

## Article

# Livelihood Capital, Risk-Bearing Capacity, and Land Transfer-Out Decisions: Evidence from China

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## Abstract

Farmers' land transfer-out decisions involve weighing benefits against risks. However, existing studies tend to examine the separate effects of livelihood capital or risk perception on land transfer, overlooking whether and how risk-bearing capacity mediates the relationship between livelihood capital and transfer-out decisions. Moreover, most research treats land transfer-out as a simple binary choice (transfer or not), ignoring that farmers also decide to whom to transfer—a choice that affects both risk and return. This study investigates the effects of livelihood capital and risk-bearing capacity on these decisions, drawing on 2021 China Land Economy Survey data. Logistic regression and mediation models are employed to assess both direct and indirect impacts. The results indicate that natural and financial capital represent the most binding constraints on farmers' livelihood capital. Higher levels of livelihood capital increase the likelihood of land transfer-out, with this effect operating partly through enhanced risk-bearing capacity. When selecting a transfer object, farmers with greater livelihood capital show a preference for village collectives over other farmers, cooperatives, or enterprises—a choice reflecting a trade-off between expected returns and perceived risks. Risk-bearing capacity partially mediates the effect of livelihood capital on the choice of village collectives and other farmers, but does not play a mediating role in transfers to enterprises or cooperatives. These findings suggest that policies designed to facilitate land transfer-out should consider not only the enhancement of farmers' livelihood capital endowments but also the strengthening of their risk-bearing capacity. China still needs to strengthen the organizational framework for rural land transfers and improve the rights protection mechanisms for such transfers. This will reduce the risks associated with land transfer-out for farmers, encourage more proactive and market-oriented decision-making, and ultimately improve land transfer efficiency.

**Keywords:** livelihood capital endowment; land transfer-out decision; risk-bearing capacity; CLES



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## 1. Introduction

Land transfer constitutes a critical link in the advancement of agricultural scale operation and the transformation of rural economies. Its orderly advancement contributes to enhancing agricultural productivity, increasing farmers' incomes, and addressing the issues of land fragmentation and abandonment arising from labor out-migration and population aging [1]. As a result, many countries and regions have actively promoted land

transfer-out through reforms of land property rights regimes, improvements to land market mechanisms, and innovations in land transfer models [2–5]. However, the progress of land transfer-out is shaped not only by macro-level policies but also, more critically, by individual farmers' decision-making. Among the various influencing factors, livelihood capital endowments and risk-bearing capacity matter the most. The former refers to the overall set of human, social, natural, physical, and financial capital that farmers possess and can draw upon; the latter reflects their ability to cope with uncertainties and potential adverse outcomes during the land transfer-out process [6]. An in-depth investigation into how livelihood capital and risk-bearing capacity interact to shape farmers' land transfer-out decisions carries significant theoretical and practical implications for understanding the behavioral logic of farm households and improving the efficiency of land transfer.

The existing literature has extensively examined the factors influencing farmers' land transfer decisions from both macro and micro perspectives. At the macro level, scholars have focused on the effects of land property rights [7], land transfer policies [8], market conditions [9], social security [10], and socioeconomic factors [11]. At the micro level, the literature has concentrated on the roles of household head characteristics, family endowments, social networks, and plot attributes [12–14]. In practice, farmers—being central participants in rural socioeconomic activities and direct users of rural land—make land transfer-out decisions that typically represent an effort to maximize returns after synthesizing multiple considerations. Accordingly, scholars have sought to adopt more integrative theoretical perspectives, among which the sustainable livelihood framework stands out as particularly prominent in analyzing farmers' land transfer-out decisions [15]. This framework emphasizes that farmers' livelihood capital—encompassing natural, physical, human, financial, and social capital—constitutes the resource base underlying their land transfer-out decisions [6].

Building on the sustainable livelihood framework, the existing literature systematically examines how farmers' livelihood capital endowments influence their land transfer-out decisions by analyzing multiple dimensions of livelihood capital. In terms of natural capital, land—as the core form of natural capital—together with its quantity and quality, jointly determines farmers' propensity to transfer land out. Research indicates that farmers with higher levels of natural capital tend to receive more land inflows and operate larger farmland areas [16]; conversely, those with fragmented plots, poor cultivation conditions, and low-quality land—characteristics associated with weaker natural capital—are more likely to transfer land out [17]. Physical capital is primarily reflected in the ownership of productive assets such as agricultural machinery, tools, and durable goods. Farmers endowed with abundant physical capital possess stronger self-cultivation capacity and exhibit a greater dependence on land, and are therefore less inclined to transfer land out [15,18]. In terms of human capital, a high level of human capital enables farmers to integrate resources more effectively and expand off-farm employment opportunities, thereby significantly increasing the likelihood of transferring land out [19].

The influence of financial capital is bidirectional. On the one hand, farmers with ample financial capital are more likely to engage in non-agricultural employment or entrepreneurial activities, leading them to exit agricultural production [20,21]; on the other hand, financially strong households may also acquire land to scale up their operations, exhibiting a tendency toward land inflow [22]. The role of social capital remains inconclusive in the literature. Most studies suggest that the accumulation of social capital fosters trust and information sharing among farmers, thereby promoting land transfer-out [23]; however, some research indicates that social capital does not always have a positive effect [24].

Furthermore, the combination and interaction effects among different dimensions of livelihood capital have also drawn scholarly attention. When natural capital is high

but human capital is low, farmers tend to transfer part of their land out [25]; in contrast, when human, physical, and financial capital are all at high levels, farmers participate in land transfers with greater frequency [19,20]. The above studies demonstrate that farmers' land transfer-out decisions are not a linear reflection of any single capital dimension, but rather the result of the combined effects of multiple livelihood capitals. The underlying mechanisms warrant further investigation.

Land transfer-out is a decision process for farmers to maximize their interests, but it brings risks [17]. Chinese farmers are generally risk-averse [26] and their land transfer-out decisions fully consider risk factors. Most of the literature focuses on how subjective factors such as risk perception and attitudes affect farmland transfer. Farmers tend to be neutral or risk-averse. Perceived risks to income, land use, and off-farm jobs reduce their willingness to partake in farmland transfer and slow down deals [27,28]. Studies on homestead exit decisions further confirm this perspective, demonstrating that risk perception exerts a negative impact on farmers' exit intentions [29,30]. However, this conclusion does not hold true for forestland transfers. Research reveals that farmers' risk cognition exerts a significant positive effect on forestland transfer-out decisions, with its influence even surpassing social regulation and benefit perception [31]. Additionally, farmers' risk preferences remain a key variable influencing transfer-out decisions. For instance, Pan et al. found that land certifications' promotion of concentrated land transfer-out only manifests in low-risk preference groups, showing minimal effect on high-risk-preference households [32].

In summary, although prior research has examined the relationships among livelihood capital, risk attitudes, risk perception, and land transfer decisions, the existing research still has gaps. First, there are limitations in terms of research perspectives. Most existing studies conceptualize land transfer-out as a static binary choice between "transferring out" or "not transferring out", overlooking its inherently hierarchical and dynamic nature. In practice, once farmers decide to transfer their land out, the choice of counterparty—such as ordinary farm households, large-scale operators, village collectives, or agricultural enterprises—directly affects the level of transaction risk and income stability, thereby fundamentally determining the ultimate outcomes of the transfer. Nevertheless, few studies have integrated the two closely intertwined decision-making stages of "whether to transfer" and "to whom to transfer" into a unified analytical framework. Second, there is an insufficiency in terms of theoretical integration. Although the existing literature has examined the effects of livelihood capital and risk factors on land transfer-out, these two strands of analysis are often treated in isolation, or studies focus solely on subjective factors such as risk perception and risk attitudes. As a result, they fail to systematically reveal how livelihood capital shapes farmers' risk-bearing capacities and, through this mechanism, influences their land transfer-out decisions at different levels.

