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Impact of Confirmation of Farmland Rights on Farmers' Welfare: Based on the Micro-Empirical Investigation of Farmers in China

Jianghua Guan [1], Ke Huang [2,*], Xi Lan [1], Junfeng Zhang [3] and Huiqin Li [2]

[1] College of Geography and Tourism, Huanggang Normal University, Huanggang 438000, China
[2] School of Economics and Management, China University of Geosciences, Wuhan 430074, China
[3] Department of Urban Economic Management, School of Public Administration, Zhongnan University of Economics and Law, Wuhan 430073, China
* Correspondence: kehuang@cug.edu.cn

Abstract: The confirmation of farmland rights would have a great impact on the welfare of farmers in China. Taking Chinese farmers as the research object, the relationship between farmland rights confirmation, farmland transfer and the welfare of farmers was studied by adopting the propensity score matching method (PSM) and logistic model. The result showed that: (1) The confirmation of farmland rights could improve the welfare of farmers. The dominant factors that affected the impact of the confirmation of farmland rights included family net income, medical insurance, self-health evaluation, difficulty of land financing, stability of land management rights, the difficulty of employment, satisfaction with circulation prices, and the improvement of neighborhood relations. (2) Implementing the confirmation of farmland rights could improve the welfare of farmers, and there were significant differences between farmers. The value of the welfare of farmers who had been transferred out was higher than that of farmers who had been transferred in. (3) After implementing the confirmation of farmland rights, the welfare of farmers would be improved by the net income of the household, the stability of land management rights and the improvement of neighborhood relations, while the welfare of farmers would be hindered from continuous improvement by the difficulty of employment, and satisfaction with circulation prices had opposite effects on the welfare of farmers who had transferred in or out. Based on these results, the suggestions put forward include building a price mechanism of effective circulation, utilizing differentiated skill training, and improving various measurements to show the advantages for welfare of the confirmation of farmland rights.

Keywords: confirmation of farmland rights; farmland circulation; welfare effect; propensity score matching

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1. Introduction

In 2013, the policy of confirming farmland rights was implemented, and it took 5 years to complete the confirmation of farmland rights in China. Therefore, the round of the confirmation of farmland rights was basically complete by the end of 2018, by which time the circulation area of contracted farmland had reached 35.3 million hectares. However, the characteristics of farmland circulation were spontaneous, disordered and extensive in China [1]; it was difficult to protect the rights and interests of farmers' land and property. The process of the confirmation of farmland rights is basically complete in China. The purpose of confirmation and registration was to solve historical problems such as property rights, unclear boundary between farmer's land, and inaccurate area. The existing literature showed that the confirmation and registration of farmland rights was of great significance to promoting the free flow of farmland, enhancing rural self-development capabilities, and reducing potential disputes in the villages; at the same time, the confirmation and registration of farmland rights changed the fragmentation of cultivated land formed by the

traditional land system, fragmented plots and under-scale farmland [2], and it accelerated farmland circulation to improve the efficiency of land use, realize land scale management, promote non-agricultural employment and increase farmer income. Were the expected goals of the confirmation of farmland rights achieved? Was the confirmation of farmland rights conducive to solving historical problems of rural land, improving the welfare of farmers and promoting social harmony? Did it help to solve the issues of "agriculture, rural areas and farmers," or not? The research on these issues would have important theoretical significance for examining the policy objectives to be achieved by the confirmation of farmland rights and improving the welfare level of farmers.

The existing literature on the impact of implementing the confirmation of farmland rights were based on two points [3,4]: the confirmation of farmland rights and farmland circulation, and the confirmation of farmland rights and changes in farmers' income, or the impact of the confirmation of farmland rights on farmers' welfare. There were three viewpoints. Some researchers believed that the confirmation and registration of farmland rights would clarify the relationship of land property rights, increase the stability of property rights and reduce the costs of transactions [5–7]. It could significantly increase farmers' willingness to circulate farmland, improve village infrastructure conditions, and promote the non-agricultural employment of rural labor [8–11], as the farmland circulation is greatly affected by non-agricultural employment [12]; of course, it was thought that improved transportation infrastructure could create economic vitality in villages [13], provide jobs and increase farmers' income [14]. Taking Cambodia, Vietnam, China, Rwanda and other developing countries as examples, it was believed that stability of farmland rights would help farmers invest in land, increase farmland productivity and leases, and, finally, increase farmers' income [1,15,16]. Other researchers believed that the confirmation of farmland rights would strengthen the subjectivity of property rights and enhance the "endowment effect" of farmers, which would increase the expected benefits of farmers, and increase costs of circulation; therefore, it would hinder land circulation [17–20]. There were also a few researchers who believed that the impact of the confirmation of farmland rights on land circulation was not obvious [21–24]. Regarding the relationship between land circulation and farmers' income, some researchers believed the confirmation of farmland rights could strengthen the protection of farmers' property rights, was conducive to the objectivity and fairness of land value and compensation, increase the rents of land circulation, reduce the opportunity cost of labor migration, and increase employment opportunities [25,26]. Regarding the impact of the confirmation of farmland rights on farmers' welfare, some researchers believed that the confirmation of farmland rights would increase the property income of farmers, improve social welfare and realize the sustainable development of farmers [27,28]. However, some researchers used Sen's welfare theory to study the welfare of farmers before and after the confirmation of farmland rights, and it was concluded that the confirmation of farmland rights would reduce the individual welfare level of farmers, although it would lessen the gap between welfare levels among farmers [29].

