

Research on the Effect of Agricultural Industry Chain on Agricultural Financing under the Background of Rural Revitalization

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Abstract: The article clarifies the role of the entire agricultural industry chain in agricultural financing. The orderly logit empirical test shows that, compared with the entities that make loans in the name of individuals, agricultural business entities that participate in and rely on loans for the entire industry chain have a higher loan amount and are more secure, but the problem of difficulty in repayment has not been effectively resolved. Based on this, this article puts forward corresponding countermeasures and suggestions.

1 INTRODUCTION

The 19th National Congress of the Communist Party of China clearly put forward the implementation of the rural revitalization strategy, and the resolution of the "three rural" issues is the top priority of the party's work. The Central Economic Work Conference and the Central Rural Work Conference emphasized promoting agriculture through quality and green agriculture. Accelerate the transformation of agriculture from the direction of increasing production to the direction of improving quality, accelerate the modernization of agriculture and rural areas, and realize the revitalization of rural industries. Among them, the revitalization of the agricultural industry is the core. However, the development of agricultural industrialization is inseparable from financial support, and the huge demand for construction funds is often difficult to meet. At the same time, traditional agricultural financing has inherent shortcomings, such as a single model, uncontrollable risks, lack of guarantees, and inconsistencies between the financing period and the capital use cycle. Therefore, the dilemma of agricultural financing has become a major issue in the implementation of the rural revitalization strategy. Wang Laixi (Wang 2016) pointed out that rural financial institutions have a single business model, and the financial supply for new agricultural business entities is far from meeting their needs; Tian Jianying (Tian 2018) based on the survey and research of 55 agricultural industry chain financing practices in

Zhejiang Province, pointed out that the problem of the mismatch between traditional financing methods and the financing needs of the agricultural industry chain has become increasingly prominent, and the financing bottleneck of agricultural tangible assets needs to be broken; Gao Yunsheng et al. (Gao, Jing, Kang, 2021) proposed that under the new investment model of the entire industry chain, through the linkage of upstream, middle and downstream industries, investment costs can be reduced and the level of international operation and management of private enterprises can be improved. Among them, discussing agricultural financing from the perspective of the entire agricultural industry chain provides a new idea for solving rural credit problems.

Agricultural financing is an important pillar of rural revitalization, and the entire agricultural industry chain is the trend of future agricultural development. Therefore, this article aims to explore the financial linkage issues of the entire agricultural industry chain and clarify whether the role of the entire agricultural industry chain in agricultural financing is helpful to alleviate agricultural financing dilemma. With the goal of optimizing financial allocation, it puts forward relevant policy recommendations based on the characteristics of the financial linkage of the entire agricultural industry chain in China at this stage.

2 RISE BACKGROUND AND DEVELOPMENT STATUS

Under the guidance of the strategic deployment of rural revitalization, strengthening the main body strength and realizing the benefits of the agricultural industry chain have become the main direction of the current rural industrial development. In response to the agricultural financing dilemma, scholars have put forward solutions to the problem of agricultural financing difficulties from all sides. Zhang Jingrui (Zhang 2016) took the county wine industry in Hebei Province as an example, and analyzed in depth the advantages of the agricultural value chain financing model with "agricultural enterprise + industrial chain" closeness, low regulatory costs, and high financing capabilities; Tao Ling, Zhang Lezhu, etc. (Tao, Xiong, Zhang, 2021) made special discussions on trade credit financing, British Airways credit financing without guarantee insurance, and bank credit financing with guarantee insurance under the "company + farmer" type agricultural industry chain financing and government subsidy mechanisms. It also proposes an agricultural financial plan for the above-mentioned financing types.

