

Article

The Impact of Livelihood Capital Endowment on Household Poverty Alleviation: The Mediating Effect of Land Transfer

Xiaonan Zhao ^{1,2} and Feng Lan ^{1,2,*}¹ School of Management, Xi'an University of Architecture and Technology, Xi'an 710055, China² Research Center of Green Development and Mechanism Innovation of Real Estate Industry in Shaanxi Province, Xi'an University of Architecture and Technology, Xi'an 710055, China

* Correspondence: lanfeng@xauat.edu.cn

Abstract: (1) Background: Poverty eradication is the common goal and challenge of human development. Livelihood capital is the basis for poor families to escape poverty and is also the key to enhancing the ability for sustainable development. (2) Methods: Using data from the 2018 China Family Panel Studies (CFPS), this paper empirically examines the impact of livelihood capital on poverty alleviation. In addition, the mediating effect of land transfer is explored. (3) Results: The results show that human, physical, financial, and social capital all have a significant positive impact on poverty alleviation, while natural capital has a significant negative impact on poverty alleviation. Moreover, land transfer plays a partial mediating role in the relationship between livelihood capital and poverty alleviation. (4) Conclusions: Based on the above findings, we suggest that the government formulate targeted poverty alleviation policies according to rural households' livelihood capital endowment characteristics, reasonably guide the land flow, and achieve sustainable poverty reduction.

Keywords: livelihood capital; land transfer; poverty alleviation; sustainable development



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1. Introduction

Poverty is a key concern for countries around the world in the process of socio-economic development [1,2]. After the United Nations Millennium Development Goals (MDGs) put poverty eradication as a primary task, the Sustainable Development Goals (SDGs) proposed by the United Nations in 2015 put poverty eradication as the top priority [3]. The economic shock caused by the COVID-19 pandemic has led to an increase in global poverty levels, particularly in developing countries, which are facing severe poverty in terms of survival, education, and health care [4]. With the world's largest number of rural poor for a developing country, China has been committed to poverty reduction, especially the fourteen contiguous poverty-stricken areas identified by the Chinese government in 2011 as key areas for poverty alleviation (Figure 1). With the extensive promotion of poverty alleviation policies, the number of rural people living below the absolute poverty line decreased from 770 million to 5.51 million from 1978 to 2019, and the poverty incidence rate dropped from 97.5% to 0.6% [5]. Eventually, the entire rural population was lifted out of poverty in 2020. China has achieved the goal of eradicating absolute poverty under the current standards, making a great contribution to global poverty reduction. In the post-poverty alleviation era, the focus of China's poverty alleviation work has begun to shift from absolute poverty centered on survival to relative poverty centered on alleviating development ability, and the poverty measurement standard has also changed from a single income standard to a multi-dimensional poverty standard, so as to achieve common prosperity and the happiness of the people. Therefore, China still has a long way to go to eliminate poverty.

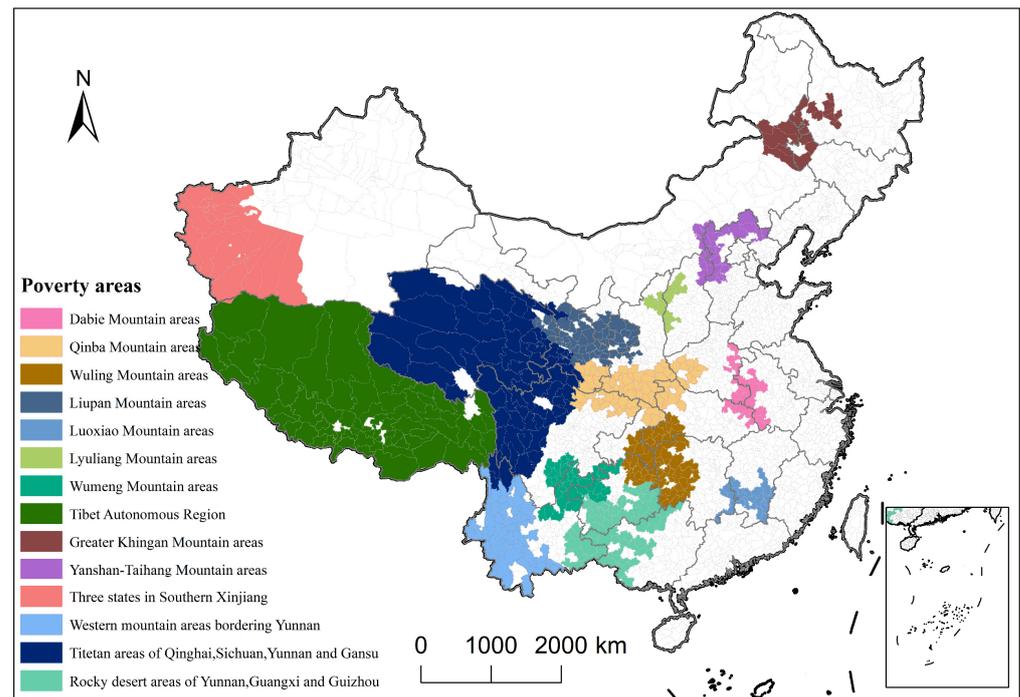


Figure 1. Fourteen contiguous poverty-stricken areas in China (State Council, 2011).

According to sustainable livelihood theory, livelihood capital is an important factor affecting poverty in rural areas [6]. Research has focused on livelihood diversity [7], vulnerability [8], or adaptation [9]. The income level of farmers depends on their livelihood decisions, and livelihood capital is the basis for household livelihood decisions. In addition, with different livelihood capital endowments, farmers also choose different livelihood strategies, which leads to a large difference in income level, and thus affects the poverty situation of families [10,11]. Growing evidence supports that livelihood capital can reduce household poverty and improve livelihood strategies [12,13]. For example, greater investment in farmers' livelihood capital can facilitate the transformation of farmers' livelihood strategies, raise the income level of farmers, and thus effectively lift them out of poverty. However, existing studies on rural poverty and poverty reduction in China mainly focus on a single income dimension [14,15]. With the deepening of the understanding of poverty, the definition of poverty has expanded from single-income poverty to multi-dimensional poverty, including health, education, nutrition, and other dimensions, thus reflecting the poverty status of the population more comprehensively [16,17]. Therefore, this leads to a real and important question in the Chinese scenario: if China adopts the multi-dimensional poverty criterion, can livelihood capital eliminate multi-dimensional poverty?

Land, as the most abundant resource in rural China, is closely related to rural poverty [18]. It can not only promote agricultural development and accelerate agricultural economic growth, thus alleviating poverty; it can also have a significant impact on food security and ecological conservation, thus exacerbating poverty [19,20]. Improving land property rights and encouraging land transfers are more effective ways to alleviate poverty in the long run [21]. If the land is not used effectively, it can hinder development and poverty governance in rural areas [22,23]. Therefore, an accurate understanding of the relationship between rural households' willingness to make decisions about land and poverty is critical for poverty alleviation and sustainable livelihood improvement. The research on the relationship between land transfer and poverty alleviation is relatively affluent. Scholars pay more attention to the impact of land transfer on farmers' livelihood capital, livelihood strategies, and livelihood outcomes [24,25], and the direct effect of land transfer on rural household poverty alleviation [26–28]; however, research on the systematic correlation among livelihood capital, land transfer, and poverty alleviation is relatively scarce. The

underlying mechanism by which livelihood capital influences multi-dimensional poverty alleviation is unclear.

