

## Demand Intentions and Contributive Factors of Mortgage Loan for Land Contractual Management Rights from the Farmers' Perspective

Xiaoyan Zhang

Xijing University 710123

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**Abstract:** The study mainly investigates the farmers' intentions in the rural land contracted mortgage loan in the pilot area in the form of questionnaire survey. A total of 287 households in Xi'an and Xian yang have been randomly selected as samples, and the Logistic model has been applied to analyze the farmers' demand for and influencing factors on the mortgage loan on rural land contractual management right. The results show that the educational level of farmers, the area of contracted land, and the degree of understanding of policies are in positive correlation with the demand for mortgage loans on farmers' land contractual management rights; while the age of farmers is negatively correlated with the demand for mortgage loans on farmers' land contractual management right. Accordingly, the corresponding countermeasures and suggestions are put forward.

### Introduction

In 2019, the Central Document No.1 released by the Central Committee of the CPC and the State Council Central Government, has focused on the "three rural issues: agriculture, rural areas and peasants" for 16 consecutive years. Among them, the lack of funds for farmers and the inability to mortgage farmers' assets have seriously restricted the development of the rural economy. The mortgage loan on farmers' land contractual management right has been under trial for more than nine years. However, the effect is still to be explored. The current research in this field mainly focuses on the risk research of mortgage loans: Wang et al. believes that the laws and regulations are in great conflict, and it's hard to measure the collateral value; thereby, it's highly risky in achieving mortgage loans<sup>[1]</sup>; Lan and Liu summarize it as institutional risk, agricultural management risk, agricultural land disposal risk and people's livelihood risk<sup>[2]</sup>; Tong concludes it as transfer risk, trading risk and moral hazard<sup>[3]</sup>; and Zhou believes that the failure of farmers to pay their due debts to financial institutions is a core risk<sup>[4]</sup>. Besides, scholars have also put forward suggestions for avoiding risks in response to the above-mentioned risks: prudently choosing the land contractual management right for mortgage loan and reasonably measuring the value<sup>[5]</sup>, registering the rights to the agricultural land management<sup>[6]</sup>, establishing a financial supervision mechanism for land and a guarantee risk dispersion mechanism<sup>[7]</sup>, strengthening the construction of the rural land transfer market, and improving the system and organizational structure of the comprehensive "trinity" development<sup>[8]</sup>. After analyzing the existing literature, we have found that the researches are mainly based on law, but rarely on economy; the risks in practice have been pointed out, but no analysis is made on their internal relationship; and only a few scholars including Yu Lihong have made the analysis of risk influencing factors. Therefore, the study makes use of the survey data of farmers in pilot districts and counties in Shaanxi Province to study the risks and influencing factors of farmland management rights' mortgage loans from the perspective of farmers. This is of great theoretical and practical significance to formulate relevant policies and procedures for the mortgage rights to agricultural land management.

### 1. Data source and sample description

The author has selected the mortgage loan rights to agricultural land management in the pilot districts and counties of Shaanxi Province as the samples for survey. The survey is mainly composed of the following four aspects: 1. The personal information, age, gender and education level of the farmers; 2. Farmers' households: family income, population, main labor force, cultivated area, etc.; 3. Farmers' willingness to mortgage the rights to manage agricultural land: whether they agree to mortgage,

understand the relevant policies and procedures for farmland management rights' mortgage; a total of 1200 questionnaires have been issued with 1149 valid ones taken back, an effective rate of 95.75%. According to the valid questionnaires recovered, the study statistically describes and analyzes the relevant data. The results are shown as follows:

## 1.1 Analysis of the personal information about the farmers

### 1.1.1 Age of the farmers involved

According to the results of the questionnaires, we can see that 64 of the 1149 farmer households under investigation are under the age of 30, accounting for 5.57%; 306 households are ranging between 30 and 40 in age, accounting for 26.63% of the total; 551 households between 40 (inclusive) and 50 in age, reaching up to 47.95% of the total, and this group is also with the highest number among the total; farmers over 50 (inclusive) years old are 228, accounting for 19.84%. In this regard, we can see that the age of the farmers involved varies mainly from 40 (inclusive) to 50 years old; the proportion of males under investigation exceeds that of females, with the males accounting for 57.47% and the females accounting for 42.53%. A table showing the age of involved farmer households is as follows.