Under the structure of the entire industry chain, corporate financing mechanisms are no longer single. Except for bank guaranteed loans, material subsidies, support funds, and the "government-school-enterprise" three production-university research bases have formed the "support bar" of the entire

industrial chain; With the advancement of Internet technology, farmers can now provide multiple loan services online. This method is an unsecured credit guarantee based on rural credit cooperatives and through the village committee. It has high timeliness, fast receipt, wide coverage, and low threshold. However, there are also problems that the loanable amount is small, which is limited to small-scale production by farmers. Although compared with the traditional agricultural development model, the whole industry chain has unique advantages, but there are still some drawbacks of the traditional model. In the process of replacing the traditional agricultural model with the entire industrial chain, the country also needs to keep improving, solve the problems of the existing chain, and realize the transformation and upgrading of the agricultural industrial chain.

3 DESCRIPTIVE ANALYSIS

A total of 98 interview data were collected by visiting government departments and enterprises, cooperatives and farmers participating in the entire agricultural industry chain. Among them, 58 data are from Hunan, 21 data are from Chongqing, and 16 data are from Sichuan. The remaining small parts of the data are from Jiangsu, Gansu, Guangdong and other places, of which 84 data are directly involved in the entire industry chain.

Table 1: Descriptive analysis of items.

Variable name	meaning	Corresponding meaning of item	Expected value	Standard deviation
age	age	1-5 corresponds to an increase in age/population	2.893	1.098
member	Family population		3.833	0.980
Edu	education level	1=4 corresponds to the improvement of academic qualifications	2.619	0.981
income	income	1-5 Corresponding to income increase	3.738	1.121
type	Types of agricultural business entities	1=Ordinary farmers; 2=Family farms; 3=Professional households; 4=Agricultural companies	2.345	1.256
join	Whether to join the whole industry chain	0=no; 1=yes	1.238	0.428
depend	Whether the loan depends on the industrial chain		1.345	0.478
rate	interest rate	1=within 3%; 2=3%-4%; 3=4%-5%; 4=5%-6%; 5=6% or more	2.286	1.313
time	Repayment period	1=1 within one year; 2=1-3 years; 3=3-5 years; 4=over 5 years	2.726	0.797
quota	Loan amount	1-4 Corresponding degree of increase in loan line	2.262	1.031
difficult	Difficulty in repayment	0=Yes; 1=No	2.310	1.371

The above table explains the meaning of the items, and lists the mean and standard deviation. Among them, whether to join the entire industrial chain and whether the loan depends on the industrial chain cannot be quantitatively measured, and is constructed as a dummy variable of 0 and 1 respectively.

Judging from the characteristics of the age structure, the survey objects are mainly concentrated in the 30-50 years old; From the perspective of family population status, the average family population is 3.82, and the family structure is dominated by nuclear families and backbone families; From the perspective of educational level, the distribution of the educational level of the survey subjects is relatively balanced, with a large proportion of junior and senior high school degrees;. From the perspective of income, the income level of the survey respondents is quite considerable, and most families have an annual income of more than 50,000 yuan; From the perspective of business types, 43.88% are ordinary farmers, family farms and professional large households account for about 15%, and agricultural companies account for 22.45%.

3.1 Participating in the Entire Industry Chain is Conducive to Financing for Agricultural Entities

Nearly half of the entities participating in the entire industrial chain enjoy a loan interest rate of 3%-4%,

and only one-fifth of the entities need to bear an interest rate of more than 5%. Compared with entities that do not participate in the entire industry chain, one-third of the loans have to bear a loan interest rate of more than 5%, the financing price has been better controlled. In terms of loan quotas, 76.56% of the subjects believe that the loan quotas have increased after participating in the entire industry chain. In addition, the loan application success rate of agricultural entities rose from 90% to 98.44%. Correspondingly, the subjective feelings of the subjects on the availability of loans are also higher than the 80% of non-participating subjects at a rate of 81.46%. Generally speaking, participating in the entire agricultural industry chain can loosen the financing environment of agricultural entities in terms of price, quota, and availability to a certain extent.

According to interview data, in addition to lowering loan interest rates and increasing loan quotas, most interviewees believe that participating in the entire agricultural industry chain has improved their credibility. In addition, some interviewees mentioned that some local governments provide interest-free loan policies and professional technical support for agricultural entities participating in the entire industrial chain; Some banks also have financial product support corresponding to the entire industry chain.