To address the aforementioned research gaps, this study proposes and empirically tests an analytical framework that integrates livelihood capital, risk-bearing capacity, and land transfer-out decisions. Moving beyond the conventional focus on the binary choice of "whether to transfer," this study conceptualizes land transfer as a dynamic and sequential decision-making process, and systematically examines how livelihood capital influences farmers' land transfer-out decisions through its effect on their risk-bearing capacity. The contributions of this study are threefold. First, at the theoretical level, it integrates the sustainable livelihood framework with risk decision theory, deepening the understanding of the micro-level mechanisms underlying farmers' land transfer-out decisions. Second, from a research perspective, it transcends the limitations of the binary choice approach, offering a more nuanced characterization of the inherent complexity of land transfer-out in practice. Third, at the practical level, in contrast to existing policy approaches that emphasize enhancing transfer returns, this study highlights that the key to promoting

orderly land transfer-out lies in effectively reducing the risks faced by farmers—shifting the policy focus from “incentive-based” approaches to “risk mitigation” strategies.

## 2. Theoretical Framework and Research Hypotheses

### 2.1. *The Sustainable Livelihood Framework and the Positioning of This Study*

The theoretical foundation of this study is the Sustainable Livelihoods Framework (SLF), which emerged in the late 1990s as a systematic approach to understand how households combine assets to pursue livelihood outcomes under varying vulnerability contexts and institutional structures [33,34]. The SLF identifies five core capital assets—human, natural, financial, physical, and social capital—as the primary building blocks of livelihoods, and emphasizes that households’ access to and combination of these assets shape their livelihood strategies and adaptive capacity [35,36].

Within this framework, livelihood capital endowment is not merely a static stock of resources but a dynamic determinant of households’ ability to cope with shocks, respond to opportunities, and engage in strategic livelihood adjustments [37]. In the context of rural land systems, scholars have increasingly applied the SLF to analyze land use decisions, arguing that land serves both as a productive asset and as a social security mechanism, and that households’ capital endowments fundamentally shape their land transfer behavior [19,38,39]. However, existing studies often treat land transfer either as a binary decision (to transfer or not) or focus solely on the identity of transfer recipients, with limited integration of the mediating mechanisms—particularly risk-bearing capacity—that link livelihood capital to the depth of land transfer strategies [40].

For farmers, transferring out land involves not only the prospect of rental income but also exposure to risks such as income instability, loss of social security functions, and contractual disputes [10,41]. The land transfer-out decision is essentially a process of weighing expected returns against potential losses. Risk decision theory (RDT) suggests that behavior under risky conditions is shaped by three interrelated dimensions: risk perception (how individuals subjectively assess risk), risk preference (individuals’ inherent attitudes toward risk), and risk-bearing capacity (the ability to withstand potential losses) [40,42–44]. This theory provides a foundation for explaining how individuals make decisions under uncertainty.

The Sustainable Livelihoods Framework explains, from an asset-based perspective, why some farmers have the capacity to transfer land out, while risk decision theory reveals, from a behavioral mechanism perspective, how farmers evaluate and respond to the risks inherent in land transfer-out. Combining these two theoretical traditions to construct an analytical framework that encompasses both farmers’ foundational capacity and their cognitive-behavioral processes can provide a more complete explanation of farmers’ land transfer-out decisions. Based on this integrated perspective, this study conceptualizes livelihood capital as the foundational explanatory variable, risk-bearing capacity as a key mediating mechanism through which capital influences decision-making, and land transfer-out decisions as differentiated livelihood outcomes shaped by the interaction of capacity and risk considerations. This framework (Figure 1) enables a more nuanced analysis of how farmers navigate the risk–return trade-offs inherent in land transfer-out decisions.

### 2.2. *Livelihood Capital Endowment, Risk-Bearing Capacity, and Land Transfer Actions*

Livelihood capital refers to the collection of resources that farmers rely on to sustain their livelihoods, providing essential security for both production and daily life. Higher levels of livelihood capital strengthen farmers’ decision-making capacities, increasing profitability, bargaining power, production and management efficiency, and access to information. Within the framework of comparative advantage, farmers are more likely to

transfer land resources out that are less economically efficient and to pursue more profitable livelihood alternatives. Extensive studies have demonstrated that households with richer capital endowments are better positioned to engage in off-farm employment or specialized agricultural production, thereby reducing their dependence on land as a primary livelihood source [19–21,38]. This reduction in dependency increases the likelihood of land transfer, as land shifts from a subsistence necessity to an asset that can be leased out for income [45]. Thus, the greater the livelihood capital endowment, the higher the probability of farmers transferring land.

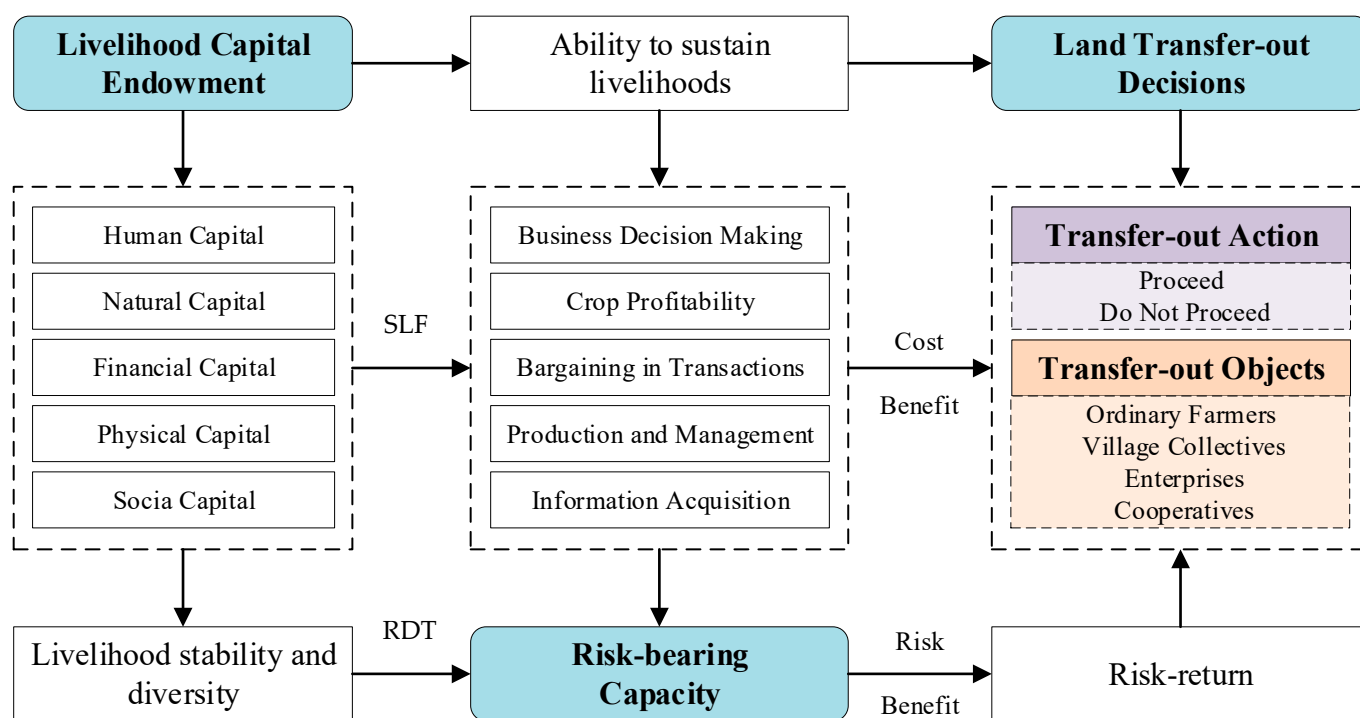


**Figure 1.** Analytical framework of livelihood capital, risk-bearing capacity, and land transfer-out decisions.

Moreover, farmers' livelihood capital endowment also enhances their risk-bearing capacity, which in turn facilitates land transfer-out decisions. Although income from farmland cultivation may be relatively low, land also fulfills functions such as social security, old-age support, and spiritual attachment [46,47]. Transferring out land exposes farmers to risks related to survival, unemployment, and health [27]. However, households with stronger livelihood capital endowments possess more livelihood options and are better positioned to withstand livelihood-related risks and pressures [48]. Thus, stronger livelihood capital endowment increases farmers' risk-bearing capacities, fostering the transformation of land from its traditional roles of production and security toward an investment function, ultimately raising the likelihood of land transfer.

