

# The Innovation and development of Rural Revitalization: Agricultural Supply Chain Finance

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*Abstract*—Agricultural supply chain finance provides a feasible supply channel for the fund demand in rural economic development, alleviates the financing difficulties of small and micro enterprises and farmers in rural areas. However, there are also problems such as low standardization of agricultural products, imperfect credit risk system and incomplete information system, which seriously hinder the implementation of Rural Revitalization strategy. Financial product innovation is put forward in this paper, giving play to the role of government-led, perfect the premium subsidy, guarantees subsidy policy, actively into more involved in the main body, using the emerging technology industrialization construction, building ecological system resource sharing, expand the scope of services, to better precision power financial poverty alleviation, finally realizes the Rural Revitalization strategy.

## 1 INTRODUCTION

In the modern economic system, the development of agriculture and the income of farmers cannot do without the support of finance. However, the enthusiasm of rural areas to provide financial services as a whole is low, especially in poor areas of financial exclusion problems<sup>[1]</sup>. With the implementation of targeted poverty alleviation policies and the development of inclusive finance, agricultural supply chain finance is regarded as a "golden key" to solve the financing difficulties of poor farmers in the context of agricultural supply-side structural reform and rural revitalization. Since the 18th National Congress of the Communist Party of China (CPC), the state has introduced the policy of encouraging financial services for agriculture, the countryside and farmers, the financial development of agricultural supply chain has ushered in the "east wind" of development. No.1, 2014–2019, the central, actively promote agricultural finance and agricultural insurance product innovation, encourage the establishment of multi-level financial service system, development of supply chain finance, as a new financing model, agricultural supply chain finance to a certain extent, alleviate the financing difficulties of agricultural enterprises and farmers, relieves the problem of rural financial repression.

## 2 LITERATURE REVIEW

Supply chain finance refers to Banks integrating the logistics and capital flows of upstream and downstream small and medium-size enterprise through specific financial models around core enterprises, transforming the uncontrollable risks of a single enterprise in credit into controllable risks of the whole supply chain, and

providing financial services to more small and medium-size enterprise with the lowest financial risks<sup>[2]</sup>, it is the capital flow and ecosystem formed by the commercial credit among the participants of the supply chain.<sup>[3]</sup> The earliest form of agricultural supply chain finance can be traced back to the "grain warehouse receipt" in Mesopotamia in 2400 BC<sup>[4]</sup>, refers to financial institutions providing financial services based on the commercial relations between different subjects in the agricultural supply chain<sup>[5]</sup>. It is the best way to solve the problems of agriculture, the countryside and farmers. But the enthusiasm of rural areas to provide financial services as a whole is low, especially in poor areas of financial exclusion problems, leading to a high cost of credit, and credit risk control difficulty phenomenon such as "market failure"<sup>[6]</sup>, and even result in poor areas of peasant household long-term in the vicious circle of poverty financial circle<sup>[7]</sup>. Agricultural supply chain finance as a new financing model effectively alleviate the financing difficulties of agricultural enterprises and farmers, not only expand the inclusive finance channels, also played a perform accurately the effect of poverty alleviation through industrial development<sup>[8]</sup>. The combination of financial and industrial poverty alleviation and the deep participation of poor households in the development of agricultural industry and the sharing of industrial profits will effectively improve the effect of financial targeted poverty alleviation<sup>[9]</sup>, compared with the poor peasant households to financial institutions financing directly, in the industry on the basis of agricultural supply chain financing for poverty alleviation of poverty reduction effect is better<sup>[10]</sup>. To explore how to give full play to the targeted poverty alleviation effect of inclusive finance in the field of "agriculture, the countryside and farmers" with the help of the new format of agricultural supply chain finance will provide new development ideas for the realization of rural revitalization strategy.