To fill in the research gaps above, we first adopted the Probit regression model to analyze the impact of livelihood capital endowment on household multi-dimensional poverty alleviation, and then explored the mediating effect of land transfer using the KHB method. While enriching the understanding of livelihood capital and poverty alleviation, this study provides a theoretical basis and reference for the government to develop targeted land transfer measures to help rural poverty alleviation.

The research contributions of this paper are mainly reflected in the following points: First, the previous studies rarely put livelihood capital and multi-dimensional poverty together, and the research on the impact mechanism of livelihood capital on multi-dimensional poverty is even more scarce. In this paper, livelihood capital, land circulation, and family poverty alleviation are included in the same research framework, and a comprehensive evaluation index system of poverty is constructed. Second, this paper identifies land transfer as the channel through which livelihood capital affects household poverty alleviation, thus providing a practical reference for future poverty alleviation work.

2. Literature Review

2.1. *Analysis of the Impact of Livelihood Capital Endowment on Poverty Alleviation*

Livelihood capital is the sum of all kinds of capital owned by peasant families to maintain survival and development, which affects the life and production of rural families [29]. Livelihood capital is closely related to the occurrence of rural poverty. The quantity and structure of family livelihood capital cannot maintain the sustainable livelihood strategy and thus cannot cross the “poverty trap”, which is the main cause of relative poverty [30]. Livelihood capital determines a household’s ability to increase income. Quality livelihood capital is vital to enhance poor people’s resilience to risk shocks and reduce the probability of families falling into poverty [31]. Therefore, to achieve the goal of sustainable poverty alleviation in the economy and society, it is necessary to increase the stock of livelihood capital of poor households, adjust the structure of livelihood capital, and activate their endogenous motivation. The Sustainable Livelihoods Framework is an effective tool for analyzing the causes of poverty and addressing poverty issues. It consists of five main types of livelihood capital: natural capital, human capital, physical capital, financial capital, and social capital. In terms of natural capital, the increase of agricultural arable land and the adjustment of the industrial structure have a significant positive impact on household income [32], contributing to household poverty alleviation. An increase in human capital would boost non-farm employment and reduce poverty through improvements in education and health [33]. In addition, the accumulation of human capital is the main way to avoid the rural poverty trap and break the intergenerational transmission chain of poverty [34]. Physical capital refers to the infrastructure, material equipment, and other assets that farmers use to maintain their living and production [35]. Basic agricultural inputs can improve agricultural production efficiency and increase the income level of farmers, thus producing significant poverty reduction results [36,37]. Financial capital is an important way to help poor groups access other resources for development and provide security and support for farmers to carry out richer livelihood activities [38]. Social capital is the total amount of all social resources formed by farmers through social interaction used to improve their livelihood [39]. The accumulation of social capital can help family members reduce search costs, obtain higher-quality employment opportunities, significantly increase family income, and thus alleviate family poverty [40]. Moreover, increased social capital can improve the livelihood strategies of the poor and increase their resilience to external environmental shocks, thereby helping poor families escape poverty [41].

2.2. *Analysis of the Impact of Land Transfer on Poverty Alleviation*

Rural land resources are the premise of agricultural production and the basis for farmers’ survival and employment [42,43]. Revitalizing land resources is an important

way to strengthen the endogenous driving force for rural development, increase farmers' incomes and promote poverty alleviation [5,44]. In particular, with the large-scale migration of urban and rural populations in China, the rational utilization of land resources is one of the keys to rural development [45]. Therefore, based on farmers' current livelihood conditions and land value attributes, guiding households to participate in land transfer in an orderly manner is of great significance for consolidating poverty alleviation achievements. The existing research on land transfer and poverty reduction mainly focuses on two aspects. First, land transfer affects poverty alleviation through rents and economies of scale. Land transfer not only increases farmers' rental income, but also creates conditions for farmers to engage in non-farm employment, which helps reduce their vulnerability to poverty [46,47]. In addition, poor farmers can obtain land through land transfer, which makes it possible to achieve social stratification [48]. Second, land transfer affects poverty alleviation by promoting the livelihood strategy choices of poor households. Land transfer can promote family members to engage in secondary and tertiary industries, bringing diversified income to households and alleviating their poverty situation [49,50]. It is found that labor transfer of poor rural households can improve livelihood capital and achieve stable employment to escape from poverty [51]. Moreover, the transfer distance shows a positive relationship with poverty alleviation [52]. In addition, the land transfer can effectively release the value-creation ability of rural idle land resources and help to promote land scale and intensive management, injecting new vitality into rural development [23].

2.3. Analysis of the Impact of Livelihood Capital and Land Transfer on Poverty Alleviation

Research on rural household poverty highlights the critical role of livelihood capital [36]. Livelihood capital is an important component of household resource endowment which can be transformed into an economic source. With the improvement of livelihood capital, farmers' cognitive levels will also increase, which will lead to a broader and deeper recognition of the value of the land. At this time, the more abundant the livelihood capital, the stronger the willingness of farmers to participate in land transfer [53]. Using structural equation modeling, Wang et al. (2021) discovered that land transfer in rural areas is influenced by livelihood capital and site conditions [29]. Moreover, there are differences in the effects of different types of livelihood capital on land transfer. For example, natural capital and human capital have significant positive effects on land inflows, and financial capital and social capital significantly positively affect land outflows [54]. In contrast, cultural capital, which reflects the education level, knowledge, and skill level of farmers, can significantly positively affect both transfers in and out of the land [53]. In addition, some scholars have found that the "push" caused by the decrease of natural capital and physical capital and the "pull" caused by the increase of human capital and financial capital, pastoral households gradually adjusted their livelihood strategies and adopted corresponding adaptive behaviors, which ultimately affected their livelihood results [36]. This is mainly reflected in the change in household income structure, thus alleviating the poverty situation of herders. Therefore, only natural capital flows during the initial stage of land transfer. After the land transfer, households formulate livelihood strategies based on the initial livelihood capital advantages. In turn, the implementation of livelihood strategies has an impact on their livelihood capital, leading to the difference in the flow of livelihood capital among families with different livelihood strategies, thus affecting household poverty alleviation. The theoretical framework of this paper is shown in Figure 2.

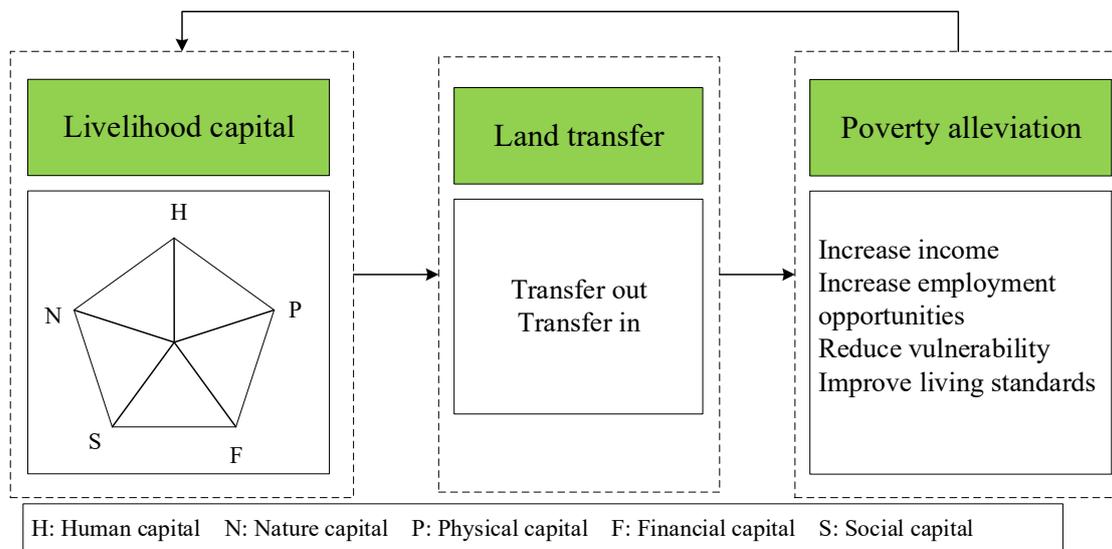


Figure 2. The theoretical framework.