### 2.3. Livelihood Capital Endowment, Risk-Bearing Capacity, and Land Transfer Objects

Beyond the binary decision of whether to transfer land out, the choice of transfer object—whether to lease to ordinary farmers, cooperatives, professional growers, or enterprises—represents a second-order strategic decision of farmers. Different objects entail distinct risk–return profiles. Farmers choose transfer patterns and objects based on transaction costs and risk–return considerations [49,50]. Transfers to enterprises or cooperatives typically offer higher rental income but expose farmers to greater counterparty risk, potential land use changes, and legal ambiguity [51]. Transfers among ordinary farmers

involve lower returns but also lower risks, although informal contracts may lead to tenure insecurity [52]. Professional growers occupy an intermediate position in terms of both risk and return.

The SLF suggests that households' livelihood capital endowments shape not only their capacity to engage in land transfer but also their ability to manage the risks associated with different recipient types [37]. Farmers with higher livelihood capital—especially those with stronger social networks, information access, and financial buffers—can better evaluate, monitor, and cope with the higher risks associated with enterprise or grower transfers [53,54]. In contrast, households with limited capital endowments are likely to avoid riskier transfer arrangements, even when returns are higher, and instead opt for transfers to familiar parties such as fellow villagers [52,55]. This implies that risk-bearing capacity functions as a critical mediator linking livelihood capital to the intensity of land transfer-out decisions.

#### 2.4. Hierarchical Relationships Among the Hypotheses

Building on the theoretical discussion above, this study proposes three hypotheses that form a hierarchical analytical structure. Hypothesis 1 establishes a direct positive relationship between livelihood capital endowment and farmers' adoption of aggressive land transfer-out decisions—defined as an increased likelihood of transferring land out, pursuing higher returns, and accepting higher risks. Hypothesis 2 posits a parallel direct effect of risk-bearing capacity on these same aggressive decisions. Hypothesis 3 specifies the mediating role of risk-bearing capacity, arguing that part of the effect of livelihood capital on land transfer-out decisions operates through its enhancement of risk-bearing capacity. Together, these three hypotheses constitute a sequentially integrated framework: livelihood capital exerts both a direct influence and an indirect influence (via risk-bearing capacity) on two progressively more complex dimensions of land transfer-out decisions—first, the action to transfer-out, and second, the choice of transfer-out object.

**Hypothesis 1:** *Livelihood capital endowment encourages farmers to adopt more aggressive decisions in land transfer-out decision-making. Specifically, farmers with a higher livelihood capital endowment are more likely to transfer land out and prefer to transfer it to objects with higher transfer returns and higher risks.*

**Hypothesis 2:** *Risk-bearing capacity prompts farmers to adopt more aggressive decisions in land transfer-out decision-making. That is, farmers with greater risk-bearing capacity are more inclined to transfer land out and choose objects offering higher returns and risks.*

**Hypothesis 3:** *Risk-bearing capacity mediates the effect of livelihood capital endowment on farmers' land transfer-out decisions.*

### 3. Materials and Methods

#### 3.1. Model Settings

Farmers' land transfer-out decisions encompass a series of decisions and actions related to the transfer of farmland. This includes not only the decision of whether to transfer land out but also the selection of the transfer-out object, which may be other farmers, village collectives, professional cooperatives, or enterprises. The primary dimension of transfer-out decision concerns whether a farmer decides to transfer land out, while the choice of transfer-out object reflects the farmer's decision regarding who will take over the land. To examine these processes, this study develops a model that incorporates both land transfer-out action and the choice of transfer-out object, in order to analyze how livelihood capital and risk-bearing capacity influence farmers' land transfer-out decisions.

Farmers' land transfer-out decisions are modeled as a binary choice variable, taking values of zero or one. A value of zero denotes "no transfer," while a value of one denotes "transfer." In this framework, farmers' livelihood capital and risk-bearing capacity are treated as continuous variables. The binary logistic regression model, a generalized linear regression model, is particularly well-suited for predicting discrete outcomes, especially binary choices. Accordingly, this study constructs a binary logistic regression model, in which land transfer-out action is the dependent variable, livelihood capital serves as the independent variable, and risk-bearing capacity functions as the mediating variable. The model is specified as follows:

$$LTA = \alpha_0 + \alpha_1 LC + \alpha_c Con + \delta_1 \quad (1)$$

$$RT = \beta_0 + \beta_1 LC + \beta_c Con + \delta_2 \quad (2)$$

$$LTA = \gamma_0 + \gamma_1 LC + \gamma_2 RT + \gamma_c Con + \delta_3 \quad (3)$$

where LTA denotes the land transfer-out action of farmers, LC denotes livelihood capital, RT denotes the risk-bearing capacity of farmers,  $\alpha_0$ ,  $\beta_0$ , and  $\gamma_0$  denote the constant term,  $\alpha_1$ ,  $\beta_1$ , and  $\gamma_1$  denote the regression coefficient of livelihood capital, and  $\gamma_2$  denotes the regression coefficient of risk-bearing ability of farmers. Con denotes the control variable. In this paper, we choose the age of farmers, the existence of coordinating organizations, and the number of months of out-of-town residency as the control variables.  $\alpha_c$ ,  $\beta_c$  and  $\gamma_c$  denote the regression coefficients of the control variables.  $\delta_1$ ,  $\delta_2$ , and  $\delta_3$  denote the error estimation term.

Land transfer-out objects include other farmers, village collectives, professional cooperative organizations, and enterprises, which constitute unordered multi-categorical variables. To address such classification problems with multiple mutually exclusive categories, the multinomial logistic regression model is employed. This model is well-suited for analyzing categorical outcomes, as it allows for multi-class classification, joint estimation, and efficient parameter inference.

In this study, the choice of land transfer-out object is specified as the dependent variable, farmers' livelihood capital is treated as the independent variable, and risk-bearing capacity is introduced as a mediating variable. Accordingly, the multinomial logistic regression model is applied to investigate the relationship among livelihood capital, risk-bearing capacity, and farmers' selection of land transfer-out objects. The model is specified as follows:

$$LTO = \theta_0 + \theta_1 LC + \theta_c Con + \delta_4 \quad (4)$$

$$LTO = \phi_0 + \phi_1 LC + \phi_2 RT + \phi_c Con + \delta_5 \quad (5)$$

where LTO denotes the land transfer-out objects of farmers, LC denotes livelihood capital, RT denotes the risk-bearing capacity of farmers,  $\theta_0$  and  $\phi_0$  denote the constant term,  $\theta_1$  and  $\phi_1$  denote the regression coefficient of livelihood capital,  $\phi_2$  denotes the regression coefficient of risk-bearing ability of farmers,  $\theta_c$  and  $\phi_c$  denote the regression coefficients of the control variables, and  $\delta_4$  and  $\delta_5$  denote the error estimation term.