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### 3 THE CONNOTATION AND CURRENT SITUATION OF AGRICULTURAL SUPPLY CHAIN FINANCE

China's supply chain finance is booming. According to data from the National Bureau of Statistics of China (Table 1), the net receivables of industrial enterprises above a certain scale have increased from 8.4 trillion yuan in 2012 to 14.3 trillion yuan in 2018, an increase of 1.7 times. China's supply chain financial market has a broad space for development, suitable for capital entry. The scale of supply chain finance market grows rapidly from 2015 to 2019. As shown in Table 2, the scale of China's supply chain finance market reached 14.42 trillion yuan in 2017, and it is expected that the scale of China's supply chain finance market will reach 27.01 trillion yuan in 2020, if agricultural supply chain finance accounts for 7.1% (the value added of the primary industry accounts for the proportion of GDP in 2019), the market size will exceed 1.91 trillion yuan. In the face of broad market potential and favorable policy support, all kinds of capital have entered the rural supply chain finance, promoting the rural market to continue to heat up. As shown in Table 3, since the establishment of statistics on agriculture-related loans in 2007, the total balance of agricultural loans of all financial institutions has increased by 534.4% in total, with an average annual growth rate of 16.5% in the past 11 years. The balance of agriculture-related loans increased from 6.1 trillion yuan at the end of 2007 to 32.7 trillion yuan at the end of 2018, increasing its share of all loans from 22 to 24 percent. Direct financing, such as bonds and stocks, has also developed rapidly. The futures market for agricultural products has grown from scratch and is gradually showing its functions. Inclusive finance still has a long way to go.

Although China is a big agricultural country, the long-term decentralized operation mode leads to low agricultural production efficiency, agricultural industrialization is still in the early stage of development, insufficient correlation degree among members of agricultural supply chain, and weak overall capital strength, which hinders the formation of agricultural supply chain finance. When farmers are unable to perform their contracts and default, the core enterprises that provide credit guarantee to farmers will pay the principal and interest to financial institutions on their behalf, and the core enterprises that suffer losses will not have the motivation to continue to maintain cooperative relations with farmers. Generally speaking, in order to obtain maximum benefits and avoid risks to the greatest extent, core enterprises are more inclined to choose farmers with better qualifications as cooperative objects, and lack the willingness and enthusiasm to cooperate with poor farmers, which greatly limits the income growth of poor farmers.

Traditional agricultural supply chain financial model: there are three kinds of typical "agricultural enterprises + farmers + financial institutions" mode, "agriculture enterprise + park + farmers + financial institutions" mode, "agricultural enterprise + cooperative + farmers + financial institutions" mode, the existing agricultural supply chain financial model mainly around the core enterprise to innovate, with the development of information technology, agricultural supply

chain financial innovation to present three trends: online and offline integration development, platform and industrial integration, personalization and precision. As the agricultural supply chain integration effect is not significant, risk control ability is poor, all kinds of agricultural institutions of agricultural supply chain financial understanding and the understanding is not enough balance, development is relatively slow, its innovative application and comprehensive risk prevention and control ability remains to be promoted, and there is still a gap in the demand for financial security of the rural revitalization strategy.

TABLE I. NET RECEIVABLES FROM INDUSTRIAL ENTERPRISES ABOVE SCALE

Year	Net receivables from industrial enterprises above scale						
	2012	2013	2014	2015	2016	2017	2018
Amount (One trillion yuan)	8.4	9.7	10.7	11.7	12.7	13.6	14.3

a. Source of data: National Bureau of Statistics of China.

TABLE II. SIZE AND FORECAST OF CHINA SUPPLY CHAIN FINANCIAL MARKET 2015-2020

Year	Size and Forecast of China Supply Chain Financial Market 2015-2020					
	2015	2016	2017	2018	2019	2020
Amount (One trillion yuan)	11.97	12.95	14.42	17.5	22.18	27.01

a. Source of data: open data collation.

TABLE III. AGRICULTURE-RELATED LOANS

Year	Agriculture-related loans						
	2007	2008	2010	2012	2014	2016	2018
Amount (One trillion yuan)	6.1	6.9	11.8	17.6	23.6	28.2	32.7

a. Source of data: China Rural Finance Service Report 2018.

