The Effects of Land Transfer on Household Income Structure and Regional Difference In China

Yifan Deng

School of Sichuan University, Chengdu 610000, China

Abstract

Based on the data of CFPS in 2018, this paper estimated the effects and regional differences of land transfer on the total income and income structure of rural households. The results show that: (1) Land transfer can significantly affect the total household income and household income structure of farmers. Land transfer out significantly increases the household wage income, property income and transfer income. (2) Land transfer in can significantly increase the operational income of farmers, reduce the wage income and property income of farmers, but not significantly increase the transfer income. The increase effect of household total income of farmers who transfer land out is significantly higher than that of farmers who transfer land in. (3) The elevating effect of land transfer on income has regional differences. The elevating effect of land transfer out on wage income of rural households in western China is greater than that in eastern China, and the elevating effect of land transfer in on operational income of rural households in eastern China is greater than that in western China.

Keywords

land transfer, Rural household income structure, PSM model, Regional difference.

1. Introduction

In 1978, China began to implement the household contract responsibility system in order to improve agricultural production efficiency and promote rural economic development. This system mobilized the enthusiasm of agricultural production at that time. Along with economic development, the agricultural production mode of fragmented land management under the household contract responsibility system has hindered large-scale land cultivation and agricultural mechanization, making it difficult to sustainably improve the productivity of agriculture. In 2014, China clearly proposed the "separation of contracting, management and ownership rights of rural land" and took the promotion of orderly land transfer and the development of moderate scale agriculture as an important measure for agricultural modernization. In January 2021, the official website of the Ministry of Agriculture and Rural Affairs released a new land transfer policy, "Measures for the Administration of Rural Land Management Rights Transfer", to further regulate the transfer of rural land management rights. With the support of a series of policies, the scale of land transfer in China has been expanding. According to data from the Ministry of Agriculture and Rural Affairs, as of 2021, 1,239 counties (cities and districts) and 18,731 townships nationwide have established markets or service centers for the transfer of rural land management rights, and the area of family contracted farmland nationwide has exceeded 37 million hectares.

With the increasing scale of land transfer, whether land transfer has an income-generating effect has also become a hot research area for many scholars. Most studies have focused on the impact of land transfer on the income level and income distribution of farmers, but there are still many different views on the effect of land transfer on farmers' income.

The article uses the household survey of the 2018 China Family Panel Studies (CFPS) as the data source to conduct a differential analysis of the impact of land transfer on the household income structure of farm households in the eastern and western regions of China.

2. Literature Review

2.1. Land transfer and total household income of farmers

Most of the current studies focus on the impact of land transfer on the total income level of farming households, dividing the farming households involved in land transfer in and land transfer out households , and exploring the impact of land transfer out and land transfer in on the income of farming households respectively. Most scholars believe that land transfer can significantly increase the total household income of farming households. Yangzi argues that the total household income and farm income of farmers who transferred in the land increased, but the income impact effect of farmers who transferred out the land was not significant[2]. Liu Guangying and Zhang Yongfeng argue that land transfer significantly raises the income level of farm households, and the income effect of transferred land out is higher than that of transferred land in[3][4]. Han Xiao believes that land transfer has a positive impact on the income of transferred in households, and the degree of impact is positively related to the area of land transfer, but there is no significant change in the income level of farmers who transferred out of the land[5]. Based on data from three impoverished provinces in China, Deininger and Jin found that the income of rural households with low initial endowments was most affected by land transfer[6]. In contrast, some other scholars argue that land transfer negatively affects the household income of farmers. Jiang Song points out that land transfer can promote agricultural scale operation, however, due to the imperfect land transfer mechanism, it reduces the household income of farmers instead[7]. Ke Lian believes that the transfer of rural land has not significantly improved the economic situation of farmers, and it is difficult to increase the per capita income of farmers[8].