### 3.2. Variable Definition and Data Source

#### 3.2.1. Dependent Variable

The dependent variable in this study is farmers' land transfer-out decisions, measured along two dimensions: (1) whether land is transferred and (2) the choice of transfer-out objects. The land transfer-out decision is defined as a binary variable (1 = transfer; 0 = no transfer). The choice of transfer-out object is treated as an unordered multinomial variable, including other farmers, village collectives, professional cooperative organizations,

and enterprises. For empirical estimation, these categories are coded numerically with values of three, five, seven and nine, according to relative risk levels. To enhance model comparability, households that did not transfer land out (land transfer = 0) are used as the reference category, as shown in Table 1.

**Table 1.** Farmers' land transfer-out decisions variable.

| Dependent Variable                   | Variable Setting          | Variable Description                       | Sample Size | Total Sample Percentage (%) | Transfer Sample Percentage (%) |
|--------------------------------------|---------------------------|--------------------------------------------|-------------|-----------------------------|--------------------------------|
| Farmers' land transfer-out decisions | Land transfer-out action  | No = 0                                     | 676         | 39.08                       | —                              |
|                                      |                           | Yes = 1                                    | 1054        | 60.92                       | 100                            |
|                                      | Land transfer-out objects | Other farmers = 3                          | 613         | 35.43                       | 58.16                          |
|                                      |                           | Village collectives = 5                    | 316         | 18.27                       | 29.98                          |
|                                      |                           | Professional cooperative organizations = 7 | 40          | 2.31                        | 3.80                           |
|                                      |                           | Enterprises = 9                            | 85          | 4.91                        | 8.06                           |

### 3.2.2. Independent Variable

Farmers' livelihood capital is the core independent variable in this study. Livelihood capital plays a vital role in enabling farmers to manage risks and reduce livelihood vulnerability. Drawing on the Sustainable Livelihood Framework developed by the United Kingdom Department for International Development, this study constructs a comprehensive indicator system consisting of five secondary indicators (human capital, natural capital, financial capital, physical capital, and social capital) and 16 tertiary indicators. Since all five secondary indicators are considered equally important for farmers' overall livelihood capital, equal weights are assigned across dimensions. The entropy weight method is employed to determine the weights of the tertiary indicators. The entropy method assigns weights based on the degree of dispersion of each indicator. It is an objective weighting method that avoids the bias caused by subjective weighting by researchers. The entropy method is particularly suitable for constructing multi-dimensional indices, as presented in Table 2.

**Table 2.** Measurement indicator system for farmers' livelihood capital endowment.

| Primary Indicator                     | Secondary Indicator (Weight) | Tertiary Indicator                                  | Indicator Description                                                                | Weight |
|---------------------------------------|------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------|--------|
| Farmers' livelihood capital endowment | Human capital (0.2)          | Average education level of family members           | 3 = Primary school; 8 = junior high school; 11 = senior high school; 14 = university | 0.051  |
|                                       |                              | Average health status of family members             | 1 = incapacity to work; 2 = poor; 3 = medium; 4 = good; and 5 = excellent health     | 0.024  |
|                                       |                              | Proportion of labor force                           | Proportion of labor force in the total family population                             | 0.135  |
|                                       |                              | Proportion of non-agricultural vocational education | Proportion of population with non-agricultural vocational education                  | 0.791  |
|                                       | Natural capital (0.2)        | Contracted land area                                | Total area of contracted land held by the family                                     | 0.225  |
|                                       |                              | Operated land area                                  | Total area of land actually operated by the family                                   | 0.744  |
|                                       |                              | Land quality                                        | 1 = Poor; 2 = medium; and 3 = good                                                   | 0.031  |
|                                       | Financial capital (0.2)      | Total annual household income                       | Total annual household income                                                        | 0.621  |
|                                       |                              | Total non-agricultural wage income                  | Total non-agricultural wage income                                                   | 0.360  |
|                                       |                              | Financial literacy level                            | Level of attention to economic and financial information: N/A                        | 0.019  |

Table 2. *Cont.*

| Primary Indicator                     | Secondary Indicator (Weight) | Tertiary Indicator                    | Indicator Description                                                                                     | Weight |
|---------------------------------------|------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------|--------|
| Farmers' livelihood capital endowment | Physical capital (0.2)       | Household housing area                | Area of the house where the family lives                                                                  | 0.098  |
|                                       |                              | Transportation assets                 | Total number of motorcycles, electric bikes, and cars owned by the family                                 | 0.115  |
|                                       |                              | Non-residential property quantity     | Number of properties owned outside the residential land area                                              | 0.787  |
|                                       | Social capital (0.2)         | Number of people who can be helped    | Number of people who can lend 50,000 yuan when in difficulty                                              | 0.402  |
|                                       |                              | Family members with village officials | 0 = No; 1 = yes                                                                                           | 0.586  |
|                                       |                              | Trust level in neighbors              | 1 = Very distrustful; 2 = somewhat distrustful; 3 = neutral; 4 = somewhat trusting; and 5 = very trusting | 0.012  |

Note: Financial literacy level is assigned based on the degree of attention farmers pay to financial information, with values for very attentive, attentive, generally attentive, slightly attentive, and never attentive set to 1, 0.75, 0.5, 0.25, and 0, respectively.

### 3.2.3. Mediator Variable

Farmers' risk-bearing capacities serves as the mediating variable in this study. It refers to the ability of farmers to protect themselves or to transfer risks when confronted with various challenges [6]. The level of risk-bearing capacity differs across households due to variations in individual and family characteristics. Overall, households with stronger psychological resilience, better social networks, and more abundant economic resources tend to exhibit a higher risk-bearing capacity.

This study assesses farmers' risk-taking capacity from three dimensions: psychological resilience, social resilience, and economic resilience. Specifically, life satisfaction is used as an indicator of psychological resilience, reflecting farmers' psychological capacity to withstand risks. Local household economic status serves as an indicator of social resilience, reflecting farmers' ability to mobilize resources within community networks. The theoretical rationale is that in rural acquaintance societies, a household's relative economic status directly determines its voice, reciprocal capacity, and potential to access social support within the community network. Farmers with lower economic status often face weaker social networks and fewer informal mutual assistance opportunities, making it difficult for them to mobilize social resources when confronted with risks. The proportion of household medical expenditure is used as an indicator of economic pressure, reflecting farmers' economic resilience in the face of major risks. The entropy weight method is applied to assign objective weights to these indicators, as presented in Table 3.

Table 3. Risk-bearing capacity measurement indicators.

| Variable Type         | Measurement Dimension    | Measurement Indicator                       | Indicator Description                                           | Attribute | Weight |
|-----------------------|--------------------------|---------------------------------------------|-----------------------------------------------------------------|-----------|--------|
| Risk-bearing capacity | Psychological resilience | Life satisfaction                           | Scale of 1–10, from low to high                                 | Positive  | 0.207  |
|                       | Social resilience        | Local household economic status             | 1 = Very low; 2 = low; 3 = average; 4 = high; and 5 = very high | Positive  | 0.500  |
|                       | Economic resilience      | Proportion of household medical expenditure | Proportion of household medical expenses to total expenditure   | Negative  | 0.294  |

Farmers' land transfer-out decisions are shaped not only by their livelihood capital and risk-bearing capacity but also by heterogeneous factors at the individual, household, and

village levels [56–58]. To reduce potential estimation bias arising from omitted variables, this study incorporates a set of control variables based on the existing literature and data availability to capture heterogeneity across households and village-level organizations. These include the average age of household members, the number of months that family members reside outside the village, and the presence of an organization that coordinates land transfer [59,60] (Table 4).

