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Study on the Evaluation of Agricultural Supply Chain Finance Model: Focused on Jilin Province China

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농산물 공급망 재정모형 평가에 관한 연구 - 중국 지린 성을 중심으로

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Abstract After many decades of development, China's agricultural supply chain finance model has distinct characteristics. This article mainly introduces the formation and development mechanism of an agricultural supply chain finance, different types of agricultural supply chain finance, and evaluation methods of agricultural supply chain finance. This paper uses the data from Jilin Province, China, and evaluates the samples using grey correlation analysis and entropy methods. This study examined the impact of agricultural supply chain finance on rural economic development. Using the grey correlation analysis method, the results showed that the index of the rural financial development structure had the highest correlation with rural economic development, which was 0.7998. On the other hand, the entropy method found that the index of the financial development scale had the largest impact on rural economic development, which was 0.78. This study concluded that agricultural supply chain finance has a positive effect on the development of the rural economy, and agricultural core enterprises play a critical role. The evidence from China can provide some new modes for the development of rural finance. Moreover, agricultural supply chain finance has a significant effect on improving the rural economy. Most importantly, this study highlights the critical role of agricultural core enterprises in the development of agricultural supply chain finance.

요 약 수십 년의 개발 끝에 중국의 농업 공급망 금융(ASCF) 모델은 뚜렷한 특징을 가지고 있다. 본 논문에서는 주로 농업 공급망 금융(ASCF)의 형성과 발전 메커니즘, 다양한 형태의 농업 공급망 금융(ASCF), 농업 공급망 금융(ASCF)의 평가 방법을 소개한다. 본 논문은 중국 지린성의 데이터를 사용하며 그레이 상관 분석(Gray Correlation Analysis) 및 엔트로피 법칙(entropy method)으로 표본을 평가한다. 이런 분석결과를 바탕으로 이 연구는 농업 공급망 금융(ASCF)이 농촌 경제 발전에 미치는 영향을 파악한다. 그레이 상관 분석법(Grey Correlation Analysis)을 이용하면 농촌경제개발구조의 지표가 0.7998로 농촌경제발전에 대한 상관관계가 가장 높은 것으로 나타났다. 엔트로피 법칙(entropy method)을 활용해 금융발전 규모 지수가 0.78로 농촌경제발전에 가장 큰 영향을 미치는 것으로 나타났다. 결과적으로 농업 공급망 금융(ASCF)이 농촌 경제 발전에 긍정적인 영향을 미치며, 농업 핵심 기업이 가장 중요한 역할을 하고 있다. 따라서, 본 논문은 농촌 금융의 발전을 위한 몇 가지 새로운 방법을 제공한다. 농업 공급망 금융(ASCF)이 농촌경제 개선에 상당한 영향을 미치고 있음을 시사하며, 농업 공급망 금융(ASCF) 발전의 초점, 즉 농업 핵심 기업이 중요한 역할을 하고 있음을 시사한다.

Keywords : Rural Finance, Agricultural Supply Chain Finance, Evaluation, Grey Correlation Analysis, Entropy Method

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1. Introduction

The empirical literature on finance and development suggests that countries with better developed financial systems experience faster economic growth[1]. The use of finance and financial instruments can quickly gather resources and bring a powerful impetus to economic development. A large and still active theoretical and empirical literature has related financial development to the economic growth process. Finance is an irreplaceable part of modern economic[2]. In most developing countries, the rural economy is an important part of the national economy. Farm Credit has played an important role in improving agricultural productivity and strengthening the rural economy of Asian countries. However, the means of using financial instruments in these countries are often relatively single[3].