2.2. Land transfer and household income gap of farmers

The impact of land transfer on income distribution and income disparity among farm households has also attracted the attention of many scholars. Some scholars believe that land transfer has widened the income gap among farm households. Guo Junping points out that the income increasing effect of transferred-in land is greater than that of transferred-out land, and that land transfer has widened the income gap between farmers in the eastern and central regions[9]. Deng Yuan, Du Xin, Shi Chang liang showed that land transfer has a significant promotion effect on farmers with higher initial income levels, but the income impact on farmers with lower initial income levels is not significant, thus widening the income gap of rural residents[10]-[12]. However, some scholars believe that land transfer has narrowed the income gap among farmers. Based on the survey data in Zhejiang, Zhang found that the agricultural income of land-transferred households has increased, which has increased the total household income of rural households at the low end of the income distribution, and is conducive to alleviating the income gap among rural households[13].Liu Zhizhong s research shows that land transfer can promote farm households to work in the non-farm sector and have a higher income enhancement effect on low-income farmers than high-income rural residents, thus reducing the income gap among rural residents[14].

3. Theoretical Analysis

In Marshall's "Principles of Economics", he pointed out that the benefits of large-scale production are most clearly expressed in industry. In China's agricultural development, how to find the optimal scale of operation and achieve economies of scale in agriculture has also been

in the exploration stage. The scale of land use largely affects the size of agricultural operations. The larger the scale of land, the larger the scale of agricultural operations and the greater the returns generated. The scale of land use largely affects the size of agricultural operations. The larger the scale of land, the larger the scale of agricultural operations, and the more agricultural returns farmers can obtain. When agricultural land is transferred, the two factors of production, land and labor, are reallocated, which has an impact on the income structure of farm households. Through the integration of scattered land, the farmers who participate in the land transfer in are conducive to the realization of large-scale agricultural production and mechanized farming. The production and operation efficiency of agricultural land will be significantly improved, and farmers will thus obtain a higher level of operating income. At the same time, farmers involved in land transfer in may receive subsidies for agricultural production from the government, thus increasing household transfer income. On the one hand, farmers who participate in land transfer out can obtain rental income through the transfer of land management rights, thereby increasing the family's property income. On the other hand, their surplus labor will be released from the agricultural sector and work in non-agricultural fields, thus increase family wage income. From the theoretical analysis, it is clear that the participation of farmers in land transfer increases their household income to a certain extent and affects their household income structure, and the income growth paths of transferred-out farmers and transferred-in farmers are also different.

Based on the above theoretical analysis, the following hypotheses are proposed:

H1: Land transfer affects the total household income and income structure of farm households

H2: The impact of land transfer on the income of farm households has regional differences.

4. Data and Methods

4.1. Data Sources and Index Selection

4.1.1. Data Sources

The source of research data is the family relationship data and family economic data of CFPS in 2018.The CFPS survey sample contains data from 31 provinces. In this study, data from 10 provinces in the eastern region and 12 provinces in the western region were selected for analysis, and rural households were chosen as the research objects, and extreme values and missing values were eliminated. In order to avoid the influence of data outliers, the data were also shrunken according to the upper and lower 1%, and finally 4536 valid samples were obtained, among which 2614 valid samples were included in the western region and 1922 valid samples were included in the eastern region.

4.1.2. Index Selection

(1) Explanatory variables

Whether or not they participate in land transfer corresponds to the questions in the questionnaire: "Do they rent out their land to others"; "Do they rent others' land". If the farmer participates in land transfer, it is recorded as 1, and the opposite is recorded as 0.

(2) Explained Variable

The explanatory variables of the article are the structure of household income, which are analyzed from four perspectives: "wage income", "operating income", "property income", and "transfer income". In the empirical analysis, the natural logarithm was taken after adding 1 to each income indicator. The total income indicator is denoted by ln_y, "Wage income", "operating income", "property income" and "transfer income" correspond to ln_y1, ln_y2, ln_y3, ln_y4 respectively.