3. Methodology

3.1. Methods

3.1.1. A-F Method

For the multi-dimensional poverty calculations, this paper uses the A-F method, a multi-dimensional poverty measurement method developed by the Poverty and Development Research Center (OPHI) of Oxford University [55]. Specifically, the A-F method requires obtaining the value of each individual on each poverty indicator and then defining a deprivation standard for each indicator. According to this standard, it can identify whether each individual experiences deprivation on this indicator. The specific calculation process of the A-F method is:

Assume that the $n * d$ dimensional matrix $X = [X_{ij}]$ reflects the values of n households under d indicators, where the row vector X_i reflects the status of household i under d indicators, and the column vector X_j reflects the status of n households under indicator j . The matrix for identifying multi-dimensional poverty in households is as follows:

$$X_{ij} = \begin{Bmatrix} X_{11} & X_{12} & \dots & X_{1d} \\ X_{21} & X_{22} & \dots & X_{2d} \\ \vdots & \vdots & \dots & \vdots \\ X_{n1} & X_{n2} & \dots & X_{nd} \end{Bmatrix} \tag{1}$$

where X_{ij} is the performance of household i in dimension j . $i = 1, 2, \dots, n$ and $j = 1, 2, \dots, d$.

Multi-dimensional poverty can be measured and identified through the following three steps:

First, the deprivation threshold is used to determine the household’s deprivation on a single indicator. If $X_{ij} < z_j$, $g_{ij} = 0$, indicates that the family does not have deprivation on this index; if $X_{ij} \geq z_j$, $g_{ij} = 1$, the family is deprived of this index. That is:

$$g_{ij} = \begin{cases} 1, & x_{ij} < z_j \\ 0, & x_{ij} \geq z_j \end{cases} \tag{2}$$

where z_j is the deprived threshold in dimension j ; g_{ij} indicates the deprivation status of household i on indicator j .

Second, the deprivation count function of multi-dimensional poverty is determined. At this point, the weights of each indicator need to be determined, and assuming that the weight of indicator j is w_j , the deprivation count function of household i is defined as:

$$c_i = \sum_{j=1}^d w_j g_{ij} \quad (3)$$

There are no uniform and clear rules for determining the weight of each dimension and index. Referring to most literature [56,57], we adopt the method of dimension equal weight; that is, the weight of each dimension is equal, and the weight of indicators in each dimension is equal.

Third, the multi-dimensional deprivation of the household is identified by the deprivation threshold k . If $c_i \geq k$, $P_i = 1$, it means the household is in multi-dimensional poverty; If $c_i < k$, $P_i = 0$, it means the household is in non-multidimensional poverty. That is:

$$P_i = \begin{cases} 1, & c_i \geq k \\ 0, & c_i < k \end{cases} \quad (4)$$

where P_i is the multi-dimensional deprivation value of the household, which is used to determine if the household is multidimensionally poor.

Through the above three steps, we can determine whether a family is in multi-dimensional poverty.

3.1.2. Entropy Value Method

In order to ensure the objectivity of the measurement results and reduce the interference of subjective factors, this paper adopts a multi-indicator comprehensive method to evaluate the poverty reduction effect of rural household livelihood capital. The improved entropy method is used to calculate the weight [58,59]. The calculation process of this method is as follows:

Assuming that there are m assessment objects and n assessment indicators, an $m * n$ original matrix is constructed:

$$X = \{x_{ij}\}_{m \times n} \quad (5)$$

(1) The calculation formula for standardizing each index value is as follows:

$$X'_{ij} = \left(X_{ij} - \bar{X}_j \right) / S_j \quad (6)$$

where \bar{X}_j is the mean value of j th indicator and S_j is the standard deviation of the j th indicator.

(2) To eliminate the effect of negative values, coordinate translation will be carried out:

$$Z_{ij} = X'_{ij} + A \quad (7)$$

where A is the translation range, standardized transformation is an objective weighting method that helps to reduce the influence of extreme values.

(3) Calculate the proportion P_{ij} of the index value of the i th object on the j th index. The formula is as follows:

$$P_{ij} = Z_{ij} / \sum_{i=1}^m Z_{ij} \quad (8)$$

(4) Calculate the entropy e_j of the j th index:

$$e_j = -\frac{1}{\ln n} \sum_{i=1}^n p_{ij} \ln p_{ij} \quad (9)$$

- (5) Calculate the difference coefficient d_j of the j th index:

$$d_j = 1 - e_j \quad (10)$$

- (6) Calculate the information weight of the j th index:

$$W_j = d_j / \sum_{j=1}^n d_j \quad (11)$$

- (7) Calculate the composite score of the i th object:

$$q_{ij} = W_j p_{ij} \quad (12)$$

$$L = \sum_{j=1}^n q_{ij} \quad (13)$$

where q_{ij} is the comprehensive score of the j th index of the i th object, and L is the comprehensive living capital score of the i th object.

3.1.3. Research Model

To explore the impact of livelihood capital on household poverty alleviation, we construct the following model.

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_i x_i + \varepsilon \quad (14)$$

where Y refers to the multi-dimensional poverty of households, x_i refers to the indicators of livelihood capital, and ε refers to the random error term.

3.2. Variable Measurement

3.2.1. Explained Variable: Multi-Dimensional Poverty

Multi-dimensional poverty theory emphasizes that the selection of dimensions and indicators of poverty should focus on individual ability. However, the academic community has not yet reached a consensus on the specific selection criteria and indicator system. But most scholars refer to the index system adopted by Human Development Index (HDI), Human Poverty Index (HPI), or multi-dimensional Poverty Index (MPI) when selecting the multi-dimensional poverty index, which mainly includes three dimensions: health, living standard, and education [60,61]. In addition, many studies include an income dimension [56,62]. Therefore, based on existing research and data availability, we select four dimensions—income, health, living standard, and education, including eleven indicators to measure multi-dimensional poverty. To be specific:

Income. We use household per capita income to measure income levels. If a family's annual income per capita is below the national relative poverty line, the household is deprived of this indicator.

Health. The health dimension contains three indicators—health level, health insurance, and BMI. Health level was measured by self-reported health status. As long as a family member self-report being unhealthy, the family is deprived of this indicator; Health insurance is measured by the type of insurance that family members attend. If a family member does not have any health insurance, the family is deprived of this indicator; If the BMI of a family member is less than 18.5, then the family is deprived of this indicator.

