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Farmland Transfer Mode and Livelihood Capital Endowment Impacts on Income Inequality: Rural Survey Data of Hubei Province, China

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Abstract: Studying the impact of different farmland transfer modes on farmers' income inequality can help understand the reasons for the income gap between farmers. Based on this, we use field survey data and OLS regression, quantile idea and Shapley decomposition to analyse the impact of farmland transfer on farmers' income inequality. The results show that the influence of farmers' spontaneous mode on the increase in farmers' income is better than that of the market-led mode and government-led mode. The market-led and government-led transfer modes also significantly enhance the positive impact of livelihood capital on farmers' income. The higher the level of natural, material, labour and social capital of farmers, the more favourable the effect on income, while the financial capital is more beneficial to high-income farmers. As for the restraining effect of the transfer modes on the income gap, the farmers' spontaneous mode is the best, the government-led mode is the second, and the market-led mode is the worst. Further research shows that the transfer mode greatly impacts the income inequality of middle-income and low-income farmers. There are significant differences in the effects of livelihood capital on farmers' income inequality in different transfer modes. Therefore, on the premise of following farmers' willingness, the government should play a leading role in further standardizing the farmland transfer market and improving the household income of low-income and middle-income farmers.

Keywords: livelihood capital; farmland transfer out; transfer mode; income inequality

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1. Introduction

With the rapid development of industrialization and urbanization in China, a series of changes have occurred in the farmland system. From the household contract responsibility system to the proposal of "separation of rights" of farmland, it is constantly changing the model of management and utilization of farmland and stimulating the development of farmland transfer [1,2]. From the perspective of the definition, the Farmland contract Law of the People's Republic of China stipulates that collective ownership, peasant household contract right and land management right should be separated from each other. The transfer of farmland usually refers to the transfer of land management rights. The transfer of farmland management right refers to the act that the contractor transfers part or all of the land management right to others to carry out agricultural production and operation independently within a certain period of time under the premise that the contract relationship remains unchanged. In terms of the impact, farmland transfer has reshaped the allocation pattern of farmland, capital and labour resources and has had a far-reaching impact on China's agriculture, villages and farmers [3]. In recent years, due to the rapid

development of the farmland transfer market in China, more and more scholars are paying attention to the problems in the transfer of farmland, such as "farmland transfer policy and system [4,5]", "poverty reduction and environmental protection impact of farmland transfer [6–8]", "farmland transfer and food security [9–11]", "farmland transfer and agricultural productivity and rural economy [12–14]" and so on. Particularly, in the context of poverty alleviation in China, farmland transfer is inextricably linked with the development of the rural economy and the increase in farmers' income. Empirical experience shows that farmland transfer plays a significant positive role in improving the income and welfare of farmers, especially in poor areas [15,16]. However, part of the evidence also shows that the transfer of farmland objectively widens the income gap among farmers, resulting in income inequality [17]. With the further development of the social economy and farmland transfer, the income gap of farmers continues to expand, which is not conducive to the future social and economic stability in rural areas.

At present, the research on farmers' income inequality is relatively rich, but the research on the impact of farmland transfer on farmers' income inequality is relatively insufficient. Shi and Yang proved that the transfer of farmland widened the income gap among farmers [18,19]. Some studies have also found that the impact of farmland transfer on the rural income gap is uncertain; there are both positive and negative effects [20]. From the perspective of the mechanism of the two, Guo et al. found that farmland transfer and economic location have great differences in relation to farmers' income, while Shi found that high-income groups get more income from farmland transfer. This shows that there are differences in the impact of farmland transfer on the household income of farmers with different income levels [21]. Xu et al. found that village cadres with a higher social capital can transfer to farmland by virtue of lower rents [22]. Zhang et al. found that the government's administrative intervention in farmland transfer aggravated the income gap of farmers [23].

Studies have shown that farmers' livelihood capital endowment plays an important role in farmland transfer behaviour and household income. From a large number of micro-studies, livelihood capital endowment affects farmers' willingness to transfer land, and different livelihood capital endowments have different effects on farmers' transfer attitude [9]. The higher the natural capital and human capital, the greater the possibility of land inflow. The higher the natural capital, the greater the area of land inflow. The higher the financial capital, the greater the likelihood of land outflow. The higher the financial capital and social capital, the larger the land outflow area. Secondly, livelihood capital also has a complex impact on income, and natural capital, material capital, human capital, financial capital and social capital all have a significant impact on household income. The higher the level of livelihood capital in different dimensions, the more conducive to the increase in household income [24].

In addition, the transfer of farmland will also cause changes in farmers' livelihood capital conditions, and then affect farmers' livelihood strategies and income [25]. First, the transfer of farmland will inevitably lead to changes in household natural capital and other livelihood capital, but also lead to the transformation of farmers' livelihood strategies. Farmers with high levels of material capital, human capital and financial capital may be more inclined to choose non-agricultural livelihood strategies, while farmers with a high natural capital and social capital may prefer agricultural livelihood strategies [26]. Due to the significant differences between agricultural and non-agricultural livelihood strategies, the change in livelihood strategies leads to changes in the way and source of household income, and finally have an impact on household income.

Generally speaking, previous studies have mainly focused on the impact of farmland transfer policies on farmers' income inequality and the impact of livelihood capital on farmers' livelihood strategies. However, they do not have enough analysis on the impact of different transfer patterns on farmers' income, and there is a lack of research on the impact of transfer patterns on farmers' income inequality, and it is even more rare to reveal the impact of farmland transfer at different levels of farmers' income inequality. Based on

this, this study takes the field survey data of seven prefecture-level cities in Jianghan Plain and western mountainous and hilly areas of Hubei Province as samples, and constructs a peasant household income model to analyse the impact of factors such as circulation model and livelihood capital on peasant household income, and carries out the impact analysis of peasant household income inequality according to Shapley decomposition in order to make up for the lack of existing research.

2. Literature Review

2.1. Impact of Farmers' Livelihood Capital on Farmland Transfer

Existing studies have shown that livelihood capital endowment represents the ability of farmers to cope with market changes and adjust the allocation of resources to maximize income [9]. The heterogeneity of farmers' livelihood capital endowment affects farmers' attitudes towards farmland transfer and the way and degree of participation in farmland transfer. The heterogeneity of livelihood capital determines the difference in the direction of effect on farmers' transfer behaviour [27].

The sustainable livelihood analysis (SLA) framework established by the UK International Development Agency has been adopted by many international organizations and scholars. It believes that livelihood includes the abilities, assets (including material and social resources) and activities that people need to make a living, and points out that livelihood capital includes natural capital, financial capital, material capital, human capital and social capital [28]. According to the SLA framework and related research, natural capital mainly describes the stock of natural resources, generally refers to the resource flow of livelihood and related services, including intangible public capital (atmosphere, biodiversity, etc.) and tangible capital directly used for production (land, trees, etc.); material capital includes the basic means of production and infrastructure for livelihood. Financial capital refers to the accumulation and flow that people need to achieve livelihood goals in the process of consumption and production. This paper mainly refers to money or loans. Human capital represents labour resources with knowledge, skills and health; social capital means the social resources that people use in the process of pursuing livelihood goals. Therefore, farmers' livelihood capital generally includes natural capital, material capital, financial capital, labour capital and social capital, and their influence on farmers' farmland transfer is different [9]. Among them, natural capital reflects the area, quality and farming conditions of contracted land. Farmers with better natural capital depend more on land and are more willing to transfer in the farmland to increase agricultural output [10]. The material capital of farmers includes real estate and means of production. The richer the material capital is, the greater the ability of farmers to cultivate the land, the greater their willingness to transfer in the farmland. On the contrary, the greater the desire to transfer out the farmland [29,30]. Financial capital refers to the savings of rural households and the ability to obtain loans from financial institutions. Farmers with rich financial capital are more willing to release labour through the transfer out of farmland and increase non-agricultural income [31,32]. Labour capital represents the potential of rural households to engage in non-agricultural production. The higher the level of labour capital, the greater the ability to engage in non-agricultural production, and the higher the probability of transferring out of farmland [33,34]. Social capital reflects the richness of social resources of peasant households. It helps obtain information related to farmland transfer promptly. The higher the social capital of farmers, the greater their enthusiasm to participate in the transfer of farmland, and the greater the benefits they could gain from it [35].