(3) Control Variable

With reference to relevant literature, factors affecting farmers' land transfer behavior decisions as well as farmers' income were selected as covariates.，including family size, average age of the family, highest educational level of the family, total government subsidy, medical care expenditure, favor expenditure, value of agricultural equipment, total cash and deposits, self-employment or not, income from working outside the home. In the empirical analysis, the natural logarithm was taken after adding 1 to each indicator.

The descriptive statistical analysis of each variable is shown in Table 1.

Table 1. Variable description and statistical analysis

Variable Name	Non-transfer N=3319	Transfer N=1217	Transfer-out N=784	Transfer-in N=433
ln_y	10.267	10.477	10.506	10.425
ln_y1	7.973	8.127	8.391	7.649
ln_y2	4.318	3.894	2.978	5.552
ln_y3	0.286	3.694	5.539	0.354
ln_y4	5.319	5.805	5.91	5.615
fam_num	3.984	3.975	3.691	4.490
age	40.681	42.104	44.08	38.526
edu	1.188	1.217	1.286	1.092
ln_gov_sub	3.656	3.731	3.48	4.185
ln_heal_exp	6.98	7.466	7.465	7.468
ln_relat_fee	6.847	7.335	7.223	7.537
ln_agr_value	2.934	2.908	1.636	5.211
ln_cash	6.665	6.781	6.939	6.494
ind_oper	0.085	0.105	0.112	0.092
ln_work	5.51	5.403	5.231	5.715

4.2. Empirical Method

Propensity score matching (PSM) is used to measure the income effect of land transfer. The propensity score matching method can well solve the problem of selectivity bias of the sample. Since farmers make the decision of whether to participate in land transfer based on their own resource endowment, there is a sample selection bias. A direct regression of the equation would bias the estimation results. The propensity matching score can control the bias of the sample data and accurately estimate the income effect brought by land transfer to farmers by matching the income indicators of farmers who participated in land transfer when they were not involved in land transfer.

Assume that household income is a function of participation in land transfers and related covariates.

$$Y_i^D = \phi^D(Z_i) + \varepsilon_i^D \quad D = 0,1$$

Y_i^D denotes the farm household income of farm household i in the state of land transfer D. $\phi^D(Z_i)$ is a function of a series of covariates, and the covariates are selected as shown above. D denotes a dummy variable for whether farmers participate in land transfer, D=1 when they participate in land transfer, D=0 when they do not participate in land transfer, and ε_i^D is the residual term.

The steps of the study based on the propensity matching score principle are as follows:

In the first step, covariates were selected. Factors affecting farm household income and participation in land transfer were included in the model with reference to relevant literature.

In the second step, propensity matching scores were calculated. The Logit model is used to calculate the propensity score of farmer i to participate in land transfer, which is the conditional probability value of the farmer's choice of land transfer.

In the third step, propensity score matching was performed. The treatment group (farmers who participated in land transfer) was matched with the control group (farmers who did not participate in land transfer) based on the propensity score value, and the income levels of the matched samples could be approximated as the results of two different experiments for the same farmers.

In the fourth step, the average treatment effect was calculated. The average treatment effect contains three categories: first, the average treatment effect (ATT) of the treatment group, which is the average of the change in income level of the farmers who participated in land transfer. Second, the average treatment effect (ATU) of the control group, which is the average of the change in income level of farmers who did not participate in land transfer. Third, the average treatment effect (ATE) for the full sample, which is the mean of the change in income level of a random sample of farm households. Since the article focuses on the contribution of land transfer to the income level of farm households, it is more appropriate to analyze the mean value of the change in income level of farm households involved in land transfer, and therefore, ATT is chosen for the analysis.

$$ATT = E\ (Y_i^1 - Y_i^0)\ = E\ (Y_i^1/D = 1)\ - E\ (Y_i^0/D = 1)$$

Y_i^1 denotes the income level of farmer i when participating in land transfer, Y_i^0 denotes the income level of farmer i when not participating in land transfer, and ATT denotes the difference between the income of participating farmers (treatment group) and their income when not participating in land transfer. Since it is unobservable, it is necessary to match substitution indicators based on propensity scores in farmers not involved in land transfer (control group), which are used to represent the income level of farmers involved in land transfer when they are not involved in land transfer.

