated in the financial system during the process of economic cyclical and financial unbalanced development, and are the overall risks of the financial system. In terms of the impact on the financial system caused by changes in political, economic, social and other factors, in terms of internal vulnerability, it is mainly caused by the accumulation, imbalance and unreasonable structure of internal risks in the financial system. Financial supervision is the general term for financial supervision and financial management. On the one hand, it refers to the comprehensive, regular and purposeful inspection and supervision of financial institutions and financial businesses by the financial authorities, so as to promote the sound operation and development of financial institutions in accordance with the law. On the other hand, it refers to a series of activities such as the leadership, organization, coordination and control of financial institutions and their business activities and financial business carried out by financial authorities in accordance with the law. As a new form of finance, Internet finance follows the essential characteristics of traditional financial development. Operational risk events in Internet finance are also derived from operational risk events in traditional finance. The difference is that Internet finance is related to information technology. With the help of the power of the Internet, the impact of some events is weakened, and at the same time, the impact of some events is amplified because of the transmission effect. The subdivision of specific risk events is different from traditional finance. With financial innovation and the development and improvement of the financial system, the objects of financial supervision continue to expand and expand, mainly including participants in financial activities and related financial businesses. Although the external factors of the financial system have a great influence on the risks of the financial system, they do not involve the reasons of the financial system itself. When the risk of the financial system is studied in a closed-system approach, the risk of the financial system specifically refers to the fragility of the financial system. That is to say, in the case of fixed external shocks, the risk of the financial system is the uncertainty of the financial system or the uncertainty of the loss of the financial system caused by the internal instability of the financial system. The premise of effectively supervising and preventing financial operational risk is to understand the formation mechanism of financial operational risk. Basel New Capital Accord once defined the operational risk faced by traditional commercial banks, and believes that operational risk is "the risk of loss due to imperfect or existing problems in internal procedures, personnel, and systems or due to external events". The loss events of operational risk include Internal fraud, external fraud, employment and job security, loss due to customer, product and business operation errors, loss of tangible assets, business interruption and system failure, and errors involving execution, delivery and transaction process management.

Mapping complex network theory in financial system can be used to study the relationship between financial network center and systemic financial risk characteristics. A complex network is generally represented by a node vector and an adjacency matrix. The node vector represents the weight of each node, and the adjacency matrix is used to define whether there is a connection relationship between nodes in a complex network and the weight of the connection. The out-degree of a node in the network is defined as follows:

$$p_a = \frac{1}{z-1}\sum_{b=1}^{z} c_{ab} \tag{1}$$

In formula (1), a and b represent two nodes; p_a represents the proportion of network nodes connected to node a; z represents the total number of nodes. The degree center of a complex network refers to the node with the largest node degree in the complex network, that is, the node with the largest number of connections with other nodes. Corresponding in the financial system, it is the most widely connected financial institution. The central node of the financial network is the "too-connected node to fail", and the failure of this institution will have wider impacts.

2.2 Dynamic Correlation Analysis of Financial and Economic Risks

Effective financial supervision should provide positive externalities for the development of the financial industry while ensuring the financial security of the entire country, making the entire financial market more efficient and dynamic. Using the financial deepening theory to analyze the current financial supervision, it can be found that there are obvious deficiencies. Because from the perspective of financial deepening, it is obvious that traditional static plane supervision cannot adapt to such a new and constantly developing and changing thing as Internet finance. There is a volatility correlation effect among various financial sub-markets such as stock market, bond market and foreign exchange market. Whether there is a Granger causality between variables depends heavily on the choice of lag period, and different lag periods will produce completely different test results [3]. Tracing the source, each financial market does not exist in isolation, and the systemic financial risks in the financial market may be dynamically linked, resulting in multi-market risk contagion. Therefore, looking at potential systemic risks by market is not able to clarify the whole picture of systemic risks. Cross-market or cross-border risk contagion plays an important role in the breeding and contagion of systemic risks. There are differences in the network structure of financial networks, but they generally exhibit the general characteristics of complex networks. In addition, a financial network with high density has a greater impact on systemic risk and a higher risk of contagion. The financial network is a typical scale-free network, and the degree distribution of its nodes satisfies the following equation:

$$w(n) = -\delta \log n \tag{2}$$

In formula (2), $w(n)$ is the probability distribution of the node degree of n in the financial network; δ represents the mutual information coefficient, which is a fixed coefficient for a certain financial network. The calculation formula of δ is as follows:

$$\delta = \frac{\eta(a) + \eta(b) - \eta(a, b)}{\min(\eta(a), \eta(b))} \tag{3}$$