Supply chain finance (SCF below) has also experienced decades of development since its inception. It has made significant contributions to converging the supply chain and ensuring the healthy and high-speed operation of the chain structure. Hofmann[4] developed SCF from the perspective of supply chain management with main focus on the risks of core enterprises. By using SCF and rigorous management methods, it can effectively avoid the upstream and downstream capital risks of core enterprises. Many scholars tried to introduce SCF into the field of rural finance. According to He Jia[5], SCF is a targeted financing model in allusion to insufficient enterprise credit in rural economic development with insufficient guarantee. But as mentioned above, the scale of finance and the types of financial instruments are rarely used in rural production and life scenarios. Residents of developing countries are more inclined to use cash to pay instead of credit cards. Of course, there are many reasons for this phenomenon, such as few financial institutions and few rural enterprises.

In this article, three modes of agricultural supply chain finance (ASCF below) that could help the source of different streams are developed. This study equally puts forward different ways of avoiding operating risks. To evaluate the ASCF, this study used two methods, the grey correlation method, and the entropy method. This study makes the following contributions;

(1) China has the largest agricultural population and the most abundant agricultural species in the world, as such analyzing and summarizing China's ASCF experience is of universal importance. When a country wants to develop the new species of agricultural industries, they can follow the Chinese experience.

(2) Using the different methods to evaluate the ASCF provides a relatively complete evaluation mechanism. Which could be used to evaluate the ASCF mode in other countries.

2. Definitions and methods

2.1 Supply Chain Finance

Hofmann[4] first defined SCF in theory: SCF is at the level of logistics, supply chain management, cooperation, and finance. SCF is an organization in the supply chain that uses planning, guidance, and control of the flow of funds and resources between organizations to share the benefits of the chain. He Jia[5] performed an in-depth analysis of organizational SCF, considering participants, collaborators, and other aspects of behavior and function. His study explained the impact of different subjects in different ways of SCF. It is worth noting that, through the SCF idea, banks, other financial institutions and even logistics service providers, are provided with a new opportunity for their development and direction.

We regards to produce SCF, Martin R. Fellenz[6], referred to it as a lack of concern about the flow of funds which leads to the invalidity of the supply chain management thereby creating liquidity and poverty, especially in the flow of midstream and downstream businesses. The problem of weakness is difficult to be effectively resolved. In response to the urgent needs of the enterprise to improve the supply chain's strong demand for liquidity problems, Martin R. Fellenz[6] proposed that banks should provide a lift on the supply chain in the business efficiency downstream of specialized financial services, inclusive of the financial services supply chain. The emergence of supply chain financial services also emerged from logistics finance and trade finance. Qifan Hu[7] also believes that SCF is an advanced form after the development of logistics finance to the supply chain stage. SCF currently mainly provides financial and credit circulation services for participating entities. Financial service is the main service model of SCF. It mainly uses various financial instruments to realize the supply and conversion of funds to various demand subjects in the supply chain.

2.2 Agricultural Supply Chain Finance

ASCF refers to the formation of a systematic and structured financial chain service system focusing on agricultural supply chain by radial agricultural supply chain. Through the overall evaluation of the agricultural supply chain, new agricultural business entities such as agricultural enterprises, farmer cooperatives, and family farms are considered. Considering farmers' actual transactions as the basis for credit guarantees of the enterprises, the credit bundling and dismantling of all participants in the agricultural supply chain, and providing them with a new financing model of financial services.

Miller. Calvin, Da Silva, Carlos[8] historically summarized the concept of value chain financing, and also pointed out the application of value chain in the market. On the other hand, the issue of agricultural industrialization management, the development direction of value chain changes may bring new opportunities and problems to the agricultural enterprises involved. In the macro policy guidelines, all participants in the value chain and service agencies involved in these parties, able to create an environment conducive to the development of the value chain. Developing countries can take advantage of policies to quickly establish a macro-environment suitable for the development of value chains, and guide all participants to develop scientifically and reasonably. For this aspect of the problem, the authors also conducted in-depth to explore, while developing countries should take the policy made a brilliant conclusion. Schutz. Peter, Tomasgard, Asgeir[9] proposed a method for supply chain operation planning for decision-makers in the context of uncertain market demand from the aspects of scheme diversity and quantity richness. A study by Christin, Matin[10] analyzed and conducted empirical analysis to prove that under the economic operation mode of developing countries. Van Bergen[11] proposed that in the practice of agricultural SCF, it is not advisable to intervene in the upstream, and the SCF plan should be selected according to the capital structure of the supply chain. In a research from Wang[12], the result showed that agri-supply chain can extend credit to the upstream and downstream enterprise through order financing, accounts receivable financing, financing warehouse, accounts payable financing, prepaid accounts financing and inventory financing.