**Table 1.** Statistics of the age of the farmer households involved

Age	<30	30(inclusive)-40	40 (inclusive) -50	>50	Total
Number	64	306	551	228	1149
Proportion (%)	5.57%	26.63%	47.95%	19.84%	100.00%

### 1.1.2 Education level of the farmers involved

Through field research, we found that the education level of farmers can have a certain impact on whether farmers will use land management rights to obtain mortgage loans. According to Table 2 and Figure 2, we can see that among the 1149 farmer households, there are 376 households with primary education or below, accounting for 32.72%; and 498 farmer with junior high school education, reaching 43.34%; 213 farmers with high school education (including vocational high schools and technical secondary schools), accounting for 18.54%; 62 farmers with junior college education or above, only accounting for 5.40%. According to statistics, the education level of the households involved concentrates on junior high schools or below, indicating that the educational level of farmers in the sampled area is generally low.

**Table 2.** Statistics of the education level of farmers involved

Education level	Primary school or below	Junior high school	High school	Junior college or above	Total
The number of	376	498	213	62	1149
proportion (%)	32.72%	43.34%	18.54%	5.40%	100.00%

### 1.1.3 The main income source of the farmer households involved

Through the statistics of the taken-back questionnaires, we can see that in terms of the main income source of the farmer households involved, 403 households are in the planting industry, accounting for 35.07%; 186 households in the breeding industry, accounting for 16.19%; 215 households engage in individual businesses, accounting for 18.71%; 324 households work in the cities, accounting for 28.20%; and 21 households belong to the others, accounting for 1.83%. According to statistics, the main income source of farmers is not just farming, and non-farm income has been playing an increasingly important role in farmers' life. A large number of rural laborers has begun to gradually transfer to the secondary and tertiary industries. Farmland left uncultivated or contracted serves as a certain economic foundation and realistic appeal for the mortgage loans on the rural land management rights, becoming one of the important prerequisites for farmland mortgage loans.

**Table 3.** Statistics of the main income source of farmer households involved

Main income source of household	Planting industry	Breeding industry	Individual business	Work in cities	Others	Total
Number	403	186	215	324	21	1149
Proportion (%)	35.07%	16.19%	18.71%	28.20%	1.83	100.00

### 1.2 Understanding of the farmers involved on the mortgage loans on land contractual management rights

According to the different levels of understanding of farmers involved on the mortgage loan policies to the rural land contractual management rights, three levels are given, that is, “known”, “known a little” and “completely unknown”. There are 224 households belong to the first level, accounting for 19.50%; 754 belonging to the second level, accounting for 65.62%, the largest; 171 belonging to the third level, accounting for 14.88%. The results show that most of the farmer households stay at the level of “known a little”, indicating that the mortgage loan policy is unfamiliar to the farmer households. The main reason may be that financing mortgage loans on rural land contractual management rights is new to the farmers, who have almost no other ways to understand it except for the propaganda of village cadres or neighbors.

**Table 4.** Statistics of farmers' understanding of the mortgage loan policy on land contractual management rights

Understanding level	Known	Known a little	Completely unknown	Total
Number	224	754	171	1149
Proportion (%)	19.50%	65.62%	14.88%	100.00%

## 2. Analysis of Farmers' Willingness Based on Binary Logistic Model

In this paper, 300 questionnaires were distributed in five districts and counties in Xi'an, Xian yang City, Shaanxi Province, Which had already carried out rural land contractual management mortgage business, Among them, 287 valid questionnaires were recovered, with the efficiency as high as 95.66%.

This paper mainly studies whether farmers are willing to contract the right to operate land for mortgages, generally only two cases: willing or unwilling. This is a qualitative dichotomous variable. In this paper, the explanatory variable (Y) is the potential for the loan. This non-metric variable and only two states. Y only takes 1 and 0 two values, the farmer is willing to participate in land mortgage when Y = 1, it does not want to participate when Y = 0, The variable is interpreted as a discrete random variable. Therefore, this paper uses binary logistic regression model to analyze it. The general form is:

$$\log\left(\frac{P_i}{1-P_i}\right) = \alpha + \sum_{j=1}^n \beta_{ij} X_{ij} + \mu (i = 1, 2, 3 \dots, n) \quad (1)$$

In the formula,  $P_i$  is for the first farmer has the probability of land contractual management of the probability of mortgage,  $\alpha$  as a constant,  $X_{ij}$  is for the impact of the first farmer land contractual management rights of the various,  $\beta_{ij}$  is the corresponding coefficient  $\mu$  is for the random error.

