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Strategies for Coordinated Development Between Local Communities and the Northeast China Tiger and Leopard National Park: Case Study of the Hunchun Area

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Abstract: As an important component of China's conservation strategy, the Northeast China Tiger and Leopard National Park faces conflicts between environmental protection and community development. Taking the Hunchun area as a case study, here a choice experiment is employed to construct a policy-scenario model encompassing participation mechanisms, benefit-sharing models, and industrial development. Our analysis of farmers' heterogeneous policy preferences reveals the following. (1) Farmers significantly prefer cooperative organization participation, ecological industry, and ecological compensation while showing less acceptance of agricultural deep processing. (2) Heterogeneity analysis indicates that middle-aged, educated, and low-income male farmers have stronger preferences for policy optimization. (3) Existing homogeneous policies do not satisfy diversified stakeholder demands. We propose a governance framework integrating ecology, industry, and institutions, suggesting practical pathways such as optimizing interest distribution mechanisms, innovating green industry models, and establishing cross-regional ecological compensation mechanisms. This study provides theoretical and practical support for reconciling conservation and development in protected areas.

Keywords: Northeast China Tiger and Leopard National Park; coordinated community development; choice experiment method; policy preferences

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Academic Editor: Li Zhang

Received: 20 March 2025
Revised: 23 April 2025
Accepted: 30 April 2025
Published: 6 May 2025

Citation: Zhou, R.; Du, Y.; Gao, Y.; Xie, Y. Strategies for Coordinated Development Between Local Communities and the Northeast China Tiger and Leopard National Park: Case Study of the Hunchun Area. *Diversity* **2025**, *17*, 336. https://doi.org/10.3390/d17050336

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1. Introduction

National parks, recognized as critical for conservation, have unique institutional value for supporting ecological security and coordinating community development. China initiated its national park pilot program in 2015, based on the principles of "ecological conservation as the primary objective, national representativeness, and public accessibility". However, there is always competition between ecological conservation and community development. Communities adjacent to and close to national parks often disproportionately bear the external costs of environmental protection, while receiving insufficient compensation, resulting in imbalances between rights, responsibilities, and benefits compared to more distant communities. Such imbalances constrain the sustainable development of protected areas [1].

Related research has largely focused on three dimensions. First, cost-compensation: researchers have advocated internalizing conservation costs by creating ecological jobs and transferring ecological payments [2,3]. Second, industrial substitution pathways explore

alternative livelihoods such as ecotourism and green agricultural product certification [4,5]. Third, multi-stakeholder governance mechanisms involving government, enterprises, and communities [6]. While such studies are important references for policy design, they generally lack empirical investigations of behavioral preferences, resulting in structural discrepancies between policy provisions and farmers' demands.

As one of China's first pilot national parks, the Northeast China Tiger and Leopard National Park exhibits a distinctive ecology–economy duality in the Hunchun region: it is a habitat for endangered species and traditionally produces specialty agricultural products such as Yanbian cattle. Local governments have implemented various policies to mitigate the conservation–development conflict arising from park establishment. Take Yanbian cattle breeding as an example (According to data statistics, there will be a total of 1832 Yanbian yellow cattle breeders in Hunchun City in 2023, including 1758 free-range breeders and 74 large-scale breeding farms), through implementing the "cattle relocation" initiative in the "Jilin Province Regulations on Mountain Closure and Grazing Ban Management", free-range cattle have been completely removed from the park. The government has also had leading agricultural enterprises establish beef cattle breeding demonstration bases outside the park through public–private partnerships. This industrial relocation model initially coordinated development between ecological conservation and industrial transformation. However, as the national park transitions from intensive construction to standardized management, the sustainability of existing policies faces challenges. The original ecological compensation mechanism, which primarily relies on financial transfers, struggles to meet local residents' growing demand for livelihood development. Especially with the aging of local farmers and the increasing degree of rural hollowing out, farmers lack the motivation to develop their own industries, and due to physical reasons, can only engage in low-value-added labor during the production cycle of crops.

More critically, the current policy framework inadequately addresses the structural contradictions between conservation and development. As the park transitions from emergency management to normalized governance, the original compensation mechanism centered on "ecological compensation + industrial substitution" does not adequately address the endogenous development needs of local communities. This contradiction is particularly evident in the incompatibility between current compensation standards and the actual costs of industrial transformation, as well as the structural imbalance between government-led compensation inputs and market-oriented development mechanisms. Future policies should aim to establish a diversified compensation mechanism that integrates government guidance, the market, and community participation. This system should focus on ecological product value realization, aiming to enhance the sustainability of industrial development and community participation.

Existing research on coordination between protected areas and local communities overlooks two critical dimensions: (1) the heterogeneous preferences of stakeholders regarding policy combinations; and (2) participatory governance logic in institutional design. The choice experiment method offers advantages in this context, as it simulates policy scenarios to reveal stakeholders' trade-off mechanisms between ecological conservation and economic development [7]. This approach provides a novel methodological perspective for addressing the current mismatch between policy supply and demand.

Focusing on the Hunchun pilot zone, this study develops a choice experiment model incorporating participation mechanisms, benefit-sharing mechanisms, policy support, and industrial models. Specifically, we examine (1) the core demands of local communities regarding coordinated development policies; (2) heterogeneity in preferences across different demographic groups; and (3) optimal policy combinations. By revealing the causal mechanisms between policy attributes and community preferences, this study constructs

a participatory governance framework grounded in empirical evidence, thereby offering theoretical and practical insights for optimizing the design of conservation and development policies.

2. Materials and Methods

2.1. Study Area and Data Source

The Hunchun area of the Northeast China Tiger and Leopard National Park is located on China's northeastern border. In recent years, the number of Manchurian tigers appearing in this area has increased annually. In addition to solitary tigers, female tigers have been breeding in this reserve for a long time. Geographically, the Hunchun area serves as an ecological corridor for the free migration of Manchurian tigers, Amur leopards, and their prey species. It is also a strategic passage for Manchurian tigers migrating from Russia to inland China [8].