5. Results

PSM includes a variety of matching methods, and the matching quality varies among methods. In order to further narrow the matching gap and improve the quality of data matching, four matching methods, K-nearest neighbor matching (K=1), intra-caliper K-nearest neighbor matching (K=5, Caliper=0.07), kernel matching and radius matching (r=0.025), were adopted in this study to match the control and treatment groups. And the ATT that passed the significance test were averaged as the average treatment effect values of land transfer out and transfer in on income. The Psmatch2 command in the software STATA17 is used for empirical analysis. Except for the difference in the matching method, the rest of the parameters are set to default values.

5.1. Propensity score matching analysis

5.1.1. Income Effect of Land Transfer Out

The income effects of land transfer out to farm households based on the four matching methods of PSM are shown in Table 2. In terms of total income level, the total income per capita of farmers participating in land transfer out in the eastern region is 35.79% (exp (0.306)-1), 27.51% (exp (0.243)-1), 25.48% (exp (0.227)-1), and 25.11% (exp (0.224)-1) higher compared to those who do not participate in land transfer out, with a the mean of the results of the significance test of 28.47%; the total income per capita is 15.60% (exp (0.145)-1), 17.47% (exp (0.161)-1), 17.47% (exp (0.161)-1), 17.59% (exp (0.162)-1) higher for farmers participating in land transfer out in the western region compared to those who did not participate in land transfer out, with the mean value passing the significance test was 17.03%

In terms of income structure, farmers who participated in land transfer out in the eastern region had higher wage income compared with those who did not participate in land transfer out, but it was not statistically significant; property income and transfer income were significantly higher while operating income was significantly lower. Compared with farmers who did not participate in land transfer out, the wage income of farmers who participated in land transfer out was 65.37% (exp (0.503)-1), 73.50% (exp (0.551)-1), 69.38% (exp (0.527)-1), and 70.92% (exp (0.536)-1) higher in the western region. The mean value that passed the significance test was 71.27%; the operating income of farmers involved in land transfer out in the western region was significantly lower, and the property income and transfer income were significantly higher.

Table 2. Income effect of land transfer out based on PSM model

Income variables (Logarithm)	Matching method	Eastern Region			Western Region		
		ATT	Standard error	T-value	ATT	Standard error	T-value
Total income	K-Nearest Neighbor Matching	0.306***	0.094	3.25	0.145*	0.081	1.80
	K-nearest neighbor matching within caliper	0.243***	0.072	3.39	0.161**	0.065	2.47
	Nuclear matching	0.227***	0.065	3.46	0.161***	0.060	2.70
	Radius Matching	0.224***	0.066	3.42	0.162***	0.060	2.70
Wage income	K-Nearest Neighbor Matching	0.695*	0.379	1.83	0.503	0.320	1.57
	K-nearest neighbor matching within caliper	0.392	0.298	1.31	0.551**	0.258	2.14
	Nuclear matching	0.313	0.275	1.14	0.527**	0.236	2.23
	Radius Matching	0.339	0.276	1.23	0.536**	0.237	2.26
Operating income	K-nearest neighbor matching	-1.322***	0.345	-3.84	-0.747**	0.322	-2.32
	K-nearest neighbor matching within caliper	-1.322***	0.271	-4.88	-0.968***	0.253	-3.82
	Nuclear matching	-1.489***	0.250	-5.96	-1.100***	0.233	-4.72
	Radius Matching	-1.494***	0.250	-5.97	-1.100***	0.234	-4.70
Property income	K-nearest neighbor matching	5.093***	0.215	23.69	5.150***	0.185	27.91
	K-nearest neighbor matching within caliper	5.034***	0.188	26.76	5.194***	0.165	31.47
	Nuclear matching	5.075***	0.179	28.29	5.261***	0.160	32.88
	Radius Matching	5.061***	0.180	28.18	5.255***	0.160	32.76
Transfer income	K-nearest neighbor matching	0.410	0.333	1.23	0.370	0.251	1.48
	K-nearest neighbor matching within caliper	0.727***	0.268	2.72	0.330*	0.199	1.66
	Nuclear matching	0.688***	0.248	2.78	0.375**	0.182	2.05
	Radius Matching	0.656***	0.248	2.64	0.365**	0.183	1.99

