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Models, Mechanism, and Practice: An Analysis of Agricultural Supply Chain Finance Based on Core Firms

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Abstract: *This paper introduces the supply chain finance models dominated by core enterprises and analyzes their operation mechanisms. Through theoretical and practical analysis, this paper believes that supply chain finance can effectively help agricultural SMEs (small & medium Enterprises) solve financing problems by using the overall credit of the whole supply chain. Supply chain finance plays a positive role in the following aspects: it is conducive to the information sharing of all parties in the supply chain, the establishment of strategic mutual trust and the improvement of operational efficiency.*

Keywords: *Agricultural Supply Chain, Pledge of Accounts Receivable, Supply Chain Finance, Farmers Financing*

1. Introduction

In recent years, with the development and enrichment of supply chain finance theory and practice, more and more banks and investment institutions have launched related financial products, and supply chain financing behaviors such as logistics banks and confirmation warehouses have emerged in various industries. In the field of agricultural industry, with the well-built of rural networks and various types of infrastructure, there has been a combination of rural e-commerce and agricultural supply chain financing. New forms of financing have enabled the agricultural industry to grow. According to the data of the Agricultural Bank of China, as at the end of October 2021, the Agricultural Bank has carried out online supply chain business with more than 300 core enterprises under more than 50 central enterprise groups, with a financing balance of more than 40 billion yuan, driving more than 10,000 upstream and downstream small and medium-sized enterprises.

It is difficult for farmers to obtain credit funds from banks, and farmers need a financing model that is different from traditional bank credit. Supply chain finance solves this problem to a certain extent[1]. Yang Ming (2019) believes that supply chain finance can be understood as an ecological group jointly established by many upstream and downstream enterprises around core enterprises for operation and financing, and the position of core enterprises in supply chain finance is irreplaceable. He analyzes the characteristics of supply chain finance and expounds the differences between traditional finance and supply chain finance[2]; Chakuu, Masi & Godsell(2019)[3] analyzed the relationship between participants and financing methods of supply chain finance，and identified financing methods of supply chain finance as fixed asset financing, inventory financing and accounts receivable/accounts payable financing. Based on the actual situation, this paper discusses the models, operation mechanism and practice of China's agricultural supply chain finance.

2. Agricultural Supply Chain Finance Models

2.1. Prepayment Financing Model

Which also known as the confirmed warehouse model, this model is applicable to agricultural small and medium-sized enterprises in the agricultural supply chain downstream of the core enterprises of the agricultural supply chain. Small and medium-sized agricultural enterprises can obtain financing by paying deposit in installments to banks to get the ability to pay a large amount of money in one time. Under this model, small and medium-sized agricultural enterprises can sign a purchase agreement with the core enterprise, and the buyer will pay off the payment in one lump sum. The core enterprise should

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prioritize production or delivery, and at the same time, the buyer will pay a certain amount of deposit to the bank to apply for confirmation warehouse financing. After receiving the deposit, the bank issues banker's acceptance bill to the buyer for one-time payment. At this time, the bank has the actual control of the goods purchased, and the bank issues a certain number of bills of lading to the buyer in accordance with the proportion of the deposit paid by the buyer. After the buyer takes delivery of the goods, he continues to pay the deposit to the bank to obtain the next batch of bills of lading until the deposit is equal to the amount of the draft, so that the buyer finally gets all the goods and pays the bank debt. In these cases, banks often need to sign warehousing supervision agreements with third-party logistics enterprises to gain actual control of goods.

2.2. Financing Warehouse Model

This model takes the inventory of small and medium-sized agricultural enterprises as a pledge, and gives the inventory to the storage supervisor designated by the bank, however there is no transfer of property rights. The storage supervisor here is the third-party logistics enterprise, and after SMEs repay the financing, they can directly pick up the goods from the logistics enterprise, which does not affect the logistics efficiency. And if the small and medium-sized enterprises defaulted and cannot repay on time, the bank can auction the pledged inventory to repay. However, for the agricultural supply chain, the accommodation warehouse model is only suitable for some industries with low product freshness requirements or long product shelf life. For example, a dried fruit processing enterprise has a large stock of raisins that are difficult to sell, and during this period, the enterprise just needs to buy a batch of processing equipment. Therefore, the enterprise pledges the inventory to the third-party warehousing enterprise authorized by the bank, and the warehousing enterprise issues the warehouse receipt to the bank and the inventory management is implemented by the bank. Thus, the enterprise obtains a certain amount of loans, and when the enterprise has sufficient funds, the loan from the bank has been repaid and so the inventory can be recovered for processing or for sales. In this process, the third-party storage enterprise carries out warehousing and inventory according to the instructions of the bank, to confirm the inventory status, ensure that the inventory value is not lower than the loan value, and controls the bad debt risk of the bank.

