

A Review of Research on Financial Risks of Agricultural Supply Chain in China

Jun Ren, Guang Li*

Department of Economics and Management, Tianjin Agricultural University, Tianjin, China

*Corresponding author. Email: tnliguang@sian.com

ABSTRACT

With the development of agricultural supply chain finance, it is conducive to connecting the small farmers and the big market, providing special loan services for all links of the agricultural supply chain, solving the problems of farmers' credit financing, and boosting the development of modern agriculture. However, due to agricultural supply chain finance is developing in the early time, it is often difficult to avoid risks of agricultural supply chain finance. The article analyzes the research situation of agricultural supply chain financial risks in China, using the Chinese database of China National Knowledge Network (CNKI) as the data source, searching effective literature according to the subject, which is aimed to discover the research hotspots and key points. In conclusion, we find that the risk identification and prevention of agricultural supply chain finance is core issue in the research of agricultural supply chain finance, but in the research of constructing a risk evaluation system, it still need time to study in the future.

Keywords: *Agricultural supply chain finance, Risk, Literature review.*

1. INTRODUCTION

With the advent of the new era, the speed of development in economy and science and technology in China has been greatly improved, which has a major impact on the way of life in China's society, and has also driven the economic development of agricultural enterprises in China. Agricultural enterprises still face major challenges on the road of development [1]. They will be subject to the level of rural economic development, as well as being plagued by the difficulty of financing. The emergence of supply chain finance can just solve the financing difficulties of agricultural enterprises.

2. THE DEVELOPMENT OF AGRICULTURAL SUPPLY CHAIN FINANCE

2.1. The Definition of Agricultural Supply Chain Finance

Supply Chain Management is defined as managing the flow of information, material and resources across and within the network of upstream and downstream organizations [2]. Agricultural supply chain finance is a kind of financial service that the bank focuses on the

core agricultural enterprises, managing the capital flow and logistics of small and medium enterprises which locate in its upstream and downstream in order to control the risk by transforming the uncontrollable risks of a single agricultural enterprise into the entire supply chain enterprise. In recent years, with the development of agricultural industrialization and the implementation of rural revitalization, agricultural supply chain finance has developed rapidly, turning the uncontrollable risks of individual farmers into controllable risks of the entire supply chain, effectively preventing financial risks in the agricultural supply chain, which make it become the key to actively promote rural financial institutions to carry out rural inclusive financial services under the background of rural revitalization and to resolve financing difficulties in the process of rural revitalization and an important driving force for the realization of agricultural modernization.

2.2. The Definition of Agricultural Supply Chain Finance Risk

The core enterprises in the agricultural supply chain usually consist of leading agricultural enterprises and large e-commerce platforms [3]. The credit risks of core companies usually include the company's external debt exceeding its own ability to pay, core companies

colluding with upstream and downstream financing companies to conceal real transactions due to competition and the inability to maintain a leading position in the industry, which leads to the core enterprise is unworthy of the name; as for the credit risk of non-core enterprises, it mainly refers to the poor transparency of the operation of the enterprise, false payment or withdrawal of registered capital, and breach of contract by agricultural product producers and farmers. Combining existing research results and industry development status, this article defines the financial credit risk of agricultural supply chain as follows: In the agricultural supply chain, core enterprises, upstream and downstream enterprises, farmers, etc. are affected by their own comprehensive strength, natural environment, market changes and other factors [4]. There is a risk event of credit default, causing damage to the financing business of financial institutions. Agricultural supply chain financial credit risk is the same as traditional supply chain financial credit risk, which has the characteristics of great harm, fast spread, and strong suddenness. It is a major problem faced by commercial banks and other financial institutions in developing agricultural supply chain financial business.

Table 1. Ranking of Authors of Published Papers on Financial Risks of Agricultural Supply Chain

Serial Number	Author	Title or Position	Posting Volume
1	Peng X	Associate Professor	3
2	Lu P	Senior Economist	3
3	Yun S	Lecturer	2
4	Guangrong L	Teacher	1
5	Jun Y	Teacher	1
6	Yufeng S	Lecturer	1

3. LITERATURE SOURCES AND ANALYSIS

By querying the CKIN journal database, there are 232 documents on agricultural supply chain finance, of which only 33 documents on agricultural supply chain financial risks, which shows that the research level is far from enough. This article analyzes the research situation of effective literature to discover research hotpots and research priorities, and provides references for future academic research.

3.1. Literature Sources

This article uses CNKI as the target database for document collection. A total of 33 relevant documents were retrieved, and a few documents with little relevance were excluded. Finally, 28 valid documents remained. The search method is advanced search and

retrieval. The expression syntax is “SU = ‘Agricultural Supply Chain Finance’ + ‘Risk’”.

