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The Impact of Rural Labor Transfer Status Differences on Household Land Management Decisions

Linhong Wen[1], Siying Yao[2]

[1]School of Economics, Fujian Normal University, Fuzhou 350108, China
[2]College of Mathematics and Statistics, Fujian Normal University, Fuzhou 350108, China

Abstract: In the context of large-scale population mobility, this study investigated the effect of income substitution on land management decisions of peasant families. The results showed that: (1) Compared with the employees without fixed employers, the employment status of employees with fixed employers, self-employed workers and employers all increased the possibility of families choosing more socialized management modes such as farming generation and land transfer; (2) Employment identity difference plays a role in household land management decisions through income substitution effect.

Keywords: Income substitution effect, Employment status, Land management.

1. Literature Review and Research Hypothesis

1.1. Literature review and research hypothesis

There are abundant literatures on influencing factors of rural land management decision-making. Rural household land management decision-making and land use are affected by family situation, social network, policies, labor transfer and employment, labor gender and other factors (Li Zhong, 2013; Zhang Jing, 2014; Zhu Peixin, 2017; Yang Fang, 2019; Zhu Wenjue, 2020). Many scholars have also confirmed that migrant workers and non-agricultural employment are more inclined to adopt a higher socialization process to dispose contracted land management rights (Li Zhong, 2013; KUNG K,2002). However, after introducing the characteristics of labor market and agricultural production, it is found that there is no inevitable positive linear relationship between rural labor transfer, non-agricultural employment and farmland transfer (Liao Hongle, 2012; Zhu Peixin, 2016). Employment identity difference is an inevitable existence of labor employment, and the essential differences of economic capital and social capital brought about by employment identity effect continue to play an influential role in multiple dimensions such as time and space, and the influence effect has the "horse state effect". However, in the previous studies, the rural labor transfer employment identity, an important representation of labor transfer, was ignored. Based on the literature review in related fields, it is concluded that the difference of rural labor transfer employment status affects family land management decisions through income substitution effect.

Research hypothesis 1: Compared with employees without fixed employers, employees with fixed employers, households with self-employment and employer employment status are more inclined to the management mode of generation farming and higher socialization of land transfer.

Research hypothesis 2: Rural labor transfer employment status plays a role in household land management decision-making through income substitution effect.

2. Research Methods, Variables and Data

2.1. Data sources

The data in this paper are derived from the "2017 Dynamic Detection Survey Data of China's Floating Population (Floating Population Questionnaire Volume A)" released by the Floating Population Service Center of the National Health Commission, covering 31 provinces (autonomous regions and municipalities) and Xinjiang Production Corps. The survey included "male and female floating population aged 15 and above (born before April 2002) who have lived locally for more than one month and are not registered in the district (city or county)". In 2017, there were 169,989 valid samples for the population mobility survey. A total of 119,516 samples with agricultural hukou and rural domicile were selected by household registration and geographical location, among which 65,930 samples had contracted land and clear land. Finally, 55,440 effective research samples were obtained after the samples with contracted land in household registration hometown were selected and the missing values of variables were deleted.

2.2. Variable selection and description

1. Explained variable: family land management decision. According to the questions and processing of the 2017 National floating Population monitoring questionnaire, family land management decisions are divided into eight types: farming by themselves/family members, abandoning farmland, planting trees, hiring people to farm, farming by relatives, subleasing to private individuals, subleasing to village collectives, and subleasing to enterprises. Table 2 shows the frequency and proportion of eight different land management decisions. The analysis shows that among the families of rural labor transferred for employment, 52% of them choose to farm by themselves or their families, and the effective proportions of leaving farmland and planting trees are 7.1% and 1.5% respectively. The cumulative percentages of the three are more than 60%. This shows that more than 60% of the household land management subject still belongs to the family or family members, in the background of the new era family contract management is still the basic management

system of China, it is worth paying attention to the proportion of land abandoned among these families reached 7.1%. Secondly, the cumulative proportion of hiring people to farm on behalf of relatives and relatives to farm is 25%, and the proportion of relatives and relatives to farm is 23.4%. Under the background of the transfer of the main labor force in the family, it is one of the main choices to give the land to relatives and relatives to farm. Finally, the cumulative proportion of land transfer (including subleasing to private individuals, enterprises and collectives) was only 14.4%, among which subleasing was mainly to private individuals. The direct result of such behavioral preference may promote the emergence of large growers. On the whole, different family land management decisions differ greatly, the whole family land contract management is still the main.