In summary, the mentioned literature mainly studied the effects of implementing the confirmation of farmland rights from a single, static or macro perspective. Little of the literature dynamically analyzed the welfare effect of implementing the confirmation of farmland rights from the microscopic perspective of the actual beneficiaries of the policies—farmers. Based on the above results, economic theory was used to analyze the welfare effect of the confirmation of farmland rights and a logistic model was constructed to analyze the dominant factors of farmers' welfare and the dominant factors influencing the welfare of farmers were the comparison factors. The propensity score matching method (PSM) was adopted to measure the value of farmer's welfare, and empirically analyze the differential characteristics of the impact of the confirmation of farmland rights on farmer's income and farmer's welfare, to reveal the path of the impact of the confirmation of farmland rights on farmer's welfare. This significantly clarifies the mechanism of the impact of the confirmation of farmland rights on the welfare of farmers and it is expected to provide a new research perspective for the evaluation of the implementation of the confirmation of

farmland rights, and a theoretical basis for the government to formulate policies to promote the improvement of farmers' welfare; on the other hand, the research combines the logistic model and the PSM method to study welfare issues, so it would fill research gaps in these issues in terms of research methods and contents.

2. Analysis and Construction of Theoretical Framework

2.1. Theoretical Framework for the Impact of Farmers' Welfare

The confirmation of farmland rights is the confirmation of ownership, management rights and contract rights. The ownership of farmland is owned by rural collectives; the management rights and contract rights of farmland are owned by farmers. The confirmation of farmland rights of this research mainly refers to the confirmation and issuance of certificates of farmland management rights. After confirming management rights, farmers can independently circulate land management rights, and they have the rights to farm, lease, mortgage, etc. (not sell and buy). Farmers can independently transfer (rent) farmland to obtain rent or offer farmland for rent to obtain non-farm income, and, finally, realize land property. On the other hand, through farmland mortgages, farmers can obtain certain funds to invest in agricultural production from economic and financial institutions, meaning the productivity of farmland would improve, the agricultural income of farmers would increase, and, finally, farmers' welfare would increase too. The process of the confirmation of farmland rights implemented is mainly to solve traditional land rectification, promote transfer, and realize farmers' land assets as wealth. It required significant efforts to ensure the realization of farmers' basic rights and interests in land. There were significant differences between the confirmation of farmland rights in China and the confirmation of water rights in foreign countries [30].

The issue of property rights and welfare was the focus of this research; therefore, the analysis of the impact of the implementation of the confirmation of farmland rights on farmers' welfare was based on the theory of property rights [31] and welfare economy [32]. It was believed, for property rights, that clear property rights were a prerequisite for market transactions, which are essentially transactions between property rights and interests. The property rights of farmland had been frequently violated in China. The primary cause was the ambiguity of property rights, which mainly manifested in the ambiguity of the property rights and the incompleteness of property rights. Therefore, the confirmation of farmland rights clarified the land property rights of farmers, improve the security of farmland property rights, encourage farmers to invest in land, obtain long-term benefits, and reduce investment losses caused by unstable property rights; in addition, the confirmation of farmland rights could effectively reduce the costs of transactions, and increase the income (rent) of the property rights in the transaction market. On the other hand, the confirmation of farmland rights eliminated the worries of farmers who transferred through the labor market, so that they could engage in non-agricultural employment easily, expand employment channels, and increase family income. Therefore, the incentive effect, income effect and factor effect derived from the confirmation of farmland rights was to generate a positive impact on the decision-making behavior of transferring farmland [6]. The stability of property rights was ensured and the land income of farmers was guaranteed; the information asymmetry between the two parties in the transaction process was reduced through the confirmation of farmland rights, which directly increased the property income of farmers; by the confirmation of farmland rights, the efficiency of farmland utilization directly affected the employment choices and circulation methods of farmers [33], and the migration of rural surplus labor was promoted to increase farmers' wages. The income status of farmers could be improved [34]; through property income, circulation income and wage income, the confirmation of farmland rights changed the income structure of farmers, and increase their income to directly improve the welfare of farmers. Figure 1 showed the theoretical analysis framework for the impact of farmers' welfare.