**Table 4.** Description of control variables.

| Variable Type     | Variable Name                         | Variable Description                                                      |
|-------------------|---------------------------------------|---------------------------------------------------------------------------|
| Control variables | Average age of family members         | The average age of all family members                                     |
|                   | Average number of months family       | The average number of months family                                       |
|                   | Members live outside the town         | members live outside the town                                             |
|                   | Presence of coordination organization | 0 = No coordination organization;<br>1 = exists coordination organization |

### 3.3. Data Sources and Descriptive Statistics

The data used in this study are derived from the 2021 China Land Economic Survey, which was made publicly available through the Rural Revitalization Data Resource Platform of Nanjing Agricultural University. The China Land Economic Survey was initiated in 2020, and a follow-up survey was carried out in 2021 based on the baseline survey conducted in Jiangsu Province. The China Land Economy Survey conducted its baseline survey in Jiangsu Province in 2020, followed by a follow-up survey in 2021. As a major economic province in China, Jiangsu leads the country in land transfer scale, activity, market development, and the exploration of transfer models, making it highly representative. The survey employed the probability proportional to size sampling method to select sample counties and administrative villages, covering 52 administrative villages and 2600 farm households across 13 prefecture-level cities in Jiangsu Province.

This study primarily relies on household questionnaire data from the China Land Economic Survey, which includes detailed information on 2600 farm households, such as household demographic and income characteristics, land use, plot attributes, household production and operations, rural industries, assets and livelihoods, household expenditures, financial transactions, and cognitive preferences. Consistent with the objectives of this research, the sample was carefully screened, and 1730 valid observations were retained after removing abnormal cases. Abnormal samples were defined as: (a) responses inconsistent with the facts, (b) missing data, and (c) responses that lacked logical consistency across the questionnaire. Descriptive statistics for each variable are presented in Table 5.

**Table 5.** Descriptive statistics of variables.

| Variable Type         | Variable Name                         | Sample | Mean   | St. Dev | Min    | Max    |
|-----------------------|---------------------------------------|--------|--------|---------|--------|--------|
| Dependent variables   | Land Transfer Action                  | 1730   | 0.609  | 0.488   | 0.000  | 1.000  |
|                       | Land Transfer Object                  | 1730   | 2.58   | 2.493   | 0.000  | 9.000  |
| Independent variables | Livelihood Capital Endowment          | 1730   | 0.107  | 0.076   | 0.008  | 0.475  |
| Mediator variables    | Risk-Bearing Capacity                 | 1730   | 0.650  | 0.101   | 0.074  | 1.000  |
|                       | Average Age of Family Members         | 1730   | 52.164 | 12.871  | 18.500 | 87.000 |
| Control variables     | Average Number of Months Family       | 1730   | 2.17   | 2.919   | 0.000  | 12.000 |
|                       | Members Live Outside the Town         |        |        |         |        |        |
|                       | Presence of Coordination Organization | 1730   | 0.494  | 0.500   | 0.000  | 1.000  |

## 4. Results

### 4.1. Measurement Results of Livelihood Capital and Risk-Bearing Capacity

The assessment results of farmers' livelihood capital endowment are presented in Table 6. The findings indicate that the maximum value of livelihood capital endowment among farm households is 0.475, while the minimum value is 0.008. This reflects the structural imbalance of livelihood resources in rural households, where a significant proportion of farmers still face constraints in accessing and mobilizing key livelihood assets.

**Table 6.** Descriptive statistics of farmers' livelihood capital endowment.

| Variables          | Sample Size | Mean  | St. Dev | Min   | Max   |
|--------------------|-------------|-------|---------|-------|-------|
| Human capital      | 1730        | 0.228 | 0.199   | 0.006 | 0.99  |
| Natural capital    | 1730        | 0.029 | 0.034   | 0.000 | 0.777 |
| Financial capital  | 1730        | 0.045 | 0.042   | 0.001 | 0.701 |
| Physical capital   | 1730        | 0.127 | 0.134   | 0.000 | 0.949 |
| Social capital     | 1730        | 0.104 | 0.214   | 0.000 | 0.759 |
| Livelihood capital | 1730        | 0.107 | 0.076   | 0.008 | 0.475 |

Among the five types of livelihood capital, natural capital (mean 0.029) and financial capital (mean 0.045) show relatively low mean values, reflecting a dual shortage of both natural and financial capital among farmers. This finding is consistent with the realities of fragmented farmland and low comparative returns from agriculture. It also suggests that rural households in the sample area remain heavily reliant on low-return, small-scale farming, with slow progress in agricultural transformation and upgrading, as well as the sluggish accumulation of financial resources.

In contrast, human capital, physical capital, and social capital have relatively higher mean values, suggesting that farmers and their families are better positioned in terms of knowledge, labor capacity, health, material resources, and social networks. These advantages help improve farmers' ability to adapt and diversify their livelihood strategies, thereby contributing to a stronger overall livelihood capital endowment.

Therefore, to effectively enhance farmers' livelihood capital, priority should be given to strengthening natural and financial capital. This can be achieved through policies that improve land quality, consolidate fragmented plots, and boost agricultural productivity, along with measures to expand farmers' access to credit and off-farm income opportunities. Addressing these structural constraints would help create more balanced conditions for sustainable livelihood development.

The calculation results of farmers' risk-bearing capacities are presented in Table 7. The results show that the maximum value of farmers' risk-bearing capacities is 1.000, the minimum value is 0.074, and the mean value is 0.650.

**Table 7.** Descriptive statistics of farmers' risk-bearing capacities.

| Group                     | Variable | Mean  | St. Dev | Min   | Max   |
|---------------------------|----------|-------|---------|-------|-------|
| Land transfer-out actions | 0        | 0.626 | 0.108   | 0.074 | 0.799 |
|                           | 1        | 0.665 | 0.094   | 0.466 | 1.000 |
| Land transfer-out objects | 3        | 0.663 | 0.093   | 0.466 | 0.989 |
|                           | 5        | 0.664 | 0.090   | 0.469 | 1.000 |
|                           | 7        | 0.674 | 0.084   | 0.510 | 0.857 |
|                           | 9        | 0.683 | 0.109   | 0.477 | 0.990 |
| Total                     | -        | 0.650 | 0.101   | 0.074 | 1.000 |

Further group comparison between farmers' risk-bearing capacities and their land transfer-out decisions reveals that farmers with higher risk-bearing capacities are more likely to transfer their land out. Moreover, their preference for land transfer-out object follows the order of enterprises, professional cooperative organizations, village collectives, and other farmers. This pattern suggests that as farmers' risk-bearing capacities increase, the traditional role of land in providing livelihood, old-age security, and social welfare diminishes, making farmers more inclined to allocate land to non-agricultural production and management activities. Regarding the choice of transfer-out object, farmers with stronger risk-bearing capacities tend to transfer land out to objects associated with higher risks and higher potential returns (professional cooperative organizations and enterprises).

#### 4.2. Impact of Livelihood Capital Endowment and Risk-Bearing Capacity on Farmers' Land Transfer-Out Action

##### 4.2.1. Impact of Livelihood Capital Endowment on Land Transfer-Out Action

Using data from 1730 farm households in the China Land Economic Survey as valid observations, Model (1) is tested and estimated, with the results reported in Table 8. The estimates in column (1) indicate that livelihood capital endowment exerts a significant positive effect on farmers' land transfer-out action. In other words, the higher the level of livelihood capital endowment, the more likely farmers are to engage in land transfer-out. Higher levels of livelihood capital mean that farmers have a greater variety of means to sustain their livelihoods. After weighing the costs and benefits of agricultural production, farmers' dependence on land-based cultivation income diminishes, making them more inclined to transfer their land out, seek entrepreneurial or relocation opportunities, and diversify income sources in pursuit of higher returns.