Family factors and geographical location are also important conditions that affect the transfer of farmland [36]. In this study, family factors mainly refer to the family environmental conditions directly related to farmland transfer and family income, including family population size, labour force, head of household identity, education level and health status. From the point of view of "cost–benefit", in areas with convenient transportation and good farmland quality, due to the relatively small early investment, the income of farmland transfer is higher. Therefore, the enterprises are more willing to participate in

local farmland transfer, and the development of the farmland transfer market is more mature. Thus, market-led farmland transfer is more common. However, in areas with a remote location and poor quality of farmland, the farmland transfer market is immature due to the high early production investment, low planting efficiency and long investment return cycle, resulting in the farmland transfer is mainly farmers' spontaneous mode or government-led mode [37]. Comprehensively, family factors, location conditions and the heterogeneity of livelihood capital endowment together affect farmers' decision-making behaviours such as the choice of transfer mode, area of transfer land, number of years of the transfer, and finally, they affect the changes in farmers' livelihood strategies and income [38].

2.2. The Influence of Farmland Transfer on Farmers' Income Inequality

In practice, according to the factors such as transfer rent, agreement, intermediary organisation and so on, farmland transfer can be divided into farmers' spontaneous mode, village collective-led mode, government-led mode and market-led mode [39]. The farmers' spontaneous mode is usually based on an oral agreement, which shows the characteristics of no fixed transfer period, small transfer scale and low rent or no rent. The village collective-led mode or the government-led mode implies that the village committee or the government provides intermediary and organisational services and farmland transfer information in the process of transfer [40]. Thus, the village committee or the government controls the transfer and guides the signing of the contract. The main feature of the market-led mode is that farmers and local enterprises or other subjects directly reach a farmland transfer agreement through the farmland transfer information platform, and the village committee or the government only provides limited intermediary services [41,42]. From a comprehensive point of view, there are great differences among different transfer modes, among which transfer rent is most closely related to farmers' income. The disagreements in transfer rent during transfer modes directly affect the income inequality of farmers. According to empirical research and field surveys, it was found that the rent of farmers' spontaneous mode is generally lower than that of market-led mode and government-led mode. Still, the difference in rent between market-led mode and government-led mode is not clear. The main purpose of farmers' farmland transfer is to maximise the economic utility of the family, but the difference in rent will directly cause the income gap of farmers' land assets. Farmland transfer may have a greater impact on the income inequality of farmers with a higher level of natural capital or those who completely rely on farmland. In addition, the farmland transfer mode will also have an important positive impact on agricultural production efficiency and household welfare. According to our field survey, it is also found that, compared with farmers' spontaneous mode, farmers involved in government-led or market-led farmland transfer can obtain additional job opportunities provided by those who transfer in of farmland. It is worth pointing out that the job requirements for the age and gender of farmers are very relaxed, which has a greater impact on the income inequality of families with labour shortages.

Farmers' participation in farmland transfer will inevitably lead to changes in livelihood capital and the choice of livelihood strategies, ultimately leading to changes in farmers' income structure and income level [38]. For example, the transfer out of farmland weakens the level of natural capital and social capital of farmers, resulting in a decline in agricultural income. Still, it releases more agricultural labour, which helps increase much more non-agricultural income [43]. Farmers with a rich labour capital tend to release labour force by transferring out of farmland to engage in non-agricultural production to increase non-agricultural income [44]. To sum up, there are significant differences in the impact of different farmland transfer modes on farmers' household income. In the process of farmers' participation in farmland transfer, the farmland transfer modes, farmers' livelihood capital, family factors and location conditions together cause unbalanced changes in farmers' income, and finally affect the income inequality among farmers. The analysis framework is shown in Figure 1.

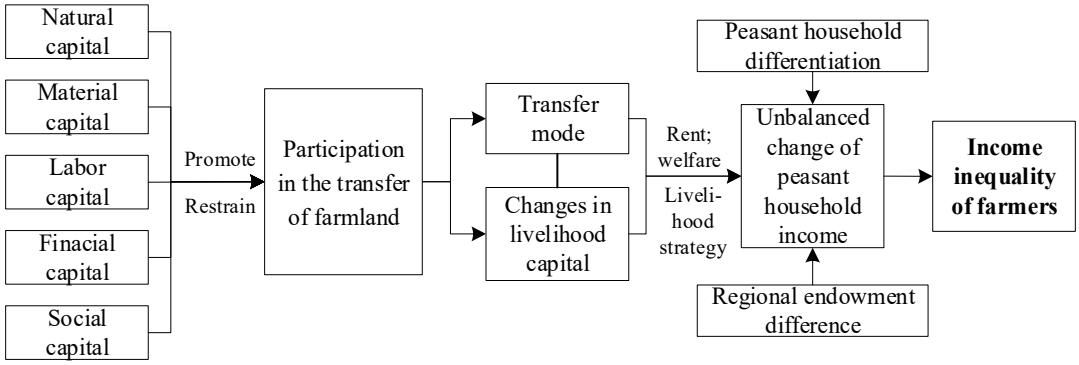

Figure 1. Analysis framework of farmland transfer and farmers' income inequality from the perspective of livelihood capital.

3. Data Source, Variable Definition, Empirical Approach

3.1. Data Source

The data of this paper come from the field survey on farmland transfer conducted by the research group in 7 cities of Hubei Province in March 2021, including Wuhan City, Jingzhou City, Jingmen City, Tianmen City, Xiaogan City, Enshi City and Yichang City, mainly distributed in the Jianghan Plain in central Hubei and mountainous and hilly areas in western Hubei. The Jianghan Plain is an important grain production base, while the western Hubei is an area with a strong ecological function because of its rich and diverse nature reserves. Significant differences exist between natural geographical conditions and peasant household characteristics. With the rapid development of the social economy and farmland transfer, the traditional rural household income structure based on agriculture has been gradually broken. Diversified livelihood strategies are becoming more and more common, and at the same time, the income gap between farmers is becoming more and more obvious.

A household survey is dominated by structured questionnaires and supplemented by semi-structured interviews, mainly related to farmland transfer, family factors, livelihood capital conditions and income and so on. The objects involved in this paper are mostly farmers who transferred out of their contracted farmland. It is because the subjects who transferred in the farmland are generally enterprises or companies that there is a lack of representativeness of farmers. Finally, 560 questionnaires were collected, and the distribution of the questionnaire is shown in Table 1. Fortunately, 551 questionnaires were valid after verification, with an effective rate of about 98%. Among them, the number of questionnaires in farmers' spontaneous mode, government-led mode and market-led mode are 88, 327 and 136, respectively.

3.2. Variable Definition

3.2.1. Explained Variables

- Annual household income (*inc*). The annual household income referred to in this paper is mainly divided into agricultural income and non-agricultural income. Agricultural income consists of agricultural income and farmland rent. Non-agricultural income is composed of working income, operating income, subsidised income and asset income [18,19]. In the model, the logarithm of the annual household income after the farmland transfer is taken as the explained variable.

Table 1. Investigation area and sample distribution.