In formula (3), η represents the information entropy. The expression for η is as follows:

$$\eta(a) = -\int q_a(a)\log(q_a(a))da \tag{4}$$

In formula (4), q_a represents the probability density function of a. Using DAG methods to analyze dynamic associations in complex networks of financial economies. DAG is composed of nodes and directed edges, nodes represent variables, and each node is connected by directed edges, indicating that there is a causal relationship in the same period. Starting from an undirected complete graph, assuming that there is a simultaneous causal relationship between any two variables, there are undirected line segments connected between them. Given an undirected graph $R = (U, V)$, (a, b) represents the edge from node a to node b, and $\varphi(a, b)$ represents the weight from node a to node b. If there is a subset where M is V and it is an acyclic graph, so that $\varphi(M)$ is the smallest, then this M is the minimum spanning tree of R, and the calculation formula of $\varphi(M)$ is as follows:

$$\varphi(M) = \sum_{(a,b)\in M} \varphi(a, b) \tag{5}$$

The scale-free characteristics of financial networks can greatly reduce the risk of contagion and systemic risks when the financial system is subjected to external shocks, but external shocks to hub nodes in financial networks will cause greater losses. The stability of the financial system is affected by the hub nodes (financial institutions) in the financial network, which is the main aspect of risk. Based on the residual correlation matrix of variables, the existence of contemporaneous causal relationship between variables is judged. First, test the unconditional correlation coefficient of each two variables. If the unconditional correlation coefficient is significantly 0, remove the connection line indicating causality; then test the first-order partial correlation coefficient of the remaining connected variables. If the partial correlation coefficient is significant If it is 0, remove the connection line indicating causality, and proceed in turn. If there are N variables, the process continues to test N-2 order partial correlation coefficients. From the perspective of the financial network, the contagion between institutions is generally faster and more serious along the direction of the greater degree of association, and the propagation along the edge with the greatest degree of association is the main aspect of risk propagation. Therefore, the study of the maximum spanning tree Transmission is the main aspect of risk contagion. The contemporaneous causal relationship between my country's stock, bond and foreign exchange market risks is adjusted with changes in the socio-economic situation. The global financial crisis in 2008 and the RMB exchange rate reform in 2015 enhanced the contemporaneous causal relationship between risks in different financial submarkets. First calculate the graph composed of the fixed weight minus the weight, then calculate the minimum spanning tree, and then calculate the spanning tree composed of the fixed value minus the weight of the minimum spanning tree, which is the obtained maximum spanning tree. In the event of major financial and economic events and policy changes, regulators should raise awareness of risk prevention and control, strengthen supervision over high-risk financial sub-markets such as stocks and foreign exchange markets, reasonably guide investment expectations in the financial market, and accurately monitor and identify each financial sub-market. The transmission channel between risks, timely curb the spread of financial risks, maintain a reasonable and stable liquidity, and promote the sound development of economic fundamentals.

