

# Model Research and Application of Land Contract Right Transfer Problem

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**Abstract:** Agriculture has always been the focus of China's economic development, land is the foundation of agricultural development, and the transfer of land contract management right is the core of the land issue. The current land contracting method in China is average and scattered. The right to the contracted management of land circulation, therefore, is to adapt to the demands of the development of rural productivity, also can satisfy the need of scale operation of land, and through right to the contracted management of land circulation so as to realize the moderate scale management of land, is of positive significance to promote the development of modern agriculture in our country. This article adopts the way of sample point's survey questionnaire, through the model establishment, and connecting with the SPSS software on the analysis of real data, results show that the individual characteristics of peasant household and the family farm income significantly affect land outflow and inflow. The farmers with the higher education degree have a strong desire for land transfer, and the farmers with larger agricultural income in the household income have a lower willingness to transfer land.

## 1. Introduction

"Land is the foundation of all things" [1]. As a kind of natural production data and the scarcity of non-renewable resources, land is the material foundation to the survival of humans and the premise condition, but the real meaning of land use is given by the human society. Therefore, all the countries and nationalities entering the civilized society have made beneficial exploration of the property right and ownership of land, and attach great importance to land development and utilization and management control [2].

After the third plenary session of the eleventh central committee established the household contract responsibility system, the land system in China's rural areas became: collective ownership, peasant household contract management. The land system separated by the three rights (ownership, right to use and usufruct) has improved the agricultural land allocation efficiency [3] [4], which make the land circulation active and more conducive to the optimal allocation of land. However, as the land change frequently, tensions between people, has the right to the contracted management of land users not smooth [5] [6], autonomous, paid to transfer, lease and mortgage of land, which greatly hindered the development of land circulation market and perfect. So must to the problem of rural land in the rural areas to develop various forms of scale operation, establish and improve land management rights



transfer market [7], perfect the rural county level 3 service system and information management network, for conditional farmers circulating contracted land management rights to provide a good external environment[8] [9].

## 2. Data sources and research methods

### 2.1 Research data source

In order to better understand the transfer of land contract management rights in Juxian township, especially farmers' willingness to transfer land, the author visited several villages in Juxian township to conduct field research. In this study, the method of random sampling was adopted to carry out the household interview on the willingness of farmers to transfer the right of land contracting and management, and the questionnaire was distributed. In-depth interviews were conducted with agricultural enterprises and government staff in order to understand their views on land transfer. The key area of the survey is the large scale of land transfer and the diversified agricultural production of Qinggang village. This survey selected 120 households from 587 households in Qinggang village as samples. In addition to Qinggang village, the author also visited the oil house village of Juxian township, the Shaojiaoya village, the great Berlin village, happy ling village and the stone village, and distributed questionnaires and interviews, 150 copies.

### 2.2 Survey sample data individual characteristic index

According to the sample data of this survey, the individual differences among farmers are larger. Among the farmers interviewed, the majority of the farmers were mainly male, with 193 people, accounting for 71.4% of the total sample. In terms of age, the number of people aged between 46 and 60 was the largest, accounting for 43.3% of the total sample, with the maximum age being 82 and the youngest being 21. The cultural level of the interviewees was the highest among the undergraduates, with 2 people, the lowest of which was illiterate with no system education, 25 people, accounting for 9.2% of the total sample. Most of the interviewees were primary and middle school culture, with 185 people, accounting for 68.5%. The high school with higher education level and above will be the new farmer of our country to develop modern agriculture. The main occupations of the farmers are mainly pure agriculture (crop farming, forestry and fishery), with 173 people, accounting for 64% of the total sample, and 52 of them are farmers, accounting for 19%. See table 1 for details.

**Table 1.** Individual characteristics situation of sample data (N=270)

index	option	sample size	proportion
gender	Male	193	71.4%
	Female	77	28.6%
age	20-30	37	13.7%
	31-45	65	24.0%
	46-60	117	43.3%
	Above 60	51	18.8%
schooling	Illiteracy	25	9.2%
	primary school	98	36.2%
	junior high school	87	32.2%
	More than a high school	60	22.2%
occupations	Agriculture	173	64.0%
	Multiple occupations farming	52	19.0%
	Other	45	16.6%

## 3. Model building

### 3.1 Research hypothesis and variable selection

In this paper, the willingness of farmers to discharge their land and the willingness of inflow will be analyzed and analyzed. Farmers' land circulation will undoubtedly influenced by many factors and

constraints, and rural land income not only has a direct relationship [10], the farmers also and individual characteristics, such as age, education level and degree of dependence on land, there is a close relationship. Of course, the perfection of rural land transfer market is also an important factor [11]. Therefore, this paper selects these factors as the independent variables for the study.