Note: ***, **, * indicate significant at 1%, 5%, 10% level

5.1.2. Income Effect of Land Transfer In

The income effects of land transfer in based on the four PSM matching methods are shown in Table 3. In terms of total income level, in the eastern region, the total income per capita of farmers who participated in land transfer in was lower compared to those who did not participate in, but did not pass the significance level. In the western region , the total income per capita is 13.66% (exp (0.128)-1), 15.37% (exp (0.143)-1), 14.00% (exp (0.131)-1), and 12.98% (exp (0.122)-1) higher for farmers participating in land transfer in compared to those who did not participate in , with the mean value passing the significance test was 14.12%.

From the perspective of income structure, the wage income of rural households participating in land transfer in in the eastern region has decreased compared with those not participating in, but it is not statistically significant; operating income has increased significantly while property income has decreased. Farmers who participated in land transfer in in the western region had significantly lower wage, significantly higher operating income, and significantly lower property income compared to those who did not participate in land transfer in. Therefore, hypothesis 1 holds.

Table 3. Income effect of land transfer in based on PSM model

Income variables (Logarithm)	Matching method	Eastern Region			Western Region		
		ATT	Standard error	T-value	ATT	Standard error	T-value
Total income	K-Nearest Neighbor Matching	-0.044	0.139	-0.32	0.128	0.085	1.49
	K-nearest neighbor matching within caliper	-0.114	0.109	-1.05	0.143**	0.069	2.07
	Nuclear matching	-0.086	0.103	-0.83	0.131**	0.064	2.05
	Radius Matching	-0.088	0.106	-0.83	0.122*	0.064	1.90
Wage income	K-Nearest Neighbor Matching	-0.405	0.573	-0.71	-0.300	0.392	-0.77
	K-nearest neighbor matching within caliper	-0.571	0.435	-1.31	-0.332	0.302	-1.10
	Nuclear matching	-0.351	0.404	-0.87	-0.542**	0.277	-1.96
	Radius Matching	-0.410	0.414	-0.99	-0.544**	0.278	-1.96
Operating income	K-Nearest Neighbor Matching	1.232**	0.556	2.22	1.023***	0.392	2.61
	K-nearest neighbor matching within caliper	1.147***	0.441	2.60	0.808***	0.310	2.61
	Nuclear matching	1.369***	0.403	3.40	0.801***	0.285	2.82
	Radius Matching	1.273***	0.412	3.09	0.773***	0.287	2.70
Property income	K-Nearest Neighbor Matching	-0.583*	0.330	-1.77	-0.727***	0.195	-3.72
	K-nearest neighbor matching within caliper	-0.627***	0.233	-2.69	-0.681***	0.130	-5.25
	Nuclear matching	-0.763***	0.209	-3.66	-0.756***	0.109	-6.92
	Radius Matching	-0.719***	0.217	-3.31	-0.746***	0.110	-6.74
Transfer income	K-Nearest Neighbor Matching	0.185	0.485	0.38	-0.200	0.290	-0.69
	K-nearest neighbor matching within caliper	-0.065	0.379	-0.17	-0.161	0.227	-0.71
	Nuclear matching	0.081	0.346	0.23	-0.112	0.207	-0.54
	Radius Matching	0.067	0.355	0.19	-0.104	0.208	-0.50

