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Analysis of the Impact of Rural Land Transfer on Farmers' Income: A Case Study of Farmers in Zaozhuang City

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Abstract Based on the survey of household data in Zaozhuang City, Shandong Province, this paper empirically demonstrates the effect of the rural land transfer system on the income and income structure of farmers. The studies have shown that the rural land transfer system reform has positive influence on income structure, wage income and property income of farmers. However, from the field survey, it is concluded that the organization effect and mortgage effect of the rural land transfer system reform are not significant.

Key words Zaozhuang City, Rural Land Transfer, Income, Analysis

1 Introduction

For the vast majority of the world's rural poor population, land is the largest and only asset. Some economists call it "sleeping capital", thinking that the activation of "sleeping capital" is essential for economic development and improvement of the income of the poor. However, in many developing countries, due to the uncertainty and legal restrictions, farmers' land rights can not be freely transferred in the market, which leads to the low market value of the land^[1]. In recent years, with the transfer of rural surplus labor to non-agricultural industries, the degree of dependence of farmers on land is reduced, so on the basis of ensuring that the land contract right is constant, many local governments actively cultivate the land transfer market, and encourage farmers to use the ways of transfer, share, cooperation and leasing to circulate their land management rights, so as to improve the configuration mode of land, capital and labor in rural areas, which has an important impact on agricultural output and farmers' income^[2].

2 Analysis of the mechanism about influence of rural land transfer system on farmers' income

This paper selects Zaozhuang as a sample region which is a prefecture-level city in the southern part of Shandong Province. Latest data show that the area of Zaozhuang City is 4563 km², it has five districts, and the agricultural population is up to 2.5499 million. More than 40% of the rural youth labor forces become migrant workers throughout the year, providing a prerequisite for the reform of the rural land circulation, scale management and a series of agricultural land property right system reforms. According to the data, there are 800 thousand acres of land for circulation, and the land transfer ratio reaches 37.2%. At present, there are various ways of farmland circulation in Zaozhuang, some of which are dominated by individual farmers, some led by the government

while others are market-driven. The different pattern of rural land transfer shows different degree of marketization. Firstly, according to the income level of farmers and agricultural management characteristics, the paper selects 4 districts from 6 areas in Zaozhuang City, and then according to the reform of rural land property rights system, selects 2 towns in each district, 2 villages in every town, 8 to 15 agricultural business entities in every village randomly. The final sample includes 6 rural land cooperatives, 4 rural professional cooperatives, 6 specialized households and 162 traditional peasant households. Finally, after eliminating some questionnaires with missing data, the number of effective samples is 150. The questionnaire survey mainly covers the individual characteristics of farmers, family characteristics, assets income, manufacturing & managing activities, as well as rural financial market participation, etc. By comparison, this paper draws the following conclusions: first of all, the gradual development of the rural land transfer market has a positive impact on the income level of farmers, the income of the farmers who participate in the circulation of agricultural land is higher than that of the farmers who do not participate in the rural land circulation, and the income gap mainly comes from the salary income (including agricultural and non-agricultural wage income) and property income^[3]; secondly, agricultural land transfer has a significant impact on household income, wage income, property income; in addition, agricultural land transfer also has some positive impact on income structure, wage income and property income of farmers involved in the transfer of rural land (Table 1). In order to study the influence of the rural land circulation on the total income and income structure of farmers, this paper selects the total household wage income, property income as the dependent variables, whether to transfer agricultural land, whether to participate in the agricultural land transfer market and whether to participate in land cooperatives as the independent variables. Specific variables and statistics are shown in Table 2. In order to investigate the impact of the agricultural land transfer, participation in the rural land transfer market and

land cooperatives on the total income, wage income and property income of the farmers, the paper builds 9 multiple regression analysis models, and uses STATA 11 software to do econometric analysis. Specific results are shown in Table 3. According to the analysis results, the paper points out that the impact of rural land transfer on the total income of farmers is significantly positive. This shows that after the transfer of agricultural land, farmers can engage in more efficient economic activities, resulting in higher income. The impact of household labor quantity, productive assets, and the actual cultivated land area, whether to grow economic crops or not on the total income of the farmers is also significantly positive^[4]. More family labor, more productive assets, and more land to cultivate, will lead to higher total household income of farmers. In addition, the effect of credit acquisition on the total income of farmers is significantly positive. It means that the acquisition of credit funds has a positive impact on farmers' production and business activities. We can see from model 4 to 6 that the influence of rural land transfer and participation in the rural land transfer market on the wage income of farmers is significantly posi-

tive. The participation in the land cooperatives has no significant impact on the wage income of farmers. This shows that after the transfer of land, farmers can engage in non-agricultural employment, gaining higher wage income. The household type, workforce? quantity and productive assets have significant impact on the wage income of farmers. Generally speaking, part-time farmers have more opportunities to engage in non-agricultural activities, so as to have higher non-agricultural wage income. This means that the rural land transfer system reform has promoted the further division of labor in rural areas. The results from model 7 to 9 show that the influence of the agricultural land transfer and participation in the rural land transfer market on the property income of farmers is significantly positive. The property income of farmers in the sample area is mainly the land rent. This means that the farmers involved in the transfer of rural land can get higher property income. It's worth noting that the influence of the distance between farmers and town on the property income of farmers is significantly negative, the farther away from the town, the lower the rent and the lower the property income of farmers.