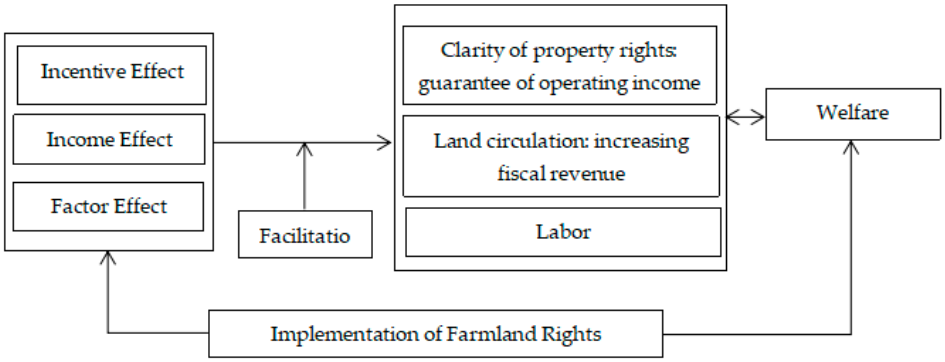

Figure 1. The theoretical analysis framework of the welfare effect of the implementation of the confirmation of farmland rights.

2.2. Construction of the Indicator System of Welfare Impact

After the farmland rights were confirmed, the flow of farmland and rural labor was promoted into the market, and farmers were attracted to participate in the flow of farmland and labor market, there were changes in the farmers' income structure, and diversified sources appeared; farmers' income increased meaning family welfare would be improved. Combined with the results of early welfare evaluation [34–37], the indicator system of the welfare impact of the confirmation of farmland rights was constructed to clarify the main factors of welfare that were promoted and to demonstrate the impact on farmers' welfare. It layed a theoretical foundation for the later measurement of the change in the welfare of farmers from the six aspects of economic conditions, social security, social opportunities, community activities, social participation and ecological environment. The indicator system of the welfare impact is shown in Table 1.

Table 1. The system of the welfare index of farmland rights.

Target	Factors	Indexes	Indicators' Definition
The welfare impact of the implementation of farmland rights confirmation	Economic condition (X_1)	Agricultural income (X_{11})	Real value of agricultural income.
		Non-agricultural income (X_{12})	Real value of non-agricultural income.
		Family net income (X_{13})	Real net income of household.
		Evaluation of own economic status (X_{14})	Very good takes 5, better takes 4, generally takes 3, poor takes 2, very bad takes 1.
	Social security (X_2)	Existence of medical insurance (X_{21})	1 is taken, but 0 is not taken.
		Possession of pension insurance (X_{22})	1 is taken, but 0 is not taken.
		Difficulty of land financing (X_{23})	Very good takes 5, better takes 4, generally takes 3, poor takes 2, very bad takes 1.
		Stability of land management rights (X_{24})	Very good takes 5, better takes 4, generally takes 3, poor takes 2, very bad takes 1.
	Social opportunity (X_3)	Employment difficulty (X_{31})	Easy to takes 5, generally takes 3, very difficult to takes 1;
		Formulation of an employment policy (X_{32})	Formulated takes 1; but not is 0.
		Subjective feelings about development opportunity (X_{33})	Very good takes 5, better takes 4, generally takes 3, poor takes 2, very bad takes 1.
	Community activity (X_4)	Are land disputes reduce (X_{41})	1 is taken, but 0 is not taken.
		Degree of improvement in cadre-group relation (X_{42})	Very good takes 5, better takes 4, generally takes 3, poor takes 2, very bad takes 1.
		Neighborhood relationship improvement (X_{43})	Very good takes 5, better takes 4, generally takes 3, poor takes 2, very bad takes 1.
	Social participation (X_5)	Knowledge of land transfer (X_{51})	Knowing as 3, knowing but not very clear as 2, Non- knowing as 1.
		Satisfaction with land transfer price (X_{52})	Very satisfied is 5, better 4, generally 3, dissatisfied 2, very dissatisfied is 1.
	Ecosystem (X_6)	Self-health evaluation (X_6)	Good is 1, bad is 0.

3. Data and Methods

3.1. Research Methods

3.1.1. Logistic Regression Model

The welfare impact of the implementation of the confirmation of farmland rights was based on increasing income of the farmers' asset, income from land operations and wage income after the circulation of farmland. Therefore, by studying the welfare factors that affect farmers' decision making regarding participating in land transfer or not, we could accurately clarify the leading factor of the welfare effect of the implementation of farmland rights confirmation. Whether the farmers participated in the circulation or not as the dependent variable, and the welfare index of the implementation of the confirmation of farmland rights was the independent variable. The participation of farmers in land circulation was a discrete variable, so there were two options of "participation" and "non-participation". The binary logistic regression model was used to study the dominant factors of the welfare effect of the implementation of the confirmation of farmland rights and observe the change in the welfare of farmers.