### 4 THE NECESSITY OF DEVELOPING AGRICULTURAL SUPPLY CHAIN FINANCE

#### A. To meet the demand for funds for the development of agricultural industry chain

Agricultural industry chain development by expanding the agricultural industry chain development, promote the construction of agricultural whole industry chain, to change the status quo of low value-added agriculture itself, the comprehensive agricultural planting, processing, services of resources integration, make the rural areas and farmers in the integrated supply chain to obtain more profits, especially, its development needs the money and financial support, the agricultural supply chain finance enable farmers fast track sale of accounts receivable, inspire enthusiasm for agricultural industry development, promote the healthy development of the agricultural industry benign.

### B. Play a major role in targeted financial poverty alleviation and rural revitalization

The strategy of rural revitalization, as the main approach to solve the problems of agriculture, the country-side and farmers in the new era, is the core component of achieving the strategic goals of rural revitalization, extending the industrial chain, upgrading the value chain and improving the chain of interests. Based on actual order agricultural production and trade of agricultural supply chain finance, the farmers financing business endorsement, the advantages of the closed loop operation of funds, through the supply chain finance make high risk individuals into a whole chain of controllable risk, alleviate farmers financing predicament, by reducing the uncertainty of the link between supply and demand of agriculture and increasing economies of scale of agricultural production, improve the ability of poor farmers' production and income level, improving the ability to repay capital and interest has promoted the development of inclusive finance in rural areas.

## 5 THE CURRENT AGRICULTURAL SUPPLY CHAIN FINANCIAL DEVELOPMENT DIFFICULTIES

### A. Agricultural products are non-standardized, with low stability and limited design of supply chain financial products

As non-standardized products, the quality of raw materials, natural climate and temperature conditions, the use and control of cold chain logistics technology and other factors will affect the quality of agricultural products, it is difficult to maintain the value of agricultural products, the greater the degree of volatile prices of agricultural products, the market risk to the financial institutions into the credit funds, to the agricultural supply chain financial participation willingness will be lower. Due to the non-standardized conditions of agricultural products, it is difficult to implement future right financing and warehouse financing in supply chain products. Agricultural products cannot exist in the form of inventory for a long time, so they cannot be bought back. As agricultural products are more difficult to preserve, financing warehouse financing is not feasible.

### B. The credit risk system is not perfect

Agricultural enterprise scale is small, the management is not standardized and the financial authenticity is low, management personnel credit consciousness, make the agricultural enterprise credit rating is low, there is credit risk, the agricultural enterprise, logistics enterprises, wholesale retailers, information asymmetry between Banks, lagging information distortion or information will result in either party decision is unreasonable, contract compliance risk. At present, China's credit evaluation system is not perfect, and the credit-rating of Alibaba, Jingdong and other companies based on big data of e-commerce transactions is still limited to their own commercial systems, which makes it difficult for commercial Banks to make use of these credit data for credit risk assessment.

### C. Laws and policies are not sound enough

China's supply chain finance started late, and the existing policies reflect more principles and directional provisions. The content of development model and risk prevention is not perfect, and the policy of benefiting agriculture, supporting agriculture and strengthening agriculture is structurally imperfect. The legal system is not sound enough, different regions have different efficiency in law enforcement, and the categories of law and government administrative power are indistinct. As a result, the order of financial market cannot be fully regulated and guaranteed, and there are still many obstacles in the actual operation.

### D. The information system is not sound, and financial services are inefficient

With the joint efforts of government departments and telecom enterprises, broadband and 4G networks have been popularized in rural areas. However, the Internet penetration rate in rural areas grows slowly, and there is still a large gap between urban and rural Internet penetration rates (Table 4). And the informatization supervision and governance level of financial management of agricultural supply chain are low. Vertically, the agricultural supply chain has a long chain, horizontally, there are many participants at the same node, and the application of agricultural automation and data is insufficient, which makes it difficult to apply the big data mining model and leads to the weak comprehensive application ability of supply chain finance. Farmers' professional quality is insufficient, the application of computer network technology is limited, the audience coverage of supply chain financial products is insufficient, it is difficult to fully promote the application.