Note: ***, **, * indicate significant at 1%, 5%, 10% level

5.1.3. Regional Variation Analysis

There is a large gap between the economic development levels in the eastern and western regions of China, and the income enhancement effect of land transfer on rural households in different regions also varies, and the following analysis of regional differences in land transfer is conducted with the nuclear matching results. The results of the analysis are shown in Table 4.The wage income enhancement effect of land transfer out on rural households in the western

region is 69.38% (exp (0.527)-1), and the wage income enhancement effect on rural households in the eastern region is not significant. The possible reason is that after the farmers in the western region transfer their land, more labor force will be invested in non-agricultural sectors, such as working in economically developed areas, thereby increasing wage income. In contrast, the eastern region is economically developed, the labor force has been mostly concentrated in the non-farm sector, and the income structure of rural households is more diversified. Therefore, land transfer out has little impact on labor transfer in the eastern region, and it is difficult to bring a significant increase in wage income.The effect of land transfer in on the increase of operating income in the eastern region is 293.14% (exp(1.369)-1), and the effect of increasing the operating income of farmers in the western region is 122.78% (exp(0.801)-1). The eastern region is significantly higher than the western region. The main reason may be that the western region is mostly hilly and mountainous, with relatively harsh natural conditions and serious land fragmentation and abandonment. The eastern region is mostly a plain area, with fertile soil and good quality land resources, suitable for planting economic crops, so it is easier to realize large-scale operation and mechanized planting when land is transferred. In addition, due to differences in economic development, the eastern region has a relatively complete land transaction market and service agencies, while the land transfer market in the western region is less developed, so the eastern region can obtain higher operating income, while the western region may face more market risks and information asymmetry. It can be seen that the total household income enhancement effect of farmers involved in land transfer out is significantly higher than that of farmers involved in land transfer in in both eastern and western regions, reflecting to some extent the current situation that the level of non-farm wage income is higher than that of agricultural operating income. Therefore, hypothesis 2 holds.

Table 4. Regional difference of income effect of land transfer based on PSM

	Explained variables (Logarithm)	Transfer-out			Transfer-in		
		ATT	Standard error	T-value	ATT	Standard error	T-value
Eastern Region	Total income	0.227***	0.065	3.46	-0.086	0.103	-0.83
	Wage income	0.313	0.275	1.14	-0.351	0.404	-0.87
	Operating income	-1.489***	0.250	-5.96	1.369***	0.403	3.40
	Property income	5.075***	0.179	28.29	-0.763***	0.209	-3.66
	Transfer income	0.688***	0.248	2.78	0.081	0.346	0.23
Western Region	Total income	0.161***	0.060	2.70	0.131**	0.064	2.05
	Wage income	0.527**	0.236	2.23	-0.542**	0.277	-1.96
	Operating income	-1.100***	0.233	-4.72	0.801***	0.285	2.82
	Property income	5.261***	0.160	32.88	-0.756***	0.109	-6.92
	Transfer income	0.375**	0.182	2.05	-0.112	0.207	-0.54

Note: ***, **, * indicate significant at 1%, 5%, 10% level

5.2. Matching Quality Tests

In order to ensure the reliability of propensity score matching results, a balanced test of covariates is required. Due to the limitation of space, only the balance test results of the western region are listed, and the eastern region also passed the balance test. As can be seen from Table 5, after matching, the Pseduo-R^2 of the land transfer out sample decreased from 0.052 before matching to 0.001-0.004 after matching, the LR statistic decreased from 117.39 before matching to 0.59-5.06 after matching, the mean bias decreased from 12.10% before matching to 1.30-3.60 after matching, and the land transfer in sample also passed the balance test. Based on the above analysis, we know that the sample matching passes the balance test and there is

no significant systematic difference between the treatment and control groups in terms of covariates. Therefore, using the PSM model to estimate the income effects of land transfers out and in can mitigate the sample self-selection bias and the estimation results are credible.