2.3 Gray Correlation Analysis

The grey correlation analysis is a tool built on the grey system to identify and analyze the factors that affect the development of things. By calculating the correlation coefficient of each

point, and then using the arithmetic mean value to obtain the correlation degree of each subfactor relative to the main factor. The calculation steps are as follows:

The first step is to formulate the reference sequence $x_0(k)$ and the sequence $x_i(k)$ to be compared, where $k=1,2,3\cdots$, $x_i(k)$ is the k_{th} term, $i=1,2,3\cdots$, they are the serial numbers of the sequence to be compared. The benchmark series consists of the optimal solution of all the values of each evaluation index.

The second step is to calculate the correlation coefficient between each comparison sequence and the reference sequence.

$$\triangle_i(k)=\frac{\min\limits_i\min\limits_k|x_0(k)-x_i(k)|+\rho\max\limits_i\max\limits_k|x_0(k)-x_i(k)|}{|x_0(k)-x_i(k)|+\rho\max\limits_i\max\limits_k|x_0(k)-x_i(k)|} \quad (1)$$

Where, ρ is the resolution coefficient, usually taken $\rho=0.5$.

The third step is to construct the optimal indicator set.

$$E=\begin{bmatrix} j_1^* & j_2^* & \cdots & j_n^* \\ j_2^1 & j_2^1 & \cdots & j_n^1 \\ \cdots & \cdots & \cdots & \cdots \\ j_1^n & j_2^n & \cdots & j_n^m \end{bmatrix} \quad (2)$$

Where, $S^*=\left[j_1^*,j_2^*,\cdots,j_n^*\right]$ is the optimal solution set, $j_k^*(k=1,2,\cdots,n)$ is the optimal solution is the k_{th} index, and the matrix E is constructed using the original data. The formula j_n^m is the original value of the n-th index of the m_{th} scheme.

The fourth step is the normalization of the indicator values.

$$A_k^i=\frac{j_k^1-j_{k1}}{j_k^2-j_{k1}}(i=1,2\cdots,m;k=1,2,\cdots,n) \quad (3)$$

Where, the k_{th} index change interval indicators for $[j_{k1},j_{k2}]$, which the minimum value of the k_{th} program is j_{k1}, j_{k2}represents the maximum value of the k_{th} embodiment.

So E matrix is transformed into A matrix:

$$A=\begin{bmatrix} A_1^* & A_2^* & \cdots & A_n^* \\ A_2^1 & A_2^1 & \cdots & A_n^1 \\ \cdots & \cdots & \cdots & \cdots \\ A_1^n & A_2^n & \cdots & A_n^m \end{bmatrix} \quad (4)$$

The fifth step is to judge the results.

$$\triangle_i(k)=\frac{\min\limits_i\min\limits_k|A_k^0-A_k^i|+\rho\max\limits_i\max\limits_k|A_k^*-A_k^i|}{|A_k^*-A_k^i|+\rho\max\limits_i\max\limits_k|A_k^*-A_k^i|} \quad (5)$$

Where, $A^*=\left[A_1^*,\ A_2^*,\ \cdots,\ A_n^*\right]$ is the reference sequence, $A=\left[A_1^i,\ A_2^i,\ \cdots,\ A_n^i\right]$ is the compared sequence, then the correlation coefficient of the k_{th} index optimal solution of the i_{th} scheme is $\triangle_i(k)$.