Living standard. The living standard contains three indicators—drinking water, fuel, and housing space per capita. If the household drinking water is raw water, such as cellar water, rainwater, or lake water, then the family is deprived of this indicator; If the family's fuel is non-clean fuels, such as firewood, straw, coal, the household is deprived on this indicator; If the per capita living space is less than 12 square meters, then the family is deprived on this indicator.

Education. The educational dimension is measured by the rate of child dropout. If a child between the ages of 6 and 15 drops out of school, the family is deprived of this indicator. Table 1 presents the index system of explained variables.

Table 1. The explained variables, assignment rules, and weights.

| Dimension | Indicator | Threshold and Assignment | Weight | Source |
|-----------------|------------------------------|--|--------|---|
| Income | Family per capita income | Households with an annual per capita income below the national relative poverty line are assigned a value of 1, otherwise 0 | 0.25 | Ghazali et al., (2023) [7]; Liao et al., (2020) [51] |
| Health | Health status | Household members who self-report being unhealthy are assigned a value of 1, otherwise 0 | 0.083 | Zhang et al., (2021) [63] |
| | Health insurance | A family member not covered by any type of health insurance is assigned a value of 1, otherwise 0 | 0.083 | Li et al., (2021) [5] |
| | BMI | Households with a BMI of less than 18.5 are assigned a value of 1, otherwise 0 | 0.083 | Zhou et al., (2021) [57] |
| Living standard | Drinking water | Households that typically use raw water (cellar water, rainwater, lake water) for cooking are assigned a value of 1, otherwise 0 | 0.083 | Pham and Mukhopadhyaya (2022) [62] |
| | Cooking fuel | Households that regularly use unclean fuels (wood, straw, coal) for cooking are assigned a value of 1, otherwise 0 | 0.083 | Liu and Xu (2016) [61]; Alkire and Fang (2019) [60] |
| | Housing area per capita | Households with less than 12 square meters of floor space per person are assigned a value of 1, otherwise 0 | 0.083 | Wang et al., (2022) [56]; Wang et al., (2021) [17] |
| Education | The dropout rate of children | Households with children (6–15 years old) who are not in school are assigned a value of 1, otherwise 0 | 0.25 | Wang et al., (2022) [56]; Alkire and Fang (2019) [60] |

3.2.2. Mediating Variable: Land Transfer

Land transfer is a variable that we are interested in. Rapid urbanization and agricultural modernization have prompted changes in household livelihood choice behavior in rural areas. Households may rent out the land they own to change their livelihood activities or rent land from other households for large-scale operations. This paper mainly focuses on whether agricultural land has been transferred in or out. If the family's land has been transferred in or transferred out, we consider that the family has had a land transfer and assign a value of 1; otherwise, 0.

3.2.3. Explanatory Variable: Livelihood Capital

According to the sustainable livelihood framework proposed by the UK Department for International Development, the livelihood capital selected in this paper includes human capital, natural capital, physical capital, financial capital, and social capital. Specifically, human capital refers to the knowledge and skills of family members [64]. It is measured by three indicators: mean age, mean education, and proportion of the labor force in households. Natural capital is mainly land, forest, and other natural resources that can be used for production [65]. The natural capital of a household is measured by two indicators: Agricultural land area and agricultural land type. Physical capital is the material resources

that farmers need for production and living [66]. The physical capital of a household is measured by the value of agricultural machinery and durable goods. Financial capital refers to the funds that households need to pursue their life goals [67]. Household financial capital is measured by the value of cash, deposits, and financial products. Social capital refers to the resources that rural households can obtain from the network of relationships [38]. A household's social capital is measured by income from important events and social relations (Table 2). Because the values of some variables are very large, such as deposits and machine value, natural logarithm conversion is performed to eliminate the effect before model estimation.

Table 2. Description of livelihood capital.

| Livelihood Capital | Indicator | Measurement | Source |
|--------------------|-----------------------------------|---|---|
| Human Capital | Mean Age | The average age of the family members | Wang et al., (2021) [29]; Su et al., (2019) [39] |
| | Mean education | The average educational years of the household members | Liu et al., (2018) [35] |
| | The proportion of the labor force | The proportion of family working members | Deng et al., (2020) [6] |
| Nature Capital | Agricultural land area | The area of agricultural land owned by the family | Yang et al., (2021) [54]; Soltani et al. (2012) [13] |
| | Agricultural land type | The type of agricultural land owned by the family | Wang et al., (2021) [14] |
| Physical Capital | Agricultural machinery | The total value of agricultural machinery owned by households | Ghazali et al., (2023) [7]; Wang et al., (2021) [29] |
| | Durable Goods | Actual value of durable goods owned by households | Liu et al., (2018) [35]; Berchoux et al., (2019) [66] |
| Financial Capital | Cash and deposits | The total amount of cash and savings owned by households | Baffoe and Matsuda (2018) [38] |
| | Financial Products | The total value of financial products owned by households | Wang et al., (2021) [29] |
| Social Capital | Cash receipts | Gross income for major events in the household. | Yang et al., (2021) [54] |
| | Social Relation | Total expenditure on maintaining social relationships | Xu et al., (2021) [53]; Wang et al., (2019) [31] |

3.3. Data

The data used in this study were from the China Family Panel Studies (CFPS). The project was officially launched by the China Social Science Survey Center at Peking University in 2010, and five rounds of survey data have been released so far. The survey reflects the basic situation of China's economic development and social changes by tracking and collecting data at three levels: individual, family, and community, and provides microdata statistics for academic research. The sample covers 25 provinces/municipalities/autonomous regions, the target sample size is 16,000 households, and the survey objects include all the family members in the sample households. Since the data for 2020 have not yet been fully published, the available data cannot meet the needs of the research. Therefore, this paper mainly uses 2018 data and relates to demographic, social, and economic information. Since this paper focuses on rural samples, 5798 samples from 25 provinces in China are finally obtained after urban samples and missing values are deleted. The following analysis is all conducted by households.

4. Results

4.1. Descriptive Statistics

Table 3 shows the descriptive statistics of the variables. Overall, 14.4% of the families in the sample are in relative poverty. For the human capital of the sample households, the average age of the sample family is 47 years old, and the proportion of the labor force is 75%. The education level is relatively low, possibly due to the lack of educational resources in rural areas. For nature capital, the land area owned by the family is 1200 square meters, and all owned at least one type of land. For physical capital, the value of the family's agricultural machinery is about CNY 3000, and the average value of durable consumables is about CNY 8300. For financial capital, households have an average of CNY 6500 in cash and savings, while the value of financial products owned is about CNY 111. The possible reason is that poor farmers generally have low income and low financial capital stock due to low education levels, single skills, and low comprehensive quality. For social capital, the income from important events is lower, while the value of interpersonal expenditure is about CNY 7000. This suggests that in rural areas, where acquaintance society is dominant, spending on favors is a very important way to maintain interpersonal relationships. For land transfer, there were 882 families transferring land out and 668 families transferring land in, accounting for 15.21% and 11.52% of the total sample, respectively.