TABLE IV. 2014-2018 INTERNET PENETRATION IN URBAN AND RURAL AREAS OF CHINA

Year	2014-2018 Internet Penetration in Urban and Rural Areas of China				
	2014	2015	2016	2017	2018
Urban areas	63%	66%	69%	71%	75%
Rural areas	29%	32%	33%	35%	38%

a. Source of data: open data collection.

## 6 STRATEGIC POLICY SUGGESTIONS ON SUPPLY CHAIN FINANCE FOR RURAL REVITALIZATION

### A. Financial product innovation and commercial ecological innovation

Combined with the use of new Internet technologies, the design of credit products should be innovated to improve the cycle matching degree between products and industrial development. Meanwhile, the overall management ability of customized and fragmented products should be improved to meet the needs of rural credit microfinance and high frequency. Provide corresponding supply chain financial products for different types of agricultural products. At the same time, we should improve the diversification level of financing channels and related

service institutions, introduce financial partners and broaden financing channels. Agricultural supply chain extends from core enterprises to related industries, such as e-commerce, logistics and distribution, so as to promote the close contact between related industries and form an industrial ecosystem. The government should grasp the basic access conditions of green, environmental protection and sustainable industry, and give preferential policies such as land and tax, so that industrial and commercial capital can focus on the industrial development in rural areas and integrate into the local business ecology.

#### *B. Giving play to the leading role of the government and building a service-oriented government*

Government innovation on the agricultural supply chain financial infrastructure management and service system, strengthen the agricultural supply chain finance each participation main body credit consciousness of education and training, better play a role of guidance, actively improve agricultural supporting infrastructure construction, strengthen the farmer vocational education and the supply chain related knowledge training, and coordinate related government departments and the local branch of the people's bank, financial institutions, such as the court as soon as possible and improve the farmers credit reporting system, perfect the social credit system, to strengthen the disciplinary mechanism construction, promote the rural credit system construction. We will increase investment in agricultural infrastructure, ensure that financial institutions serve the safety of agricultural production, and protect agricultural production. We will carry out education at various levels and in various categories in rural areas, run small-scale schools in rural areas, speed up the popularization of senior middle school education, and cut off the intergenerational transmission of poverty, so as to foster both aspiration and wisdom.

Government adjust measures to local conditions improve agricultural support policies, regulate and improve the farmers' professional cooperatives, such as the development of new type of agricultural management main body pattern, with the aid of inclusive finance products and services, to do a good job of start the poor peasant households to join the agricultural supply chain finance, stimulate internal momentum poor peasant households, which form the vicious cycle of agricultural production, promote agricultural industrialization pattern step by step. We will improve policies such as premium subsidies and guarantee subsidies, actively promote agricultural insurance and agriculture-related guarantees, and provide assistance to poor groups who are unable to work and are impoverished by illness. We will support enterprises that actively undertake social responsibility, and encourage and reward outstanding enterprises through the establishment of a sound supervision system, so that they will have the motivation to continuously serve the rural areas in the fields of inclusive finance and poverty alleviation.

#### *C. Applying new science and technology to promote industrialization*

Advanced technologies are widely used in agriculture, smart agriculture is developed, data transparency is

enhanced, and multi-party monitoring and dynamic risk control are strengthened. System using big data analysis of global agricultural production process, build the data model, accurately grasp the dynamic economy and market trends, for farmers or agricultural base the planting and breeding time, composition of soil, fertilization information such as how much precision guidance, precision production, understand the rival product data, reasonably adjust product structure, to differentiate the production. Based on the accumulated multidimensional data of upstream and downstream enterprises and other transaction data on the Internet, it is comprehensively applied to the risk control before, during and after lending by means of data model analysis and data cross-validation, reduce information fraud and moral hazard. Industrial Internet should be built through the introduction of intelligent management system, in accordance with the division of labor in agriculture and different levels of technology, professional outsourcing services should be formed so that professional people can do professional things.