3.2. Literature Author Analysis

It can be seen from Table 1 that according to the amount of articles published by authors, the amount of articles published by each author is not much at present. Peng X and Lu P are the first authors to publish three articles on agricultural supply chain financial risks. The publication time is concentrated from 2016 to 2018. Lu P systematically raised the issue of agricultural supply chain financial risk prevention earlier than others. And previous authors only conducted research from a single credit risk. Peng X’s article mainly studies online agricultural product supply chain finance, with the purpose of constructing an online agricultural product supply chain financial risk prevention model. The next author with the second largest number of articles is Yun S, who mainly studies poverty reduction in agricultural supply chain finance. Most of other authors only published a related article, constructing an agricultural supply chain credit risk evaluation system from different perspectives. In short, different authors have their own focus on the research of agricultural supply chain financial risks, but most of them focus on the construction of risk evaluation system and risk prevention [5].

3.3. Literature Keyword Analysis

It can be seen from Table 2 that most of the researchers study the credit risk of supply chain finance, taking small and medium-sized enterprises or small and medium-sized agricultural enterprises as the research object, measuring their credit risk, and then putting forward risk prevention and control suggestions.

Table 2. Frequency Table of Hot Keywords in the Risk Research of Agricultural Supply Chain Finance

Serial Number	Key Words	Frequency
1	Supply Chain Finance	14
2	Credit Risk	10
3	Agriculture (Agricultural Products) Supply Chain Finance	9
4	Risk Control	5
5	Small and Medium Enterprises	4

3.4. Literature Content Analysis

The research on the risk prevention of agricultural supply chain finance can be divided into two main aspects. Some scholars study the risk elements of agricultural supply chain finance from various angles, and then build a financial risk evaluation index system for agricultural supply chain. Other scholars mainly

conduct research from the aspect of credit risk, using empirical research methods to predict the credit risk of small and medium-sized enterprises and provide references for financial institutions.

4. RESEARCH FOCUS ON FINANCIAL RISK OF AGRICULTURAL SUPPLY CHAIN

4.1. Risk Factors of Agricultural Supply Chain Finance

Many scholars have conducted research on the risk components of the agricultural supply chain. Jing J (2013) believes that the financial risk components of the agricultural supply chain mainly include: the credit risk of core enterprises, the loan guarantee risk of small and medium-sized enterprises in the supply chain, and the credit of farmers with asymmetric information [6]. Xiaomei C (2014) mentioned that the main risks faced by commercial banks in developing agricultural supply chain financial services include credit risk, property pledge risk and operational risk [7]. Peng X (2016) found that the financial risk elements of the online agricultural product supply chain include credit risk, supply chain operation stability risk, agricultural product risk, network information technology risk, and legal risk through an investigation in Chongqing City [8]. At the same time, he also extracted 10 risk factors that affect the financial business of the online agricultural product supply chain: agricultural product market supply and demand changes risk, borrowing enterprise credit risk, supply chain stability risk, pledged agricultural products risk, network technology risk, electronic signature risk, electronic order or warehouse receipt risk, quality supervision and supervision risk, business personnel operation risk and risk of laws and regulations [9]. Dongbo Z (2017) analyzed the sources of financial risks in the agricultural supply chain, including credit risk and information asymmetry risk [10]. Peng X (2017) extracted the main types of risks faced by the agricultural product pledge financing business: external environment change risk, credit level risk, supply chain stability risk, pledge risk, technical level risk, and regulatory risk [11]. Fang L (2018) found through research that the risks of Fujian agricultural supply chain finance mainly come from the credit risk of leading enterprises, the credit risk caused by the natural environment, the risk of asymmetric information of farmers, and the operational risk of financial institutions [12]. Yun S, Zunshuai Z, Jingrong L (2018) concluded that commercial banks may face the credit risk of agricultural supply chain financial which is from leading enterprise, the moral hazard of core enterprises or operating entities, the internal and external financial risks faced by commercial banks themselves, and the

management of agricultural supply chain financial credit Risk [13]. Huanyu Z (2019) studied the financial model of the agricultural supply chain in Heilongjiang Province, and concluded that the agricultural supply chain risks in Heilongjiang Province mainly come from credit risk, technical risk, and overall risk. Generally speaking, the risk elements of agricultural supply chain finance include credit risk, information asymmetry risk, technical risk, moral risk, legal and regulatory risk, etc. [14].

Some scholars have conducted research on the specific components of credit risk. Liangming H (2014) [15] and Yufeng S (2016) [16] believe that China's agricultural supply chain financial credit risk comes from credit risk caused by core enterprises, changes in the macroeconomic environment, policy supervision environment, natural environment and moral hazard. Xiaohua W (2015) divides the financial credit risk inducing agricultural supply chain into market risk and default risk [17]. Li M (2018) divided agricultural supply chain financial credit risk into credit risk caused by external factors and internal factors. Credit risk caused by external factors includes credit risk caused by natural environment, economic environment, legal environment and credit environment; credit risk caused by internal factors includes credit risk caused by information asymmetry, core enterprises and small and medium agricultural enterprises. The credit risk is mainly composed of two aspects: the credit risk caused by the core enterprise inside and outside the supply chain [18].