Table 3. Results of descriptive statistics.

| Indicator | Mean/% | Standard Deviation | Indicator Weight |
|-----------------------------------|---------|--------------------|------------------|
| Mean Age | 47.2795 | 14.3116 | 0.0826 |
| Mean education | 5.9957 | 3.4707 | 0.0866 |
| The proportion of the labor force | 0.7468 | 0.3314 | 0.1093 |
| land area | 1.8328 | 0.9663 | 0.0867 |
| Agricultural land type | 1.1497 | 0.6414 | 0.0857 |
| Agricultural machinery | 2.907 | 3.9721 | 0.0762 |
| Durable Goods | 8.2524 | 2.8817 | 0.1424 |
| Cash and Deposits | 6.5017 | 4.5555 | 0.0928 |
| Financial Products | 0.1112 | 1.0652 | 0.0348 |
| Cash receipts | 0.8462 | 2.6886 | 0.0591 |
| Social Relation | 7.0122 | 2.5422 | 0.1438 |
| Multi-dimensional poverty | 14.4% | | |
| Land rent out | 15.21% | | |
| Land rent in | 11.52% | | |

4.2. The Impact of Livelihood Capital on Poverty Alleviation

4.2.1. Basic Regression

In order to explore the effect of livelihood capital on poverty alleviation, we distinguish the extent of household poverty. With reference to relevant literature, the deprivation score calculated by the deprivation count function (Formula (3)) of the household was used as the judgment criterion. Deprivation scores greater than 1/3 are multi-dimensional poor families, and deprivation scores less than 1/3 are non-multidimensional poor families. Among multi-dimensional poverty households, those with deprivation scores greater than 3/4 are defined as severely poor, while those with deprivation scores less than 3/4 are defined as generally poor.

Table 4 shows the differentiated impact of livelihood capital on poverty. For general multi-dimensional poverty, the regression coefficients of human capital, physical capital, financial capital, and social capital are significantly negative at the 1% and 5% levels,

suggesting that they can alleviate the general multi-dimensional poverty of households. The regression coefficient of natural capital is significantly positive at the 1% level, indicating that natural capital will increase households' general multi-dimensional poverty. However, for severely multi-dimensional poor households, the poverty reduction effect of livelihood capital is not significant. This may be due to a shortage of livelihood capital for severely poor households. The inadequacy of natural capital and physical capital constraints the agricultural production activities of families. Inadequacy of human and social capital puts family members at a disadvantage in non-farm employment. Therefore, the effect of livelihood capital on reducing severe poverty is not significant.

Table 4. Baseline results of livelihood capital on household poverty alleviation.

| Variables | Non-Multidimensional Poor Households Are Used as a Reference | |
|------------------------|--|----------------------------------|
| | General Multi-Dimensional Poverty | Severe Multi-Dimensional Poverty |
| Human capital | −1.8379 *** (0.167) | −1.4698 (1.4373) |
| Natural capital | 1.3172 *** (0.1571) | 1.803 (1.2985) |
| Physical capital | −0.4885 *** (0.1304) | 0.7236 (1.299) |
| Financial capital | −1.7078 *** (0.2259) | −3.5429 (2.2649) |
| Social capital | −0.2757 ** (0.1346) | 1.3268 (1.5015) |
| Pseudo R-squared | 0.0704 | 0.1478 |
| Number of observations | 5798 | 5798 |

Notes: Standard errors in parentheses. ** $p < 0.05$, *** $p < 0.01$.

4.2.2. Robust Tests

(1) Transform estimation methods

Previous studies have shown that there is no significant difference in the estimated results obtained using Probit or Logit, or OLS models. Therefore, this paper uses OLS and Logit methods to replace Probit methods, respectively, for the robustness test. Columns (1) and (2) of Table 5 show the results of OLS regression and Logit regression. The results show that the regression coefficients of human capital, physical capital, financial capital, and social capital are significantly negative, and the regression coefficient of natural capital is significantly positive. Therefore, the results obtained by changing the estimation method are consistent with the results of the baseline regression, indicating that the model is robust.

(2) Change poverty indicators

In addition to the multi-dimensional poverty index, the single-income index can also measure the poverty reduction effect of livelihood capital because income is closely related to a family's economic situation. Therefore, this paper uses an income index instead of multi-dimensional poverty index to analyze the poverty reduction effect of livelihood capital. Column (3) of Table 5 shows that using a single income index, the regression coefficients of human capital, physical capital, financial capital, and social capital are still significantly negative, and the regression coefficient of natural capital is significantly positive. Therefore, the results are robust.

Table 5. Robustness test.

| Variables | (1) | (2) | (3) |
|----------------------------|------------------------------|-------------------------|---------------------------|
| | Transform Estimation Methods | | Change Poverty Indicators |
| | Logit model | OLS model | single income index |
| Human capital | −3.2714 *** (0.3023) | −0.3776 *** (0.0345) | −0.3602 *** (0.0333) |
| Natural capital | 2.3819 *** (0.2848) | 0.265 *** (0.0329) | 0.1515 *** (0.0318) |
| Physical capital | −0.9043 *** (0.2319) | −0.1283 *** (0.0289) | −0.2874 *** (0.0278) |
| Financial capital | −3.1136 *** 0.4101 | −0.3204 *** (0.0456) | −0.4153 *** (0.044) |
| Social capital | −0.5351 ** (0.2416) | −0.0689 *** (0.0295) | −0.3169 *** (0.0285) |
| Pseudo R-squared/R-squared | 0.0695 | 0.0552 | 0.1137 |
| Number of observations | 5798 | 5798 | 5798 |

Notes: Standard errors in parentheses. ** $p < 0.05$, *** $p < 0.01$.

4.3. Mediating Effects

Table 6 shows the mediating effect of livelihood capital on household poverty reduction. It can be found that an increase in livelihood capital reduces household poverty by 48%, while the impact of livelihood capital decreases to 47.1% when the land transfer is controlled. Therefore, the indirect impact of land transfer is 0.9%, which is significant at the 5% level, indicating that land transfer plays a partial mediating effect.

Table 6. KHB mediation results.

| Mediating Variables | Land Transfer |
|--------------------------|----------------------|
| Reduced | −0.480 *** (0.05) |
| Full | −0.471 *** (0.05) |
| Diff | −0.009 ** (0.004) |
| Observations | 5798 |
| Confounding Percentage % | 1.65 |

Notes: Standard errors in parentheses. ** $p < 0.05$, *** $p < 0.01$.

5. Discussion

5.1. Key Findings

Our first findings suggest that livelihood capital has a differentiated impact on multi-dimensional poverty. Specifically, human capital positively promotes household agricultural activities, which may further alleviate household poverty. This is consistent with the findings of Kuang et al. (2019), who believe that transforming household livelihood activities from manual to skilled labor can significantly improve household income and quality of life and alleviate poverty [67]. In addition, many rural families are poorly educated and lack professional skills, which restricts the improvement of family human capital. Therefore, comprehensively enhancing the human capital level of poor households can improve

the survival skills and endogenous development ability, block intergenerational poverty, gradually and fundamentally get rid of poverty, and achieve sustainable development.

Households relatively rich in natural capital tend to engage in traditional agricultural activities, which can reduce the diversity of their income sources and expose them to higher livelihood risks [68]. This is contrary to the study of Mahapatra(2007). In earlier studies, they found that the more arable land a household owned, the less likely it was to fall into poverty [32]. However, with the acceleration of urbanization around the world, farmers' dependence on land is gradually reduced, livelihood strategies are gradually diversified, and relatively little land owned by families can contribute to the alleviation of household poverty [69]. In particular, in China's large-scale urban and rural immigration, much young labor force chooses non-agricultural employment, resulting in severe rural population loss. The loss of the rural labor force affects land use efficiency, which has a negative impact on household poverty alleviation [70].