Table 1. Management decisions of household contracted land

Land management decision		frequency	%	effective percentage	cumulative percentage
Family management	Farm by yourself/family	34280	52.0	52.0	52.0
	Abandoned farmland	4696	7.1	7.1	59.1
	Plant trees	968	1.5	1.5	60.6
Alternate farming and planting	Hire people to farm on behalf of other people	1027	1.6	1.6	62.2
	Family farming	15475	23.4	23.4	85.6
Land transfer	Sublet to private	8457	12.8	12.8	98.4
	Sublet to the village collective	778	1.2	1.2	99.6
	Sublet to business	249	0.4	0.4	100.0
	Total	65930	100.0	100.0	100.0

Explained variable classification and value assignment: This paper divides explained variable family land management decisions into three categories according to the standard of management subject. The first category is family management (including self-farming, abandoned land and planting trees). The management subject of the three management modes in such land management decisions belongs to family and family members, and the value of such management decisions is 1. The second category is generation farming (including hiring people to farm and relatives to farm). The main body of this mode of operation is the hands of employees and relatives other than family members, and the value of this kind of business decision is 2. The third category is land transfer (including subleasing to private, enterprise and collective operation modes). All the operational decisions of this category realize land transfer, and the management right is in the hands of large growers, enterprises or collectives. The value of such operational decisions is 3.

2. Explanatory variable: rural labor transfer employment status. Employment status is divided into four categories: employees without fixed employers, employees with fixed employers, self-employed workers and employers. From Table 2, it can be seen that most of the rural labor transfer employment samples belong to the employed, among which the proportion of employees without fixed employers reaches 46.7% and that of employees with fixed employers reaches 38.5%. The accumulation ratio of the two exceeded 80%. In contrast, the cumulative proportion of innovation and entrepreneurship (including self-employed workers and employers) is only 14.7%, and the proportion of employers is higher than that of self-employed workers.

Table 2. Employment status of rural labor force transfer

Employment status	Observed value	Marginal percentage
Employee without regular employer	25911	46.7%
Employees with regular employers	21342	38.5%
Self-employed workers	2960	5.3%
Employer	5227	9.4%
Total	55440	100%

3. Control variables. The individual characteristics of the labor force (age, gender, ethnicity, education level, political status, marriage), family structure, range of mobility, and occupation are taken as control variables. Meanwhile, the variables of the region where the family address is located are also controlled, so as to reduce the deviation caused by regional economic conditions. The specific variable definitions and statistics are shown in Table 3 and Table 4.

Table 4 shows that in the sample of families with labor transfer employment, the average family size is 3.30 people, and the average labor transfer employment ratio reaches 84%. Rural family labor transfer employment shows the characteristics of family. The average age of labor transfer is 37.5 years old, and most of them are married Han males. Most of the labor force only has high school education experience or below, and is in good health condition. They are mainly masses and have no significant political identity characteristics. The flow range is generally inter-provincial or intra-provincial and inter-municipal long-distance or relatively long-distance flow, and manufacturing and agriculture are the main industries.