Table 1 The relationship between rural land circulation and household income in Zaozhuang in 2015

Household income type	Income of farmers who participate in farmland circulation//yuan	Proportion//%	Income of farmers who do not participate in farmland circulation//yuan	Proportion//%
Agricultural management income	800.60	5.41	1200.00	13.41
Grain crop income	320.00	2.16	467.89	5.23
Economic crop income	480.60	3.25	453.66	5.07
Livestock breeding income	0.00	0.00	278.45	3.11
Wage income	12006.78	81.09	6546.34	73.17
Property income	800.00	5.40	0.00	0.00
Transfer Income	1200.00	8.10	1200.00	13.41
The average rural household income	14807.38	100.00	8946.34	100.00

Table 2 Specific variables and statistics

Variable	Variable-definition	Mean value	Standard deviation
Dependent variable			
Gross income	Total household income of sample in 2015 (10 ³ yuan)	56.08	43.77
Wage income	Total wage income of sample in 2015 (10 ³ yuan)	33.75	36.80
Property income	Total property income of sample in 2015 (10 ³ yuan)	2.08	3.29
Independent variable			
Agricultural land transfer	Agricultural land transferred = 1	0.45	0.56
	No agricultural land transferred = 0		
Rural land transfer market	Involved in the agricultural land transfer market = 1	0.62	0.60
	No involved in the rural land transfer market = 0		
To participate in land cooperatives	Participate in land cooperatives = 1	0.35	0.60
	Do not participate in land cooperatives = 0		
Age	Age of head of household (years)	52.89	10.22
The education level of the head of household	Illiterate = 1, primary school = 2, junior high school = 3, senior high school = 4	2.97	1.13
	Technical secondary school and above = 5		
Peasant household type	Part-time farmers = 1	0.78	0.62
	Planting and breeding farmers = 0		
Number of labor force	Number of workers in a sample family	2.96	1.45

(to be continued)

(continued)

Variable	Variable-definition	Mean value	Standard deviation
Productive assets	The present value of productive assets owned by the sample households in 2016 (10^3 yuan)	33.20	253.85
Actual cultivated land area	Actual cultivated land area (ha)	0.37	0.31
Inflowing land area	Inflowing land area (ha)	0.08	0.23
Outflowing land area	Outflowing land area (ha)	0.07	0.12
Planting economic crops	Plant economic crops = 1 Do not plant economic crops = 0	0.61	0.59
Loan acquisition	Loan acquisition = 1 No loan acquisition = 0	0.45	0.61
Distance from town	Distance Between sample family and town (km)	11.30	5.24