Province	City	County (District)	Town	Sum (Copies)
Hubei	Jingzhou	Gongan	Maojiagang town	32
			Mahaokou town	34
			Dohudi town	28
	Jingmen	Shayang	Guanfeng town	20
			Zengji town	22
			Lishi town	22
			Gaoyang town	24
	Enshi	Enshi	Longfeng town	62
	Yichang	Yiling	Longquan town	38
			Yaquiling town	30
	Wuhan	Jiangxia	Jinkou Street	44
		Caidian	Yong'an Street	41
	Tianmen	Tianmen	Yuekou town	32
			Lushi town	28
			Pengshi town	23
	Xiaogan	Yingcheng	Tiandian town	45
			Chenhe town	35

3.2.2. Explanatory Variables

- Transfer mode (*tran*). The transfer mode is divided comprehensively according to the questions in the questionnaire, such as "whether the contract has been signed", "transfer period", "transfer rent" and "intermediary organisation". The farmers' spontaneous mode is mainly "oral" agreements, and there is generally no formal transfer agreement or official description of the transfer period. The main purpose of this mode is to prevent farmland abandonment. The market-led mode is mainly the transfer promoted by farmers, companies and enterprises through the farmland transfer information platform. The village committee or the government provides basic guidance. The government-led mode refers to the transfer directly introduced or promoted by the government or the village collective. Market-led and government-led mode generally have formal and legal transfer contracts, clear transfer rents, appointed time limits and utilisation agreements. Because the main explanatory variables are logical data, according to the characteristics of logistics regression model, all farmers are divided into three sub-groups: (1) farmers' spontaneous mode as control group, market-oriented type as the observation group; (2) farmers' spontaneous mode as the control group, government-oriented type as the observation group; (3) market-oriented type as the control group and government-dominated type as the observation group.
- Livelihood capital (*cap*). Livelihood capital endowment can be divided into five categories: natural capital (*nat*), material capital (*mat*), financial capital (*fin*), labour capital (*lab*) and social capital (*soc*). Referring to Xu et al. (2019) [45], Fang et al. (2014) [46], Liu et al. (2021) [47] and Wang et al. (2021) [48], combined with the investigation of the actual situation of farmers, the natural capital of this study includes the farmland area, quality and farming conditions of farmers. Material capital mainly includes household housing area and other fixed assets of farmers. Financial capital mainly considers the loan level and ability of rural households. Human capital mainly includes the proportion of labour force, education and skill training of peasant households. Social capital mainly considers the neighbourhood relationship and management experience among farmers. Considering the objectivity and accuracy of weight acquisition, we use the entropy weight method to calculate the weight of each sub-variable [49–51]. Then, five kinds of livelihood capital values are obtained using the sub-variables and entropy weight method. The sub-variables of livelihood capital are shown in Table 2. In order to reflect the impact of different transfer modes on

livelihood capital more directly, the difference between the livelihood capital after the transfer and the livelihood capital before the transfer is regarded as the variable value. Alongside that, 14 sub-variables of five kinds of livelihood capital are standardised to calculate the total livelihood capital level of farmers according to the entropy weight method.

- Interaction factor (*m_c*). There is an interactive relationship between different transfer modes and farmers' livelihood capital. Therefore, the interaction between transfer mode and total livelihood capital is introduced as a supplement to the model. Drawing further lessons from the entropy method, the 14 sub-variables of five types of livelihood capital are standardised, and then the total livelihood capital of farmers is calculated.

Table 2. Variable settings and descriptions.

Variable	Description and Assignment	Sample Size	Mean Value	Standard Deviation
Explained Variable				
Annual household income (*inc*)	The logarithm of the sum of all household incomes	551	2.182	0.9038
Explanatory Variable				
Transfer mode (*tran*)	There are three kinds of transfer modes: farmers' spontaneous mode, market-led mode and government-led mode, and three kinds of control–observation groups: Group I: spontaneous mode(0) and market-led mode(1)	224	0.607	0.4884
	Group II: spontaneous mode(0) and government-led mode(1)	415	0.760	0.4270
	Group III: market-led mode(0) and government-led mode(1), where 0 represents the controlled samples and 1 represents the observed samples	463	0.672	0.4694
Interaction factor (*m_c*)	Product of transfer mode (*tran*) and total livelihood capital			
	Group I × total livelihood capital	224	0.039	0.0604
	Group II × total livelihood capital	415	0.056	0.0736
	Group III × total livelihood capital	463	0.049	0.0715
Livelihood capital (cap)	It is calculated from five parts of livelihood capital.	551	0.054	0.3491
Natural capital (*nat*)	The difference between natural capital before and after farmland transfer	551	−0.171	0.2091
Material capital (*mat*)	The difference between material capital before and after farmland transfer	551	0.401	1.4489
Financial capital (*fin*)	The difference between financial capital before and after farmland transfer	551	0.087	0.7440
Labour capital (*lab*)	The difference between labour capital before and after farmland transfer	551	−0.093	0.0806
Social capital (*soc*)	The difference between social capital before and after farmland transfer	551	0.056	0.0480
Control variable				
Family factor (*fam*)	Comprehensive value of family variables	551	2.648	1.3906
Age of head of household (*age*)	The older you are, the more likely you are to adopt a conservative transfer policy (years old)	551	62.376	9.6134

Table 2. *Cont.*

Variable	Description and Assignment	Sample Size	Mean Value	Standard Deviation
Social identity (*sid*)	Ordinary people:1; Party members:2; Village cadres:3; Party members + village cadres:4	551	1.095	0.4401
Health (*hea*)	Health:1; Occasional ailments:2; Chronic diseases:3; Major diseases:4	551	3.243	0.8488
Educational level (*edu*)	Did not attend school:1; Primary School:2; Junior High School:3; Senior High School (Technical Secondary School):4; University (College) and above:5	551	1.971	0.9156
Geographical conditions (*geo*)	Plains:1; Mountains and hills:0	551	0.507	0.4999
Subvariables of livelihood capital [1]				
nat-per capita contracted land area	Household contracted land area divided by total population (mu/person)	551	0.490	0.7196
nat-farmland quality	Very bad:1; Bad:2; General:3; Good:4; Very good:5	551	3.627	0.8139
nat-farming conditions	Very bad:1; Bad:2; General:3; Good:4; Very good:5	551	3.52	0.9702
mat-per capita housing area	Total housing area divided by total population (m^2/person)	551	40.772	22.5214
mat-fixed assets	Number of household fixed assets (pieces)	551	6.257	1.9422
fin-access to loans	(units)	551	2.649	0.6885
fin-convenience of loans	Very difficult:1; Difficult:2; General:3: Easy:4; Very easy:5	551	2.649	1.1091
fin-amount of the loan	The total amount of loans obtained by households from loan channels (10,000 yuan)	551	1.884	8.2493
lab-proportion of young and strong labour	The proportion of family members aged 15 to 65 (%)	551	0.628	0.3179
lab- education expenditure	The family members' expenditure on education (10,000 yuan)	551	0.901	1.2261
lab-skill training	Family members participate in all kinds of labor skills training (times)	551	0.301	0.8338
soc-interpersonal expenditure	Expenditure on behalf of rural social relations (10,000 yuan)	551	0.642	0.4219
soc-neighbourhood relationship	Very bad:1; Bad:2; Average:3; Good:4; Very good:5	551	4.287	0.5895
soc-management experience	Very poor:1; Poor:2; General:3; Rich: 4; Very rich: 5	551	2.050	1.2142

[1] Due to the limitation of space, only livelihood capital after the transfer out of farmland is displayed.