Table 3. Variable definition table

Variable type	Variable name		Variable description	Questionnaire question method (corresponding to questionnaire question number)
Explained variable	Family land management decisions		1= Family operation (own/family, abandoned land, planted trees) 2= Substitute farming (hire people/relatives to farm) 3= land transfer (private/enterprise/collective)	Who cultivates your land? (107)
Explanatory variable	Core explanatory variable	Employment status	1= employees with a permanent employer 2= self-employed workers 3= employer 4= Employees with no permanent employer	What kind of employment status do you have now? (208)
	Family structure	Family size	Household size	How many people are there in your family, your spouse, your children and the family you live with? (Q100)
	Personal characteristics	Transfer to the employment-labor ratio	Floating population/family population	Obtained according to the basic information of A-N respondents' families
		gender	1= male, 0= female	Gender? (B)
		age	2017- Date of birth	Date of birth? (C)
		nationality	1= ethnic minorities, 0= Han	Ethnic group (D)
		Marital experience	1= Marriage experience (first marriage/first marriage/second marriage/divorce/death) 0= No marital experience (single/cohabiting)	Marital status (H)
	Core explanatory variable	Educational level	1= Never attended school 2= primary school 3= junior high school 4= High school/technical secondary school 5= junior college 6= graduate school 7= graduate student	Educational attainment (E)
		Political status	1= Party member 0= something else	J Is he a member of the Communist Party of China or the Communist Youth League? (G)
Control variable		Health self-assessment	1= healthy 0= unhealthy	How is your health? (401)
		trade	1= agriculture 2= service industry 3= manufacturing	What industry are you working in now? (206)
		Flow range	1= interprovincial 2= inter-provincial 3= inter-city	Current flow range (L)
		Family region	1= western region 2= Northeast China 3= Central region 4= eastern region	Classification of domicile (J)
		Urban integration intention	1= Completely disagree 2= disagree 3= basically agree 4= Completely agree	I would like to blend in with the locals and become one of them (503C)
		Transfer employment intention	1= Yes 2= No 3= not well thought out	Do you plan to stay here for some time? (314)
		income	Average monthly household income	What was the average monthly income of your family in the past year? (105)

Note: The eastern region includes Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan; The central region includes Shanxi, Anhui, Jiangxi, Henan, Hubei and Hunan; The western region

includes Chongqing Municipality, Sichuan, Yunnan, Guizhou, Shaanxi, Ningxia, Gansu, Qinghai, Xinjiang, Tibet, Inner Mongolia and Guangxi; The northeast includes Heilongjiang, Jilin and Liaoning provinces.

Table 4. Descriptive statistics

	N	Minimum value	Maximum value	Mean value	Standard deviation
Soil management mode	55440	1.00	3.00	1.53	0.73
Employment status	55440	1.00	4.00	1.77	0.92
Family size	55440	1.00	10.00	3.30	1.18
Current ratio	55440	0.11	1.00	0.84	0.24
gender	55440	0.00	1.00	0.62	0.48
age	55440	15.00	79.00	37.50	10.02
nationality	55440	0.00	1.00	0.08	0.27
marriage	55440	0.00	1.00	0.86	0.34
education	55440	1.00	7.00	3.18	0.99
Political status	55440	0.00	1.00	0.03	0.18
Health condition	55440	0.00	1.00	0.98	0.13
Work industry	55440	1.00	3.00	1.74	0.50
Flow range	55440	1.00	3.00	1.67	0.76
area	55440	1.00	4.00	2.29	1.13
Transfer employment intention	55440	1.00	3.00	1.33	0.72
Urban integration intention	55440	1.00	4.00	3.29	0.64
income	55440	1.00	4.00	2.23	1.23

2.3. Selection of measurement model

1. Regression of benchmark model: The impact of rural labor transfer employment status on household land management decisions

$$Flmd_i = \alpha + \beta_1 Es_{\ i} + \gamma X_{ic} + \mu_{ic} \quad (1)$$

2. Mechanism of the effect of rural labor transfer employment status on household land management

(1) Income substitution effect model (2.1-2.2) :

$$Ln(Income)_i = \beta_0 + \beta_1 ES_{\ i} + \gamma X_{ic} + \mu_{ic} \quad (2)$$

$$Flmd_i = \beta_0 + \beta_1 Inncome_{\ i} + \gamma X_{ic} + \mu_{ic} \quad (3)$$

In the above equation, Flmd (Family land management decision) represents the family land management decision choice of sample i. There are three choices and values, namely, family management (represented by 1), replacement farming (represented by 2), and land transfer (represented by 3), with family management as the reference item. Es(Employment status) represents the core variable: transferred employment status of family labor, which is divided into employees with no fixed employers (represented by 1), employees with fixed employers (represented by 2), self-employed workers (represented by 3), and employers (represented by 4). Employees with no fixed employers are taken as reference. Ln(Income) represents the logarithm of average monthly household income, X_{ic} represents a series of control variables affecting family land management decisions, and μ_{ic} represents the residual term.