Table 2: Comparative analysis table of the main loan situation.

	Participate in the entire industry chain	Not participating in the entire industry chain
Loan object	Mainly banks and credit unions	Small amount of private lending
Guarantee method	Mostly guarantee guarantees, mortgage guarantees	
Mortgage method	Obvious phenomenon of mortgage enterprise management rights	Mainly mortgage real estate and management rights
Lending rates	Significantly lower	Relatively higher
Loan amount	Higher	Lower
Repayment period	Basically the same	
Ease of loan	Significantly easier	Relatively difficult

3.2 The Risk of Repayment Is Still an Important Issue in Agricultural Financing That Needs to Be Solved Urgently

Survey data shows that nearly 70% of agricultural entities have difficulties in repayment. Among them, natural disasters are the biggest risk. The subjects who are unable to repay due to natural disasters

account for 37.5% of the groups with difficulties in repayment; The instability of agricultural product prices is the second largest risk factor, and 12.5% of those who have difficulty in repayment due to the low market prices of agricultural products; Another 7.81% of agricultural entities have difficulties in repayment due to poor management and low output. Combined with the content of the interview, most of the interviewees, that is, agricultural entities, enjoy the

guarantee of the leading enterprises because they join the entire agricultural industry chain, which reduces the difficulty of repayment, but there is still a certain risk of repayment.

4 EMPIRICAL ANALYSIS AND RESULT INTERPRETATION

Based on the research data, this paper establishes a regression model with loan quota, loan interest rate, and repayment period as dependent variables. The analysis finds that the entire agricultural industry chain has a significant impact on the loan quota of financing entities. By clarifying the specific influencing factors and salient features of loan lines, this paper evaluates the mechanism of the influence of the entire industry chain on the financing of agricultural entities. Since the explanatory variable loan amount changes are classified and ordered

variables, this article uses the more widely used multi-point ordered Logit (logistic) regression for analysis, and the regression model is in the form of:

$$Logit = Ln \frac{p_1 + \dots + p_j}{1 - (p_1 + \dots + p_j)} = \alpha_j + \sum \beta_j x_j, \quad j = 1, 2, \dots, j$$

In the evaluation model of loan quota impact mechanism based on logistic regression analysis, the dependent variable is the degree of loan quota change. The independent variables are age, family population, education level, income, type of agricultural business entity, whether to join the whole industry chain, whether the loan depends on the industry chain, interest rate, repayment period, loan amount, and whether it is difficult to repay. In order to improve the parameter estimation accuracy of the regression equation through the maximum likelihood estimation method of the overall equation, the heteroscedasticity robust standard error method is used to correct the corresponding variance of the estimator.

Table 3: Stepwise regression diagram.

	quota			
join	3.603*** (0.933)	2.739*** (0.907)	2.431*** (0.889)	2.128** (0.836)
depend		2.05*** (0.675)	2.359*** (0.694)	2.612*** (0.652)
difficulty			1.172** (0.525)	1.438** (0.583)
member				-0.615** (0.310)
rate				0.059 (0.271)
time				0.385 (0.369)
income				0.172 (0.317)
age				0.319 (0.339)
Edu				-0.511 (0.362)
type				-0.173 (0.292)
obs	84	84	84	84

Note: "()" is the standard deviation, *p<0.1, **p<0.05, ***p<0.01.

The explanatory variables are gradually introduced into the initial regression model. Introducing join, the variables pass the z test with a significance level of 1%, showing a significant positive correlation, indicating that joining the entire agricultural industry chain can significantly increase the loan line of the financing entity. Introducing depend, the variables pass the z test with a significance level of 1%, showing a significant positive correlation. This means that compared with entities that do not rely on the industrial chain, the loan amount that relies on the industrial chain will be higher. The industrial chain helps the credit enhancement of financing entities, thereby obtaining a higher amount of loans. Introduce difficulty and