We selected the farmer households surveyed in this study using multistage stratified random sampling. Considering the actual situation of the communities surrounding the Hunchun area, we selected 51 villages, including 5 from Mijiang Township, 6 from Yangpao Manchu Township, 6 from Banshi Town, 15 from Hadamen Township, and 19 from Chunhua Town (Figure 1). About 10 farmer households were randomly selected from each village based on their household registration for the survey, resulting in 534 farmer household questionnaires collected. All farmer households surveyed resided in the study area for an extended period.

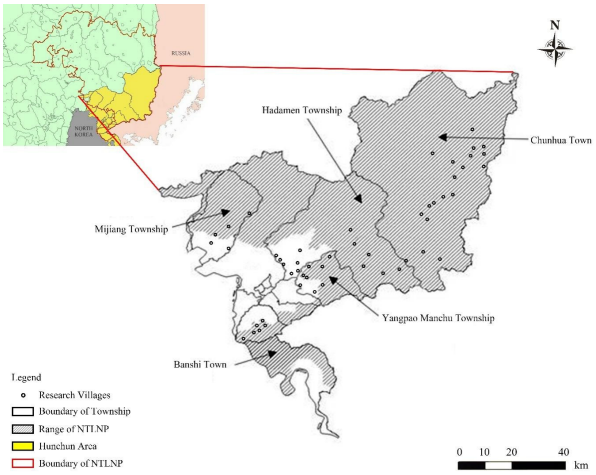


Figure 1. Schematic diagram of the Hunchun area of the Northeast China Tiger and Leopard National Park.

2.2. Research Hypotheses

Utility, a central concept in consumer behavior theory, denotes the degree of satisfaction a consumer derives from consumption choices or needs fulfillment, serving as a behavioral and decisional foundation [9]. Functionally, utility reflects decision-makers' subjective psychological evaluations of outcomes associated with alternative choices. Empirical studies have demonstrated that farmers' policy preferences are an important basis for coordinating conservation areas with adjacent communities [10]. Notably, heterogeneity in individual characteristics, livelihood capital, and personal preferences among farmers leads to significant variations in policy demands, adaptability, and participation levels. Studies have examined rural households' evaluations of policies implemented by reserve administrations or local governments, encompassing areas such as policy determinants [11], satisfaction levels [12], and cost–benefit analysis [13]. Methodologically, these investigations often use case studies, game-theoretic analyses, and cost–benefit approaches. As

a robust stated preference technique, the choice experiment method enables the precise measurement of the marginal value derived from attribute variations in alternative policy packages. This approach can facilitate the estimation of welfare effects attributable to specific policy attribute enhancements by analyzing farmers' selections among policy bundles with varying attributes.

Based on utility theory, rural household decisions maximize utility. Consequently, variations in attribute levels across policy alternatives change household preferences and their feasible choice sets. To investigate rural households' developmental needs and expectations, we designed multiple policy bundles, differentiated by policy objectives and technical attributes. These bundle options provide households with the best choice for their specific circumstances, indicating the policy design that best addresses their demands. Respondents selected their preferred option from multiple simulated choice scenarios. Analyzing the selection patterns of households in communities adjacent to the Northeast China Tiger and Leopard National Park allows us to quantify the marginal welfare contributions of distinct policy attributes. Each respondent's aggregate welfare valuation is based on multiple attributes, with households consistently prioritizing utility maximization. Using variations in choice set configurations, this framework reveals attribute-specific preference intensities, and how policy attribute adjustments influence rural welfare outcomes.

To investigate how governments can facilitate diversified industrial development among rural households while ensuring community well-being under protected area policy constraints, we propose the following hypotheses based on random utility theory.

H1. *Rural households exhibit a systematic preference for choice sets delivering higher utility.*

H2. *Individual characteristics (specifically, age, gender, educational attainment, and annual household income) have an impact on whether a family will make choice strategies.*

3. Experimental Design

This section outlines the methodological framework adopted for evaluating stakeholder preferences and policy effectiveness. The study employs choice experiments, a robust approach for simulating real-world decision-making scenarios, to identify key factors influencing the adoption of sustainable economic development policies. The design process involves constructing choice sets, defining policy attributes, and analyzing combinations to assess trade-offs and priorities.

3.1. Design of Choice Sets and Setting of Alternative Attributes

The foundation of choice experiments lies in systematically defining policy alternatives and their attributes to reflect real-world decision contexts. This subsection details the process of attribute selection, level assignment, and combinatorial logic used to generate choice scenarios. The rigorous design ensures that the experiment captures meaningful variations in policy configurations while minimizing cognitive overload for participants.

3.1.1. Design of Choice Sets

Choice experiments require clearly defining the various attributes of different alternatives and their corresponding levels and, on that basis, constructing suitable choice scenarios or choice sets. "Local support policies" refer to a series of measures, actions, and related requirements involved in promoting local economic development to achieve sustainable economic development in a region. Based on the actual situation of livelihood activities of farmers in the Hunchun area of Northeast Tiger and Leopard National Park, and combined with the needs of economic development, we divide the attributes of local

sustainable economic development policies (alternative solutions) into four categories: participation channels, benefit methods, policy support, and industrial models, which are used to describe the participation methods of local farmers in livelihood activities, the ways in which agricultural products obtain income, local support policies for farmers' livelihoods, and feasible paths for agricultural industry development. Based on these attributes, it is possible to comprehensively measure the livelihood behavior of local farmers. Table 1 shows a collection of all possible combinations that contain these attributes. Table 2 shows an example of a questionnaire selection set.