3.2.3. Control Variables

- Based on the existing research, we select family factors (*fam*) and geographical conditions (*geo*) as control variables [20,23,25]. Family factors include "the age of the head of household (*age*)", "social identity (*sid*)", "health status (*hea*)" and "education level (*edu*)". Geographical conditions have an important impact on rural income inequality. In this paper, virtual variables are set according to plains, mountains and hills to measure the impact of geographical conditions on farmers' income. The specific settings of each variable are shown in Table 2.

3.3. Empirical Approach

3.3.1. Farmers' Income Model

Farmers' income model is the premise of Shapley decomposition. In the form of a semi-logarithmic model, we take the logarithm of annual household income as the explained variable and introduce family factors, interaction factors, livelihood capital and geographical condition as explanatory variables. The model is as follows:

$$Ln(y) = \alpha + \beta_1 \times geo + \beta_2 \times tran + \beta_3 \times m\_c + \beta_4 \times age + \beta_5 \times sid + \beta_6 \times hea + \beta_7 \times edu + \beta_8 \times nat + \beta_9 \times mat + \beta_{10} \times fin + \beta_{11} \times lab + \beta_{12} \times soc + \varepsilon \quad (1)$$

where $ln(y)$ is the logarithmic form of the annual household income. α is the constant term, β is the coefficient of each variable. "*geo*" is a virtual variable about geographical conditions. "*tran*" is the transfer mode, which is assigned according to three control–observation groups in Table 2. "*m_c*" is the interaction factor between the transfer mode and total livelihood capital. "*age*" is the age of the head of household. "*sid*" represents the social identity of the head of household. "*hea*" represents the health of family members. "*edu*" represents the education level of the head of household. "*nat*" represents the level of natural capital. "*mat*" represents the level of material capital. "*fin*" represents the level of financial capital. "*lab*" represents the level of labour capital. "*soc*" represents the level of social capital. ε represents the error of the model.

3.3.2. Decomposition of Income Inequality

We introduce the Gini coefficient to characterise farmers' income inequality and carry out Shapley decomposition based on the income model to analyse the contribution of various influencing factors to income inequality. According to empirical research, when the number of variables exceeds 10, the calculation workload of Shapley decomposition increases exponentially. Therefore, we integrate "the age of the head of household (*age*)", "social identity (*sid*)", "health level (*hea*)" and "education level (*edu*)" into a family factor index (*fam*) according to the entropy weight method. In order to avoid the distortion of the results, it is necessary to take indices on both sides of the equation before decomposition. The model is as follows:

$$y = \exp(\beta_0) + \exp(\beta_1 \times geo + \beta_2 \times tran + \beta_3 \times m\_c + \beta_4 \times fam + \beta_5 \times nat + \beta_6 \times mat + \beta_7 \times fin + \beta_8 \times lab + \beta_9 \times soc) + \exp(\varepsilon) \quad (2)$$

According to Wan, the constant term does not participate in the decomposition, and ε represents the residual of the decomposition equation of income inequality [39]. "$1 - \varepsilon$" represents the contribution ratio of income inequality explained by the model, reflecting the degree of explanation of all explanatory variables to income inequality.

4. Empirical Results

4.1. Influence of the Transfer Mode and Livelihood Capital on Farmers' Income

4.1.1. OLS Regression Analysis of Household Income Based on the Total Sample

First, we construct the OLS regression model of farmers' household income based on all samples and construct the regression model M1, M2 and M3 according to the three control–observation groups shown in Table 3. According to the OLS results of all samples in Table 3, except for financial capital, natural capital, material capital, human capital and social capital all pass the 1% significance test, and the coefficients are all positive, indicating that the level of livelihood capital has a significant positive impact on farmers' household income. Among them, social capital, human capital and natural capital have the greatest impact on farmers' income. For every 1% increase in the three kinds of livelihood capital, the increase in household income is 2.41%, 1.70% and 0.97%, respectively. The impact of financial capital on the income of farmers is not significant. That is, the rural financial market has not played its due role in the growth of farmers' income. Generally speaking, one of the keys to promoting the growth of household income is to improve the level of livelihood capital, especially the level of social capital and human capital by reducing the social identity gap among farmers and improving the quality and skill level of the rural labour force.

Table 3. Regression results of household income.

Variable	All Samples (OLS)	Group I (M1)			Group II (M2)	Group III (M3)	
tran	—	−0.302 *	−0.879 ***	−0.116 ***	−0.300 **	0.803 ***	0.722 ***
		(0.171)	(0.142)	(0.031)	(0.0627)	(0.155)	(0.133)
m_c	—	0.165	0.303 *	0.371 ***	0.930 *	−2.489 *	−1.661
		(0.262)	(0.194)	(0.047)	(0.098)	(0.627)	(0.897)
nat	0.965 ***	2.488 **	1.024 ***	0.439 *	0.654 ***	0.971 ***	0.987 ***
	(0.231)	(0.365)	(0.158)	(0.125)	(0.157)	(0.194)	(0.162)
mat	0.065 ***	0.002	−0.018	0.160 *	0.097 **	0.108 *	0.070 **
	(0.012)	(0.074)	(0.094)	(0.076)	(0.013)	(0.041)	(0.015)
fin	0.043	0.017	0.081	−0.007 *	−0.038	0.004	0.019
	(0.233)	(0.101)	(0.135)	(0.004)	(0.047)	(0.015)	(0.061)
lab	1.896 ***	2.224 **	3.149 ***	0.295 *	0.340	4.307 **	3.274 ***
	(0.331)	(0.435)	(0.583)	(0.264)	(0.148)	(0.773)	(0.625)
soc	2.414 ***	1.905 *	2.499 **	0.902 ***	1.890 *	3.326 ***	2.387 **
	(0.428)	(0.466)	(0.598)	(0.283)	(0.389)	(0.619)	(0.562)
age	−0.003		−0.015 **		0.010 *		−0.002
	(0.064)		(0.013)		(0.003)		(0.017)
sid	0.317 ***		0.290 ***		0.284 ***		0.206 *
	(0.152)		(0.053)		(0.049)		(0.075)
hea	0.003		0.061		−0.015		0.057
	(0.055)		(0.086)		(0.033)		(0.126)
edu	0.134 ***		0.146 **		0.120 ***		0.186 ***
	(0.041)		(0.039)		(0.022)		(0.032)
geo	0.229 ***		0.474***		0.212**		0.159 **
	(0.056)		(0.061)		(0.047)		(0.035)
_cons	1.830 ***	3.448 ***	2.630 ***	3.006 ***	1.077 **	2.197 ***	1.309 ***
	(0.381)	(0.392)	(0.453)	(0.654)	(0.229)	(0.417)	(0.238)
Observations	551	224	224	415	415	463	463
R^2	0.182	0.337	0.435	0.237	0.206	0.299	0.270
F	10.93	12.67	13.52	8.68	7.64	12.49	12.37

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Among the family factors of farmers, only the social identity and education level pass the 1% significance test, and the coefficients are 0.317 and 0.134, respectively. Referring to the research results of Xu et al., we can see that the status of village cadres or party members has a significant positive effect on the household income of farmers [21]. Geographical conditions also pass the significance test, and the coefficient is 0.229, indicating that farmers' income is also affected by geographical conditions.