In terms of physical capital, higher physical capital can enable poor families to achieve a better standard of living. This is similar to the findings of Iiyama et al. They argue that households with higher physical capital tend to choose agricultural activities as their main livelihood strategy [50]. These families improve their living conditions by increasing their income through large-scale operations. Especially with the deepening of China's aging population, the input of agricultural machinery can liberate the labor force from heavy agricultural production. At the same time, the use of agricultural machinery optimizes the structure of agricultural production factors and improves agricultural production efficiency, thus contributing to poverty reduction. In addition, abundant physical capital creates conditions for the scale and mechanization of agricultural production, which can promote the transformation of agricultural growth mode in poor areas, so as to achieve the goal of poverty alleviation.

Our findings on the effect of financial capital on poverty reduction are consistent with Baffoe's (2017) results. They found that access to financial capital can accumulate other assets, which can significantly impact the non-farm employment of poor households [38]. Moreover, chronic poverty in rural areas is rooted in households' lack of access to financial capital and their low ability to use acquired financial capital, which restricts the speed of endogenous capital accumulation by households. Better access to financial capital, such as finance for development and bank loans, is crucial to the sustainability of households' livelihoods. Therefore, what financial capital provides to poor families is not only the injection of financial capital. But more importantly, poor families rely on the continuous services of financial capital and financial institutions to improve their comprehensive quality and professional skills, so as to find effective means and methods of poverty alleviation in production activities.

In general, the accumulation of social capital helps to diversify sources of income, thereby reducing household vulnerability [50]. This may be due to rural areas' relative lack of modern information exchange methods. Therefore, social capital based on relatives and friends can help farmers obtain potential employment information and employment opportunities, facilitate the labor flow of rural families, and obtain better and more stable jobs to increase family income. In particular, poor families affected by socio-economic status often have insufficient social capital, a relatively small network of contacts, and limited access to information, which is not conducive to realizing diversified livelihood strategies to alleviate poverty. This is consistent with Khosla and Jena's (2019) study [41]. They believe that the diversified personnel structure of farmers' social interaction can provide farmers with more information, which can promote the diversification of farmers' livelihood strategies and poverty alleviation.

5.2. Limitations and Future Work

This paper confirms the impact of livelihood capital on rural household poverty. But there are still the following limitations: First, this study analyzes the independent effects of livelihood capital and does not consider the impact of its interactions on poverty alleviation.

Second, this paper only considers the one-way process of livelihood capital, land transfer, and poverty alleviation. However, land transfer can also lead to changes in livelihood capital and livelihood strategies. Future studies can explore complex interactions. Third, the indicators for measuring livelihood capital in future studies can be further improved due to data availability.

6. Conclusions and Policy Implications

Using 2018 data from the China Family Panel Studies (CFPS), this paper analyzes the impact of livelihood capital on household poverty alleviation based on the sustainable livelihood framework. In addition, the potential mechanism of livelihood capital influencing poverty alleviation through land transfer is also explored. The results show that livelihood capital can alleviate general multi-dimensional poverty, but the alleviation of severe multi-dimensional poverty is not significant. Specifically, human capital, physical capital, financial capital, and social capital can significantly contribute to poverty alleviation, while natural capital can significantly increase poverty. In addition, land transfer plays a partial mediating role in the relationship between livelihood capital and poverty alleviation. This study confirms the idea that improving livelihood capital and promoting land transfer can alleviate multi-dimensional poverty. Based on the differentiated impact of livelihood capital on poverty alleviation, we propose the following policies to help poor families get out of poverty.

(1) Human capital, financial capital, and social capital have a positive effect on family poverty alleviation, and it is particularly important to promote the improvement of these capital stocks. Therefore, the government can formulate targeted poverty alleviation policies through educational support, financial assistance, and technical assistance. First, the government should further consolidate poverty alleviation through education, effectively improve individual education levels, and provide key support for sustainable poverty alleviation. Second, the government should continue to give aid funds and technology to poor areas. For example, innovating poor farmers' access to capital and enhancing their stock of financial capital, thereby enhancing households' resilience to their livelihoods; using modern information technology to improve the level of community governance and service in rural areas, and build a harmonious community atmosphere;

(2) Physical capital is the material basis for farmers to get rid of poverty and realize sustainable livelihood. Therefore, government departments should focus on strengthening the skills and upgrading of the workforce. On the one hand, the mechanization of agricultural production can be realized through the training of professional and technical personnel. The improvement of agricultural production efficiency can promote the growth of farmers' operating income. On the other hand, agricultural mechanization has also promoted the transfer of the labor force to non-agricultural employment. The government can give due consideration to providing targeted employment skills training to those in real need, improving their ability to participate in the market and cope with risks, so as to achieve sustainable development;

(3) Natural capital has a negative impact on household poverty reduction. Especially in the context of new urbanization, a large amount of land in rural areas is idle. Therefore, the government should introduce corresponding policies such as tax reduction and land concessions, and so on. Encourage the government, enterprises, and communities to explore the mode of cooperation. Through land transfer and large-scale management, the government can revitalize land resources, expand the collective economy, and increase the income of rural households. At the same time, rural areas can explore new business models, such as characteristic towns and agricultural parks, to promote the transformation of natural capital into other types.