Table 1. Attribute levels and descriptions.

Attributes	Levels	Attribute Descriptions
Participation Channels	Direct Farmer Participation Farmer + Cooperative Partnership Farmers + Leading Enterprise Participation	Production Engagement Pathways for Farmer-Generated Agricultural Products
Marketing Models	Direct Farm-to-Consumer Sales Contract Farming Lease-Back Farming Model Equity-Based Cooperative Farm	Marketing Frameworks for Smallholder-Generated Agri-Produce
Policy Support	Core Subsidy Programs Niche Agricultural Sector Incentives Agri-Financial Inclusion Mechanisms Concessional Licensing Schemes	Tiered Government Support Mechanisms for Smallholder-Centric Agricultural Development
Agri-Industrial Frameworks	Integrated Crop–Animal Systems Value-Chain Deep Processing Integration Agro-Ecotourism Experience Packages	Structural Ecosystem of Agrarian Economic Models for Farming Households

Table 2. Example of questionnaire selection set.

Selection Set	Plan1	Plan2	Plan3	Plan4 (Current Situation)
Participation Channels	Farmer + Cooperative Partnership	Direct Farmer Participation	Direct Farmer Participation	Direct Farmer Participation
Marketing Models	Lease-Back Farming Model	Lease-Back Farming Model	Direct Farm-to-Consumer Sales	Direct Farm-to-Consumer Sales
Policy Support	Core Subsidy Programs	Agri-Financial Inclusion Mechanisms	Niche Agricultural Sector Incentives	Core Subsidy Programs
Agri-Industrial Frameworks	Value-Chain Deep Processing Integration	Agro-Ecotourism Experience Packages	Agro-Ecotourism Experience Packages	Integrated Crop–Animal Systems
Your Choice				

3.1.2. Setting of Alternative Attributes

This subsection elaborates on the specific attributes and levels used to define the policy alternatives in the choice sets. Each attribute is carefully selected to capture key dimensions of local sustainable economic development, ensuring that the study reflects the diverse needs and priorities of stakeholders.

1. Participation Channels

Farmers participate in agricultural production in various ways. Based on the requirements of the "National Agricultural Sustainable Development Plan (2015–2030)", which aimed to establish mechanisms conducive to sustainable agricultural development, and considering the actual situation of the Hunchun area, we designed three different options: "farmers participating directly" (as the current baseline option), "Farmer + cooperative participation", and "farmers + leading enterprise participation".

As an organizational form of community production and management, cooperatives unite farmers with similar needs or wishes to facilitate joint production and management. The cooperative model combines the enthusiasm of family farm management with the advantages of scale. Participation in cooperatives is a way for farmers to participate in collective community decision-making. By giving up some of their own freedom and paying certain transaction costs, farmers cooperate to complete tasks, including production, processing, sales, and purchases. Researchers generally believe that cooperatives can help achieve agricultural industrialization [14], alleviate poverty [15], and promote rural revitalization [16].

Leading enterprises refer to enterprises that focus on the production, processing, or circulation of agricultural products, meet the prescribed standards in terms of scale and operational indicators, and have been recognized by relevant government departments. Leading enterprises are the pillars of the modern agricultural industrial system, effectively promoting rural revitalization, agricultural modernization, and farmers' income and employment. Notably, leading enterprises increase farmers' income while driving their employment and the development of agricultural processing [17]. Meanwhile, as top enterprises in the industry, they can also accelerate the gathering of innovative elements and build mature innovation networks and ecological elements. Leading enterprises can support the development of local characteristic industries, promote the integration of enterprises with local production factors, and achieve the innovative transformation and development of local characteristic industries [18].

2. Sales Model

Most farmers in the communities surrounding the Hunchun area of the Northeast China Tiger and Leopard National Park generate income through self-production and self-marketing, directly connecting with consumers in the market. This method is relatively primitive, requiring farmers to conduct production, processing, transportation, and sales on their own. The organizational level, scale, and professionalism of this method are relatively low, while the mobility, randomness, and volatility of the transaction mode are high. Additionally, since farmers operate and sell independently, it is difficult for them to form stable sales relationships, and the level of trust between consumers and farmers remains low [19].

Contract farming, also known as agreement farming, centers on the production and supply of agricultural products based on contracts signed by both parties. The essence of this model is that producers provide specific types and quantities of agricultural products at agreed times and prices according to the actual needs of buyers, thereby achieving precise matching between supply and demand [20]. Through contract farming, farmers can effectively reduce the price risks they face and ensure income stability. At the same time, companies providing contracts to farmers can reduce uncertainty in the agricultural product acquisition process, guarantee a stable source of production materials, and thus better plan production and supply chain management.

As a land circulation model spontaneously explored by farmers, the reverse leasing and subcontracting mechanism operates as follows. The community collective (or village collective) first takes back the land originally contracted to farmers, conducts unified management and planning, and then re-contracts these lands in a contiguous form to

farmers to support their agricultural production activities [21]. Compared with the ordinary land transfer, contracting, and leasing activities spontaneously formed by farmers, reverse leasing and subcontracting can more stably concentrate management rights for contiguous land and ensure that there are no property rights issues during the land circulation process. Through unified planning and management by the community collective, reverse leasing and subcontracting can fully leverage the advantages of scale operations, thereby enhancing economic benefits.

As a new agricultural management model, shareholding cooperative farms can further rejuvenate rural economies. Given its shareholding cooperative characteristics, the shareholding cooperative farm, which possesses stronger institutional features, is an ideal model for agricultural industrialization and modernization. It transforms the village collective economic organization into a substantive agricultural production and operation entity, fully leveraging the institutional advantages of "political–social integration and organizational unity" and helping enhance the level of organization and scale in agricultural production [22].