4.1.2. Analysis of the Influence of Different Transfer Modes on Farmers' Household Income

According to the results of model M1–M3 shown in Table 3, there is a high similarity between the model coefficient results with and without control variables as a whole, which indicates that the model results are more feasible. According to the results of the model containing control variables, the transfer modes all passed the significance test. The coefficients of transfer modes were negative in M1 and M2 but positive in M3, which were −0.879, −0.300 and 0.722, respectively. It is shown that the direct impact of farmers' spontaneous mode on household income is more positive than that of market-led mode and government-led mode, while the influence of government-led mode is also more positive than that of market-led mode. The reason may be that during the three transfer modes, farmers' agricultural income accounted for a low proportion of the total household income for families with young labour. Therefore, although the rental income of government-led and market-led modes is higher than that of farmers' spontaneous mode, the impact of rent on total household income is very limited [52–54]. Farmers' spontaneous transfer is largely to transfer out of farmland to "acquaintances" at the cost of low rent to maintain the original planting pattern and structure of farmland to avoid land abandonment [55–57].

This kind of farmland transfer under the maintenance of local logic is very harmonious, resulting in farmers could rest assured to go out to work, so that the incomes of farmers with farmers' spontaneous mode were relatively high. Compared with the market-led farmland transfer, the government-led mode is usually backed by the credibility of the government, causing the transfer agreement and rent are more guaranteed.

From the perspective of the interaction between farmland transfer mode and livelihood capital, both M1 and M2 pass the 10% significance test, and the coefficients are 0.303 and 0.930, respectively. It is shown that compared with the spontaneous model, market-oriented or government-led transfer model and livelihood capital jointly enhance the positive effect on farmers' income. Compared with the market-led type and the government-led type, the joint impact of the transfer model and livelihood capital on farmers' income is not obvious.

4.2. Decomposition of Unequal Factor Contribution of Farmers' Income

4.2.1. Comparison of Income Inequality of Farmers before and after the Farmland Transfer

The Gini coefficient is commonly used to characterise the income inequality of farmers. When the Gini coefficient is greater than 0.4, it is generally considered that the income inequality is serious. As can be seen from Table 4, the Gini coefficient of the farmers' annual household income is higher than 0.4 before and after the transfer, which means that the income inequality of farmers is still prominent. From the perspective of farmers with different transfer modes, the Gini coefficients of farmers' spontaneous mode and government-led mode decrease after the farmland transfer, while that of market-led mode increases. The Gini coefficient of farmers with spontaneous transfer mode is the lowest, which is lower than 0.4, but the Gini coefficient of farmers with government-led transfer mode or market-led transfer mode is higher than 0.4. This reflects that farmers' spontaneous mode and the government-led mode have an inhibitory effect on farmers' income inequality as a whole, while the market-led mode may aggravate the income inequality of farmers to some extent.

Table 4. Gini coefficient of the total household income of different farmers before and after transfer.

	All Samples	Farmers' Spontaneous Mode	Government-Led Mode	Market-Led Mode
GINI—before	0.4326	0.3976	0.4260	0.4111
GINI—after	0.4103	0.3702	0.4013	0.4186
N	551	88	327	136

4.2.2. Analysis of Factor Contribution Decomposition of Farmers' Income Inequality

On the basis of the OLS regression, the quantile idea is further used to divide low-income farmers, middle-income farmers and high-income farmers according to 10%, 50% and 90% quantiles, respectively, and then the Shapley method is used to investigate the contribution of explanatory variables to farmers' income inequality. The results of contribution decomposition are shown in Table 5.

From the results of livelihood capital of all samples, we can see that the largest contribution to farmers' income inequality comes from natural capital, accounting for 31.87%, followed by family factors and human capital, accounting for 21.58% and 18.81%, respectively. The smallest is financial capital, accounting for 3.93%. For low-income farmers, natural capital and geographical conditions are the main factors affecting their income inequality, contributing 28.53% and 31.52%, respectively. For middle-income farmers, human and natural capital make a greater contribution, accounting for 38.52% and 23.69%, respectively. From the above results, the differences in natural resource endowment and labour force have a great impact on the income inequality of farmers, especially middle-income and low-income farmers in the study area. Therefore, measures should be mainly focused on middle-income and low-income farmers, such as land levelling, high-standard farmland construction and labour skills training. These measures will play a positive role in promoting their income growth if reliably implemented. As for high-income farmers, social

capital and financial capital are the determinants of their income inequality, contributing 36.21% and 22.16%, respectively, indicating that the current consolidation of rural social relations and the development of financial markets would aggravate the "Matthew effect" of "the rich get richer and the poor get poorer", deepening the income inequality of farmers.

Table 5. Factor contribution decomposition results of the income inequality of different farmers.

Variable	All Samples				Group I			
	OLS	**Q10**	**Q50**	**Q90**	**OLS**	**Q10**	**Q50**	**Q90**
tran	—	—	—	—	1.50	23.93	46.05	26.81
m_c	—	—	—	—	11.75	17.00	6.45	10.72
nat	31.87	28.53	23.69	2.89	29.77	4.95	5.33	0.39
mat	9.54	1.25	13.47	7.41	14.12	21.8	1.36	2.73
fin	3.93	7.55	0.27	22.16	2.38	1.44	10.30	7.48
lab	18.81	24.64	38.52	9.24	5.89	7.40	12.54	28.26
soc	8.35	6.02	13.97	36.21	5.22	9.81	3.93	0.82
fam	21.58	0.49	6.62	2.63	21.33	1.38	8.38	22.6
geo	5.92	31.52	3.45	19.47	8.03	12.30	5.66	0.19
Total (%)	100	100	100	100	100	100	100	100
Variable	**Group II**				**Group III**			
	OLS	**Q10**	**Q50**	**Q90**	**OLS**	**Q10**	**Q50**	**Q90**
tran	12.49	14.64	9.06	3.72	12.63	1.88	10.70	21.43
m_c	8.63	8.27	32.66	10.77	23.20	11.07	24.16	13.42
nat	12.29	15.82	8.73	35.44	20.66	1.08	10.79	8.16
mat	2.79	5.84	1.66	1.33	16.95	6.24	4.40	4.90
fin	2.17	15.34	5.03	5.38	3.72	13.06	10.57	7.76
lab	13.41	3.34	9.67	4.37	0.75	48.54	3.59	7.26
soc	21.40	3.53	13.24	29.79	10.96	15.58	12.95	3.41
fam	14.18	1.75	6.02	6.74	19.42	2.55	9.16	1.22
geo	12.63	31.49	13.93	2.46	2.88	1.88	13.69	32.45
Total (%)	100	100	100	100	100	100	100	100

From the perspective of farmland transfer mode, and according to the OLS regression results of group I in Table 5, the contribution of the transfer mode to income inequality is small. But in terms of different income levels, the contribution of the transfer mode to the income inequality of low-income, middle-income and high-income farmers is as high as 23.93%, 46.05% and 26.81%, respectively. In group I, the impact of livelihood capital is relatively lower than that of all samples, indicating that compared with farmers' spontaneous mode, market-led mode could help reduce the impact of livelihood capital differences on farmers' income inequality, which makes the contribution of the market-led mode to farmers' income inequality greater. The reason may be that the asymmetric and opaque information of market-led transfer leads to the lack of true feedback and guarantee of farmers' income from farmland transfer. Because the enterprises and companies who transfer in the farmland have a more thorough understanding of the information and policies about farmland transfer, it is easier for them to use the market rules to compress the interests of farmers. As for the results of group II, the contribution of transfer mode to income inequality is relatively small. The contribution of farmers' income inequality mainly comes from the difference in livelihood capital endowment, which shows that the government-led transfer mode can alleviate farmers' income inequality to a certain extent. From the results of group III, the contribution of the transfer mode to the income inequality of low-income and middle-income farmers is relatively small, which is 1.88% and 10.7%, respectively, indicating that compared with the market-led mode, government-led farmland transfer plays a more important role in stabilising farmers' income and alleviating income inequality.