The comprehensive evaluation results are:

$$r_i=\sum_{k=1}^{n}\left[w(k)\bullet\triangle_1(k)\right] \quad (6)$$

Where, $w(k)$ is the weight of k.

The sixth step is sorting.

A larger value indicates that this value is the closest to the optimal parameter, and it can be arranged in descending order.

2.4 Entropy Method

The determination of the weight of each index in the entropy method is calculated based on actual numerical values, which can truly and objectively reflect the evaluation index, and the importance of impact on rural financial development. Therefore, when determining the weight of the index, the entropy method is used to determine the results of the grey correlation analysis which were objectively weighted to ensure the validity of the results.

In the first step, the data is made dimensionless.

$$Y_{ij} = x_{ij}\sqrt{x_j} \tag{7}$$

Where, Y_{ij} is the dimensionless value of the j_{th} term of sample i.

The second step is to calculate the entropy value.

$$e_j = -K\sum_{i=1}^{m} p_{ij}\ln p_{ij} (0 \le e_j \le 1) \tag{8}$$

Where, p_{ij} is the proportion of the j_{th} index of the i_{th} sample, $p_{ij} = \frac{Y_{ij}}{\sum_{i=1}^{m}}$, $K = \frac{1}{\ln m}$ and m is the number of samples.

The third step is to determine the weight of the evaluation index.

$$w_j = \frac{h_j}{\sum_{j=1}^{n} h_j} \tag{9}$$

Where w_j is the weight of the j_{th} index, $h_j = 1 - e_j$ is the index difference coefficient.

The fourth step is to find the weights and sort them.

3. Sample and explanation

Jilin Province is one of the earliest province of China's rural financial revolutions. It is China's main commercial grain base. In 2019, the grain planting area was 564.5ha, and the total output was 3878 tons. The increase in grain production was the first place in the country. It is representative to study the rural financial development model of Jilin Province. Besides, the SCF of Jilin Province has developed into different modes. This paper summarizes the three main modes as explained below;

The first mode is farmers or small and medium-sized enterprises joint insurance mode. This mode is a financial mode of agricultural supply chain with multiple farmers as the service object. This mode in Jilin province appeared earlier. Before the rural financial reform, the rural credit cooperatives had the financial service of "five households' joint insurance" loan. However, there are some typical products, such as "multi-household loan for small and medium-sized enterprises with county characteristics" launched by the Agricultural Bank of China. In general, the loans provided by financial institutions can meet the production needs of farmers, and the promotion in rural areas of Jilin Province is also the most popular, and the procedures in credit cooperatives are also simple and convenient. Through practical research, this study observed that the time interval from submitting procedures to getting loans is generally 3 to 5 days. Many farmers prefer to use this method for agricultural production financing. In the short run, the use of the "five household joint insurance" mode can solve the financial problems of farmers and avoid the lack of effective mortgages. Fig. 1 shows the service mode of this kind of ASCF.

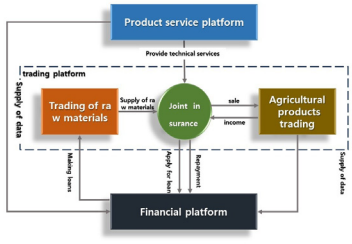

Fig. 1. Farmers or Small and Medium-sized Enterprises Joint Insurance Mode.

The second mode is the cooperative or base-oriented mode. It is a financial service provided by financial institutions for its production and sales based on cooperatives or agricultural bases.

At present, there are two main driving modes of agricultural supply chain: producer driven and

buyer driven, as shown in Fig. 2. ASCF dominated by cooperatives or bases belong to producer driven. Compared with individual farmers or small and medium-sized enterprises, cooperatives or bases have more advantages in obtaining loans or other financial services because of their larger asset scale and higher credit.