3. Policy Support

The phrase "agricultural support policies" refers to the support provided by the government to farmers aimed at increasing their income or reducing production costs. Because agricultural production is cyclical and vulnerable [23], investment returns are lower than in other industries. To ensure agricultural security and maintain the industry, policies that guarantee higher-quality agricultural development need to be implemented. Currently, in the Hunchun area, major agricultural support policies include subsidies for grain cultivation, quality seeds, agricultural machinery, and the scrapping and renewal of agricultural machinery.

As agricultural industrialization diversifies, universal support policies will not meet development needs. The Hunchun beef cattle breeding industry needs a more complete social service system to support high participation and penetration upstream and downstream of the industrial chain. This requires more targeted preferential industrial subsidy policies from government departments to compensate agricultural operator losses due to constraints and to ensure their production and operation.

Agricultural financial support policies are designed to promote agricultural economic development in China. Agricultural financial policies focus more on safeguarding local agricultural development than general financial support policies, and serve the local agricultural economy rather than purely pursuing profits. Their main goal is to promote healthy agricultural development by providing stable, reliable financial support for agriculture. Therefore, these policies have stronger social and political characteristics, reflecting local governments' support and assistance for the agricultural economy [24].

According to the International Franchise Association, franchising is a business model centered on a contractual partnership between a franchisor and a franchisee. In this model, the franchisor grants the franchisee the right to use its name, trademark, technology, products, and other resources for commercial activities in return for compensation. This business model achieves mutual benefit and win-win results for both parties through shared brands, technology, and resources [25].

4. Industrial Models

Agricultural production in the Hunchun area mainly includes food crop cultivation, economic crop cultivation, and beef cattle breeding. Community farmers often adopt a combination of planting and breeding to sustain their livelihoods. The main cultivated food crops are corn, rice, and soybeans. Economic crops include apple trees and Auricularia (wood ear mushrooms), among others. The breeds raised are chiefly local specialty beef

cattle and hybrid beef cattle varieties. Typically, farmers who cultivate food crops store straw and other harvested residues as food sources for beef cattle in the winter. At the same time, they collect manure from beef cattle to return to the fields as a natural fertilizer for the next planting season.

Deep processing of agricultural products refers to the multiple and complex processing of agricultural products, transforming them from primary products into final products with higher added value, finer quality, wider applications, and longer shelf life. The deep processing of agricultural products involves using scientific processing to ensure product quality and meet market demands. The deep processing of food crops, economic crops, and livestock breeds is the most value-added segment of the agricultural product industry chain. In addition to addressing issues of periodic surplus in grain supply, the deep processing of agricultural products can effectively promote the full utilization of grain resources and increase farmers' production and income [26]. This will help increase the added value of agricultural products, promote locally clustered grain cultivation, and enhance farmers' production and income.

Ecotourism has become an important way for people to get close to and appreciate nature, representing a significant trend in tourism development. Through ecotourism, people can experience the charm of nature and promote the awareness of harmonious coexistence between humans and nature. Different from general tourism, ecotourism emphasizes environmental protection as a prerequisite. By allowing tourists to experience and understand the environment, it provides environmental education to tourists, enabling them to gain different tourism experiences [27].

3.2. Ensuring the Validity of the Experiment

To increase experimental reliability, the choice sets must be reasonable, and the choices must be as realistic as possible. Thus, during the interviews with farmers, we introduced the main purpose of the experiment and briefly explained the choice method: "During this survey, you will be given a series of questions, with four options to choose from. Options 1, 2, and 3 are combinations of governmental development policies, and option 4 is the existing policy. You are asked to select your most preferred option". Afterward, we presented the farmers with five different choice sets. If the farmers had difficulty understanding any questions, we further explained them to ensure the validity of the experimental data.

3.3. Variable Definitions and Descriptive Statistics

In the model constructed here, the dependent variable is whether a particular scheme is selected by farmers. If a scheme is selected, it is assigned a value of 1; if it is not selected, it is assigned a value of 0. The ASC (alternative-specific constant) represents farmers choosing an "improved scheme", which means that in each choice set, a value of 1 is assigned when farmers choose schemes ①, ②, or ③, and a value of 0 is assigned when they choose scheme ④. The core explanatory variable in the model is the attributes specifically, whether the scheme is selected by farmers. To further explore potential sources of heterogeneity in farmers' preferences for government agricultural support policies, the individual characteristic variables of farmers (including age, gender, education, and income) and location characteristics (e.g., whether the area is within the boundaries of the national park) are included in Equations (5) and (6), respectively. Table 3 shows the definitions and descriptive statistics of the variables.

Table 3. Variable Definitions and Descriptive Statistics.

Variable	Definition and Assignment	Mean	Std. Err.
Dependent Variable			
Whether the Plan is Selected	Selected = 1, Not = 0	0.2500	0.0042
ASC	Selected ①, ②, ③ = 1, Not = 0	0.7500	0.0042
Attributes and Levels			
Participation Channels			
Direct Farmer Participation	Yes = 1, No = 0	0.6000	0.0047
Farmer + Cooperative Partnership	Yes = 1, No = 0	0.2000	0.0039
Farmers + Leading Enterprise Participation	Yes = 1, No = 0	0.2000	0.0039
Marketing Models			
Direct Farm-to-Consumer Sales	Yes = 1, No = 0	0.4000	0.0047
Contract Farming	Yes = 1, No = 0	0.2000	0.0039
Lease-Back Farming Model	Yes = 1, No = 0	0.2000	0.0039
Equity-Based Cooperative Farm	Yes = 1, No = 0	0.2000	0.0039
Policy Support			
Core Subsidy Programs	Yes = 1, No = 0	0.4000	0.0047
Niche Agricultural Sector Incentives	Yes = 1, No = 0	0.2000	0.0039
Agri-Financial Inclusion Mechanisms	Yes = 1, No = 0	0.2000	0.0039
Concessional Licensing Schemes	Yes = 1, No = 0	0.2000	0.0039
Agri-Industrial Frameworks			
Integrated Crop–Animal Systems	Yes = 1, No = 0	0.6000	0.0047
Value-Chain Deep Processing Integration	Yes = 1, No = 0	0.2000	0.0039
Agro-Ecotourism Experience Packages	Yes = 1, No = 0	0.2000	0.0039
Individual Characteristics			
Gender	Woman = 0, Man = 1	0.7734	0.0047
Age	Actual age	58.67	0.0926
Education Level	Primary school and below = 1, junior high school = 2, secondary vocational school or high school = 3, junior college or bachelor's degree and above = 4	1.9906	0.0137
Annual Income	Logarithm of total annual household income (yuan)	10.8985	0.0112