From the perspective of the interaction between the transfer mode and livelihood capital, and according to the results of group I, the interaction factor has the largest contribution

to the income inequality of low-income farmers, which is 17%. That is, compared with the farmers' spontaneous mode, the market-led mode and livelihood capital work together to enhance income inequality among low-income farmers. It is known from the results of group II and group III, that the interaction factor of the two groups make the greatest contribution to the income inequality of middle-income farmers, as high as 32.66% and 24.16%, respectively, indicating that the interaction between government-led mode and livelihood capital will expand the income inequality among middle-income farmers. Generally speaking, the interactions between different transfer modes and livelihood capital have relatively little impact on high-income farmers.

5. Discussion

In recent years, China's farmland transfer market has been hot, and many farmers have achieved poverty alleviation and income growth by virtue of farmland transfer policies. However, it cannot be ignored that the growth of farmers' income caused by farmland transfer is not treated equally. Farmers' income is affected by the transfer mode, farmers' livelihood capital endowment and farmers' income level and other factors. In other words, the transfer of farmland increases the income of farmers, but there is also the adverse effect of the widening income gap among farmers. Based on it, we analyse the impact of farmland transfer on farmers' income in seven cities in central and western Hubei Province through a field survey and empirical model in this paper. Moreover, we further analyse the impact of livelihood capital and transfer modes on the income inequality of farmers at different income levels. Compared with previous studies, the main marginal contribution of this paper may be the impact of different farmland transfer modes and livelihood capital on farmers' income inequality from the theoretical and empirical aspects. The empirical results can provide a reference for the management of farmland transfer and rural revitalisation in Hubei and other areas.

This paper mainly analyses the relationship between livelihood capital, farmland transfer mode and farmers' income inequality, and the research results have some similarities and differences with the existing empirical results. From the perspective of livelihood capital, we find that labour capital, natural capital, and social capital have the greatest impact on middle-income and low-income farmers, while financial capital has a greater impact on high-income farmers. From an economic point of view, the main factors that affect the growth of farmers' income are labour, farmland and capital. Therefore, the changes in human capital, natural capital and financial capital must have an important impact on farmers' income. Due to the complexity of the socio-economic system, the social relations and status of farmers may have an impact on income to a certain extent through indirect ways. The further research results of this paper show that natural capital, family factors and labour capital affect the income inequality of low-income and middle-income farmers. On the contrary, social capital and financial capital mainly affect the income inequality of high-income farmers, which is similar to the results of Xu et al., who found that the higher the social status of the head of household, the easier it is to get excess income from the transfer of farmland [22]. In China's rural areas, farmers with rich social capital are more likely to be elected as members of village committees than ordinary farmers, thus affecting the formulation of rules for the transfer of farmland in rural areas. Assuming that the information about farmland transfer lacks transparency and fairness, the farmland transfer rules may lead to uneven resources distribution, resulting in unfairness and the phenomenon that "the rich get richer and the poor get poorer" [17].

From the results of the transfer mode, the restraining effect of farmers' spontaneous mode on the income gap of farmers is better than that of market-led mode and government-led mode, but that of government-led mode is better than that of market-led mode. First, the research of Liu et al. shows that the transfer of farmland can promote non-agricultural employment [52]. For families with a small amount of labour, the impact is negligible, but for families with a large amount of labour, the impact is significant and positive [52]. Due to the fragmentation of farmland in China and the huge difference between agricultural income and non-agricultural income, except for traditional pure farmers, most farmers tend to engage in non-agricultural work [47]. It can be seen that farmers tend to release agricultural labour through the transfer out of farmland to obtain non-agricultural income, which leads to a lower and lower proportion of agricultural income in total household income. Therefore, although the government-led and market-led transfer rent is higher than that of farmers' spontaneous mode, the impact on household income is very limited [32]. Farmers with a spontaneous transfer mode generally transfer out of farmland to acquaintances for farming, so they can go out to work at ease and obtain high non-agricultural income without worrying about the destruction of farmland [33]. Referring to the results of market-led and government-led mode of farmland transfer, the government-led mode has better security and stability based on the credibility of the government.

From the results of the interaction between the transfer modes and livelihood capital, Liu and Liu find that the government-led farmland transfer has the attribute of promoting the development of people's livelihood through the study of farmers' livelihood transformation at different stages in China [52]. This is similar to the result of this paper, which finds that market-led and government-led modes indirectly enhance the positive effect of livelihood capital on farmers' income. The reason may be that market-led and government-led modes play a stronger role in promoting employment than farmers' spontaneous modes because of additional employment opportunities provided by market-led and government-led modes. Secondly, government-led and market-led modes have the characteristics of a large-scale farmland and high rent, which can release agricultural surplus labour to a greater extent. The difference is that the results of this paper show that market-led and government-led modes expand the income inequality between middle-income and low-income farmers. This is consistent with the results of Wu and Liu who found that different farmers participate in farmland transfer in different ways, resulting in great differences in the way and size of farmland transfer income [55–57]. The income brought by farmland transfer accounts for a relatively large proportion of total household income for low-income and middle-income farmers, especially large-scale farmland transfer led by the government and the market. Unfortunately, Wu and Liu did not further analyse the impact of transfer modes and livelihood capital on household income inequality of farmers at different income levels [58,59].

From the perspective of methods and data, during the field research, our research group designs the research route by looking for the demonstration sites of farmland transfer or rural revitalisation in various cities and adopting the combination of demonstration sites and non-demonstration sites. To a certain extent, the demonstration area can ensure the number of samples of farmland transfer led by the market or the government, while the non-demonstration site ensures the availability of samples of farmers' spontaneous transfer, and finally ensures that the whole research data can meet the needs of the research. According to the characteristics of the survey data, we use the regression model to analyse the impact of the transfer mode on income inequality. Due to the heterogeneity of farmers' income levels, quantile idea and Shapley decomposition methods are further used to analyse the differences among different farmers [17,43]. Therefore, the models and methods are relatively scientific and reasonable, but there are deficiencies in the exploration and verification of the influence mechanism, which should be perfected in follow-up research.

On the basis of our field survey, this paper analyses the impact of different transfer modes on farmers' income inequality from the perspective of farmers' livelihood capital, but there may also be some shortcomings. First, the data samples of this paper only include some urban areas of Hubei Province, and the applicability of the results to other provinces and cities in China is worthy of further discussion. Secondly, although we consider the differences in geographical conditions, the analysis of the impact of the differences in regional economic conditions is lacking. In the follow-up study, the scope of research and sample size should be expanded, and the dual effects of regional geographical and economic conditions should be comprehensively considered to make the research results more scientific and applicable.

6. Conclusions and Implications

The mode of farmland transfer plays an important role in changing farmers' livelihood capital and affecting farmers' income structure, indirectly leading to farmers' income inequality. Judging from the above results, the main conclusions are as follows. (1) Farmers' spontaneous mode, market-led mode and government-led mode of farmland transfer all enhance the impact of livelihood capital on farmers' income, but farmers' spontaneous mode has a better effect on farmers' income growth. (2) The higher the level of natural capital, material capital, labour capital and social capital, the more beneficial the impact on farmers' income, but the financial capital is more beneficial to high-income farmers. (3) The main factor of farmers' income inequality is natural capital, followed by family factor and labour capital. From the perspective of income stratification of farmers, geographical conditions and the level of natural capital mainly affect the income inequality of low-income farmers. Labour capital and natural capital mainly affect the income inequality of middle-income farmers. Unsurprisingly, social capital and financial capital mainly affect the income inequality of high-income farmers. (4) Compared with farmers' spontaneous mode or government-led mode, the market-led mode has weakened the impact of livelihood capital endowment but expanded the contribution to income inequality. As a result, the effect of the market-led mode on alleviating income inequality of middle-income or low-income farmers is weaker than that of farmers' spontaneous mode or government-led mode.