2.3 Selection of Financial and Economic Risk Indicators Based on Big Data Clustering

When making a comprehensive evaluation of the impact of big data on financial statistics, the key is the selection of evaluation indicators. The selected evaluation indicators must truly and objectively represent a certain aspect of the impact of big data on financial statistics, and reflect the essence of the impact of big data on financial statistics. At the same time, each evaluation index must be independent of each other, cannot overlap each other, and must be measurable, comparable, accessible and operable. The combination of evaluation indicators can reflect the impact of big data on financial statistics from different levels and links. Fully consider the occurrence and transmission of financial and economic risks, and reflect the impact of financial risks on macroeconomics, the financial sector and people's lives, so as to construct impact factors comprehensively, reasonably and scientifically. Then, the big data clustering algorithm is used to classify the indicators that affect financial and economic risks. Big data clustering uses ensemble learning technology to obtain a better and more robust clustering result by learning to fuse the multiple base clustering divisions of the dataset [4]. The big data clustering integration process can be described as: Assuming that data set $Y = \{y_1, y_2, \cdots, y_u\}$ includes u objects, first perform L clustering processes (different algorithms or different parameters of the same algorithm) on data set Y, and obtain L base clusters $F = \{f_1, f_2, \cdots, f_u\}$. f_u means The clustering results obtained in u clustering process [5]. Finally, the L base clustering results are integrated through the consistency function to obtain the final clustering result. The schematic diagram of the big data clustering integration process is shown in Fig. 1.

The first high-accuracy base cluster members are generated based on a criterion that maximizes this information entropy. Serialization iteratively and gradually discovers more base clusters with high clustering quality and strong differences [6]. In the process of generating the new base cluster, the difference between it and the existing base cluster is considered by normalizing the mutual information index. The split hierarchical clustering method first regards the data set to be clustered as a class, and then splits down layer by layer to obtain smaller classes until the split reaches the termination condition of the cluster. The normalized mutual information is used to measure the dissimilarity between base clusters. In order to calculate the expected entropy of numerical data, the kernel-based probability density function estimation strategy is the most commonly used calculation method [7]. The clustering feature CF is a three-dimensional vector used to describe the information of clusters in the clustering process, and it is also a node in the clustering feature tree CF-Tree. Recursively traverse down from the root node, calculate the distance between the data object to be inserted and the current entry, and follow the

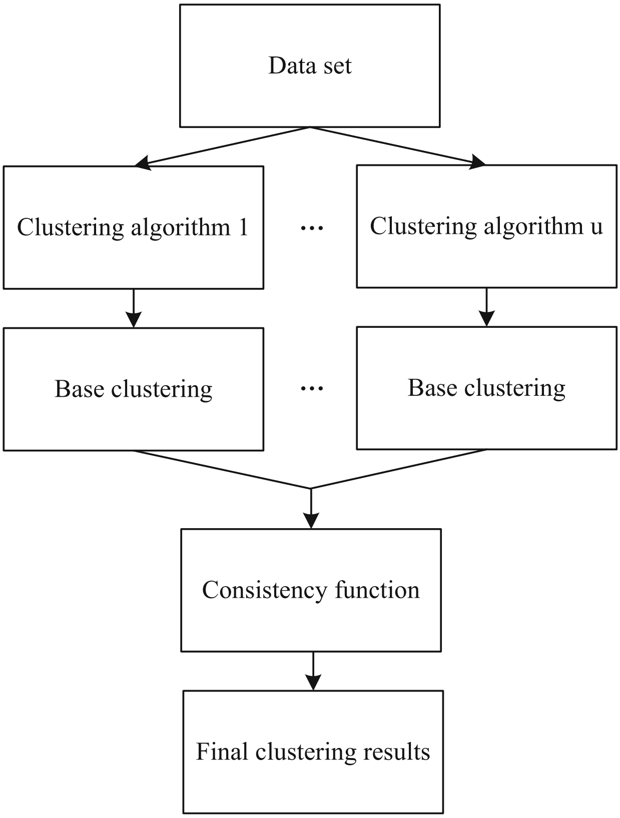

Fig. 1. Big data clustering integration process

path with the closest distance to find the entry in the leaf node that is closest to the data object. In this paper, the MeanNN differential entropy estimation is used to calculate the expected entropy of numerical data. This estimate computes entropy based on pairwise distances between all given data points in a class. The expected entropy of numerical data is described as follows:

$$\theta_1 = \frac{d_1 \log\|x_1 - x_2\|}{s_1(s_1 - 1)} \tag{6}$$

In formula (6), θ_1 represents the expected entropy of the numerical data; d_1 represents the attribute of the numerical data; s_1 represents the number of objects described by the numerical data; x_1 and x_2 are two data points respectively. The time and space complexity required to process high-dimensional datasets will far exceed the processing power of current computers. Feature reduction, also known as data dimensionality reduction, is a method of data preprocessing for high-dimensional datasets. It can identify meaningful features from the dataset. These features can not only reflect the differences between data objects within the same class. The similarity can also reflect the differences between data objects between different classes. For categorical data, uncertainty and ambiguity are measured in the form of complementary entropy. Given categorical data, the complementary entropy on attributes is described as follows:

$$\theta_2 = \frac{d_2}{s_2}\left(1 - \frac{d_2}{s_2}\right) \tag{7}$$

In formula (7), θ_2 represents the complementary entropy of the classified data; d_2 represents the attribute of the classified data; s_2 represents the number of objects described by the classified data. Iterative clustering algorithms randomly divide the given data into different classes. Then, loop through all the data objects and determine whether moving each object from the current class to another class lowers the objective function. The objective function can be expressed as:

$$T = \arg\min[(1-\varepsilon)\theta_1 + \varepsilon\theta_2] \tag{8}$$

In formula (8), represents the objective function; represents the adjustment parameter. This loop executes iteratively until the objective function no longer decreases or the change is small enough. In the process of generating a base cluster, in order to judge whether the object needs to be reassigned, it is necessary to calculate the update entropy of each class and the NMI value after adding the object to the class. This paper divides the indicators into three levels. The first level is the overall index, and the indicator system framework is constructed from the perspectives of external factors and internal factors that affect financial and economic risks; the second level is structural indicators, including fiscal revenue, expenditure, debt. The third level is the analysis index, which belongs to the sub-index of each structural index of the second level. Evaluation indicators used to reflect the impact of big data on financial statistics. From the perspective of evaluation process and empirical analysis, rating indicators must be measurable. For objective indicators, it is best to obtain them directly or indirectly through the existing data of relevant departments. The relevant statistics can be used for estimation; for subjective indicators, comprehensive statistical survey methods should be used to obtain indicator data, and subjective indicators should be objectified and explained by measurable data.

2.4 Design a Financial and Economic Monitoring System

On the basis of using big data clustering to measure financial and economic risks, establish my country's financial and economic monitoring system. The financial and economic monitoring system established in this paper is shown in Fig. 2.

The reduction of financial and economic income will lead to an increase in the gap between revenue and expenditure, which will have an impact on public financial security. Whether it is central or local fiscal revenue, it depends on local economic development and industrial development. With underdeveloped financial markets, asset prices may not be high enough to trigger macroeconomic volatility. However, now that the economy has entered the era of financial economy, the scale of financial assets in the financial market has far exceeded the scale of the real economy. Fluctuations in asset prices have the potential to trigger macroeconomic changes, especially when large fluctuations in asset prices can trigger economic depressions and financial crises. The increase in financial and economic expenditure will lead to a larger gap between revenue and expenditure, which