3.1.2. Propensity Score Matching Method (PSM)

The propensity score matching method (PSM) is often used for non-experimental data or observational data to evaluate the effect of intervention [38–40]. It is an effective and innovative statistical method that can be studied under the same conditions by examining the results of non-intervention subjects for the causal effects of the intervened-upon objects. The current research on the welfare of farmers tends to constitute static research on the changes in welfare before and after the participants' participation. Such research could not objectively reflect the changes in the family welfare between the farmers' participation and non-participation, after the farmland rights were confirmed.

Through investigating the related literature [2,35], in this experimental design the research adopted the propensity score matching method (PSM) to construct a counterfactual framework that would evaluate the net difference in outcome variable that the same farmer participated in the circulation and non-circulation: the net value of participant. The design process of experiment was: firstly, the probability values of the "treatment group" and the "reference group" according to the selected characteristic variables were calculated. The subjects in the two groups with similar probability propensity values were the matching units, and the difference in the outcome variables were obtained by an unbiased estimation of the average effect under the tendency value; secondly, according to the propensity value, the non-transferred farmers with similar participation tendencies were used to estimate the counterfactual value of the farmers who had transferred the farmland; after matching the treatment group with participation tendency and the reference group who had chosen similar farmland circulation, the family welfare of the reference group who had similar circulation propensity replaced the welfare of the farmers who had transferred farmland, assuming that they had not transferred the land, the welfare difference of the matched subjects was compared. The difference between the actual economic welfare of farmers participating in farmland transfer and the counterfactual economic welfare was the economic level of farmland transfer. The net effect was calculated as follows [38]:

$$ATT = E\left(\frac{Y_1^a T}{D_a} = 1\right) - E\left(\frac{Y_0^a T}{D_a} = 1\right) = \frac{1}{a}\sum_a \left[Y_1^a T - \sum_b \omega(a,\ b)\left(Y_0^b T\right)\right]$$

In the above formula, "ATT" represents the net economic effect of land transfers; "a" represents the treatment group, "b" represents the reference group; "$Y_1^a T$" represents the result that the farmers (treatment group) were affected by the economic welfare effect of land transfer, "$Y_0^a T$" represents the result that the farmers (treatment group) were not affected by the economic welfare effect of land transfer, $Y_0^b T$ represents the result that the farmers (reference group) were not affected by the economic welfare effect of land transfer, and "ω" represents the weight of the family economic welfare of the group of farmers who did not participate in the land transfer.

3.2. Data Sources

3.2.1. Overview of the Survey Area

Hubei is a major agricultural province in central China. The implementation of the process of confirmation policy started in 2013 and ended in 2018; the confirmation and certification of farmland rights of the province was basically completed by the end of 2018. More than 98% of farmland rights were confirmed and certificated. Figure 2 shows the map of the study area, the survey area is located in the main grain production area and agricultural production area in Hubei Province, and includes Huanggang, Yichang, Enshi, Suizhou, and Xiangyang. The farmland circulation in these areas is relatively active, the scale of farmland circulation had reached 41.21%, and the circulation willingness of farmers was 52%; the transfer method was mainly based on the village collective organization and the voluntary participation of farmers, which account for about 66.1%. In order to promote the standardized, fair and equitable circulation of farmland, a service agency of farmland circulation was established in the town (township) to protect the farmland rights of transferred farmers and ensure that the original purpose of the transferred farmland was not changed.

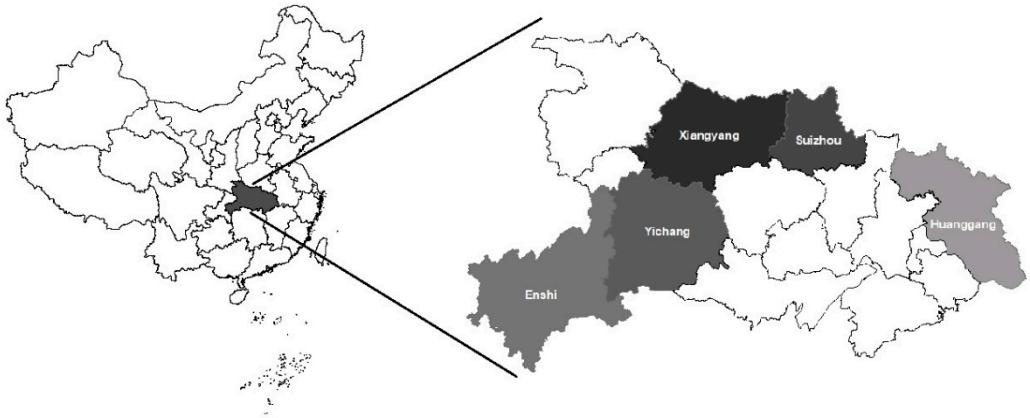

Figure 2. Map of the surveyed area.