The explained variables of models (1) and (2.2) are categorical variables, and there is no relationship between their values. Therefore, the logistic model is used for estimation. The dependent variable of model (2.1) is the average monthly household income, so multiple regression estimation is used.

3. Results and Analysis

3.1. The impact of labor transfer employment status on household land management decisions

1. Regression results of the benchmark model

Table 5 reports the model estimation results of the impact of rural labor transfer employment status on household land management decisions. It can be found that, from the perspective of influence direction, no matter the operation mode of substitute farming or land transfer is chosen, the regression coefficients of employment status of employees with fixed employers, self-employed workers and employers are all positive, respectively 0.004, 0.176 and 0.275, and the regression coefficients show an increasing feature. These results indicate that the positive marginal contribution of the three employment identities to the family's choice of generation farming and generation management mode is increasing. However, the influence of employment status of employees with fixed employers on household choice of land transfer behavior has not passed the significance test.

In summary, the above analysis verifies hypothesis 1, that is, compared with employees without fixed employers, employees with fixed employers, self-employed workers and families with employer employment status are more inclined to choose business modes with higher degree of socialization such as generation farming or land transfer, and the marginal effect among the three employment identities increases. In other words, the difference of rural labor transfer employment status promotes the change of household land management subject from family to employees, relatives and relatives, or realizes the transfer of management right through land transfer. However, the employment status of employees with fixed employers has no significant influence on family preference for land transfer.

Table 5. Logistic benchmark model regression results (reference category: family operation, the same below)

	Alternate farming and planting		Land transfer	
variable	Contant	Exp(B)	Contant	Exp(B)
An employee with a permanent employer	0.004***(0.039)	0.986	0.035(0.049)	1.035
Self-employed worker	0.176***(0.038)	1.210	0.088**(0.048)	1.092
employer	0.275***(0.056)	1.350	0.271***(0.068)	1.312
Family size	0.213***(0.010)	1.237	0.116***(0.013)	1.123
Labor transfer employment ratio	1.299***(0.049)	3.665	0.991***(0.059)	2.694
gender	-0.004**(0.022)	1.045	0.017(0.027)	0.984
age	-0.034***(0.008)	0.967	-0.056***(0.010)	0.946
Age squared	0.001***(0.000)	1.001	0.001***(0.000)	1.001
nationality	-0.126***(0.039)	0.882	-0.333***(0.054)	0.717
marriage	-0.025***(0.044)	0.778	-0.009(0.054)	0.991
Educational level	0.037***(0.012)	1.038	0.072***(0.015)	1.075
Political status	0.060(0.058)	0.942	0.045(0.071)	0.956
Health self-assessment	0.151**(0.075)	0.859	0.172*(0.095)	0.842
Service industry	-0.108*(0.064)	0.898	-0.019(0.080)	0.981
Manufacturing industry	-0.054(0.061)	0.948	-0.046(0.077)	0.955
Interprovincial flow	0.186***(0.029)	1.205	0.099***(0.035)	1.104
Inter-city flow within the province	0.164***(0.031)	1.178	-0.001(0.039)	1.001
Western region	0.298***(0.034)	1.348	-0.101**(0.043)	0.904
Northeast China	0.540***(0.052)	1.716	1.221***(0.053)	3.392
Central region	0.386***(0.034)	1.471	0.361***(0.040)	1.435
intercept	-3.265***(0.196)		-2.860***(0.237)	
Final minus 2 log likelihood		82705.764		
Degree of freedom		40		
significance		0.000		

Note: *, ** and *** respectively mean that the null hypothesis is rejected at the significance level of 10%, 5% and 1%. The data in brackets are standard errors.

3.2. The effect mechanism of labor transfer employment status on family land management decision-making

1. Income substitution effect

The second column of regression results in Table 7 firstly examines the relationship between different employment identities and average monthly household income. The results show that compared with the employment identities of employees without fixed employers, employees with fixed employers, self-employed workers and employers all pass the 1% significance test, and the regression coefficients are all positive and gradually increasing. These results indicate that the three employment identities have significantly increased the average monthly household income, the contribution of transfer employment to household income has increased, and the employer has the greatest effect on the increase of household income.