### 2.1 The Selection and Description of Variables

Based on the existing research and taking into account the basic characteristics of farmers, the situation of borrowing and the status of farmland mortgage policy in the region, the following variables are chosen as explanatory variables.

**Table 2.1.** Dependent variables and assignments that may affect the willingness of the land contractual to be landed

Variable name	Code	variables assignment	Expected impact
Whether it is willing to	Y	1=willing; 0=unwilling	

participate in farmland mortgage				
Age of visited farmer	X1	1= <30; 2=30-40; 3=40-50;4=> 50		-
Gender of visited farmer	X2	1=male; 0=female		+
Cultural level of farmers surveyed	X3	1=Primary school and below; 2=junior school; 3=High school; 4=College		+
Occupational Types of Peasant Households	X4	1=Pure agriculture; 2=Agriculture and industry,3=Non-agricultural-oriented and concurrently; 4=Pure non-agricultural		+
Family annual income	X5	1= <30,000; 2=30,000-50,000; 3=50,000-100,000; 4=> 100,000		-
Family main source of income	X6	1=crop farming; 2=Aquaculture; 3=Self-employed; 4=go out for work; 5=other		-
Scale of cultivated land	X7	1= <10mu; 2=10-30mu; 3=30-50mu; 4=> 50mu		+
Whether contract the land	X8	1=contract; 0=No contract		+
Whether there is a borrowing demand	X9	1=yes; 0=No		+
Understanding of Farmland Mortgage Policy	X10	1=Very well undertood; 2=A little understanding; 3=Completely ignorant		+

Note: "+" represents a positive impact on the willingness of farmers to participate in land contractual management mortgage loans; "-" indicates that this factor have a negative impact on farmers' willingness to participate in land contractual management mortgage.

**Table 2.2.** Descriptive characteristics of variables

Explanatory variables	Minimum value	Maximum value	Mean	Standard deviation
Age of visited farmer	1	4	2.18	1.03
Gender of visited farmer	0	1	0.54	0.50
Cultural level of farmers surveyed	1	4	2.38	0.95
Occupational Types of Peasant Households	1	4	2.62	1.05
Family annual income	1	4	2.55	0.83
Family main source of income	1	5	4.14	4.49
Scale of cultivated land	1	4	1.88	1.40
Whether contract the land	0	1	0.30	0.46
Whether there is a borrowing demand	0	1	0.33	0.47
Mortgage Policy	1	3	2.26	0.62

## 2.2 Analysis of Metrological Regression Results

In this paper, we use measurement software SPSS 22.0 to measure the survey samples. According to the characteristics of the model, we select the "binary logistic" regression model analysis in the regression model analysis. And replace all the independent variables and dependent variables into the regression equation mentioned above in the equation, the significance of the regression coefficient is examined.

According to the results of SPSS 22.0, the closer the P value of the simulation test is to 0.0000, the better

the fitting effect is. The more the explanatory variable, the closer the P value, the better the fitting effect. Moreover, the regression coefficient is positive, independent that the independent variable has a positive effect on the dependent variable, the regression coefficient is negative indicating that the independent variable has negative impact on the dependent variable.

**Table 2.3.** Return Land Contracting management mortgage return results

Explanatory variables	B	S.E.	Wald	df	Sig.
Age of visited farmer (X1)	-0.580**	0.410	2.000	1	0.047
Gender of visited farmer (X2)	-0.022	0.248	0.008	1	0.931
Cultural level of farmers surveyed (X3)	0.060**	0.128	0.218	1	0.041
Occupational Types of Peasant Households (X4)	-0.056	0.117	0.227	1	0.633
Family annual income (X5)	-0.088	0.145	0.363	1	0.547
Family main source of income (X6)	0.029	0.027	1.158	1	0.282
Scale of cultivated land (X7)	-0.026	0.092	0.079	1	0.778
Whether contract the land (X8)	0.292***	0.266	1.206	1	0.002
Whether there is a borrowing (X9)	-0.199	0.260	0.588	1	0.443
Understanding of Farmland Mortgage policy (X10)	0.457**	0.198	5.297	1	0.021
Constant	-0.210	0.368	0.325	1	0.568

Note: \*\*\* indicates significant at 1% level, \*\* indicates significant at 5% level and \* indicates significant at 10% level.