#### *D. Build a resource-sharing ecosystem*

Strengthen rural especially remote and poor area communication network and development of the modern logistics system, in the field of agriculture, rural areas and farmers to implement a complete coverage of the Internet, the Internet of things, the innovative construction of agricultural supply chain information sharing mechanism, constructing sharing platform, solve the problem of asymmetric information, integration of logistics companies and social drivers, idle resources, make full use of social idle vehicles Shared vehicles, logistics transport industry to reduce costs, increase the industrial chain upstream and downstream enterprise profits. Establish industry standards, let the production standards of agricultural products deep processing plant to join the platform, sharing processing plant, broaden the raw material purchase channels, establish a stable sales relationship. Establish communication channels between warehouse operators and agriculture-related enterprises and farmers, share warehouses, solve the storage problems of agricultural products, and improve the utilization rate of warehouses.

#### *E. Strengthening the legal guarantee of agricultural supply chain finance*

We will further extend and revise existing laws and policies, improve basic laws and policies in this field, and develop a complementary set of laws and policies. Improve the agricultural insurance mechanism and industry trading system, and constantly broaden the content of the guarantee business, promote rural resources and financial resources effectively and transformation, strengthen the government's policy support, reasonable use financial leverage, allow it to break through the current policy appropriately, explore new models of innovation of supply chain finance service rural revitalization of perfecting rural financial legal system in China.

## 7 CONCLUSION

Agricultural supply chain finance mode has realized the transformation of rural finance from decentralized to centralized, alleviated the long-standing financing difficulties in the field of rural finance, improved the financial availability of poor farmers, and promoted the large-scale operation and industrialization development of agriculture. The efficient development of agricultural supply chain finance can effectively link the government, enterprises, financial institutions and farmers with the joint efforts of all sectors of society to help fight against poverty, stimulate the endogenous driving force of rural development, and accelerate the realization of rural revitalization strategy.

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## REFERENCES

1. Yun Shen. "Social Capital, Dual Finance and Peasant Household Borrowing Behavior," Economic Review, 2016, pp. 80-90.
2. Yanjie Gou. "The Innovation of Financial Model for Agricultural Supply Chain," Journal of Sichuan University of Science & Engineering(Social Sciences Edition), 2020, pp. 33-52.
3. Michael Lamoureux. "A supply chain finance prime," Supply Chain Finance, 2007, pp. 34-48.
4. Tina Breckwoldt. "Management of Grain Storage in Old Babylonian Larsa," Archiv für Orientforschung, 1995, pp. 42-43.
5. Miller, Calvin, Jones, Linda. "Agricultural value chain finance: tools and lessons," Agricultural Value Chain Finance Tools & Lessons, 2010.
6. Longyao Zhang, Yuyun Xu, Bing Zhang. "In-kind finance substitute mechanism for failure of rural credit market: a case study of Jiangsu Province," Journal of Southeast University (Philosophy and Social Science), 2018, pp. 60-69.
7. Ziqiang Zhang, Guoyong Wu, Ping Xu. "Logic Reconstruction of Rural Household Poverty in Ethnic Areas: the Perspective of Vicious Circle of Poverty," Guizhou Ethnic Studies, 2017, pp. 69-72.
8. Donghui Jiang, Bo Wang. "Accurate and Inclusive Finance: The Innovation and development of Agricultural Supply Chain Finance," Rural Economy, 2020, pp. 99-104.
9. Juijie Ma, Xing Luo, Benjian Wu. "Research on the Innovation of poverty alleviation mechanism of precision financial industry," Contemporary Rural Finance and Economics, 2016, pp. 26-29+37.
10. Yun Shen, Xiaobing Peng. "Chain Financing Model and the Effects of Precision Poverty Alleviation: Empirical Study Based on Quasi Experiment," Journal of Finance and Economics, 2016, pp. 4-15.