Note: The total number of observations for the explained variable and scheme attribute variables is 10,680; the total number of observations for the individual farmer characteristic variables is 534.

4. Model

Grounded in theoretical foundation analysis and behavioral choice analysis, choice experiments construct multiple scenarios with varying attribute combinations for respondents to evaluate and select. This approach enables researchers to gain deeper insights into respondents' decision-making processes and preference orientations during multi-alternative selections [28]. The choice set–centric questionnaire design requires respondents to engage in higher cognitive processing when making trade-offs, thereby enhancing participants' engagement and depth of contemplation. This design significantly improves the precision of behavioral observation and data recording. Furthermore, in agricultural household research, choice experiments demonstrate incentive compatibility advantages that effectively stimulate respondent motivation [29,30], thereby ensuring the scientific validity and empirical reliability of the research outcomes.

Based on Lancaster's attribute value theory and McFadden's random utility theory, we construct a behavioral analysis framework for agricultural households. The utility (U)

for decision-maker i (i.e., the surrounding communities in the Northeast China Tiger and Leopard National Park) when selecting policy combination j can be expressed as

$$U_{ij} = V_{ij} + \varepsilon_{ij}. \quad (1)$$

In Equation (1), V_{ij} represents the observable utility component for farmers in the surrounding communities, which can be explained by the attributes of alternative j. ε_{ij} represents the random disturbance term; that is, the unobservable utility component for farmers in the surrounding communities.

Based on the principle of utility maximization, the probability that a farmer (decision-maker i) in the surrounding communities of the area will choose a particular alternative from a set of alternatives (also known as a choice scenario) C is

$$P_{ig} = \text{Prob}\left(U_{ig} > U_{ih}\right) = \text{Prob}\left[\left(V_{ig} + \varepsilon_{ig}\right) > \left(V_{ih} + \varepsilon_{ih}\right)\right]; \forall h \neq g; g, h \in C. \quad (2)$$

When ε_{ig} in Equation (2) strictly follows an extreme value distribution, is independently and identically distributed, and satisfies the independence of irrelevant alternatives assumption. Equation (2) represents a multinomial logit model. Although the multinomial logit model presumes consistent choice preferences for decision-maker i, in reality, owing to individual differences among farmers, their preferences and demands for various policy objectives exhibit heterogeneity. In such cases, this restrictive assumption of the multinomial logit model does not align with reality [31]. Therefore, by allowing randomness in the involvement of attributes to relax the assumption, Equation (2) becomes a random parameters logit model.

In practical analysis, the observable utility V_{ij} in the aforementioned Equations (1) and (2) are typically defined in a linear form representing the specific attributes of the alternatives:

$$V_{ij} = \alpha_{ASC} ASC_i + \sum_{k=1}^{K} \beta_k X_{ijk}. \quad (3)$$

In Equation (3), ASC_i represents the alternative-specific constant for the choice, and its coefficient α_{ASC} signifies the average utility derived from unobservable moral factors influencing a farmer's choice of a specific alternative. When farmers choose any "policy adjustment" alternative within each choice set, ASC_i is assigned a value of 1; if farmers choose the "status quo" alternative, ASC_i is assigned a value of 0; X_{ijk} represents the k-th attribute variable of alternative j chosen by farmer i as the decision-maker, where β_k denotes the parameter to be estimated and K indicates the number of attributes for the alternatives.

In the random parameters logit model, the linear form of the observable utility V_{ij} can be expressed as

$$V_{ij} = (\alpha_{ASC} \pm \sigma_i) ASC_i + \sum_{k=1}^{K} (\beta_k \pm \delta_{ik}) X_{ijk}. \quad (4)$$

In Equation (4), σ_i represents the difference (i.e., standard deviation) between the individual coefficient of decision-maker i for their chosen alternative-specific constant (ASC_i) and the population mean coefficient α_{ASC}. If σ_i is significant, it indicates that there is heterogeneity in farmers' preferences for a specific policy combination alternative (the chosen alternative). Similarly, δ_{ik} represents the difference (i.e., standard deviation) between the individual coefficient of decision-maker i for the k-th attribute variable X_{ijk} and the population mean coefficient β_k. If δ_{ik} is significant, it suggests that there is heterogeneity in farmers' preferences for the k-th attribute when choosing from among policy alternatives.