2.3. Supply Chain Accounts Receivable Financing Model

In the above-mentioned prepayment and warehouse models, the former can only be applied to enterprises downstream of the supply chain, while the latter needs to pledge a large amount of inventory. But what farmers produced is basically raw product, whose short shelf life and perishability make it impossible for farmers to pledge their fresh product as inventory for a financing cycle. Therefore, for most farmers, only the third financing model can be adopted, that is, the supply chain accounts receivables financing model. In the process of transactions between the core enterprises of agricultural supply chain and the upstream enterprises, in order to obtain the liquidity of capital turnover, the core enterprises often extend the payment cycle of the goods, and generate accounts receivable by means of creditors' rights such as commercial acceptance bills. Due to the long-term cooperation of the supply chain, such accounts are less risky and the possibility of default is low. This model is suitable for upstream agricultural SMEs, which have accounts receivable notes issued by core enterprises, somewhat similar to the bill discounting process.

2.3.1. Accounts Receivable Pledge Financing

In this financing model, the creditor enterprises of accounts receivable, debt enterprises and banks are involved, and the core enterprises with high credit are used as the guarantee of bank risk. The process is as follows: after the buyer and seller sign the purchase and sales contract, the buyer makes payment by commercial acceptance bills and other documents to form accounts receivable, and the seller applies for financing to the bank, and the bank provides loans after verifying the authenticity of the transaction and getting the payment guarantee.

2.3.2. Accounts Receivable Factoring Financing

Factoring is a contract between a factor and a seller. A factor is usually an accounts receivable management and service organization. The seller in the supply chain signs a purchase and sale contract with the buyer and transfers the accounts receivables to the factoring provider, who usually provides services such as risk control, debt collection, trade financing and guarantee. Factoring can also be divided into recourse factoring and non-recourse factoring. In the case of factoring with recourse, when there is a risk of non-payment, the factoring seeks recourse from the seller of the transaction. When

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there is no recourse, the factoring claims against the buyer. Through this model, accounts receivable holders obtain funds through means other than pledge, and provide more flexible financing methods for suppliers upstream of the supply chain, especially those without pledge qualifications.

3. Agricultural Supply Chain Finance Mechanism

In general, the supply chain of agricultural products includes at least the following links: core enterprises obtain raw materials from farmers or agricultural cooperatives, process them into products, and then provide them to downstream wholesalers after packaging. Wholesalers find retailers in community stores, supermarkets and other channels, so that all suppliers, manufacturers, wholesalers and retailers form a whole chain. In this process, due to the strong position of core enterprises in the agricultural supply chain, they have strict requirements on the supply requirements of upstream manufacturers and the payment period of downstream enterprises. However, the individual enterprises at the ends of the upstream and downstream usually lack the credibility and the ability to obtain financing from banks, which will lead to the tension of the capital chain and the imbalance of supply and demand in the supply chain. In order to solve this problem, banks take supply chain finance as the means and core enterprises as the starting point to provide credit financing for small and medium-sized agricultural enterprises. On the one hand, its funds can be used to support its upstream and downstream financing nodes, which are weak, to solve the problem of financing difficulties; on the other hand, the credit of SMEs with direct transaction relationship with core enterprises can be increased, and the bill assets formed by intra-supply chain transactions can be used as a guarantee to reduce the risk of bad debts of banks. In this model, banks clearly know the future capital flow of agriculture-related SMEs by means of commercial paper and other assets generated by real transactions within the supply chain. The future cash flow reflects the solvency of small and medium-sized enterprises for accounts. Under the operation of pledging or factoring, the credit of loans can be granted with confidence.