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References

1. Griggs, D.; Stafford-Smith, M.; Gaffney, O.; Rockström, J.; Öhman, M.C.; Shyamsundar, P.; Noble, I. Sustainable development goals for people and planet. *Nature* **2013**, *495*, 305–307. [[CrossRef](#)] [[PubMed](#)]
2. Liu, Y.S.; Liu, J.L.; Zhou, Y. Spatio-temporal patterns of rural poverty in China and targeted poverty alleviation strategies. *J. Rural Stud.* **2017**, *52*, 66–75. [[CrossRef](#)]
3. United Nations. *Transforming our World: The 2030 Agenda for Sustainable Development*; Department of Economic and Social Affairs of United Nations: New York, NY, USA, 2015.
4. Zhang, L.; Zhuang, Y.; Ding, Y.; Liu, Z. Infrastructure and poverty reduction: Assessing the dynamic impact of Chinese infrastructure investment in sub-Saharan Africa. *J. Asian Econ.* **2023**, *84*, 101573. [[CrossRef](#)]
5. Li, C.; Jiao, Y.; Sun, T.; Liu, A. Alleviating multi-dimensional poverty through land transfer: Evidence from poverty-stricken villages in China. *China Econ. Rev.* **2021**, *69*, 101670. [[CrossRef](#)]
6. Deng, Q.; Li, E.; Zhang, P. Livelihood sustainability and dynamic mechanisms of rural households out of poverty: An empirical analysis of Hua County, Henan Province, China. *Habitat Int.* **2020**, *99*, 102160. [[CrossRef](#)]
7. Ghazali, S.; Zibaei, M.; Azadi, H. Impact of livelihood strategies and capitals on rangeland sustainability and nomads' poverty: A counterfactual analysis in Southwest Iran. *Ecol. Econ.* **2023**, *206*, 107738. [[CrossRef](#)]
8. 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](#)]
9. Liu, W.; Li, J.; Ren, L.; Xu, J.; Li, C.; Li, S. Exploring Livelihood Resilience and Its Impact on Livelihood Strategy in Rural China. *Soc. Indic. Res.* **2020**, *150*, 977–998. [[CrossRef](#)]
10. Zhang, C.; Fang, Y. Application of capital-based approach in the measurement of livelihood sustainability: A case study from the Koshi River basin community in Nepal. *Ecol. Indic.* **2020**, *116*, 106474. [[CrossRef](#)]
11. Jiao, X.; Pouliot, M.; Waleign, S.Z. Livelihood Strategies and Dynamics in Rural Cambodia. *World Dev.* **2017**, *97*, 266–278. [[CrossRef](#)]
12. Sina, D.; Chang-Richards, A.Y.; Wilkinson, S.; Potangaroa, R. What does the future hold for relocated communities post-disaster? Factors affecting livelihood resilience. *Int. J. Disaster Risk Reduct.* **2019**, *34*, 173–183. [[CrossRef](#)]
13. Soltani, A.; Angelsen, A.; Eid, T.; Naieni, M.S.N.; Shamekhi, T. Poverty, sustainability, and household livelihood strategies in Zagros, Iran. *Ecol. Econ.* **2012**, *79*, 60–70. [[CrossRef](#)]
14. Wang, W.; Lan, Y.; Wang, X. Impact of livelihood capital endowment on poverty alleviation of households under rural land consolidation. *Land Use Policy* **2021**, *109*, 105680. [[CrossRef](#)]
15. Waleign, S.Z. Livelihood strategies, environmental dependency and rural poverty: The case of two villages in rural Mozambique. *Environ. Dev. Sustain.* **2015**, *18*, 593–613. [[CrossRef](#)]
16. Olivera, J.; Tournier, I. Successful ageing and multi-dimensional poverty: The case of Peru. *Ageing Soc.* **2015**, *36*, 1690–1714. [[CrossRef](#)]
17. Wang, J.X.; Wang, C.; Li, S.H.; Luo, Z. Measurement of relative welfare poverty and its impact on happiness in China: Evidence from CGSS. *China Econ. Rev.* **2021**, *69*, 101687. [[CrossRef](#)]
18. Cheng, X.; Chen, J.; Jiang, S.; Dai, Y.; Shuai, C.; Li, W.; Liu, Y.; Wang, C.; Zhou, M.; Zou, L.; et al. The impact of rural land consolidation on household poverty alleviation: The moderating effects of human capital endowment. *Land Use Policy* **2021**, *109*, 105692. [[CrossRef](#)]
19. Xia, M.; Zhang, Y.; Zhang, Z.; Liu, J.; Ou, W.; Zou, W. Modeling agricultural land use change in a rapid urbanizing town: Linking the decisions of government, peasant households and enterprises. *Land Use Policy* **2020**, *90*, 104266. [[CrossRef](#)]
20. Zeweld, W.; Van Huylbroeck, G.; Tesfay, G.; Azadi, H.; Speelman, S. Sustainable agricultural practices, environmental risk mitigation and livelihood improvements: Empirical evidence from Northern Ethiopia. *Land Use Policy* **2020**, *95*, 103799. [[CrossRef](#)]
21. Besley, T. Property rights and investment incentives: Theory and evidence from Ghana. *J. Polit. Econ.* **1995**, *103*, 903–937. [[CrossRef](#)]
22. Liu, Y.; Wang, Y. Rural land engineering and poverty alleviation: Lessons from typical regions in China. *J. Geogr. Sci.* **2019**, *29*, 643–657. [[CrossRef](#)]
23. Long, H.; Tu, S.; Ge, D.; Li, T.; Liu, Y. The allocation and management of critical resources in rural China under restructuring: Problems and prospects. *J. Rural Stud.* **2016**, *47*, 392–412. [[CrossRef](#)]
24. Rigg, J. Land, farming, livelihoods, and poverty: Rethinking the links in the Rural South. *World Dev.* **2006**, *34*, 180–202. [[CrossRef](#)]