Based on the results and conclusions, we put forward the following suggestions. (1) In the process of promoting the transfer of farmland, the spontaneous mode based on the wishes of farmers should be fully respected. Then the government should play a dominant role in the current farmland transfer context to guide the healthy development of farmland transfer in an orderly manner, further improve the transfer market to ensure the transparency, openness and fairness of the transfer process, and finally reduce the impact of the transfer modes on the income inequality of farmers. (2) According to the analysis of farmers' income inequality, in order to increase farmers' household income, the difference in farmers' livelihood capital endowment needs to be found first, then targeted to make up for the shortcomings of farmers through the rural social security system, land formation and high-standard farmland construction, labour skills training policies and other combined measures. (3) As for the analysis of income inequality of farmers with different income levels, the income-increasing effect of rural finance on low-income farmers should be improved to avoid the expansion of rural income inequality. Firstly, it is necessary to reduce the loan difficulty of low-income farmers by increasing their loan channels to ensure financial fairness. Secondly, the government should strengthen administrative intervention in rural financial institutions, further standardise and improve rural financial services, and establish a financial service database for low-income farmers through financial subsidies, interest-free loans and other measures.

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References

1. Luo, B.L. 40-year reform of farmland institution in China: Target, effort and the future. *China Agric. Econ. Rev.* **2018**, *10*, 16–35. [CrossRef]
2. Zhou, Y.; Li, X.H.; Liu, Y.S. Rural land system reforms in China: History, issues, measures and prospects. *Land Use Policy* **2020**, *91*, 104330. [CrossRef]
3. Gao, J.L.; Liu, Y.S.; Chen, J.L. China's initiatives towards rural land system reform. *Land Use Policy* **2020**, *94*, 104567. [CrossRef]
4. Zhang, C.C. The major problems and the governmental role in Chinese rural land transfer. *Asian J. Agric. Res.* **2011**, *3*, 62–65.
5. Wang, Q.X.; Zhang, X.L. Three rights separation: China's proposed rural land rights reform and four types of local trials. *Land Use Policy* **2017**, *63*, 111–121. [CrossRef]
6. Li, C.Y.; Jiao, Y.; Sun, T.; Liu, A.R. Alleviating multi-dimensional poverty through land transfer: Evidence from poverty-stricken villages in China. *China Econ. Rev.* **2021**, *69*, 101670. [CrossRef]
7. Cao, H.; Zhu, X.; Heijman, W.; Zhao, K. The impact of land transfer and farmers' knowledge of farmland protection policy on pro-environmental agricultural practices: The case of straw return to fields in Ningxia, China. *J. Clean. Prod.* **2020**, *277*, 123701. [CrossRef]
8. You, H.Y.; Wu, S.Y.; Wu, X.; Song, Y. The underlying influencing factors of farmland transfer in urbanizing China: Implications for sustainable land use goals. *Environ. Dev. Sustain.* **2021**, *23*, 8722–8745. [CrossRef]
9. Yang, H.X.; Huang, K.; Deng, X.; Xu, D.D. Livelihood capital and land transfer of different types of farmers: Evidence from panel data in Sichuan Province, China. *Land* **2021**, *10*, 532. [CrossRef]
10. Wang, W.W.; Gong, J.; Wang, Y.; Shen, Y. Exploring the effects of rural site conditions and household livelihood capitals on agriculture land transfers in China. *Land Use Policy* **2021**, *108*, 105523. [CrossRef]
11. Udimal, T.B.; Liu, E.; Luo, M.C.; Li, Y. Examining the effect of land transfer on landlords' income in China: An application of the endogenous switching model. *Heliyon* **2020**, *6*, e05071. [CrossRef] [PubMed]
12. Li, X.G.; Liu, J.D.; Huo, X.X. Impacts of tenure security and market-oriented allocation of farmland on agricultural productivity: Evidence from China's apple growers. *Land Use Policy* **2021**, *102*, 105233. [CrossRef]
13. Han, W.J.; Zhang, Z.F.; Zhang, X.L.; He, L. Farmland rental participation, agricultural productivity, and household income: Evidence from rural China. *Land* **2021**, *10*, 899. [CrossRef]
14. Kuang, Y.P.; Yang, J.L.; Abate, M.C. Farmland transfer and agricultural economic growth nexus in China: Agricultural TFP intermediary effect perspective. *China Agric. Econ. Rev.* **2021**, *14*, 184–201. [CrossRef]
15. Peng, K.L.; Yang, C.; Chen, Y. Land transfer in rural China: Incentives, influencing factors and income effects. *Appl. Econ.* **2020**, *52*, 5477–5490. [CrossRef]
16. Wang, W.; Luo, X.; Zhang, C.M.; Song, J.H.; Xu, D.D. Can land transfer alleviate the poverty of the elderly? Evidence from rural China. *Int. J. Environ. Res. Public Health* **2021**, *18*, 11288. [CrossRef]
17. Huo, C.J.; Chen, L.M. Research on the impact of land circulation on the income gap of rural households: Evidence from CHIP. *Land* **2021**, *10*, 781. [CrossRef]
18. Shi, C.L. The impact of land transfer on rural household income gap: Exacerbation or alleviation? *Res. Econ. Manag.* **2020**, *41*, 79–92. (In Chinese)
19. Yang, Z.; Ma, X.L.; Zhu, P.X.; Ma, D. Land transfer and income change of peasants. *China Popul. Resour. Environ.* **2017**, *5*, 111–120. (In Chinese)
20. Liu, X.Z.; Zhou, H.M.; Wang, X.H. Does farmland transfer narrow income gap among farmers? Microcosmic evidence from CFPS. *J. Agro-For. Econ. Manag.* **2021**, *94*, 501–510. (In Chinese)
21. Guo, J.P.; Qu, S.; Xia, Y.; Lv, K.Y. Research on income distributive effects of farmland circulation. *China Popul. Resour. Environ.* **2018**, *213*, 160–169. (In Chinese)
22. Xu, C.; Chen, B.D.; Li, L.C.; Xu, X.Y. Does political identity reduce the rent of land?—An empirical analysis from Zhejiang Province. *J. Agrotech. Econ.* **2019**, *293*, 73–81. (In Chinese)
23. Zhang, J.; Feng, S.Y.; Zhu, P.X. Does government intervention on farmland rental market lead to rural income inequality? *J. Public Manag.* **2017**, *14*, 104–116. (In Chinese)
24. Yang, F.; Jiang, Y.; Zeng, W.Z. Livelihood capitals on income inequality among rural households: Evidence from China. *Ciência Rural* **2020**, *50*, e20190461. [CrossRef]
25. Wang, X.Q.; Zhu, G.L.; Zhou, W. Farmers' livelihood capital, family factor flowing and farmland transfer participation. *Resour. Environ. Yangtze Basin* **2021**, *30*, 992–1002. (In Chinese)