4.2. Analysis on the Causes of the Risks of Agricultural Supply Chain Finance

The causes of agricultural supply chain finance risks have also aroused researchers' thinking. Xiuli L (2014) and Liangming H (2014) divided the causes of agricultural supply chain financial credit risks into micro-level and macro-level. The micro-level reasons include small business scale and poor ability to withstand risks; lack of corporate financial data; and insufficient solvency of agricultural SMEs [19]. The macro reasons include the non-authenticity of the trade background between SMEs and their core enterprises; the risk of market fluctuations; the incompleteness of legal system; single suppliers and logistics [20]. Xiaomei C (2014) analyzed the causes of credit risk, property pledge risk and operational risk respectively. The formation of credit risk includes not only the lack of subjective credit awareness of agricultural supply chain members, which may lead to credit risk, but also the credit risk caused by objective uncertain factors outside the agricultural supply chain; the risk of pledge of property rights mainly comes from the risks of logistics enterprises and the pledge risks and warehouse receipt risks; China's agricultural supply chain financial

practice has just started, the agricultural supply chain financial model is not perfect, the risk management experience is insufficient, and the relevant professional talents are scarce, so the operational risks are more prominent. Yurou C (2020) believes that the lack of credit awareness among supply chain members and insufficient risk management experience have caused the risk of agricultural supply chain finance [20]. Finally, Guangrong L (2020) uses the scientific method of system theory to construct the agricultural supply chain from four aspects: internal elements, external environment, the relationship between internal elements and their realization methods, and the functional relationship between internal elements and external environment. The framework of the financial credit risk cause analysis system is the most scientific and systematic risk cause analysis [21].

4.3. Risk Prevention of Agricultural Supply Chain Finance

In the construction of risk prevention mechanism, Yun S, Jingrong L (2019) designed a relatively complete agricultural supply chain financial credit risk prevention and control mechanism, including ex-ante screening mechanism, process control mechanism, and ex-post execution mechanism. At the same time, he also proposed the institutional risk prevention mechanism and the financial technology risk prevention mechanism [22]. Xiaohua W (2015) proposes to improve the credit evaluation mechanism of agricultural supply chain enterprises, innovate the agricultural supply chain financial credit risk dispersion mechanism, improve the credit risk management level of agricultural supply chain financial institutions, and establish an early warning mechanism for agricultural supply chain financial credit risks to control the financial credit risk of agricultural supply chain [23].

In terms of risk prevention measures, Jing J (2013) and Tiantian Z (2018) believe that the following four aspects should be taken, which concludes strictly controlling the access mechanism of the main body of the supply chain node; improving the risk assessment standards for core enterprises; controlling the overall supply chain Credit line; establishing a smooth information sharing platform. Xinghai L (2016) believes that in order to prevent supply chain financial risks, we should first innovate the financial joint insurance model of the supply chain of agricultural enterprises, then optimize the supply chain financial risk control system of small and medium agricultural enterprises, and finally pay attention to the policy support system for supply chain financial business Construction [24]. Yufeng S (2016) proposed the management strategy of agricultural supply chain financial credit risk from the aspects of improving the relevant legal system, strengthening the construction of

the rural credit system, establishing the incentive and restraint mechanism, and building the credit risk early warning system. Huanyu Z (2019), based on the risk sources of Heilongjiang Province's agricultural supply chain finance, proposed to prevent the risks of Heilongjiang Province's agricultural supply chain finance through three aspects: credit construction, technology training, and communication.

On the principle of risk prevention, Lu P (2015) believes that the basic principle of China's agricultural supply chain financial risk prevention should determine the agricultural supply chain financial support projects according to local conditions and use system theory to control risks [25].

5. CONCLUSION

This article focuses on the research status of China's agricultural supply chain financial risk management. Agricultural supply chain finance, as a new financial model, can effectively solve corporate financing difficulties, has different risks. Scholars have made a series of research results on the identification, measurement, and early warning system of agriculture supply chain financial risks. Based on the previous theoretical research on the concept and risk management of agricultural supply chain finance and the current time situation, this article summarizes the existing literature research, and puts forward some shortcomings and the focus of future research.

Most scholars' research focuses on the analysis of credit risk and agricultural supply chain finance models, with high repeatability and a single method. Since the start and application of supply chain finance in my country is not long, many scholars only stay in case analysis and mode analysis of supply chain finance, without digging into the reasons for the formation of supply chain finance; research on credit risk is concentrated on the risk evaluation system. Therefore, the research on operational risks, contractual risks and other risks should be more in-depth.

The risk identification and prevention of agricultural supply chain finance is a core issue in the research of agricultural supply chain finance. Researchers have conducted a thorough analysis. Among them, the research on the risk elements of agricultural supply chain finance is the most abundant, and basically draws the conclusion. However, at the time of constructing a risk evaluation system, different researchers always use different research methods, such as analytic hierarchy process (AHP), BP neural network method, fuzzy comprehensive evaluation method, which will lead to completely different risk evaluation systems. Therefore, future research should use a more scientific method to construct a risk evaluation system which will be suitable for agricultural supply chain finance.

In the time of constructing the credit risk evaluation index system of agricultural supply chain finance, we should combine the particularity of agriculture and add agricultural indicators to the traditional supply chain finance credit risk evaluation index system to make the index system more accurate and specific. According to this model, it is easy to evaluate the risks of specific agricultural supply chains, analyze the sources of corresponding risks and provide risk prevention measures.

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