In the context of the Internet era, relying on core enterprises and relying on third-party information service providers to build an informationized financial service platform, all transactions can be carried out through digital systems. Each enterprise in the supply chain generates claims such as receivables and prepayments based on real transactions, which are uploaded to the digital system for record. Financial institutions issue corresponding digital certificates based on these real transaction information, and relevant enterprises can use the digital certificates for payment or apply for credit from financial institutions.

Compared with the supply chain financing model, traditional finance is more simpler and focuses on a single enterprise. In terms of risk assessment and credit granting, commercial banks only pay attention to the credit status or business of the applicant enterprises, and banks often refuse to grant credit to small and medium-sized enterprises with insufficient pledged assets or high risks or put forward a higher loan interest rates. Secondly, the main credit objects of traditional finance are mature enterprises with good operating conditions, they also refused to lend to enterprises that were still in the growth stage. Under the supply chain finance model, commercial banks provide credit loans to enterprises in the chain that have transaction relationships with core enterprises, and the core enterprises usually have good credit in the supply chain, banks can make lending decisions based on the industrial characteristics of the entire supply chain[4].At this time, the bank is concerned about the huge inventory, materials in transit, accounts receivable, prepaid accounts and logistics in the entire supply chain, reducing the concern about the lack of credit for a single enterprise. For the supply chain as a whole, if the core enterprises do not participate in the financing of SMEs, resulting in the lack of funds of SMEs and the inability to maintain normal supply, the overall operation of the supply chain will be affected. If the supply of products at all levels is tight or quality problems occur, the overall value of the supply chain will be reduced. Therefore, in the operation process of the supply chain, if all parties can coordinate and help SMEs to finance through credit, real property, and other resources generated by real transactions on the basis of information sharing, it will speed up the turnover level of the supply chain from a macro perspective, improve production efficiency, break the information blind area and become an efficient and reliable supply chain.

4. The Practice of Agricultural Supply Chain Finance in Zhouzhi County

Zhouzhi County is located in Xi 'an, Shaanxi Province, It is suitable for planting kiwi fruit trees and gradually wins in the market competition for decades. Its products are exported overseas as juice raw materials and primary agricultural products, and are landmark products selected by China National

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Geographic. Up to now, the kiwi planting area of Zhouzhi County is 432,000 mu, accounting for 15% of the country and 12% of the world, with an annual output of 530,000 tons of fresh fruit, accounting for 25% of the country and 15% of the world. The output value of primary production exceeds 3.2 billion yuan, and the per capita income of fruit farmers exceeds 13,000 yuan, making it the largest kiwi production base in the world. Zhouzhi County cultivates 1007 professional kiwifruit cooperatives, and more than 4,000 e-commerce and wechat business operators. A large number of farmers in Zhouzhi County choose to grow kiwi fruit, at the same time, a number of agricultural cooperatives have been established in Zhouzhi County. And Zhouzhi established relationship with Wantong fruit industry, Jiaxing Xianghe fruit industry and other kinds of fruit distributors. With the extension of the industrial chain, a series of downstream enterprises which use kiwifruit as raw materials have established a stable supply cooperation relationship with the above-mentioned agricultural enterprises and fruit professional cooperatives, and built a kiwifruit supply chain network structure that is conducive to ensuring continuous supply. How to effectively finance is the key for farmers to expand production scale.

Through the growth of online e-commerce, in the rapid development of rural e-commerce, with the help of Ali e-commerce power, integrate rural Taobao, Tmall supermarket, etc., to help the agricultural product industry form a complete supply chain and sales channels, and make it a model of agricultural product supply chain finance in Zhouzhi County. In January 2021, fruit and vegetable distributor (core enterprise) Yiguo Fresh and Zhouzhi County cooperative signed a large purchase agreement, agreed that in the year of kiwifruit maturity, the cooperative to provide a large number of kiwifruit original products, Yiguo fresh will sell it to urban areas through e-commerce channels. In order to solve the production fund problem of the cooperative, Yiguo Fresh has already carried out strategic cooperation with Ant Financial. Through Internet technology, whenever a retailer orders a batch of products on Yiguo Fresh's e-commerce platform, Ant Financial will be able to receive a notification and identify, and the corresponding financing amount will be unlocked after confirmation. When the order amount exceeds a certain amount, an online banking unit of Ant Financial will provide low-interest loans to the cooperative. In addition, the e-commerce platform related to Ant Finance will also sell production tools such as pesticides needed by cooperatives at a low price for this project, forming the ecology of the agricultural product supply chain.