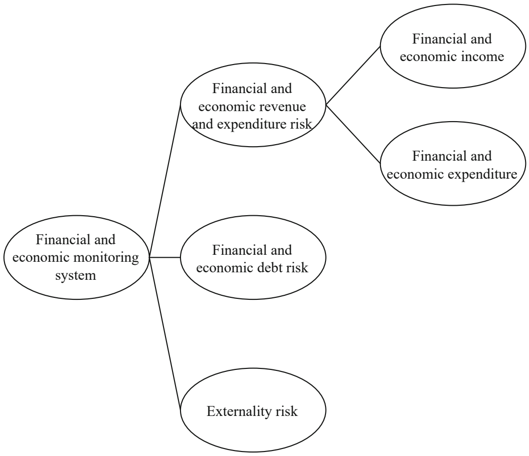

Fig. 2. Financial and Economic Monitoring System

is also not conducive to public financial security. According to the positioning of public financial functions, financial expenditure can be roughly divided into wage expenditure and government operating expenditure, social undertaking development and equalization expenditure, coping with international and domestic Contingency expenditures, etc., the construction of such indicators needs to consider the motivations of the above expenditures. When the cash flow of debt repayment exceeds the production income, the debt will further increase in order to repay the debt. When the economy is prosperous, borrowers take more speculative financing, and both borrowers and lenders have optimistic expectations for the future, underestimate the risk, and financial debt increases. Once asset prices peak or begin to reverse, some economies will be unable to repay principal and interest due to excessive debt, currency liquidity will decline, asset prices will fall, and investment will be sluggish. The volatility of investors' expected consumption and the covariance of expected consumption and asset returns are the main factors that determine asset prices. There is a mutual influence between public debt and economic aggregates, and the influence presents a cyclical state over time. Different stages of the cycle determine whether the government's fiscal risk tends to converge or diverge. Generally speaking, debt risk is a comprehensive manifestation of various risk behaviors, and the monitoring and early warning of debt risk is also a corresponding sequential, level-by-level overall process. The development of the financial market is becoming more and more independent of the real economy, and the changes in asset prices also appear to be separated from the fundamentals of the macro economy, showing a unique law of motion. Macro market movements related to changes in consumption and investment should have pricing power in capital markets. The external influence factors of financial and economic risks mainly consider the transmission effect of macroeconomic and financial risks on the financial field. The impact of macroeconomics on finance is mainly reflected in the decisive role of the economy on finance. The scale of social production and economic benefits determine The scale and growth rate of fiscal revenue, and the structure of social production also determine the structure of fiscal distribution.

Under different macroeconomic conditions, investors tend to change their consumption and investment behavior, and they will trade-off between current consumption and future consumption and savings. Changes in macroeconomic risks can stimulate asset price changes and volatility. Macroeconomic factors that can track the real economic cycle, such as inflation, interest rates, and production technology characteristics, are also important macro factors that can affect the returns of financial assets. The impact of finance on finance is mainly manifested in the liquidity of funds. The financial system provides guidance for the allocation of social resources. Once the financial crisis breaks out, it will greatly restrict the ability of public finance to operate. So far, the design of the financial and economic monitoring system based on big data clustering has been completed.

3 Experimental Studies

3.1 Experiment Preparation

This experiment mainly calculates the value at risk of the financial and economic monitoring system based on big data clustering, and selects the VaR value in the risk loss measurement as the evaluation index. The VaR value reflects the value of the maximum potential loss that may be caused by operational risk in financial activities. Using this value, financial and economic monitoring institutions can predict and control potential operational risk losses, thereby managing operational risk. In order to test the risk prevention effect of the financial and economic monitoring system based on big data clustering, the VaR value obtained by the method in this paper is compared with the VaR value of the financial and economic monitoring system based on BP neural network and Bayesian network. The data in this article is obtained from the Guotai'an database, and the data used is the daily total market value data of financial institutions listed in Shanghai and Shenzhen. Considering the stock market crash in 2015 and the stock market crash in early 2016, this article analyzes the daily data from 2017 to 2021. The experiment included 51 financial institutions in the calculation.

3.2 Results and Analysis

Based on data samples, the VaR values of financial and economic operational risk at 90%, 95%, 99%, and 99.9% confidence levels are obtained. The VaR value of the operational risk of each financial and economic monitoring system is shown in Table 1–Table 4.

At the 90% confidence level, the VaR value of the financial and economic monitoring system based on big data clustering is 10.832 billion yuan, which is 3.118 billion yuan lower than the VaR value of the financial and economic monitoring system based on BP neural network and Bayesian network. And 1.886 billion yuan.

Table 1. Comparison of VaR values at 90% confidence level (100 million yuan)

Testing frequency	Financial and economic monitoring system based on big data clustering	Financial and economic monitoring system based on bp neural network	Financial and economic monitoring system based on bayesian network
1	113.46	132.47	126.65
2	104.85	136.78	124.42
3	106.54	138.69	138.72
4	108.60	142.33	126.83
5	102.22	139.02	122.56
6	113.53	137.25	123.63
7	116.26	145.54	135.24
8	109.18	146.41	120.06
9	105.55	132.82	121.13
10	102.97	143.70	132.52

Table 2. Comparison of VaR values at the 95% confidence level (10,000 yuan)

Testing frequency	Financial and economic monitoring system based on big data clustering	Financial and economic monitoring system based on bp neural network	Financial and economic monitoring system based on bayesian network
1	198.49	265.43	243.54
2	185.56	264.36	240.85
3	192.63	278.65	242.63
4	189.22	266.22	263.30
5	193.30	252.01	256.22
6	199.51	273.54	245.56
7	186.22	262.28	230.18
8	192.53	280.32	242.25
9	201.86	272.63	234.32
10	197.75	265.86	248.23

At the 95% confidence level, the VaR value of the financial and economic monitoring system based on big data clustering is 19.371 billion yuan, which is 7.442 billion yuan lower than the VaR value of the financial and economic monitoring system based on BP neural network and Bayesian network. And 5.1 billion yuan.