To further investigate the sources of heterogeneity in farmers' preferences for policy alternatives, drawing on the literature [32], the observable utility V_{ij} in the random parame-

ters logit model can be further expanded into two specific forms, as shown in Equations (5) and (6):

$$V_{ij} = (\alpha_{ASC} \pm \sigma_i)ASC_i + \sum_{k=1}^{K}(\beta_k \pm \delta_{ik})X_{ijk} + \sum_{m=1}^{M}\lambda_m(ASC_i \times Z_{im}). \quad (5)$$

$$V_{ij} = (\alpha_{ASC} \pm \sigma_i)ASC_i + \sum_{k=1}^{K}(\beta_k \pm \delta_{ik})X_{ijk} + \sum_{m=1}^{M}\gamma_m\left(X_{ijk} \times Z_{im}\right). \quad (6)$$

In Equation (5), $ASC_i \times Z_{im}$ represents the interaction term between the ASC_i and the individual characteristic variable Z_{im} of the farmer. This term is used to examine the sources of heterogeneity in farmers' preferences for a specific policy combination alternative (i.e., the alternative chosen by the farmer). Here, λ_m denotes the parameter to be estimated for the interaction term, and M represents the number of individual characteristic variables for farmers in the surrounding communities. Similarly, in Equation (6), $X_{ijk} \times Z_{im}$ represents the interaction term between the k-th attribute variable X_{ijk} and the individual characteristic variable Z_{im} of the farmer. This term is used to examine the sources of heterogeneity in farmers' preferences for the k-th attribute when choosing from among policy alternatives. Here, γ_m denotes the parameter to be estimated for the interaction term.

5. Results

The model is simulated using Stata 15.0. In the choice experiment, respondents were presented with five choice scenarios, each containing four alternatives. The total sample size for model estimation is 10,680 (534 individuals * 4 alternatives * 5 scenarios).

5.1. Farmers' Preferences for Agricultural Support Policies

First, we consider only the alternative-specific variables and the ASC in the multinomial logit model estimation of Equation (3). Table 3 shows the estimation results. The regression results indicate that "contract farming" in the sales model and "deep processing of the industrial chain" in the industrial development model are not significant. "Reverse leasing and subcontracting" in the sales model and "agricultural financial support" in policy support are significant at the 5% level while "ecotourism experience" in the industrial model is significant at the 10% level. All other policy attribute variables are significant at the 1% level, and the signs of their coefficients are positive.

ASC is significant at the 1% level with a positive coefficient. Based on the definition of ASC given earlier, this means that combinations of agricultural support policies can significantly increase actual utility for farmers in communities around the Northeast China Tiger and Leopard National Park. Compared with choosing the "maintain the status quo" alternative (i.e., alternative ④), respondents were more likely to accept combinations of agricultural support policies (i.e., alternatives ①, ②, and ③). This suggests that introducing different agricultural support policies among various alternatives can increase the actual utility for farmers in choosing to participate in these programs. Therefore, the support policy alternatives discussed in this study exhibit good utility trade-off characteristics, and the design of their attributes meets the technical application requirements of the choice experiment method, providing a strong guarantee for the accuracy and validity of the results.

From the estimation results regarding farmers' preferences for different policy attribute variables, in addition to "reverse leasing and subcontracting" in the sales model being significant at the 5% level (coefficient = 0.0198), variables such as "farmer + cooperative participation" and "farmers + leading enterprise participation" in the participation pathways, "shareholding cooperative farms" in the sales model, "specialty industry subsidies" and "franchise support" in policy support, and "ecotourism experience" in the industrial

model are all significant at the 1% level (coefficients are 1.2322, 0.4130, 0.3454, 1.0908, 0.3726, and 0.0651, respectively). This indicates that changing existing participation pathways, adding more sales models, and expanding the scope of government support policies can all affect the utility farmers derive from choosing combinations of economic development support policies. Therefore, these policies can increase the likelihood of farmers choosing "improved alternatives".

It is also worth noting that compared with other improved alternative attribute levels, "deep processing of the industrial chain" is not significant while "ecotourism experience" is significant at the 1% level. This suggests that compared with developing ecotourism, developing deep processing has relatively lower utility for local farmers and does not significantly affect their likelihood of choosing "improved alternatives".

5.2. Effect of Farmer Heterogeneity on Preferences for Agricultural Support Policies

To further explore the sources of heterogeneity in farmers' preferences for policy combinations in communities around the Northeast China Tiger and Leopard National Park, we incorporate individual farmer characteristics into the model and perform maximum likelihood estimation using Equations (5) and (6). Table 4 shows the estimation results. Compared with the results without incorporating individual farmer characteristics, the coefficient signs and significance of the attribute variables do not change significantly. This indicates that the model results are highly robust, and the regression results after introducing interaction terms have stronger explanatory power, providing a more accurate, in-depth perspective.

Table 4. Farmer Program Attribute Preferences.

Variable	Coef.	Std. Err.
ASC	0.7068 ***	0.1329
Farmer + Cooperative Partnership	1.2322 ***	0.0642
Farmers + Leading Enterprise Participation	0.4130 ***	0.0694
Contract Farming	0.0247	0.0767
Lease-Back Farming Model	0.0198 **	0.0808
Equity-Based Cooperative Farm	0.3454 ***	0.0847
Niche Agricultural Sector Incentives	1.0908 ***	0.0864
Agri-Financial Inclusion Mechanisms	0.2453 **	0.0955
Concessional Licensing Schemes	0.3726 ***	0.0894
Value-Chain Deep Processing Integration	−0.0904	0.0701
Agro-Ecotourism Experience Packages	0.0651 ***	0.0695
Constant	−1.9323 ***	0.1246
R^2	0.0527	
Observations	10,680	

Note: *** and ** indicate significance at the 1% and 5% levels, respectively.

Specifically, Table 5 shows the estimation results for the interaction terms between farmers' age, gender, and education level and their respective ASCs. The results are significant at the 1% level, with positive coefficients. This suggests that as age and education level increase, farmers derive higher utility from "improved policies", and male respondents obtain higher utility than female respondents. The result for the interaction term between annual household income and ASC is also significant at the 1% level, but its coefficient is negative, indicating that annual income has a negative effect on farmers' utility. That is, farmers with lower annual incomes can obtain higher utility from "improved policies". Regarding the sample area, local low-income households typically adopt self-sufficient agricultural planting models, making it difficult to achieve economies of scale and necessitating government policy support for sustainable economic growth. The alternative explanation is

that farmers with higher annual incomes can obtain lower utility from "improved policies", meaning that the current situation has already enabled them to earn higher incomes, and therefore they are unwilling to choose to change. Farmers with more education have a higher degree of recognition of government support policies, which increases the actual utility derived from these policies. Therefore, male farmers who are old, have more education, and have relatively lower incomes are more willing to participate in the improvement of economic support policies.