**Table 8.** Benchmark regression analysis results of livelihood capital endowment, risk-bearing capacity, and farmers' land transfer-out actions.

| Variables                         | (1)                   | (2)                   | (3)                  |
|-----------------------------------|-----------------------|-----------------------|----------------------|
|                                   | LTA                   | RT                    | LTA                  |
| LC                                | 2.118 **<br>(0.995)   | 0.103 ***<br>(0.032)  | 1.839 *<br>(1.003)   |
| RT                                |                       |                       | 3.322 ***<br>(0.819) |
| Age                               | 0.309 ***<br>(0.006)  | −0.001 ***<br>(0.000) | 0.035 ***<br>(0.006) |
| Organizations                     | 5.028 ***<br>(0.255)  | 0.035 ***<br>(0.005)  | 4.996 ***<br>(0.256) |
| Months                            | 0.070 **<br>(0.028)   | −0.0004<br>(0.001)    | 0.075 ***<br>(0.029) |
| Constant                          | −3.118 ***<br>(0.398) | 0.659 ***<br>(0.012)  | −5.43 ***<br>(0.709) |
| LR chi <sup>2</sup> /F-statistics | 1188.91 ***           | 19.02 ***             | 1206.81 ***          |
| Pseudo R <sup>2</sup>             | 0.5136                | 0.0400                | 0.5213               |

Note: In the table, “\*”, “\*\*”, “\*\*\*” denote significance at the 10%, 5%, and 1% levels, respectively, the same as in the tables below.

With respect to the control variables, the average age of household members has a significant positive effect on land transfer behavior, suggesting that older households are more willing to transfer land out. As the average age of household members increases, physical capacity and farming ability decline, labor becomes scarcer, and households are more inclined to transfer land out to secure additional income. At the same time, older

households tend to accumulate more social resources and employment opportunities, which further motivates them to release land for non-agricultural work.

The presence of coordinating organizations also has a significant positive effect, indicating that such organizations facilitate land transfers. Coordinating organizations help protect farmers' interests against information asymmetry, reduce transaction time and costs, and improve the contractual environment. By mitigating the risks and opportunism that arise from informal transfer processes, they enhance the expected stable returns of both parties. Finally, the number of months of out-of-town residence significantly increases the likelihood of land transfer-out. The longer household members live or work outside the village, the less time they devote to agricultural activities, the lower their dependence on land for production, and the more willing they are to transfer land out as a source of supplementary income.

In this paper, since the dependent variable is binary, the KHB method is employed to test the mediation effect in order to overcome the estimation bias associated with traditional mediation testing methods in nonlinear models. The results show that both the total effect and the direct effect of livelihood capital on land transfer are positive and statistically significant in Table 9. Regarding the indirect effect, the coefficient of the indirect effect transmitted through risk-bearing capacity is 0.343, and it is significant at the 5% level. This finding is consistent with theoretical hypothesis 2, indicating that a higher level of livelihood capital endowment not only directly promotes land transfer but also indirectly facilitates land transfer by enhancing farmers' risk-bearing capacities.

**Table 9.** Full sample KHB model test results.

| Variables   |                                    | LTA                 |
|-------------|------------------------------------|---------------------|
|             |                                    | (1)<br>RT           |
| Full sample | Total Effect                       | 2.187 **<br>(1.003) |
|             | Direct Effect                      | 1.844 *<br>(1.003)  |
|             | Indirect Effect                    | 0.343 **<br>(0.136) |
|             | Proportion of mediation effect (%) | 15.69               |
|             | N                                  | 1730                |

Note: In the table, "*\**" and "*\*\**" denote significance at the 10% and 5% levels, respectively, the same as in the tables below.

#### 4.2.2. Impact of Livelihood Capital Endowment on Risk-Bearing Capacity

To evaluate the impact of livelihood capital endowment on farmers' risk-bearing capacities, this study tested and estimated Model (2), and the results are presented in Table 8. The estimates in column (2) show that livelihood capital endowment exerts a significant positive effect on farmers' risk-bearing capacities. This suggests that farmers with higher levels of livelihood capital possess greater human, physical, and financial resources. When confronted with emergencies, illnesses, or accidents, such farmers are better equipped with material resources, social networks, and risk-mitigating mechanisms in order to cope with shocks. Moreover, households with more abundant livelihood capital generally exhibit stronger business decision-making skills and information-gathering capacities, enabling them to allocate resources more efficiently and adopt effective strategies to avoid or reduce risks.

The average age of household members has a significant but modest negative effect on farmers' risk-bearing capacities. As farmers age, their physical health deteriorates,

and their attitudes toward risk become more conservative, reducing their willingness and ability to bear risks [23]. However, aging may also be accompanied by the accumulation of social and human capital, which helps mitigate potential risks in production and daily life to some extent. This interaction explains why the negative impact of household age structure on risk-bearing capacity remains relatively limited.

The presence of coordinating organizations has a significant positive effect on farmers' risk-bearing capacities, which is consistent with the existing literature [60]. Village committees or professional coordinating organizations, by formalizing contracts and standardizing land transfer procedures, strengthen farmers' sense of security and trust in the transaction process, thereby reducing the likelihood of income loss associated with transferring land outside the village. In addition, coordinating organizations provide legal safeguards and institutional remedies, further lowering the potential risks and ultimately enhancing farmers' willingness and ability to bear risks in land transfer activities.

#### 4.2.3. Impact of Livelihood Capital Endowment and Risk-Bearing Capacity on Farmers' Land Transfer-Out Action

The results in column (3) of Table 8 indicate that both livelihood capital endowment and risk-bearing capacity exert significant positive effects on farmers' land transfer-out actions when risk-bearing capacity is introduced as a mediating variable. However, the coefficient of livelihood capital endowment decreases compared with the model without the mediator, suggesting that risk-bearing capacity plays a partial mediating role in the relationship between livelihood capital endowment and land transfer-out action.

Two primary pathways explain how livelihood capital endowment affects land transfer-out action through risk-bearing capacity. First, higher levels of livelihood capital endowment imply a more stable and diversified portfolio of livelihood resources and a stronger ability to manage risks. This reduces farmers' dependence on land for subsistence and increases their capacity to bear the risks associated with land transfer-out. Second, greater human and financial capital strengthen households' ability to integrate resources, enabling more rational decision-making in identifying and mitigating risks during the land transfer-out process. Furthermore, the accumulation of social capital enhances farmers' access to information, supporting the formulation of risk-prevention and control measures, which in turn improve the expected benefits of land transfer-out and encourage participation in land transfer activities.

### 4.3. Impact of Livelihood Capital Endowment and Risk-Bearing Capacity on Farmers' Choice of Land Transfer-Out Objects

#### 4.3.1. Impact of Livelihood Capital Endowment on Land Transfer-Out Objects

When deciding to whom they will transfer their land out, farmers generally face four options: other farmers, village collectives, professional cooperative organizations, and enterprises. Farmers transferring out land tend to share relatively equal social status and bargaining power with other farmers and village collectives, whereas professional cooperative organizations and enterprises usually possess higher social status and stronger bargaining power. Moreover, farmers' trust in other farmers and village collectives is generally greater, and village collectives, as local institutions, are more widespread and established in rural areas, providing a relatively stable cooperative environment. Based on these considerations, this study groups other farmers and village collectives into transfer recipient group 1, and professional cooperative organizations and enterprises into transfer recipient group 2. A multivariate logistic model is then employed to empirically examine the impact of livelihood capital endowment on farmers' choice between these two groups. The specific results are presented in Table 10.