Table 3. Comparison of VaR values at the 99% confidence level (10,000 yuan)

Testing frequency	Financial and economic monitoring system based on big data clustering	Financial and economic monitoring system based on bp neural network	Financial and economic monitoring system based on bayesian network
1	326.06	428.65	405.66
2	328.84	436.57	414.47
3	339.66	422.49	408.84
4	346.28	443.63	416.92
5	323.56	422.25	423.28
6	335.72	430.68	412.53
7	324.40	425.23	425.37
8	325.13	428.39	406.68
9	322.22	416.61	403.50
10	336.38	442.48	429.15

At the 99% confidence level, the VaR value of the financial and economic monitoring system based on big data clustering is 33.083 billion yuan, which is 9.887 billion yuan lower than the VaR value of the financial and economic monitoring system based on BP neural network and Bayesian network. And 8.381 billion yuan.

Table 4. Comparison of VaR values at the 99.9% confidence level (10,000 yuan)

Testing frequency	Financial and economic monitoring system based on big data clustering	Financial and economic monitoring system based on bp neural network	Financial and economic monitoring system based on bayesian network
1	528.36	682.41	654.03
2	527.42	688.12	667.48
3	539.18	667.33	649.57
4	546.53	686.57	658.66
5	510.67	693.69	669.34
6	553.59	695.92	636.19
7	552.05	662.10	663.58
8	535.60	685.25	650.63
9	527.44	679.38	642.92
10	536.88	670.46	621.07

At the 99.9% confidence level, the VaR value of the financial and economic monitoring system based on big data clustering is 53.577 billion yuan, which is 14.535 billion yuan lower than the VaR value of the financial and economic monitoring system based on BP neural network and Bayesian network. And 11.561 billion yuan. According to the above results, the operational risk capital that financial institutions need to allocate increases with the increase of confidence level. In general, the VaR value of the financial and economic monitoring system based on big data clustering proposed in this paper is lower than that based on BP neural network and BP neural network. Monitoring system based on Bayesian network.

Financial institutions should still pay attention to and actively guard against operational risks. According to the operational risk value at risk of the financial and economic monitoring system proposed in this paper, financial institutions can allocate operational risk capital as appropriate to effectively prevent operational risks. Optimize the structure of the financial system, increase the proportion of direct financing, and give full play to the financing function of the financial market. Strengthen and improve the construction of the hierarchical system of the financial market, promote the comprehensive and coordinated development of various financial markets such as the capital market, the money market, and the foreign exchange market, upgrade the financial system structure, increase the amount of financing through various channels, and develop a balanced development, reduce the concentration of risks to a certain department, and effectively Defuse my country's systemic financial risks.

4 Conclusion

With the continuous deepening of economic development and the development of the financial system, an effective market supervision mechanism is the cornerstone to ensure the long-term and stable development of the financial market. Give full play to the government's macro-prudential management role in market supervision, set up special agencies to coordinate financial market coordination and supervision, strengthen The comprehensive supervision of the financial system realizes the unification of behavior, function and institutional supervision, and comprehensively prevents the occurrence of systemic financial risks. This paper designs a financial and economic monitoring system based on big data clustering. The construction of this system is conducive to accelerating the informatization and digitization of supervision methods, and provides more complete and accurate information for the monitoring of systemic financial risks.

The method of this paper does not consider more indirect links in the interbank market. For example, the transfer of credit risk in the form of derivatives is an important source of potential contagion. Therefore, in future research, the risks caused by different sources of contagion should be studied in more detail.

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