Table 3 Data specification

Items	Dependent variable; gross income of family			Dependent variable; wage income			Dependent variable; property income		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Flow-in rural land	14.2100	/	/	13.6200	/	/	2.2100	/	/
Rural land transfer	/	9.6100	/	/	9.0100	/	/	1.7200	/
Participation in land cooperatives	/	/	1.3400	/	/	0.4300	/	/	0.2000
Age	-0.5000	-0.3900	-0.6000	0.1000	0.1500	0.1000	-0.0200	0.0100	-0.0100
Education	3.6500	4.4100	3.7900	0.2000	0.8500	0.5800	-0.2000	-0.0000	-0.2000
Farmer type	9.0100	10.2500	9.0100	27.3800	29.2500	29.3000	0.3000	0.6900	0.3100
Amount of labor	8.6900	8.7900	7.8000	6.0000	5.9100	6.1400	0.1000	0.1400	0.0900
Productive assets	0.0500	0.0500	0.0500	0.0600	0.0600	0.0500	0.0002	0.0002	0.0002
Actual cultivated land area	3.2400	2.6300	4.4000	0.4400	0.1000	0.0600	-0.0200	-0.0800	-0.0300
Flow-in land area	/	/	-0.5300	/	/	/	/	/	/
The square of the flow-in land area	/	/	0.0600	/	/	/	/	/	/
Flow-out land	/	/	3.4500	/	/	/	0.4200	/	0.7000
Planting economic crops	15.4390	13.1000	16.1000	-5.4000	-7.2600	-7.2000	0.6000	0.2500	0.6000
Loan acquisition	10.8000	10.5000	10.7000	13.5000	13.1000	13.8000	0.2000	0.1400	0.2000
Participation in land cooperatives	/	/	1.5000	/	/	0.4300	/	/	0.1600
Age	-0.5000	-0.4000	-0.6000	0.1000	0.1500	0.1000	-0.0100	0.0100	-0.0100
Education	3.6000	4.4000	3.8000	0.1800	0.8300	0.6000	-0.2100	-0.0800	-0.2000
Farmer type	9.0300	11.2500	8.2900	27.4900	29.3400	29.2800	0.2900	0.7000	0.3300
Amount of labor	8.9000	8.8000	7.8000	6.0000	5.9500	6.0000	0.1000	0.1200	0.0900
Productive assets	0.0500	0.0500	0.0500	0.0600	0.0600	0.0500	0.0002	0.0002	0.0002
Actual cultivated land area	3.2000	2.8400	4.4000	0.4400	0.1000	0.0800	-0.0200	-0.0900	-0.0300
Flow-in rural land	/	/	-4.5000	/	/	/	/	/	/
Flow-in rural land area	/	/	0.0800	/	/	/	/	/	/
Flow-out land area	/	/	3.4500	/	/	/	0.4200	/	0.7000
Planting economic crops	15.4000	13.0800	16.1100	-5.4000	-7.3000	-7.2000	0.6200	0.2400	0.6000
Loan acquisition	10.8000	10.4000	10.9000	13.4800	13.1200	13.7600	0.2000	0.1600	0.2000
Distance between household and town	-0.1800	-0.3200	-0.0300	0.0500	-0.0900	0.0200	-0.0400	-0.0700	-0.0500
Adjusted R^2	0.3828	0.3660	0.3865	0.4734	0.4595	0.4464	0.2900	0.1425	0.2660

3 Conclusions

Overall, it can be initially considered that the impact of the reform of rural land transfer system on farmers' income is mainly based on the reallocation of the rural land and rural labor, to improve the allocation efficiency and production efficiency, thus improving the income level^[5]. At the same time, the reform of the rural land transfer system also has certain influence on income structure, wage income and property income of farmers. The income of farm-

ers who participate in the reform increases significantly. However, from the angle of field survey and empirical results, the organization effect and mortgage effect of the rural land transfer system reform are not significant. It may be due to government or individual farmers. Therefore, to further deepen the reform of rural land system in the future, we should fully respect the farmers' willingness, give full play to the leading role of the rural cooperatives, and improve the

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scape elements and habitat have strong influence on the evaluation indicator system; the plant species abundance, diversity of spatial form, hard landscape materials and colors, convenience of use, completeness of auxiliary facilities, reasonableness of barrier-free facilities, richness of water landscape types, water features of landscape, reasonable of arrangement of the sheltered landscape, and comfort of sheltered landscape have intermediate influence on the evaluation indicator system; the water self-purification capacity, guiding functions of roads, and frequency of the use of sheltered landscape basically have no influence on the evaluation indicator system.

5 Conclusions and discussions

Through the field survey of construction of garden landscape in residential areas, combined with the analytic hierarchy process (AHP), we established a reasonable and feasible suitability evaluation system for garden landscape in residential areas. Our analysis indicated that the environment of garden landscape in residential areas of Chizhou City in Anhui province remains at the level of intermediate and lower level, and there are great differences between different areas, showing high unbalance. In water self-purification capacity, guiding functions of roads, and frequency of the use of sheltered landscape, the effect is poorest. In later period of construction, it is required to take overall consideration of the relationship between people, logistics, and traffic information flow in the residential areas, properly treat the relationship between practicality and accessibility of roads; when arranging water landscape, it is required to keep flow of water body and strengthen water self-purification capacity; when arranging sheltered landscape, it is required to consider the travel psychology, behavior custom, visual effect, and experience effect of residents, so as to better serve people. For those areas with living as main function, residential area planning and construction should center on demands of residents. The landscape design full of humane care must properly treat the relationship between elements of garden landscape and the sharing of resources. In later period of construction, we should strengthen input in the soft material environment in the residential area, provide appropriate infrastructure suitable for the size of residential area, and accelerate the transformation of many unreasonable problems in residential areas, to better serve the majority of residential areas. In addition, we should cultivate the sense of pride and sense of responsibility of the main residents of residential areas.

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relevant legal system, promote the construction of rural financial market and other relevant elements of the market, so as to effectively activate the property rights of farmers.

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Through organizing some training and lecture activities, it is expected to make owners fully participate in the greening projects of the residential landscape and other activities, and enhance the subject awareness of residents, and to join in teams of protecting environment and creating beautiful life.

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