In order to investigate the correlation between household income and household land management decisions, the variable of average monthly household income was used as an independent variable to replace the variable of employment status in the baseline model for regression. The regression results are shown in the third to sixth columns of Table 6. The results show that there is a positive correlation between average monthly household income and the probability of household decision making on land management by substituting farming and planting and land transfer. That is to say, the increase of family income can significantly increase the probability of land management modes with higher socialization, namely, subtillage subcropping and land transfer. Compared with families with higher income level, the probability of subtillage subcropping and land transfer is 1.708 times and 2.416 times of that of family management. High-income families have a low dependence on land and a strong desire to transfer land. That is to promote the socialization of family land management by increasing family income to play the income substitution effect.

Table 6. Mechanism analysis of income substitution effect

Variable	Income of Ln	Alternate farming and planting		Land transfer	
		Contant	Exp(B)	Contant	Exp(B)
An employee with a permanent employer	0.086***(12.236)				
Self-employed worker	0.086***(12.759)				
employer	0.191***(41.042)				
Income of Ln		0.535***(0.048)	1.708	0.997***(0.059)	2.416
Family size	0.217***(48.712)	0.200***(0.010)	1.222	0.075***(0.013)	1.078
Labor transfer employment ratio	0.082***(20.435)	1.303***(0.0048)	3.679	0.930***(0.059)	2.536
Gender	0.004(1.086)	-0.046**(0.022)	1.047	0.015(0.027)	0.986
Age	0.300***(10.344)	-0.035***(0.008)	0.966	-0.063***(0.010)	0.939
Age squared	-0.396***(-14.178)	0.001***(0.000)	1.001	0.001***(0.000)	1.001
nationality	-0.030***(7.747)	-0.113***(0.039)	0.893	-0.314***(0.055)	0.730
marriage	0.155***(-29.742)	-0.285***(0.044)	0.752	-0.107**(0.054)	0.898
education	0.182***(41.169)	0.008(0.013)	1.008	0.027*(0.015)	1.027
Political status	0.009**(2.390)	0.048(0.058)	0.953	0.031(0.071)	0.969
healthy	0.051***(13.292)	0.103(0.075)	0.903	0.078(0.096)	0.925
Service industry	0.249***(22.531)	-0.252***(0.064)	0.777	-0.152**(0.080)	0.859
Manufacturing industry	0.226***(20.754)	-0.143**(0.062)	0.867	-0.151**(0.078)	0.859
interprovincial	0.190***(36.298)	0.136***(0.030)	1.145	0.008(0.036)	1.008
Within the province and across cities	0.091***(17.617)	0.139***(0.031)	1.149	-0.048(0.039)	0.953
western	-0.071***(-12.219)	0.302***(0.034)	1.352	-0.068(0.043)	0.934
Northeast China	-0.027***(-5.994)	0.532***(0.052)	1.703	1.252***(0.053)	3.497
Central part	-0.017***(-2.991)	0.393***(0.034)	1.481	0.374***(0.040)	1.453
Constant/intercept	3.014***(165.361)	-4.932***(0.242)		-5.935***(0.297)	
R squared after adjustment	0.210				
Final minus 2 log likelihood			93060.527		
Degree of freedom			36		
significance			0.000		

Note: t values are in parentheses in column 2, and standard errors are in parentheses for results in columns 3 and 5.

4. Conclusion

From the perspective of rural labor transfer identity difference embedded in the general background of population mobility, this paper obtains the impact of rural labor transfer employment identity difference on family land management decisions through the analysis of income effect. The research conclusion is that, under the background of population mobility, although rural family land is still mainly managed by family, However, a variety of management modes, such as substitution farming and land transfer, have been promoted and developed to some extent. The transfer employment status of rural labor has significantly affected the decision-making behavior of household land management. Specifically, compared with the employment status without fixed employer, The three employment identities of employees with fixed employers, self-employed workers and employers significantly increased the probability of households choosing more socialized management modes, such as generation farming and land transfer.

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