3.2.2. Data Collection

The data was collected by a survey of 440 households in 41 villages in 11 counties (cities) in Hubei Province in July 2018 and July 2019. The random sampling method was adopted. Each county (city) was randomly selected, two townships of each county (city) were randomly selected, two villages were randomly selected in each township, and 10–15 sample farmers, as the survey objects, were randomly selected in each village. The 500 questionnaires were distributed to farmers or village officials, and 440 valid questionnaires were recovered with an effective rate of 88%. After the farmland rights were confirmed, there were 188 households that participated in the land circulation. Among them, there were 109 households that transferred out of farmland, 79 households that transferred in farmland, and 252 households that did not participate in farmland circulation.

4. Results and Discussion

4.1. Regression Analysis of the Dominant Factors of the Welfare Effect

When clarifying the dominant factors of welfare after the implementation of the confirmation of farmland rights, all the investigated samples were used for regression model analysis. The data obtained from the 440 questionnaires was used to perform logistic regression in SPSS19.0 and the significance of the variables was tested. The coefficient test showed that the regression equation was more significant. The likelihood ratio index of the regression was 317.025, indicating that the fitness of the model was relatively satisfactory. The total prediction accuracy rate of the model was 93.16%, indicating that the results of the model were highly reliable. In addition, the correlation between the variables was measured

with the Spearman coefficient, and the measured values of the correlation coefficients were all below 0.5, indicating that these independent variables did not have the problem of multicollinearity. The specific results of the regression analysis are shown in Table 2.

Table 2. Regression analysis of the dominant factors of welfare in the implementation of farmland rights confirmation.

Variable	Coef.	S.E.	Wals	Sig.	Exp (B)
Agricultural income (X_{11})	−0.072	0.341	0.045	0.722	0.726
Non-agricultural income (X_{12})	0.031	0.049	0.218	0.681	0.798
Family net income (X_{13})	0.246	0.197	0.325	0.037 **	0.741
Evaluation of own economic status (X_{14})	−0.441	0.357	0.807	0.240	1.097
Existence of medical insurance (X_{21})	0.634	0.511	0.836	0.035 **	1.649
Possession of pension insurance (X_{22})	0.084	0.145	0.039	0.759	0.997
Difficulty of land financing (X_{23})	0.198	0.158	2.099	0.090 *	0.733
Stability of land management rights (X_{24})	0.135	0.302	0.065	0.081 *	0.365
Employment difficulty (X_{31})	−0.423	0.719	0.979	0.065 *	2.119
Formulation of an employment policy (X_{32})	0.059	0.331	0.079	0.625	0.827
Subjective feelings about development opportunity (X_{33})	−0.089	0.199	0.118	0.719	0.912
Reduction in land disputes (X_{41})	−0.126	0.124	1.643	0.113	1.029
Degree of improvement of cadre-group relations (X_{42})	0.425	0.503	0.241	0.0713 *	0.614
Improvement of neighborhood relationships (X_{43})	0.506	0.223	0.645	0.126	0.059
Knowledge of land transfer (X_{51})	0.526	0.326	0.486	0.113	0.053
Satisfaction with land transfer price (X_{52})	0.609	0.256	0.473	0.089 *	0.110
Evaluation of Self-health (X_6)	−0.241	0.255	0.511	0.0401 **	1.351
Constant (C)	−4.360	1.501	4.763	0.041 ***	0.522

Note: *, **, and *** indicate significance at the level of 10%, 5%, and 1%, respectively. The same meaning applies to the following tables.

It can be seen from Table 2 that the three factors of family net income, whether there was medical insurance, and evaluation of self-health passed the significance test at the 5% level. The difficulty of land financing, the stability of land management rights, the difficulty of employment, the satisfaction with the transfer price, and improvement of neighborhood relations passed the significance test at the level of 10%; among them, the difficulty of employment and evaluation of self-health had a negative impact on the decision-making of farmers' land circulation, and the other factors related to the farmland circulation having a positive impact, among which whether there was medical insurance or not, improvement of neighbor relationship and the satisfaction of the transfer price had a greater impact on the decision making of farmers, which was consistent with the results of related literature [36].