Table 2.3 is the result of regression analysis of 287 valid samples retrieved by the measurement software SPSS 22.0. From the result obtained from the model, the overall fitting effect is consistent with the test, the model is applicable, and the following specific analysis of each factor Impact on Farmers Participation in Rural Land Contractual Mortgage Business.

(1) The regression of farmers age(X1)  $B=-0.580 < 0$ ,  $P=0.047 < 0.05$ , through the 5% basis of the significance level test, indicating that the age of farmers for their participation in rural land contract management rights mortgage Loan business has a negative impact, that is, the older farmers, the more reluctant to participate in farmland mortgages, mainly because with the growth of farmers age, the risk can be less and less, the older farmers, the more Do not want to take more risks, so do not want to participate in agricultural land mortgage business.

(2) The regression coefficients of farmers education (X3)  $B = 0.06$ ,  $P = 0.041 < 0.05$ , and the significance level test on the basis of 5% shows that the education level of farmers is related to rural land contract The higher the cultural level of the farmer, the stronger the willingness to participate in the farmland mortgage business, mainly because the higher the cultural level of the farmers, the stronger the ability to accept new things, rural areas Land contracting mortgage business is a new thing, the higher the degree of education of farmers more receptive capacity.

(3) The regression coefficient  $B = 0.292$  and  $P = 0.002$  of the contracted land or not (X8), and the significance level test on the basis of 1% shows that whether the contracted land of the farmer is involved in the rural land contract management The mortgage business has a positive impact, indicating that the contracted land farmers are more willing to participate in the rural land contract, management mortgage business, mainly because the contractor a large number of land contract management mortgage business, mainly because the contractor a large number of land farmers need more funds, need to seek loans, and its expected land contract Income is able to repay the loan, so more willing to participate in the land mortgage business, on the contrary, are reluctant to participate in the business.

(4) The Understanding of rural land contract management mortgage policy (X10) regression coefficient  $B = 0.457$ ,  $P = 0.021$ , through the 5% on the basis fo the significance level test, that farmers understand the agricultural land the mortgage policy is positive for its participation in the rural land contract management

mortgage business, the more understand of the policy, the more willing to participate in rural land contract management mortgage business, because farmers are often willing to support their understanding of things, while knowing that Bear the risk, in this premise, farmers are more willing to participate in the land mortgage business, if they do not know, do not want to participate.

### **3. Research Conclusions and policy Recommendations**

In this paper, the binary logistic model is used to analyze the willingness of 287 households in Xian Yang city, Shaanxi Province and Xian yang city, the following conclusions are drawn: (1) Farmers' willingness to contract land is limited by many factors the influence of the independent variables chosen in this on the contracted land management right is different in different directions. (2) In the influencing factors, the educational level of the farmer, the area of the contracted land , the degree of understanding of the policy and the willingness to contract the land management right mortgage demand are positively related, and the farmers age and the contractual land management right mortgage demand will be negative related.

In order to solve the problem of farmers' loans. the paper puts forward the following suggestions; First, let the farmers according to the principle of legally paid, fair and voluntary, and transfer the land management right to raise the farmers income. The second is to “promote the transfer structure” as a means to enhance the value of farmers land mortgages. Revitalize the financial institutions of the stock funds to promote agricultural economic growth. Third, to further improve the contractual land management right mortgage system and operating mechanism, standardize the loan procedures increase the amount of loans, a reasonable determination of the loan period, to ensure that the contractual land management mortgage business continued steady development. Fourth, improve the level of social protection of farmers. Farmers have been regarded as the basic agricultural means of production and living security resources, restricting the farmers to obtain contractual land management mortgage loans.

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