26. Cai, J.; Wang, T.; Xia, X.L.; Chen, Y.Z.; Lv, H.Q.; Li, N. Analysis on the choice of livelihood strategy for peasant households renting out farmland: Evidence from western poverty-stricken areas in China. *Sustainability* **2019**, *11*, 1424. [CrossRef]
27. Qiu, T.W.; Luo, B.L. The path of scale management in the perspective of agricultural factor market construction. *Reform* **2018**, *289*, 90–102. (In Chinese)
28. Serrat, O. The sustainable livelihoods approach. In *Knowledge Solutions: Tools, Methods, and Approaches to Drive Organizational Performance*; Springer: Berlin/Heidelberg, Germany, 2017; pp. 21–26.
29. Mazzone, A. Decentralised energy systems and sustainable livelihoods, what are the links? Evidence from two isolated villages of the Brazilian Amazon. *Energy Build.* **2019**, *186*, 138–146. [CrossRef]
30. Yang, L.; Liu, M.C.; Lun, F.; Min, Q.W.; Li, W.H. The impacts of farmers' livelihood capitals on planting decisions: A case study of Zhagana Agriculture-Forestry-Animal Husbandry Composite System. *Land Use Policy* **2019**, *86*, 208–217. [CrossRef]
31. Dendir, Z.; Simane, B. Livelihood vulnerability to climate variability and change in different agroecological zones of Gurage Administrative Zone, Ethiopia. *Prog. Disaster Sci.* **2019**, *3*, 100035. [CrossRef]
32. Berchoux, T.; Watmough, G.R.; Hutton, C.W.; Atkinson, P.M. Agricultural shocks and drivers of livelihood precariousness across Indian rural communities. *Landsc. Urban Plan.* **2019**, *189*, 307–319. [CrossRef]
33. Jezeer, R.E.; Verweij, P.A.; Boot, R.G.A.; Junginger, M.; Santos, M.J. Influence of livelihood assets, experienced shocks and perceived risks on smallholder coffee farming practices in Peru. *J. Environ. Manag.* **2019**, *242*, 496–506. [CrossRef] [PubMed]
34. Kelley, L.C.; Peluso, N.L.; Carlson, K.M.; Afiff, S. Circular labour migration and land-livelihood dynamics in Southeast Asia's concession landscapes. *J. Rural Stud.* **2020**, *73*, 21–33. [CrossRef]
35. Liu, M.C.; Yang, L.; Bai, Y.Y.; Min, Q.W. The impacts of farmers' livelihood endowments on their participation in eco-compensation policies: Globally important agricultural heritage systems case studies from China. *Land Use Policy* **2018**, *77*, 231–239. [CrossRef]
36. Berchoux, T.; Hutton, C.W. Spatial associations between household and community livelihood capitals in rural territories: An example from the Mahanadi Delta, India. *Appl. Geogr.* **2019**, *103*, 98–111. [CrossRef]
37. Jiang, S.; Wang, Z.; Cao, Z.L. Different land transfer mode: Empirical evidence form Chongqing. *China Land Sci.* **2013**, *27*, 10–18.
38. Chen, L.L.; Chen, H.S.; Zou, C.H.; Liu, Y. The impact of farmland transfer on rural households' income structure in the context of household differentiation: A case study of Heilongjiang Province, China. *Land* **2021**, *10*, 362. [CrossRef]
39. Ou, M.L.; Gong, J. Farmland Transfers in China: From Theoretic Framework to Practice. *Int. J. Environ. Res. Public Health* **2021**, *19*, 217. [CrossRef]
40. Shi, X.P.; Chen, S.J.; Ma, X.L.; Lan, J. Heterogeneity in interventions in village committee and farmland circulation: Intermediary versus regulatory effects. *Land Use Policy* **2018**, *74*, 291–300. [CrossRef]
41. Gao, W.; Li, Z.; Yu, L.; Wang, J. Speed up development of agricultural informatization and improve construction of agricultural modernization. *Res. Agric. Mod.* **2010**, *3*, 257–261.
42. Brandt, L.; Whiting, S.H. Changing property-rights regimes: A study of farmland tenure in China. *China Q.* **2017**, *232*, 1026–1049. [CrossRef]
43. Wan, G.H. Changes in regional inequality in rural China: Decomposing the Gini index by income sources. *Aust. J. Agric. Resour. Econ.* **2001**, *45*, 361–381. [CrossRef]
44. Wang, S.; Hong, M.Y.; Qian, W.R. The Role of government in farmland transfer and rural household income: An empirical research based on a survey of 608 rural households in Guizhou Province. *China Land Sci.* **2020**, *34*, 39–48. (In Chinese)
45. Xu, D.D.; Deng, X.; Guo, S.L.; Liu, S.Q. Sensitivity of livelihood strategy to livelihood capital: An empirical investigation using nationally representative survey data from rural China. *Soc. Indic. Res.* **2019**, *144*, 113–131. [CrossRef]
46. Fang, Y.P.; Fan, J.; Shen, M.Y.; Song, M.Q. Sensitivity of livelihood strategy to livelihood capital in mountain areas: Empirical analysis based on different settlements in the upper reaches of the Minjiang River, China. *Ecol. Indic.* **2014**, *38*, 225–235. [CrossRef]
47. Liu, M.y.; Feng, X.L.; Wang, S.G.; Zhong, Y. Does poverty-alleviation-based industry development improve farmers' livelihood capital? *J. Integr. Agric.* **2021**, *20*, 915–926. [CrossRef]
48. Wang, M.Y.; Li, M.; Jin, B.; Yao, L.; Ji, H. Does livelihood capital influence the livelihood strategy of herdsmen? Evidence from western China. *Land* **2021**, *10*, 763. [CrossRef]
49. Kuang, F.Y.; Jin, J.J.; He, R.; Wan, X.Y.; Ning, J. Influence of livelihood capital on adaptation strategies: Evidence from rural households in Wushen Banner, China. *Land Use Policy* **2019**, *89*, 104228. [CrossRef]
50. Jin, G.; Peng, J.; Zhang, L.X.; Zhang, Z.Y. Understanding land for high-quality development. *J. Geogr. Sci.* **2023**, *33*, 217–221. [CrossRef]
51. Zhang, Z.; Jin, G.; Hu, Y.; He, N.; Niu, J. Performance Management of Natural Resources: A Systematic Review and Conceptual Framework for China. *Water* **2022**, *14*, 3338. [CrossRef]
52. Liu, Z.; Rommel, J.; Feng, S.; Hanisch, M. Can land transfer through land cooperatives foster off-farm employment in China? *China Econ. Rev.* **2017**, *45*, 35–44. [CrossRef]
53. Jin, G.; Chen, K.; Wang, P.; Guo, B.; Dong, Y.; Yang, J. Trade-offs in land-use competition and sustainable land development in the North China Plain. *Technol. Forecast. Soc. Chang.* **2019**, *141*, 36–46. [CrossRef]
54. Guo, B.S.; Chen, K.L.; Jin, G. Does multi-goal policy affect agricultural land efficiency? A quasi-natural experiment based on the natural resource conservation and intensification pilot scheme. *Appl. Geogr.* **2023**, *161*, 103141. [CrossRef]
55. Wang, J.Y.; Cao, Y.; Fang, X.Q.; Li, G.Y. Does land tenure fragmentation aggravate farmland abandonment? Evidence from big survey data in rural China. *J. Rural Stud.* **2022**, *91*, 126–135. [CrossRef]

56. Jin, G.; Shi, X.; He, D.W.; Guo, B.S.; Li, Z.H.; Shi, X.B. Designing a spatial pattern to rebalance the orientation of development and protection in Wuhan. *J. Geogr. Sci.* **2020**, *30*, 569–5826. [CrossRef]
57. Guo, B.S.; He, D.; Jin, G. Agricultural production efficiency estimation and spatiotemporal convergence characteristic analysis in the Yangtze River Economic Belt: A semi-parametric metafrontier approach. *Land Degrad. Dev.* **2023**, *34*, 4635–4648. [CrossRef]
58. Liu, Z.X.; Liu, L.M. Characteristics and driving factors of rural livelihood transition in the east coastal region of China: A case study of suburban Shanghai. *J. Rural Stud.* **2016**, *43*, 145–158. [CrossRef]
59. Wu, B.; Liu, L.H. Social capital for rural revitalization in China: A critical evaluation on the government's new countryside programme in Chengdu. *Land Use Policy* **2020**, *91*, 104268. [CrossRef]