4.2. Analysis of the Welfare Effect of the Implementation of the Farmland Rights Confirmation

4.2.1. Estimation of PSM and Test of Balance Validity

The dominant factors that affected welfare following the implementation of the confirmation of farmland rights included family net income, whether there is medical insurance, evaluation of self-health, difficulty of land financing, stability of land management rights, difficulty of employment, satisfaction with land transfer price and improvement of neighborhood relations, which created a propensity score. Based on this propensity score, the matching of the "treatment group" and the "reference group" formed new sample groups, and the new sample groups were adopted to study farmers' welfare after the implementation of the farmland rights confirmation. In order to accurately analyze welfare following the implementation of the confirmation of farmland rights, two models were established: a model with farmers who had transferred in farmland (treatment group) and those who had not transferred (reference group), and the other with those who transferred out of farmland (treatment group) and did not transfer out of farmland (reference group). The 188 farmers participating in farmland circulation were matched one-to-one with non-transferring farmers with the closest propensity score by the kernel matching method. In the treatment

group and the reference group, 24 and 88 sample farmers were eliminated. The propensity matching score is shown in the Table 3.

Table 3. The statistical table of the propensity matching score.

	Original Samples		Successfully Matched Samples				Unmatched Samples	
	Treatment Groups	Reference Groups	Transfer-In Groups	Reference Groups	Transfer-Out Groups	Reference Groups	Treatment Groups	Reference Groups
Number of samples	188	252	68	68	96	96	24	88

After matching, it was necessary to check whether the data between the treatment group and the reference group were balanced to determine whether the influencing variables between the groups were significant. The data that had passed the balance test could be analyzed for results. According to PSM analysis, the propensity score method was selected to test the balance validity. The test results are shown in Table 4. After the transfer-out and transfer-in models of PSM, the factor of "existence of medical insurance" in the transferred-in model, the "difficulty of land financing" and the "evaluation of self-health" in the transferred-out model were unbalanced at the 5% level, and the standardized differences of other variables approached 0, which significantly eliminated the differences between groups. In order to make the matched variable indicators pass the balance test between the treatment group and the reference group, the three variables of "existence of medical insurance", "ease of land financing" and "farmer self-health evaluation" were eliminated in the paper. The variables that had passed the balance test were used to measure the welfare effect of the implementation of the farmland rights confirmation.

Table 4. Validation test of matching balance between groups.

Welfare Variables	Transfer-In			Transfer-Out		
	Non-Transferred	*PSM*		Non-Transferred	*PSM*	
	Standard Deviation (%)	Standard Deviation (%)	Value (*p*)	Standard Deviation (%)	Standard Deviation (%)	Value (*p*)
Family net income	−1.89	1.70	0.610	2.28	−1.05	0.645
Existence of medical insurance	2.12	3.07	0.038 *	3.15	3.32	0.117
Difficulty of land financing	0.12	2.05	0.032 *	1.49	2.97	0.233
Stability of land management rights	0.22	2.15	0.332	1.85	2.68	0.253
Difficulty of Employment	1.65	2.40	0.547	5.35	−3.05	0.392
Evaluation of Self-health	−3.52	1.18	0.712	−4.55	4.25	0.087 *
Neighborhood relationship improvement	0.79	0.12	0.742	5.36	3.08	0.183
Satisfaction with land transfer price	−3.02	−1.18	0.544	6.30	2.30	0.213

Note: * indicates significance at the level of 10%.

4.2.2. Measurement of Changes in the Welfare Effects of the Implementation of the Confirmation Farmland Rights

The software Stata 13.0 product of the StataCorp LLC (Lakeway, TX, USA) was employed to measure the changes in the welfare of farmers before and after the implementation of the confirmation of farmland rights. The results are shown in Table 5. If the ATT value of each factor was positive, it indicated that the implementation of the confirmation farmland rights helped improve the welfare of farmers; otherwise, it hindered the improvement of the welfare of farmers.

Table 5. Measurement results of the welfare effect of the implementation of farmland rights confirmation.

Welfare Variables	In-Transferred			Out-Transferred		
	Treatment Groups	Reference Groups	Effect Value	Treatment Groups	Reference Groups	Effect Value
Family net income	1.843	0.956	0.887	2.243	1.077	1.166
Stability of land management rights	0.352	0.224	0.128	0.762	0.402	0.360
Employment difficulty	0.267	0.384	−0.117	0.298	0.378	−0.080
Neighborhood relationship improvement	0.218	0.157	0.061	0.403	0.304	0.099
Satisfaction with land transfer price	0.063	0.081	−0.018	0.251	0.197	0.054
Total effect value of farmer welfare			0.941			1.599

It can be seen from Table 5 that, in general, the implementation of the confirmation farmland rights helped improve the overall welfare of farmers. However, there were large differences in the impact of various factors on the welfare of farmers

(1) Impact of net income of family on the welfare of farmers.