The gender, age, education degree and occupation 4 variables were selected in the individual characteristics. The proportion of agricultural income, the main source of income, and whether to participate in the three variables of new farmers are selected in the family. The variables selected by the external factors of land transfer are the three variables of land transfer, the life of land transfer and the contract form of land transfer. In other aspects, it is selected whether there is a land transfer intermediary to organize one variable, and the variables of 11 dimensions are analyzed to analyze the relevance of these variables to the transfer intention of farmers' land contract management rights. The detailed study hypothesis is shown in table 2:

**Table 2.** Select the argument and hypothesis

variable	research hypothesis
gender	1. Men's land outflows and inflows are stronger than women's
age	2. The older farmers are less willing to transfer land than the younger ones
schooling	3. The higher the degree of education, the stronger the farmers' land transfer will be
occupations	4. Farmers engaged in pure agriculture are less willing to transfer land than those who are mainly engaged in non-agriculture
The proportion of agricultural income	5. The larger the land is to the family economy (i.e. the higher the proportion of agricultural income in the household income), the weaker the land transfer will of the farmers
The proportion of family income	6. Other rural households with income from work are more willing to transfer their land than the farmers whose main income comes from land cultivation
Whether to join the new farmers	7. Farmers who participated in social security were more willing than those who did not participate in social security
Regional land transfer situation	8. The better the land transfer situation in the region, the stronger the willingness of farmers to transfer land
Length of land transfer	9. The longer the age of land transfer will weaken the will of farmers' land transfer
Land transfer contract form	10. The more standardized the land transfer mode, the stronger the intention of land transfer
Whether any land transfer intermediaries	11. With land transfer intermediaries, farmers are more willing to transfer land

### 3.2 Model building

The land transfer intention of the farmers is willing and unwilling to be two cases, is a qualitative dichotomy variable, so Logistic regression analysis is used to analyse the farmers' land transfer intention. Logistic model is often used in statistics to analyse the dichotomous variables of dependent variables. It is an ideal model for analysing individual decision behaviour. The basic form is:

$$p = \frac{\text{Exp}(Z)}{1 + \text{Exp}(z)} \quad (1)$$

In the equation, Z is the independent variable  $X_1, X_2 \dots$  Linear combination of  $X_i$ :

$$Z = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n = b_0 + \sum b_iX_i \quad (2)$$

In the statistical analysis of SPSS, the probability of land transfer is set as  $P(Y=1)$ , and the probability of land transfer is not  $1-P(Y=0)$ . In Logistic regression analysis, the Logit transformation of P is usually expressed as:

$$\text{Logit}P = \ln\left(\frac{P}{1-P}\right) \quad (3)$$

After Logit transformation, the linear expression between the probability function and the independent variable is:

$$\text{Logit}P = \ln\left(\frac{P}{1-P}\right) = b_0 + \sum_{i=1}^n b_i X_i \quad (4)$$

The assignment and sample of variables and independent variables are shown in table 3.

**Table 3.** The situation of assignment arguments

explaining variable	Variable meaning
<b>1. personal feature</b>	
gender(X <sub>1</sub> )	1=male; 0=female
age(X <sub>2</sub> )	1=20-30; 2=31-45; 3=46-60; 4=60
schooling(X <sub>3</sub> )	1= illiteracy; 2= primary school; 3= junior high school; 4= More than a high school
occupations(X <sub>4</sub> )	1=agriculture(Planting, forestry, fishery); 0=other
<b>2.family feature</b>	
The proportion of agricultural income(X <sub>5</sub> )	1=75%-100%; 2=50%-75%; 3=25%-50%; 4=below25%
The proportion of family income(X <sub>6</sub> )	1= The land farming; 2=other
Whether to join the new farmers(X <sub>7</sub> )	1=yes; 0=no
<b>3. external factor</b>	
Land transfer in the area(X <sub>8</sub> )	1=yes; 0=no
Length of land transfer(X <sub>9</sub> )	1=below1year; 2=1-3year; 3=4-9year; 4=above10year
Land transfer contract form(X <sub>10</sub> )	1= verbal agreement; 2= written contract
<b>4. Market development</b>	
Whether any land transfer intermediaries(X <sub>11</sub> )	1=yes; 0=no