25. Min, M.; Lin, C.; Duan, X.; Jin, Z.; Zhang, L. Research on targeted land poverty alleviation patterns based on the precise identification of dominant factors of rural poverty: A case study of Siyang County, Jiangsu Province, China. *Environ. Dev. Sustain.* **2021**, *23*, 12791–12813. [[CrossRef](#)]
26. Udimal, T.B.; Liu, E.; Luo, M.; 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](#)]
27. Zhang, L.; Feng, S.; Heerink, N.; Qu, F.; Kuyvenhoven, A. How do land rental markets affect household income? Evidence from rural Jiangsu, P.R. China. *Land Use Policy* **2018**, *74*, 151–165. [[CrossRef](#)]
28. Li, R.; Li, Q.; Lv, X.; Zhu, X. The land rental of Chinese rural households and its welfare effects. *China Econ. Rev.* **2019**, *54*, 204–217. [[CrossRef](#)]
29. Wang, W.; Gong, J.; Wang, Y.; Shen, Y. Exploring the effects of rural site conditions and household livelihood capitals on agricultural land transfers in China. *Land Use Policy* **2021**, *108*, 105523. [[CrossRef](#)]
30. Li, D.; Yang, Y.; Du, G.; Huang, S. Understanding the contradiction between rural poverty and rich cultivated land resources: A case study of Heilongjiang Province in Northeast China. *Land Use Policy* **2021**, *108*, 105673. [[CrossRef](#)]
31. Wang, P.; Yan, J.; Hua, X.; Yang, L. Determinants of livelihood choice and implications for targeted poverty reduction policies: A case study in the YNL river region, Tibetan Plateau. *Ecol. Indic.* **2019**, *101*, 1055–1063. [[CrossRef](#)]
32. Mahapatra, S. Livelihood pattern of agricultural labour households in rural India: Evidence from Orissa. *South Asia Res.* **2007**, *27*, 79–103. [[CrossRef](#)]
33. Alia, D.Y. Progress Toward The Sustainable Development Goal on Poverty: Assessing The Effect of Income Growth on The Exit Time from Poverty in Benin. *Sustain. Dev.* **2017**, *25*, 495–503. [[CrossRef](#)]
34. Lim, S.S.; Lee, J. Aspirations, Human Capital Investment, and the Intergenerational Transmission of Poverty in Indonesia. *Soc. Indic. Res.* **2021**, *162*, 377–412. [[CrossRef](#)]
35. Liu, M.; Yang, L.; Bai, Y.; Min, Q. 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. Hua, X.; Yan, J.; Zhang, Y. Evaluating the role of livelihood assets in suitable livelihood strategies: Protocol for anti-poverty policy in the Eastern Tibetan Plateau, China. *Ecol. Indic.* **2017**, *78*, 62–74. [[CrossRef](#)]
37. Guo, S.; Lin, L.; Liu, S.; Wei, Y.; Xu, D.; Li, Q.; Su, S.L. Interactions between sustainable livelihood of rural household and agricultural land transfer in the mountainous and hilly regions of Sichuan, China. *Sustain. Dev.* **2019**, *27*, 725–742. [[CrossRef](#)]
38. Baffoe, G.; Matsuda, H. An empirical assessment of rural livelihood assets from gender perspective: Evidence from Ghana. *Sustain. Sci.* **2018**, *13*, 815–828. [[CrossRef](#)]
39. Su, Z.; Aaron, J.R.; Guan, Y.; Wang, H. Sustainable Livelihood Capital and Strategy in Rural Tourism Households: A Seasonality Perspective. *Sustainability* **2019**, *11*, 4833. [[CrossRef](#)]
40. Shen, J.; Bian, Y. The causal effect of social capital on income: A new analytic strategy. *Soc. Netw.* **2018**, *54*, 82–90. [[CrossRef](#)]
41. Khosla, S.; Jena, P.R. Switch in Livelihood Strategies and Social Capital Have a Role to Play in Deciding Rural Poverty Dynamics: Evidence from Panel Data Analysis from Eastern India. *J. Asian Afr. Stud.* **2019**, *55*, 76–94. [[CrossRef](#)]
42. Liu, Y.; Fang, F.; Li, Y. Key issues of land use in China and implications for policy making. *Land Use Policy* **2014**, *40*, 6–12. [[CrossRef](#)]
43. Ruhiga, T.M. Land Reform and Rural Poverty in South Africa. *J. Soc. Sci.* **2017**, *29*, 29–38. [[CrossRef](#)]
44. Zhou, Y.; Guo, L.; Liu, Y. Land consolidation boosting poverty alleviation in China: Theory and practice. *Land Use Policy* **2019**, *82*, 339–348. [[CrossRef](#)]
45. Li, C.; Li, S.; Feldman, M.W.; Li, J.; Zheng, H.; Daily, G.C. The impact on rural livelihoods and ecosystem services of a major relocation and settlement program: A case in Shaanxi, China. *AMBIO* **2018**, *47*, 245–259. [[CrossRef](#)]
46. Gao, L.; Sun, D.; Huang, J. Impact of land tenure policy on agricultural investments in China: Evidence from a panel data study. *China Econ. Rev.* **2017**, *45*, 244–252. [[CrossRef](#)]
47. Zhang, J.; Mishra, A.K.; Zhu, P.; Li, X. Land rental market and agricultural labor productivity in rural China: A mediation analysis. *World Dev.* **2020**, *135*, 105089. [[CrossRef](#)]
48. Deininger, K.; Jin, S. The potential of land rental markets in the process of economic development: Evidence from China. *J. Dev. Econ.* **2005**, *78*, 241–270. [[CrossRef](#)]
49. Zhou, Y.; Li, X.; Liu, Y. Rural land system reforms in China: History, issues, measures and prospects. *Land Use Policy* **2020**, *91*, 104330. [[CrossRef](#)]
50. Iiyama, M.; Kariuki, P.; Kristjanson, P.; Kaitibie, S.; Maitima, J. Livelihood diversification strategies, incomes and soil management strategies: A case study from Kerio Valley, Kenya. *J. Int. Dev.* **2008**, *20*, 380–397. [[CrossRef](#)]
51. Liao, W.; Qiao, J.; Xiang, D.; Peng, T.; Kong, F. Can labor transfer reduce poverty? Evidence from a rural area in China. *J. Environ. Manag.* **2020**, *271*, 110981. [[CrossRef](#)]
52. Guo, Y.; Wang, J. Poverty alleviation through labor transfer in rural China: Evidence from Hualong County. *Habitat Int.* **2021**, *116*, 102402. [[CrossRef](#)]
53. Xu, J.; Huang, J.; Zhang, Z.; Gu, X. The Impact of Family Capital on Farmers' Participation in Farmland Transfer: Evidence from Rural China. *Land* **2021**, *10*, 1351. [[CrossRef](#)]
54. Yang, H.; Huang, K.; Deng, X.; Xu, D. Livelihood Capital and Land Transfer of Different Types of Farmers: Evidence from Panel Data in Sichuan Province, China. *Land* **2021**, *10*, 532. [[CrossRef](#)]

55. Alkire, S.; Foster, J. Counting and multidimensional poverty measurement. *J. Public Econ.* **2011**, *95*, 476–487. [[CrossRef](#)]
56. Wang, S.; Guo, Y.; He, Z. Analysis on the Measurement and Dynamic Evolution of Multidimensional Return to Poverty in Chinese Rural Households. *Soc. Indic. Res.* **2022**, *165*, 31–52. [[CrossRef](#)]
57. Zhou, D.; Cai, K.; Zhong, S. A Statistical Measurement of Poverty Reduction Effectiveness: Using China as an Example. *Soc. Indic. Res.* **2021**, *153*, 39–64. [[CrossRef](#)]
58. Liu, Q.; Wang, S.; Zhang, W.; Li, J.; Zhao, Y.; Li, W. China's municipal public infrastructure: Estimating construction levels and investment efficiency using the entropy method and a DEA model. *Habitat Int.* **2017**, *64*, 59–70. [[CrossRef](#)]
59. Miao, C.; Ding, M. Social vulnerability assessment of geological hazards based on entropy method in Lushan earthquake-stricken area. *Arab. J. Geosci.* **2015**, *8*, 10241–10253. [[CrossRef](#)]
60. Alkire, S.; Fang, Y.F. Dynamics of Multidimensional Poverty and Uni-dimensional Income Poverty: An Evidence of Stability Analysis from China. *Soc. Indic. Res.* **2019**, *142*, 25–64. [[CrossRef](#)]
61. Liu, Y.H.; Xu, Y. A geographic identification of multidimensional poverty in rural China under the framework of sustainable livelihoods analysis. *Appl. Geogr.* **2016**, *73*, 62–76. [[CrossRef](#)]
62. Pham, A.T.Q.; Mukhopadhyaya, P. Multidimensional Poverty and The Role of Social Capital in Poverty Alleviation Among Ethnic Groups in Rural Vietnam: A Multilevel Analysis. *Soc. Indic. Res.* **2022**, *159*, 281–317. [[CrossRef](#)] [[PubMed](#)]
63. Zhang, Z.; Ma, C.; Wang, A. A longitudinal study of multidimensional poverty in rural China from 2010 to 2018. *Econ. Lett.* **2021**, *204*, 109912. [[CrossRef](#)]
64. Barrera-Mosquera, V.; de los Rios-Carmenado, I.; Cruz-Collaguazo, E.; Coronel-Becerra, J. Analysis of available capitals in agricultural systems in rural communities: The case of Saraguro, Ecuador. *Span. J. Agric. Res.* **2010**, *8*, 1191–1207. [[CrossRef](#)]
65. Department for International Development. *Sustainable Livelihoods Guidance Sheets*; Department for International Development: London, UK, 1999.
66. 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](#)]
67. Kuang, F.; Jin, J.; He, R.; Wan, X.; Ning, J. Influence of livelihood capital on adaptation strategies: Evidence from rural households in Wushen Banner, China. *Land Use Policy* **2019**, *89*, 104228. [[CrossRef](#)]
68. Quandt, A. Measuring livelihood resilience: The Household Livelihood Resilience Approach (HLRA). *World Dev.* **2018**, *107*, 253–263. [[CrossRef](#)]
69. Winters, P.; Davis, B.; Carletto, G.; Covarrubias, K.; Quiñones, E.J.; Zezza, A.; Azzarri, C.; Stamoulis, K. Assets, activities and rural income generation: Evidence from a multicountry analysis. *World Dev.* **2009**, *37*, 1435–1452. [[CrossRef](#)]
70. Long, H. Land use policy in China: Introduction. *Land Use Policy* **2014**, *40*, 1–5. [[CrossRef](#)]

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