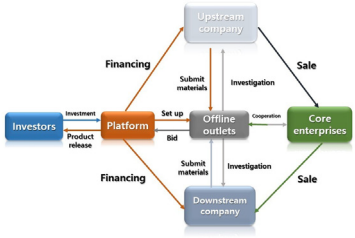

Fig. 2. Cooperative or Base Oriented Mode.

The third mode is the core enterprise oriented ASCF. At present, it is the largest ASCF service mode in the use of funds. It is dominated by agricultural raw material production enterprises or agricultural products deep processing enterprises, has a strong adsorption effect. Generally, the companies that use this mode to do business with financial institutions are listed enterprises or agricultural leading enterprises, with huge amount of funds, rich links of agricultural supply chain, and a wide range of farmers. Therefore, it can have a huge driving role in Jilin Province, and has the most potential for the deep development of ASCF. Especially for agricultural listed enterprises, due to the financial control of national management institutions, as well as the mechanism of the board of shareholders and the board of supervisors, financial institutions tend to lend money to such enterprises. In the process of specific practice, due to the long production and processing chain of agricultural core enterprises and the huge demand for raw materials, they often control one or more high-quality agricultural enterprises in Jilin Province The purchase of raw materials from the source of the supply chain has the foundation of long-term cooperation alliance. The core enterprise has been established for a long time, and has a deep sales network and sales channels. The sales information record is also clear, which greatly reduces the difficulty for financial institutions to obtain the original data. Moreover, financial institutions tend to provide more rich and free information to the core enterprises. The establishment of this system has natural platform advantages and is in line with the core interests of all participants in the SCF. For the agricultural core enterprises themselves, the linkage between goodwill and credit investigation also forces the enterprises themselves to be more cautious and stable in their production and operation activities. In the face of due diligence and quarterly assessment of banks, the purchase and sales data of upstream and downstream enterprises can promote the improvement of core enterprise credit, which objectively reduces the lending risk of financial institutions. The specific service flow of this mode is shown in Fig. 3.

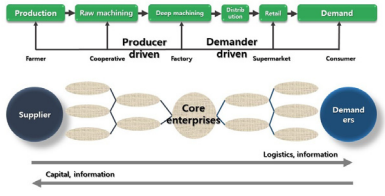

Fig. 3. Core Enterprise Oriented ASCF.

4. Index selection and data collection

4.1 Index selection

In order to better assess the relationship between Jilin Province ASCF and economic development in Jilin province, this article uses three types of financial indicators which reflect the development of the Jilin Province ASCF and rural economy of Jilin Province, include:

Financial development efficiency indicators.

Financial institutions and financial intermediaries are an important part of ASCF, the only financial institution funds effectively allocated to agribusiness, SCF it may be effective, and financial intermediaries can be no efficient to put allocated to fund agricultural enterprises, quickly injected into the production and marketing chain downstream enterprise which, directly affect the efficiency of financing agricultural enterprises, thus affecting the development of rural economy. Therefore, financial development efficiency indicators, has significant meaning for the evaluation of the development of the agricultural SCF development and the rural economy, the index represents the ratio of the balance of deposits in rural areas with rural loans, recorded as: RD/RL, abbreviated as RDL.

Financial development structural indicators.

Rural economy and rural finance development relies heavily on the core of the development of agricultural enterprises, the core business or agricultural enterprises, through the connector industry, downstream industry chain. This is not only to increase employment, but also stimulating rural economic growth through its development as a huge boost to local economic development. It can be said that a Region's (specifically refers to rural areas) agriculture is the core business or the development of leading enterprises, can directly affect the region's economic development, and rural economic development structure. The pros and cons are also positively related to the economic development structure of the core agricultural enterprises in the region. The core business of agricultural loans and the ratio of loans in rural areas, to represent the structure of financial development index is denoted by: RLT/RL and abbreviated as RLTL.

Financial development scale indicators.