Transferred-in and transferred-out farmland could promote the scale operation of land and obtain economies of scale, thereby significantly affecting the net income of farmers. After the implementation of the confirmation of farmland rights, the values of the welfare effect of the transferred-in and transferred-out farmers were 0.887 and 1.166, and the welfare effect of the transferred-out farmers was higher than that of the transferred-in farmers. It was shown that, after the implementation of the confirmation of farmland rights, the income sources and structure of farmers have been changed. Among them, the farmers who transferred in or did not participate in the circulation possessed mainly agricultural income, and the income from farmland accounted for 85 percent of the total income, while other income accounted for 15%; the structure of the farmers' income of the transferred-out farmers was the proportion of income from wages, operational income, and property income, respectively, which reached 42.6%, 35.8%, and 6.7%. The main income of this type of farmers was wages and property income. From the perspective of comparative benefits, the benefit of agricultural production was lower than that of non-agricultural production. After the confirmation of farmland rights, part of the labor force was transferred from agriculture. In addition, there were opportunities for farmers who transferred land, making the increase in non-agricultural income far higher than agricultural income.

(2) Impact of the stability of land management rights on the welfare of farmers.

The effect of the stability of land management rights on the values of the welfare effect of the transferred-in and transferred-out farmers were 0.128 and 0.36, respectively. The implementation of the confirmation of farmland rights improved the welfare of farmers. The confirmation of farmland rights strengthened farmers' ownership of specific land, increased farmers' enthusiasm for agricultural capital investment, and increased farmers' expectations for future growth in agricultural income. This was consistent with the results of related studies [40]. Therefore, by transferring in farmland, farmers could engage in agricultural production and management to obtain stable agricultural-investment expected returns, and increase family welfare; while farmers transferring out farmland could obtain the asset income from the circulation of land by confirming their rights. On the other hand, the farmers transferring out farmland were separated from agriculture to engage in non-agricultural employment and increase their wage income. From the investigated areas, the income structure of the farmers who had circulated farmland was changed, and the family income after the confirmation of farmland rights was higher than before.

(3) Impact of difficulty of employment on the welfare of farmers.

Employment was the main factor affecting the welfare of farmers. The effect of employment difficulty on the welfare of the transferred-in and transferred-out farmers was −0.117 and −0.08, respectively, which could reduce the level of farmers' welfare, and the impact on the transferred-in farmers was greater than that of the transferred-out

farmers. One researcher believed that achieving the full employment of farmers was the key path to increasing farmers' income and improving their welfare [41]. In the investigated areas, 70.67% of the investigated farmers were over 50 years old, and only 29.33% under 49 years old; most of the investigated farmers were worried that they would not be able to find employment after the farmland circulation and that their income would decrease. In the survey of enterprises in the region, it was found that the recruitment of surrounding enterprises was mainly based on the part of the labor force under the age of 45, and it was difficult for the labor force over the age of 50 to find another job. Therefore, promoting the employment of farmers through multiple channels and ensuring steady growth in the wage income of circulating farmers could not only improve the economic welfare of farmers, but also increase the improvement of farmers' health and the environment, thereby enhancing overall welfare improvement.

(4) Impact of the improvement in neighborhood relations on the welfare of farmers.

The improvement in neighborhood relations had an effect on 0.061 and 0.099 of the welfare changes of the transferred-in and transferred-out farmers, respectively, which promoted the improvement of the welfare of the farmers. The effect on the welfare of the transferred-out farmers was higher than that of the transferred-in farmers' welfare. Existing results showed that the improvement of neighborhood relations was conducive to the construction of a harmonious society and the improvement of farmers' welfare [42]. It was found that, after the implementation of the confirmation of farmland rights, the spatial location, area and border disputes of farmland were effectively resolved, potential land disputes between the neighbors were reduced, opportunities for neighbor exchanges were increased, harmony between neighbors was promoted, and farmers' relationships were enriched. The spiritual exchanges between the two improved the spiritual welfare of farmers.

(5) Impact of satisfaction with the price of farmland transfer on the welfare of farmers.

Satisfaction with circulation price had an inverse relationship on the welfare of the transferred-in and transferred-out farmers, and their welfare changes were −0.018 and 0.054, respectively. Other researchers believed that incomplete property rights would reduce the security of property rights, affect the benefits of property rights, and decrease the price of farmland [43]. Through the confirmation of farmland rights, the rights of farmland property were clarified, the security of property rights was enhanced, and the price of farmland was increased; for the transfer-in farmers, the confirmation of farmland rights strengthened farmers' bargaining power in the markets of farmland circulation (rent); transferred-out farmers obtained a higher land rent, which increased the welfare of transferred-out farmers. For farmers who transferred out their farmland, the rent increased, the production costs of farmers who transferred in farmland would increase, at the same time, agricultural production was greatly affected by natural factors and relatively low efficiency. It was difficult to show the benefits of land scale, which reduced the welfare of transferred-in farmers.