**Table 10.** Benchmark regression analysis results of livelihood capital endowment on farmers' land transfer-out object selections.

| Variables     | (1)<br>Other Farmers<br>and Village<br>Collectives | (2)<br>Professional Cooperative<br>Organizations and<br>Enterprises | (3)<br>Other<br>Farmers | (4)<br>Village<br>Collectives | (5)<br>Professional Cooperative<br>Organizations and<br>Enterprises |
|---------------|----------------------------------------------------|---------------------------------------------------------------------|-------------------------|-------------------------------|---------------------------------------------------------------------|
| LC            | 2.225 **<br>(0.999)                                | 0.763<br>(1.570)                                                    | 2.210 **<br>(1.027)     | 2.269 *<br>(1.194)            | 0.769<br>(1.572)                                                    |
| Age           | 0.032 ***<br>(0.006)                               | 0.018 *<br>(0.010)                                                  | 0.033 ***<br>(0.007)    | 0.030 ***<br>(0.008)          | 0.018 *<br>(0.010)                                                  |
| Organizations | 4.956 ***<br>(0.256)                               | 5.636 ***<br>(0.366)                                                | 4.782 ***<br>(0.260)    | 5.346 ***<br>(0.288)          | 5.634 ***<br>(0.366)                                                |
| Months        | 0.073 **<br>(0.028)                                | 0.039<br>(0.042)                                                    | 0.081 ***<br>(0.029)    | 0.048<br>(0.034)              | 0.037<br>(0.042)                                                    |
| Constant      | −3.267 ***<br>(0.402)                              | −4.903 ***<br>(0.630)                                               | −3.618 ***<br>(0.416)   | −4.486 ***<br>(0.489)         | −4.883 ***<br>(0.631)                                               |

Note: In the table, “\*”, “\*\*”, “\*\*\*” denote significance at the 10%, 5%, and 1% levels, respectively, the same as in the tables below.

The estimates in columns (1) and (2) indicate that livelihood capital endowment has a significant positive effect on farmers' choice of other farmers and village collectives as land transfer-out objects, while the effect on choosing professional cooperative organizations and enterprises is positive but not statistically significant. In other words, compared with farmers who do not engage in land transfer, those with higher levels of livelihood capital are more likely to select other farmers or village collectives as transfer recipients.

Further subgroup analysis reveals significant differences in farmers' expected return-to-risk ratios across different transfer recipients (in Table 11). Farmers who choose other farmers and village collectives report significantly higher return-to-risk ratios than those who select professional cooperative organizations or enterprises. This finding suggests that although farmers may consider higher potential returns when choosing transfer recipients, as rational and risk-averse actors, they tend to weigh the expected benefits against the potential risks when making land transfer decisions. In addition, because the farmland transfer market in China remains relatively underdeveloped, transfers are often characterized by familiarity, which further explains farmers' preference for transferring out land to other farmers and village collectives.

**Table 11.** Statistical analysis of expected return-to-risk ratios for different land transfer.

| Land Transfer Objects                                  | Mean    | Std.dev | Min | Max    |
|--------------------------------------------------------|---------|---------|-----|--------|
| No transfer-out of land                                | 0       | 0       | 0   | 0      |
| Other farmers and village collectives                  | 664.479 | 544.284 | 0   | 10,000 |
| Professional cooperative organizations and enterprises | 261.912 | 328.123 | 0   | 3200   |

Note: This paper measures the expected return-to-risk ratio of land transfer objects by the ratio of the rental income from the transferred land to the potential risk coefficient of the transfer object. The potential risk coefficient for each transfer-out object is assigned based on the social status equivalence between the farmer and the transfer-out object, with values as follows: other farmers = 1, village collectives = 2, professional cooperatives = 3, and enterprises = 4. A higher value indicates that the farmer faces greater potential risks when transferring land.

The above analysis indicates that as farmers' livelihood capital endowment increases, they are more inclined to transfer land out to other farmers or village collectives that share relatively equal social status and bargaining power. To further examine potential differences in farmers' preferences between these two types of recipients, this study divides group 1 (other farmers and village collectives) into two sub-samples and applies a multivariate logistic regression model to assess the impact of livelihood capital endowment on farmers' choice of transfer recipients. The results are reported in Table 10.

Columns (3) and (4) reveal that livelihood capital endowment exerts a significant positive influence on farmers' choice of transfer-out objects, but with distinct preference patterns. Specifically, the regression coefficients for choosing village collectives are slightly higher than those for choosing other farmers, suggesting that farmers with greater livelihood capital endowment are more likely to transfer their land out to village collectives. This tendency arises because, when land is transferred to village collectives, farmers can secure relatively stable monetary income, regardless of whether the collective directly manages the land or leases it to large-scale farmers, professional cooperatives, or agribusinesses. Compared with transfers to other farmers, village collectives provide clearer advantages in post-transfer management, including supervision, coordination, and service delivery, which offer stronger protection of farmers' interests. This combination of trust and income security makes farmers with abundant livelihood capital more inclined to select village collectives as the object of land transfers.

The results in columns (2) and (5) of the table indicate that increases in livelihood capital endowment exert a positive effect on farmers' choice of professional cooperative organizations and enterprises as land transfer-out objects, but this effect is not statistically significant. Two main explanations may account for this finding.

First, the rural land transfer market in China remains underdeveloped. Land transfers are still largely dependent on spontaneous transactions or government-led initiatives, with limited participation from formal market actors. In many regions, the number of local agricultural professional cooperatives and leading enterprises is relatively small, which constrains farmers' options for transfer-out objects. In addition, the lack of well-functioning land transfer institutions and weak information flows creates mismatches between land supply and demand, further restricting farmers' ability to select cooperatives or enterprises.

Second, farmers, as dispersed individuals, generally occupy a weaker bargaining position when dealing with enterprises or other social organizations, particularly in cases of land disputes. Many farmers are concerned that their economic rights and interests may not be adequately safeguarded. This asymmetry in rights protection reduces farmers' willingness to engage in land lease transactions with enterprises or cooperatives.

#### 4.3.2. Impact of Livelihood Capital Endowment and Risk-Bearing Capacity on the Choice of Land Transfer-Out Objects

To further examine whether risk-bearing capacity mediates the relationship between livelihood capital endowment and the choice of land transfer-out objects, this study constructs a mechanism-testing model for empirical analysis, with the results presented in Table 12.

**Table 12.** Benchmark regression analysis results of livelihood capital endowment, risk-bearing capacity, and farmers' choice of land transfer-out objects.

| Variables     | (1)                   | (2)                   | (3)                                                    |
|---------------|-----------------------|-----------------------|--------------------------------------------------------|
|               | Other Famers          | Village Collectives   | Professional Cooperative Organizations and Enterprises |
| LC            | 1.942 *<br>(1.034)    | 1.995 *<br>(1.201)    | 0.345<br>(1.577)                                       |
| RT            | 3.183 ***<br>(0.845)  | 3.243 ***<br>(0.990)  | 4.962 ***<br>(1.263)                                   |
| Age           | 0.037 ***<br>(0.007)  | 0.033 ***<br>(0.008)  | 0.023 **<br>(0.010)                                    |
| Organizations | 4.755 ***<br>(0.261)  | 5.318 ***<br>(0.289)  | 5.586 ***<br>(0.368)                                   |
| Months        | 0.087 ***<br>(0.030)  | 0.053<br>(0.034)      | 0.042<br>(0.042)                                       |
| Constant      | −5.836 ***<br>(0.732) | −6.742 ***<br>(0.849) | −8.300 ***<br>(1.085)                                  |

Note: In the table, "\*", "\*\*", "\*\*\*" denote significance at the 10%, 5%, and 1% levels, respectively.

The results in columns (1) and (2) show that, after incorporating risk-bearing capacity as a mediating variable, its coefficient for farmers' choice of other farmers and village collectives as transfer-out objects is significantly positive. At the same time, the coefficient of livelihood capital endowment on farmers' choice of other farmers and village collectives decreases, but remains statistically significant. This indicates that risk-bearing capacity plays a partial mediating role in the process through which livelihood capital endowment affects the choice of land transfer-out objects. In other words, as farmers' livelihood capital endowment increases, their risk-bearing capacity also improves, making them more inclined to transfer land out to other farmers or village collectives.