In this case, Yiguo Fresh is the core enterprise in the agricultural supply chain finance model. As a large-scale distributor, it fully plays the role of coordination and control in financing and sales, using rural e-commerce and network information platform as means. The core enterprise has a strategic cooperation with Ant Financial, which focuses on rural finance, to facilitate financing for its upstream supplier, such as Zhouzhi County Cooperative. The advantage of doing so is not only to ensure its own upstream production capacity, to provide customers with high-quality products, smooth production and marketing links, but also to help rural farmers financing, promote the development of rural areas, have both economic and social benefits. For Ant Finance, the reason why it provided necessary loans to Zhouzhi County cooperative, which does not have sufficient financing qualifications, is not only because of its strategic cooperative relationship with core enterprises, but also because it has mastered the order information of Yiguo fresh supply chain. With the guarantee of order information of Yiguo Fresh and downstream retailers, its risk of recovering loans is greatly reduced and its credit confidence is improved. This model is similar to the accounts receivable financing model, the only difference is that the online business bank replaces the virtual bill of exchange with the order information of the e-commerce platform. However, the utility of the two is the same, whether it is commercial draft or order information, it clearly guarantees the future cash flow of farmers. Regarding the authenticity of the order, because the online information platform of Yiguo Fresh shares the order information with Ant Financial, the authenticity of the order can be guaranteed.

Kiwifruit growers in Zhouzhi County are difficult to obtain traditional bank credit. The reason why banks find it difficult to provide financing is not because the moral credit of cooperatives is difficult to be trusted, but because cooperatives lack assets of sufficient value to be used as collateral, so banks cannot guarantee to recover their accounts. However, Yiguo Fresh and Ant Financial jointly solved this problem. Based on the commercial credit of the cooperative, the order information obtained through the online information platform can clearly know the future capital flow and shipment status of farmers, so as to know the business situation and bankruptcy risk. In this process, it is very important to master the production and marketing data in the supply chain. A steady flow of orders and receivables accounts within the supply chain can undoubtedly provide guarantee for cooperatives to repay loans on time. In this case, various agricultural production cooperatives in Zhouzhi County have stable supply relationships with fruit buyers and retailer or processing enterprises in various places. ZhouzhiLinqi Fruit professional cooperative, Xi 'an Guangfeng Fruit industry professional cooperative and other farmers signed contracts worth 123 million yuan with local enterprises in Jiaxing, including the supply

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of 3000 tons fruit worth 85 million yuan, in many years will continue to supply and obtain payment. Shaanxi Zhongnong Hopu Company, and Taicang local enterprises signed the supply amount is expected to be 30 million yuan. And thanks to the development of fresh agricultural products e-commerce in recent years, the sales of kiwi fruit in Zhouzhi County broke through the time and space restrictions, and at its peak, the e-commerce platform placed more than 800,000 orders one day, totaling more than 2,000 tons of sales. These sufficient and stable orders are the guarantee for the bank to recover the accounts. After the establishment of stable and sufficient transaction relationships and contracts, if the bank can accurately know these data, it can determine the amount of credit funds applicable to farmers and enterprises according to the future payment situation, so as to increase the business volume while scientifically preventing and controlling risks, and play a role in serving small and medium-sized agricultural enterprises.

In the process of using the order data of the e-commerce platform for credit granting, the transaction data in the supply chain can be guaranteed to be authentic and reliable by all parties in a common information platform based on Internet technology. Also due to the convenience of information access, the bank can learn the actual data remotely, without having to send personnel to inspect the field situation, saving the time and cost.

5. Conclusion

This paper introduces the supply chain finance model dominated by core enterprises, analyzes the operation mechanism of agricultural supply chain finance, and aims at the financing difficulties faced by small and medium-sized agricultural enterprises due to the characteristics of agricultural products, lack of effective collateral, insufficient external financial support and other reasons. Through theoretical and practical analysis, this paper believes that supply chain finance can effectively use the overall credit of the supply chain to help agricultural SMEs solve financing problems, and supply chain finance has a positive effect on information sharing, building strategic mutual trust and improving operational efficiency of all parties in the supply chain operation. At the same time, the development of supply chain finance business will also enable banks to benefit from it, expand market depth and potential customers.

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