Table 5. Results of balance tests of matching methods

Matching method	Transfer-out			Transfer-in		
	Pseudo-R^2	LR	standarded bias(%)	Pseudo-R^2	LR	standarded bias(%)
Before matching	0.052	117.39	12.10	0.058	106.62	13.30
K-Nearest Neighbor Matching	0.004	5.06	3.60	0.005	4.38	2.70
K-nearest neighbor matching within caliper	0.002	1.76	2.00	0.001	0.77	0.80
Nuclear matching	0.001	1.39	2.10	0.001	1.22	1.80
Radius Matching	0.001	0.59	1.30	0.000	0.16	0.50

5.3. Robustness Tests

In order to test the reliability of the propensity score matching results, the multiple regression method was adopted for robustness testing, and the control variables were selected as covariates in the propensity score matching. The regression results are shown in Table 6.The differences between the regression coefficients of the explanatory variables and the propensity score matching ATT values are small and statistically significant at the level, indicating that the results of the empirical analysis of PSM propensity score matching pass the robustness test.

Table 6. Income effect of land transfer based on regressive analysis

	Explained variables (Logarithm)	Transfer-out			Transfer-in		
		Regression coefficient	Standard error	T-value	Regression coefficient	Standard error	T-value
Eastern Region	Total income	0.224***	0.051	4.44	-0.107	0.079	-1.35
	Wage income	0.359*	0.202	1.77	-0.349	0.315	-1.11
	Operating income	-1.484***	0.218	-6.82	1.174***	0.342	3.43
	Property income	5.063***	0.129	39.13	-0.769***	0.270	-2.85
	Transfer income	0.630***	0.186	3.38	0.022	0.291	0.08
Western Region	Total income	0.151***	0.047	3.22	0.134**	0.054	2.49
	Wage income	0.569***	0.167	3.41	-0.492**	0.191	-2.57
	Operating income	-1.095***	0.221	-4.96	0.728***	0.254	2.87
	Property income	5.239***	0.096	54.45	-0.750***	0.160	-4.67
	Transfer income	0.330***	0.121	2.73	-0.116	0.139	-0.84

Note: ***, **, * indicate significant at 1%, 5%, 10% level

6. Conclusions

1. Land transfer can significantly affect the total household income and the structure of household income of rural households. Land transfer out significantly increases the household wage income, property income, and transfer income of farmers. The main reason for this is that after transferring out of land, farmers put in work in the non-farm sector and thus increase their wage income.In addition, farmers can also obtain land rent by transferring their land management rights, which enhances the property income of households. After land transfer out, state agricultural subsidies will still be paid to the original land contractors, as well as subsidies for participating in land transfer, so land transfer out still has a boosting effect on transfer income.

2. Land transfer in can significantly increase farmers' operating income, reduce farmers' wage income and property income, but not significantly increase transfer income. Land transfer in allows transferring households to expand the scale of agricultural operations, which effectively increases the farm operating income.Large-scale farming operations require a large amount of capital investment, which reduces the capital investment for financial products, thus land transfer in has a negative impact on property income.

3. The income enhancement effect of land transfer has regional differences. For the western region, the effect of land transfer out on wage income is greater than that of farmers in the eastern region, probably because the eastern region has a more developed economy and more farmers are engaged in non-farm work, while most farmers in the western region choose to go out to work after land transfer out, so the effect of land transfer out on wage income of farmers in the eastern region is smaller than that of the western region. The reason may be that the western region is mostly hilly and mountainous, while the eastern region has flat terrain and superior natural conditions, which are more conducive to large-scale farming and mechanized operation, as well as more advanced farming techniques and agricultural management concepts in the eastern region, so the land operating income is higher than that in the western region.

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