### 3.3 Operation result

As stated earlier, this article is from the farmer's land and into two dimensions to analyse farmers' willingness to land circulation, using SPSS17.0 statistical software Logistic regression analysis was carried out on the sample data, see table 4 and table 5:

**Table 4.** The will of land out and argument of logistic regression analysis

	Coefficient B	Wald test value	S.E	Sig
X <sub>1</sub>	0.304	3.207	0.171	0.073
X <sub>2</sub>	0.335***	3.837	0.007	0.005
X <sub>3</sub>	0.317*	2.987	0.027	0.085
X <sub>4</sub>	-0.499	0.96	0.170	0.005
X <sub>5</sub>	-0.290***	5.266	0.096	0.002
X <sub>6</sub>	0.889	34.000	0.096	0.069
X <sub>7</sub>	0.076	0.201	0.119	0.284
X <sub>8</sub>	2.838***	61.996	0.229	0.006
X <sub>9</sub>	-1.677***	22.577	0.120	0.009
X <sub>10</sub>	0.328	0.524	0.098	0.339
X <sub>11</sub>	0.067	0.244	0.194	0.266
Constant	-3.632	19.260	0.658	0.002

Note: coefficient B: partial regression coefficient; Wald: test factor; S.E: standard error; Sig: significance test;- 2 Log Likelihood = 937.672;Cox & Snell R Square=0.200;Square Nagelkerke R = 0.272;Sig. = 0.000;Among them \*, \*\*, \*\*\*, respectively, are statistically significant in 10%, 5% and 1% respectively.

**Table 5.** The will of land in and argument of logistic regression analysis

	Coefficient B	Wald test value	S.E	Sig
X <sub>1</sub>	0.050	0.066	0.195	0.797
X <sub>2</sub>	-0.290***	3.837	0.009	0.007
X <sub>3</sub>	-0.027	0.035	0.030	0.034
X <sub>4</sub>	0.060	0.026	0.229	0.002
X <sub>5</sub>	0.197***	4.368	0.123	0.003
X <sub>6</sub>	-0.725	36.086	0.121	0.042
X <sub>7</sub>	0.121	0.909	0.185	0.189
X <sub>8</sub>	0.520***	5.172	0.229	0.002
X <sub>9</sub>	1.659***	9.004	0.190	0.007
X <sub>10</sub>	1.074	10.55	0.189	0.323
X <sub>11</sub>	-0.067	8.355	0.083	0.235
Constant	1.597	2.559	0.762	0.090

Note: -2 Log Likelihood=753.730; Cox & Snell R Square=0.103; Square Nagelkerke R = 0.163; Sig. = 0.000; among them \*, \*\*, \*\*\*, respectively, are statistically significant in 10%, 5% and 1% respectively.

#### 4. Conclusions

This study mainly draws the following conclusions:

(1) The transfer of land contract management rights in hilly areas is conducive to optimizing rural industrial structure and increasing farmers' income; it is helpful to optimize the land resource structure and realize the scale operation of land. It is beneficial to promote the construction of small towns and promote the transfer of rural surplus labor force. Therefore, in the context of the rapid development of rural economy and new rural construction, some positive measures are taken to promote the standard and orderly transfer of rural land contract management rights [12].

(2) Using the data from investigation, data analysis software SPSS analysis the wishes of farmers contracted management of land circulation, land outflow and inflow are influenced by many factors. In terms of individual characteristics of the farmers, the farmers of gender, age, level of education and the career will have an impact on its circulation, it's worth noting that the higher the level of education of farmers land circulation will more strongly, because of its strong employment skills, it is easy to obtain other benefits. The larger the proportion of agricultural income in the family, the more dependent the land is, the less willing to leave the land, and the farmers with non-agricultural income are more willing to leave the land [13]. Therefore, we should vigorously develop rural economy, increase farmer's non-agricultural income, and promote land standardization and orderly progress. Although whether to participate in social security[14], contract model and land circulation market development failed to pass the test of significance, but in practice must perfect the rural social security system, cultivating intermediary market for the circulation of farmland, to create a good social environment to promote the orderly operation.

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