The size of financial development in rural areas determine whether the development of rural economy vibrant capital is the core force in promoting economic development in rural areas. On the other hand, the agricultural core business, by covering the whole industry chain service capabilities can greatly increase the GDP while activating the financial functions of core agricultural enterprises. This can effectively stimulate the wealth growth of rural producers and consumers. Here the ratio of the core agricultural enterprise loan balance to rural GDP is expressed as RLT/RGD and abbreviated as RLG.

4.2 Data collection method

Firstly, the gray correlation degree analysis method is used to construct the gray correlation degree model. The raw data of the indicators was used in the model. This article mainly uses the literature data of NetEase Finance stocks, China Statistical Yearbook, Jilin Statistical Yearbook, China Financial Yearbook and Financial Services Report.

To calculate the balance of agricultural core enterprise loans used in the financial development structural indicator RDL, six A-share listed companies in Jilin Province, Jilin Aodong (000623.SZ), Tonghua Jinma (000766.SZ), and Zixin Pharmaceutical were selected. (002118.SZ), Yisheng Pharmaceutical (002566.SZ), Jiyao Holdings (300108.SZ), Tongpu shares (600365.SH) announced in the balance sheet. On the one hand, considering the field of agriculture in the study area, the core agricultural enterprises selected were listed companies. this selection was based on the fact that the listed companies are widely involved in the industry chain, radiating great social, urban and rural employment opportunities while promoting the income level of the residents. On the other hand, listed companies announced Compared with non-listed state-owned or private enterprises, financial data is less difficult to obtain and more reliable, and the financial accounting subjects are more standardized, which facilitates

the calculation of corporate loan balances. This article selected the sum of short-term loans and long-term loans to represent the loans of the agricultural listed companies. This study chose the resident per capita disposable income of Jilin Province as the main factor reflect the development of social economy and abbreviated as RPGDP.

5. Results

5.1 Calculation and analysis of grey correlation degree

By calculation, the financial sub-factors of the agricultural supply chain in Jilin Province, and their influence on the primary factors of the rural economy in Jilin Province are obtained as shown in Table 1.

Table 1. Impact Factors of Agricultural Supply Chain Finance and Rural Finance in Jilin Province

Years	RDL	RLTL	RLG	RPGDP
2012	2.68	46.14	101.58	6834.45
2013	2.64	64.42	149.97	7523.44
2014	2.51	83.57	212.01	8139.82
2015	2.21	118.46	360.18	8783.31
2016	2.08	85.57	344.23	9521.43
2017	1.96	104.29	662.78	10279.4

By DPS software for gray correlation calculation for rural economy factor on main factor standardized conversion, results shown in Table 2 below:

Table 2. Normalized Transformation Results

RDL	RLTL	RLG	RPGDP
1.14	0.55	0.33	0.80
1.12	0.77	0.49	0.88
1.07	0.99	0.69	0.96
0.94	1.41	1.18	1.03
0.89	1.02	1.13	1.12
0.84	1.25	2.17	1.21

Notes: The minimum difference $\Delta_{min} = 0.01$, the maximum difference : $\Delta_{max} = 0.10$.

Obtained RPGDP and other factors associated with the sequence as shown in Table 3 :

Table 3. Association Order of RPGDP and Other Factors

No.	factor	Correlation coefficient
X2	RLTL	0.80
X1	RDL	0.70
X3	RLG	0.64

Finally, the correlation coefficient of each influencing factor to the rural economy are as follows: The correlation coefficient of rural financial development structural indicators to rural economic development is 0.80. The correlation coefficient of rural financial development efficiency index to rural economic development is 0.70. The correlation coefficient of rural financial development scale index to rural economic development is 0.64.

The larger the correlation coefficient, the proof of the financial sub-factors on the development trend of rural female factors closer to the rural economy, it is considered, rural finance sub-factors associated with the level of economic development in rural areas, from high to low are: rural financial development structure indicators, rural financial development efficiency indicators, rural financial development scale indicators.