The results in columns (3) show that, although risk-bearing capacity has a significantly positive effect on farmers' choice of professional cooperative organizations and enterprises as land transfer-out objects, the baseline regression coefficient of livelihood capital endowment on this choice does not pass the significance test. Therefore, risk-bearing capacity does not serve as a mediating factor in the relationship between livelihood capital endowment and farmers' choice of professional cooperative organizations or enterprises as land transfer recipients.

## 5. Discussion

### 5.1. Main Findings in Light of Hypotheses and the Literature

The empirical results confirm our main hypotheses. Livelihood capital endowment positively affects farmers' land transfer-out decisions (Hypothesis 1), and risk-bearing capacity partially mediates this relationship (Hypothesis 2). Furthermore, a higher livelihood capital favors transfers to village collectives over other recipients, supporting our extended hypothesis on recipient selection.

In terms of relationships, livelihood capital enhances land transfer-out both directly and indirectly by strengthening risk-bearing capacity, explaining how endowments translate into behavioral outcomes. The choice of recipient is not random: higher livelihood capital is associated with a clear preference for village collectives, whereas transfers to enterprises or cooperatives are not significantly driven by livelihood capital. Consequently, risk-bearing capacity mediates the effect of livelihood capital only for certain recipients (village collectives and other farmers), but not for enterprises or cooperatives.

These findings align with prior studies showing that livelihood capital promotes land transfer-out [19–21,38]. Unlike the existing literature that treats transfer-out as a binary choice, we extend the inquiry by demonstrating that livelihood capital also differentiates recipient selection. The preference for village collectives is consistent with the risk-averse behavior documented in [26,27]: in our sample, the expected return-to-risk ratio for transfers to professional cooperatives and enterprises (mean = 261.9) was significantly lower than that for transfers to other farmers or village collectives (mean = 664.5). The partial mediating role of risk-bearing capacity provides a mechanistic explanation that has not been systematically tested before, thereby integrating separate strands of the literature on livelihood capital [20,21] and risk perception [27].

### 5.2. Implications and Significance of the Study

These findings carry several practical implications. For farmers, enhancing livelihood capital and risk-bearing capacity facilitates land transfer-out, which can increase rental income and enable labor reallocation to off-farm activities. For village collectives, the results indicate that they are trusted institutional recipients, capable of offering both stable returns and effective contract enforcement. For policymakers, promoting transfers to village collectives may be more effective than encouraging transfers to enterprises or cooperatives under the current institutional context, given the latter's weaker uptake.

The study contributes a novel integrated framework that links livelihood capital, risk-bearing capacity, and land transfer-out decisions—including recipient choice. It empirically demonstrates the mediating mechanism at the micro level, which has theoretical significance for understanding farmland rental markets in developing economies. The finding that risk-bearing capacity mediates transfers to collectives but not to enterprises also has diagnostic value for assessing the maturity of rural land transfer markets.

### *5.3. Limitations and Future Research Directions*

One might question whether the observed preference for village collectives truly reflects risk mitigation, or whether it could be driven by other factors such as social networks, information asymmetry, or collective pressure. For example, farmers might transfer land out to collectives simply because that is the most accessible or socially expected option, rather than the outcome of a calculated risk–return trade-off. Additionally, the non-significant effect of livelihood capital on transfers to enterprises or cooperatives could be interpreted not only as institutional underdevelopment, but also as farmers' rational response to past negative experiences with such entities (e.g., delayed payments or contract violations)—an interpretation that our cross-sectional data cannot directly verify.

This study has several limitations that point to directions for future inquiry. First, the cross-sectional nature of the data limits causal inference. Although our mediation model is theoretically grounded, unobserved temporal dynamics and potential reverse causality cannot be ruled out. Future research should employ longitudinal panel data or natural experiments to establish causal chains more rigorously.

Second, the sample is drawn exclusively from Jiangsu Province, an economically developed coastal region. The findings may not generalize to less developed regions in central and western China, where land transfer markets are less mature and farmers' risk-bearing capacities is likely lower. Cross-regional comparative studies are needed to test the external validity of our conclusions.

Third, while the composite index of livelihood capital and risk tolerance demonstrates methodological transparency (employing entropy weighting), data limitations may still result in measurement errors and omitted variable bias. For instance, risk-bearing capacity was measured using only three indicators (life satisfaction, economic status, and medical expenditure), which may not fully capture psychological resilience or social coping strategies. Constraints on land transfer-out for farmers, crop types, irrigation methods, and product characteristics are all important factors influencing farmers' land transfer-out decisions, and may serve as key control variables. A more comprehensive measurement framework remains essential for advancing future research.

## **6. Conclusions and Policy Implications**

### *6.1. Conclusions*

This study looks at how farmers' livelihood capital and risk-bearing capacity affect their land transfer decisions, including who they choose as the recipient. Although previous research has recognized the importance of asset endowments and risk factors separately, we still lack a full understanding of the mediating pathway between them. At the same time, most existing studies focus only on the simple binary choice of “whether to transfer out,” and ignore the dynamic decision of “who to transfer to”.

Using data from the 2021 China Land Economic Survey and employing logistic regression and mediation models, we reach three high-level conclusions. First, natural and financial capital exert the strongest influence on livelihood capital endowment, while household economic status is the primary determinant of risk-bearing capacity. Second, livelihood capital encourages land transfer-out both directly and indirectly through enhancing

risk-bearing capacity, which partially mediates the relationship. Farmers with greater endowments and higher risk tolerance are more likely to transfer land out. Third, regarding recipient choice, farmers with abundant livelihood capital predominantly transfer land out to village collectives rather than to other farmers, professional cooperatives, or enterprises. Importantly, risk-bearing capacity partially mediates the effect of livelihood capital on the choice of village collectives and other farmers, but not on the choice of enterprises or cooperatives—a finding that reflects the current underdevelopment of China's rural land transfer market.

## 6.2. Policy Implications

The findings point to several areas that may merit attention in policy discussions on land transfer.

First, given that natural and financial capital exert the strongest influence on livelihood capital endowment, differentiated strategies tailored to regional and farmer group conditions could help strengthen farmers' livelihood capital. In areas with weak natural capital, rural infrastructure such as irrigation facilities and transportation networks should be improved to optimize production conditions. With respect to financial capital, the availability of financial services should be expanded, particularly entrepreneurial loans and productive financial support, to ensure that farmers can effectively participate in land transfer and agricultural modernization.

Second, given the partial mediating role of risk-bearing capacity between livelihood capital endowment and land transfer-out decisions, a range of measures aimed at improving farmers' risk-bearing capacities could help facilitate land transfer-out. On one hand, this requires improving the rural social security system, including pension, medical, and unemployment insurance, to mitigate farmers' exposure to economic shocks. On the other hand, agricultural insurance—especially crop insurance and natural disaster insurance—should be further developed to protect farmers from unforeseen risks. In addition, encouraging participation in cooperatives and collective economic organizations can help establish effective risk-sharing mechanisms. Collectively, these measures will enhance farmers' confidence and capacity to engage in land transfer.

Third, institutional reforms that clarify land transfer regulations and protect farmers' rights could help promote more orderly rural land transfer-out. Promoting the growth of land cooperatives and collective economic organizations can guide farmers to transfer land to professional cooperatives or leading agricultural enterprises, thereby reducing transaction costs arising from information asymmetry and improving the efficiency of land allocation. Furthermore, dividend-sharing mechanisms within cooperatives should be encouraged to enhance farmers' returns, increasing both the attractiveness of land transfer and their motivation to participate.

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