pass the z-test with a significance level of 5%, which shows a positive correlation. It means that the increase in the loan amount does not significantly increase the difficulty of repayment, and the difficulty of repayment is not related to the loan amount. Through interviews, it was learned that repayment is more difficult due to other factors such as weather and unstable prices of agricultural products. Introducing other variables, member passes the z-test with a significance level of 5%, which shows a negative correlation. It means that the growth of the family population is inversely proportional to the loan amount, which is of little practical significance; Among them, there is no significant relationship between interest rate and loan line. Since

interest rates are mostly uniformly regulated by banks or the government, the range of changes is small and will not have a significant impact on loan lines. Since the main objects are mostly ordinary farmers, the income gap is not large, and there is no significant relationship. In addition, there is no significant relationship between the type of agricultural entity, the repayment period, age, education level and the loan amount.

In general, with the introduction of different variables, the existing variable coefficients and standard deviations have gradually decreased. Depend has the greatest impact, with a coefficient of as high as 2.612, indicating that the loan line relying on the entire industry chain has increased significantly; The second is join, with a coefficient of 2.128. It proves that the entire agricultural industry chain does significantly help solve the dilemma of agricultural financing. Especially for small-scale agricultural entities with small income gaps and similar conditions. The resource integration effect brought by the industrial chain can produce a "1+1>2" effect, helping small and micro farmers to raise funds. However, the increase in the loan amount will not increase the difficulty of repayment. The problem of difficulty in repayment is mainly due to natural disasters and unstable prices of agricultural products. The entire agricultural industry chain should provide more help in increasing farmers' income and repayment.

5 CONCLUSIONS AND RECOMMENDATIONS

Compared with entities that make loans in the name of individuals, agricultural business entities that participate in and rely on loans for the entire industry chain have a higher loan amount and are more secure, but the problem of difficulty in repayment has not been effectively resolved. Based on this, this article puts forward corresponding countermeasures and suggestions.

5.1 The Government Attracts Investment and Establishes a Financial Innovation Team for the Agricultural Industry Chain

Local governments can sign investment cooperation contracts with external companies with strong capital and rich experience. Companies such as Pinduoduo, JD.com, and Suning are all accelerating the

deployment of "Internet +" agricultural products projects. The establishment of a multi-level, wide-coverage, and sustainable rural financial system that adapts to the characteristics of "agriculture, rural areas and farmers" should be accelerated. Including the establishment of an agricultural industry financial innovation team. At the same time, the government should actively assist enterprises in handling project-related administrative licenses, implement preferential subsidies for all links of the industrial chain, and implement dynamic management. The fiscal policy, taxation policy, industrial policy, financing policy and other policy resources are more inclined to projects with better development prospects and profitability.

5.2 Strengthen the Training of Farmers and Encourage Self-Employed Farmers to Participate in the Entire Industry Chain

Most farmers are still under the economic system of small farmers, with little self-owned arable land, self-produced and self-marketed, unstable market, and weak risk prevention capabilities. The government can strengthen publicity through local grassroots cadres, encourage farmers to participate in the entire agricultural industry chain, and stimulate the enthusiasm of all participants in the entire industry chain. Part of the farmers participating in the entire local industrial chain are satisfied with the purchase money of the counterpart assistance company, the scale of planting is small, and their income has not increased significantly. The government should unite leading enterprises to increase the training of farmers to improve their income and ability to resist risks.

5.3 Promote Farmers' Income and Solve the Problem of Repayment

Based on the integrated circulation model of production and marketing based on the entire industry chain, the extensive integration of agricultural self-employed. Unblocking stable sales channels is conducive to improving the efficiency of agricultural operations, improving the efficiency of agricultural product circulation, enhancing the ability of agricultural product enterprises and individual farmers to resist risks, and providing stable order income. A stable source of funds can prompt farmers to reduce the difficulty of repayment based on the expansion of production financing; Increase the training of farmers in production technology, promote farmers' income and reduce financial

pressure; Upstream enterprises should provide guidance on farmers' financing and production increase behaviors to achieve the most suitable level and avoid blind expansion.

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