According to the definition of financial development structural indicators, it can be seen that agricultural core enterprises play an important role in rural finance. Agricultural core enterprises cover the agricultural product production and agricultural industry chain. Operating state of the enterprises determines the level of income directly. Meanwhile, they associated with the downstream agricultural enterprises, and improve income levels of participants in the supply chain. Evaluating the core business of agricultural financial functions is of great significance for evaluating the effects of agricultural supply chain financial development.

5.2 Calculation and analysis of entropy method

Construction of the efficiency of financial development indicators, structural indicators of financial development and financial development index scale, the original matrix in different years.

Table 4. Raw Matrix of Three Indicators

Years	RDL	RLTL	RLG
2012	2.68	46.14	101.58
2013	2.64	64.42	149.97
2014	2.51	83.57	212.01
2015	2.21	118.46	360.18
2016	2.08	85.57	344.23
2017	1.96	104.29	662.78

Dimensionless processing of the original matrix to obtain a new matrix, shown in Table 5.

Table 5. New Matrix After Dimensionless Processing

Year	RDL	RLTL	RLG
2012	0.19	0.09	0.06
2013	0.19	0.13	0.08
2014	0.18	0.17	0.12
2015	0.16	0.24	0.20
2016	0.15	0.170	0.19
2017	0.14	0.21	0.36

By calculating the entropy value, the matrix table 6 is obtained.

Table 6. Entropy Matrix and Calculation

Years	RDL	RLTL	RLG
2012	-0.32	-0.22	-0.16
2013	-0.31	-0.26	-0.20
2014	-0.31	-0.30	-0.24
2015	-0.29	-0.34	-0.32
2016	-0.28	-0.30	-0.31
2017	-0.27	-0.33	-0.37
Sum	-1.78	-1.75	-1.62
Constant k	-0.56		
e_j	0.99	0.98	0.90
h_j	0.01	0.02	0.10
w_j	0.03	0.19	0.78

Through entropy calculation, the weights of financial development efficiency index, financial development structure index, and financial development scale index are obtained as follows: 0.03, 0.19, 0.78. For the development of rural finance, the scale of development of rural finance has the most significant impact, followed by the structure of financial development, and finally the efficiency of financial development.

6. Conclusion

According to the definition of financial development scale indicator, it can be known that agricultural core enterprises play a key role in the process of rural financial development. Through grey correlation analysis and entropy calculation, although the three indicators have changed in ranking, it can be found from the connotation of the indicators that the development of rural finance depends on the ASCF. The development of ASCF is inseparable from the active promotion of agricultural core enterprises.

In the development of ASCF, the core organizational strength lies in producers and sellers, and the participants in the supply chain also rely on the collaboration of the two. The problem of unfavorable capital turnover often brings difficulty to enterprises. As a result, the weakness operation is the most unwilling result of all agricultural enterprises, financial institutions have become "the most innocent victims" in this process. Using the ASCF mode can avoid this unfavorable situation. It can stimulate the best state of each participant in the supply chain, that is, when participating in business behaviors, to maximize their own interests by meeting the needs of the other part. In the process of development, with the continuous enrichment of goods flow and capital flow data, both financial institutions and supply

chain participating entities can accumulate rich production, operation and sales data. The full use of data can not only be used for the decision-making assistance of enterprises, it can be used to establish the financial big data system of the entire agricultural supply chain. Through data analysis, market trends can be analyzed more accurately and the frontier of the industry can be predicted. They can not only accurately grasp the operating conditions of service companies, but also to establish risk evaluation mechanisms.

The limitation of this study is the lack of data. Because the ASCF mode is a new type of financial form in China, so it is hard to obtain finance data about ASCF directly. The use of secondary data in this article can only contain the most important information when describing the ASCF indicators, and cannot completely contain all the information. With the development of ASCF, there will be more direct database to measure the positive effects of ASCF, and this kind of data will be used in future studies.

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