Table 5. Heterogeneous Farmer Program Attribute Preferences.

Variable	Coef.	Std. Err.
ASC	1.3942 ***	0.4108
Farmer + Cooperative Partnership	1.2322 ***	0.0642
Farmers + Leading Enterprise Participation	0.4130 ***	0.0694
Contract Farming	0.0247	0.0767
Lease-Back Farming Model	0.0198 **	0.0808
Equity-Based Cooperative Farm	0.3454 ***	0.0847
Niche Agricultural Sector Incentives	1.0908 ***	0.0864
Agri-Financial Inclusion Mechanisms	0.2453 **	0.0955
Concessional Licensing Schemes	0.3726 ***	0.0894
Value-Chain Deep Processing Integration	−0.0903	0.0701
Agro-Ecotourism Experience Packages	0.0651 **	0.0695
Interaction Term		
ASC * Age	0.0449 ***	0.0057
ASC * Gender	0.1981 ***	0.0957
ASC * Education Level	0.2632***	0.0500
ASC * Annual Income	−0.3337 ***	0.0434
Constant	−1.9323 ***	0.1246
R^2	0.0718	
Observations	10,680	

Note: *** and ** indicate significance at the 1% and 5% levels, respectively.

6. Discussion

This study reveals the multidimensional mechanism of action underpinning coordinated development policies in national park communities. Regarding policy instruments, combined support policies have enhanced farmers' flexibility in responding to policies by reducing transaction costs and restructuring property rights relationships. Farmers are willing to alter their existing production participation approaches, diversify sales models, and obtain more policy support to improve their own utility. Meanwhile, agricultural deep processing does not significantly enhance farmers' utility, and farmers prefer to develop local ecotourism. After incorporating farmers' individual characteristics, we find that older farmers with more education derive higher utility from "improved policies". Additionally, farmers with lower annual incomes can obtain higher utility from different combinations of policy enhancements.

Cooperatives and leading enterprises, serving as pillars of community management and agricultural modernization, respectively, both have positive effects on stabilizing farmers' incomes and local employment [33,34]. Cooperatives reduce market transaction costs through embedded relational networks while leading enterprises build stable value chains through contractual relationships. Our choice experiment results also validate this point. Local farmers need to adopt more formal, well-established production and management organizations to realize the value of their products. This not only promotes the more efficient utilization of local resources but also contributes to advancing local

agricultural modernization. Ultimately, coordinated development forms a symbiotic model of "cooperatives addressing market failures–enterprises overcoming scale bottlenecks".

The sales methods of local agricultural product markets also need effective expansion. Integrating various agricultural product sales models can help farmers enhance the sustainability of their livelihood capital accumulation [35,36]. More efficient production and sales processes can be achieved through the reintegration of scattered local land resources, and by combining different sales models, existing self-production and self-sales business models can be expanded to achieve a more scalable, organized, and professional sales model. However, it should be noted that the effectiveness of sales model innovation is constrained by two factors: (1) ecological red lines limit the physical space for land integration; (2) the special regulations of national parks increase the institutional costs of market access, which could lead the current industry into the "smiling curve" trap, where farmers are locked into production stages with the lowest added value.

Agricultural support policies can safeguard agricultural production, which is characterized by cyclicality and vulnerability [37]. Within the scope of the Northeast China Tiger and Leopard National Park, agricultural safeguard policies have a high degree of coverage, but such universal policies have difficulty meeting diversified needs for sustainable local development. The root cause lies in the institutional friction between the special governance structure of national parks and traditional agricultural support policies. National Park governance prioritizes "environmental protection" while traditional agricultural policies focus on "food security" and "increasing farmers' income". We recommend establishing a "special ecological zone" policy framework to help farmers further share production risks and encourage the development of the local specialty agricultural economy by improving the existing agricultural support policy system.

The development of industrial clusters can stimulate the production enthusiasm and livelihood sustainability of local farmers [38]. However, in practical terms, planning and implementation for increasing the added value of agricultural products and developing a full industrial chain model suitable for local characteristic industries need to be tailored to local conditions. For characteristic agricultural products in the Hunchun area, given the particularity of the location, several factors limit industrial development, making it relatively difficult to advance. Meanwhile, in terms of ecotourism, given the uniqueness of locally protected species, it is difficult for tourists to see them at close range, making it challenging to realize the value of ecotourism. These findings provide new entry points for subsequent research. We recommend further exploring the adaptive development path of characteristic industries in protected areas from an institutional perspective.

7. Recommendations

This subsection outlines actionable strategies to address the challenges identified in the discussion. The recommendations are organized into three key areas: optimizing participation mechanisms, innovating industrial upgrading pathways, and establishing long-term participation frameworks. These proposals aim to improve the effectiveness of policies and promote the sustainable development of national park communities. It should be noted that these suggestions require further research to receive more support. Meanwhile, considering that the Northeast Tiger and Leopard National Park is located on the border between China and Russia; in order to promote the overall and integrity protection of the ecosystem, it is necessary to consider the connection between the policies of the two countries. Russia emphasized the cross-border protection of Northeast tigers in the "Tiger Conservation Strategy of the Russian Federation", and the leaders of China and Russia also proposed to strengthen cooperation in species cross-border protection during their meeting in 2019. Therefore, when considering policy formulation, it is necessary

to take into account the connection and cooperation with Russia's relevant policies and further enrich the integrity of China's policies.