5. Conclusions and Recommendation

Based on the survey data of the farmers in China, the dominant factors were researched that affected the welfare changes of the farmers following the implementation of the confirmation of farmland rights, and the value of the welfare effect was calculated. After the confirmation of farmland rights, the dominant factors that affected the welfare were family net income, existence of medical insurance, evaluation of self-health, difficulty of land financing, stability of land management rights, difficulty of employment, satisfaction with price and improvement of neighbor relationship. The confirmation of the farmland rights could be implemented to significantly improve the welfare of farmers. The value of the change in the welfare of the transferred-out farmers was 1.599, and the value of the change in the welfare of the transferred-in farmers was 0.941. The value of the welfare of the farmers who had transferred out was 60% higher than that of the farmers who had

transferred in. Perhaps there were other factors that affected the value of welfare; however, the following suggestions were made based on the above conclusions:

(1) Establishing an effective mechanism for farmland transfer prices (rent) and improving the institutional system to promote farmland transfer. The confirmation of farmland rights guaranteed the security of farmer's land property rights, and pushed up the value of farmland property rights and the transfer price (rent), which was conducive to increasing the property income of the farmers who had transferred. However, the transfer price (rent) was excessively high to inhibit the circulation of farmland, to aggravate the increase in the cost of agricultural products, and ultimately to inhibit the formation of the farmland transfer market. It was difficult to achieve the purpose of increasing farmers' property income and hindering the increase in farmers' income and the improvement of welfare. Therefore, under the premise of completing the confirmation of farmland rights, a regional and standardized farmland circulation market should be established according to local conditions, and a mechanism establishing the effective transfer price (rent) should be constructed so that the farmers participating in the circulation could obtain the maximum income of farmland. At the same time, a system of land circulation, such as the land rent income compensation system, and a subsidy mechanism for food and agriculture should be improved; through the land rent income compensation system, monetary compensation would be given to the farmers who did not conform to the market laws and damage, so as to ensure that the income of participating farmers did not decrease and welfare was not reduced; by optimizing the subsidy mechanism for grain and farmers, subsidy compensation standards for grain and farmers in land transfer could be established, grain and agricultural subsidies could be implemented, classified and differentiated to increase the subsidy amount for farmers who transfer in farmland and to reduce land management costs.

(2) Strengthening differentiated skills training and the support of employment and entrepreneurship to promote the conversion of farmers' transfer willingness to transfer behavior. Promoting the employment and entrepreneurship of the labor force of villages is an important measurement to ensure that the income and welfare of farmers are not reduced. Most of the respondents in the investigated areas were around 50 years old, and farmland was the source of their employment, medical care, and pension expenses. After the farmland rights were confirmed, farmers placed a higher expected return on farmland (endowment effect). To promote land transfer, it is necessary to find corresponding substitutes to replace farmland with the "endowment effect." Therefore, farmers should be trained in new vocational skills to improve their production and management capabilities, and the expected benefits obtained through new vocational channels should replace the "endowment effect" of farmland to promote land transfer and increase farmers' income. In terms of practical-skill training, farmers who transferred in farmland should pay attention to the training of modern agricultural production and operation to improve their agricultural planting skills, guiding them to become master planters or professional households, and increasing their income levels through large-scale operations. Farmers whose land was transferred out should focus on training in agricultural science and technology or other technologies, so that they can master advanced production and management skills, guiding them to engage in modern agricultural production or other non-agricultural employment; finally, they could obtain a stable income.

(3) Improving the various measures for the implementation of the confirmation of farmland rights, and highlighting the advantages of the welfare effect of thte confirmation of farmland rights. The implementation of the confirmation of farmland rights helped promote land scale operation, accelerate the non-agricultural transfer of rural labor, change the structure of rural income, increase farmers' income to improve the welfare of farmers and promote the improvement of overall social welfare. To highlight the welfare effect of the confirmation of farmland rights, we should first introduce

measures to maintain the continuity and stability of the confirmation of farmland rights, ensure the stability of farmland management rights, and realize farmers' long-term expectations of farmland. Through the implementation of the new round of confirmation of farmland rights, farmers' land rights have been given a clearer status as the subject of property rights in the legal system, which provided legal protection for the realization of farmers' asset rights; secondly, the guarantee measures should be improved concerning the financing policies for the large-scale operation land-mortgage and financing functions of land after confirmation, which provided investment guarantee for the scale operation of farmer; finally the standardization and procedural management of the contract for the circulation of farmland management rights should be standardized to reduce the land disputes of farmers, increase neighborhood harmony and realize farmers' land-transfer benefits.

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