7.1. Optimizing the Design of the Participation Mechanism

To increase farmers' enthusiasm for participation, it is important to strengthen the driving role of cooperatives and leading enterprises. Specific recommendations include the following. Establish a special support fund to help cooperatives provide technical training and market access services for farmers while promoting the "cooperative + farmer" model to achieve shared benefits through land shares and contract farming. For leading enterprises, mandatory long-term cooperation agreements with local farmers should be established to clarify benefit distribution and prevent the marginalization of farmers' interests. Differentiated policies are essential, i.e., subsidies and low-interest loans should target low-income and elderly farmers for prioritized project participation while entrepreneurship incubation (e-commerce training, ecotourism permits) should target educated farmers to cultivate community leaders.

7.2. Innovating the Pathways of Industrial Upgrading

On the sales front, contract farming and equity-based cooperative farms should be promoted. In addition, regional agricultural trading platforms should be established to reduce intermediaries, and pilot "reverse land leasing + equity cooperation" models where village collectives consolidate land to attract social capital. For industrial upgrading, nonintrusive tourism (birdwatching, nature education) with strict visitor restrictions should be developed to protect tiger habitats while training farmers as eco-guides. We can also conduct economic evaluations of industrial transformation based on existing experience and under the premise of a closed-loop model, to increase the reliability of future industrial transformation choices. Furthermore, cattle farming should be leveraged to create organic beef brands and immersive ranch experiences, along with offering tax incentives for deep-processing enterprises that prioritize local hiring. In the future, we will further increase promotional activities on green product labeling to enhance public acceptance of eco-friendly products.

7.3. Establishing Long-Term Participation Mechanisms

A coordination committee (farmers, government, reserve management) should be established for regular policy reviews and benefit sharing, in addition to implementing "community co-management" granting oversight of conservation activities. Technologically, a smart agriculture platform with blockchain traceability should be developed for "tiger-friendly" certification, and cross-border ecotourism with Russian reserves should be promoted alongside establishing "economic enclaves" to relocate intensive industries, thus alleviating ecological pressures. In terms of the ecological protection participation mechanism, after the establishment of Northeast Tiger and Leopard National Park, strict restrictions were imposed on yellow cattle farming in the mountains, effectively promoting the growth of local grassland vegetation. However, this will to some extent increase the risk of grassland fires. Therefore, in the future management process, it is necessary to prevent and regulate the grassland ecological environment in advance, and limited grazing can be carried out appropriately to reduce fire hazards.

To ensure sustainable engagement, a coordination committee comprising farmers, government representatives, and reserve management should be established. This committee would oversee regular policy reviews and facilitate equitable benefit-sharing mechanisms. Additionally, adopting a "community co-management" model would empower local stakeholders to actively participate in conservation activities. On the technological front, developing a smart agriculture platform integrated with blockchain traceability can enhance the

credibility of "tiger-friendly" certifications. Furthermore, fostering cross-border ecotourism collaborations with Russian reserves and creating "economic enclaves" to relocate intensive industries can significantly reduce ecological pressures.

Author Contributions: Conceptualization, R.Z., Y.D. and Y.G.; methodology, R.Z. and Y.D.; software, R.Z. and Y.D.; validation, R.Z., Y.D. and Y.X.; formal analysis, R.Z. and Y.D.; investigation, R.Z., Y.D. and Y.G.; resources, R.Z.; data curation, R.Z. and Y.D.; writing—original draft preparation, R.Z. and Y.D.; writing—review and editing, R.Z., Y.D. and Y.G.; visualization, Y.D.; supervision, Y.X.; project administration, Y.X.; funding acquisition, Y.X. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the National Social Science Foundation of China "Research on Adaptive Governance Model and Mechanism Innovation of Human-Wildlife Conflict in National Parks Based on CAS Theory", grant number 23BGL177.

Institutional Review Board Statement: Ethical review and approval were waived for this study due to there being no ethics-related issues involved.

Data Availability Statement: Data are not available due to privacy or ethical restrictions.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Hoffmann, S. Challenges and opportunities of area-based conservation in reaching biodiversity and sustainability goals. *Biodivers. Conserv.* **2022**, *31*, 325–352. [CrossRef]
2. Zhao, X.; Zhu, Z.; Lu, Z.; Xiao, L.; Mei, S.; Wang, H. An observation to the new initiative of community conservation guard posts in the pilot Three-River-Source National Park. *Biodivers. Sci.* **2018**, *26*, 210–216. (In Chinese) [CrossRef]
3. Cheng, Y.; Ma, B.; Sun, Y. Does central ecological transfer payment enhance local environmental performance? Quasi-experimental evidence from China. *Ecol. Econ.* **2023**, *212*, 107920. [CrossRef]
4. Raina, S.K.; Kioko, E.; Zethner, O.; Wren, S. Forest Habitat Conservation in Africa Using Commercially Important Insects. *Annu. Rev. Entomol.* **2011**, *56*, 465–485. [CrossRef]
5. Ge, W.; Bai, X.; Zhang, Z.; Gao, Q. The impact of consumer participation certification on the trust of eco-agricultural products based on the mediating effects of information and identity. *Sustainability* **2022**, *14*, 3825. [CrossRef]
6. Jansen, L.J.M.; Kalas, P.P. Improving governance of tenure in policy and practice: A conceptual basis to analyze multi-stakeholder partnerships for multi-stakeholder transformative governance illustrated with an example from South Africa. *Sustainability* **2020**, *12*, 9901. [CrossRef]
7. Ryffel, A.N.; Rid, W.; Grêt-Regamey, A. Land use trade-offs for flood protection: A choice experiment with visualizations. *Ecosyst. Serv.* **2014**, *10*, 111–123. [CrossRef]
8. Li, W.; Bao, H.; Zhang, M. Habitat analysis and design of potential ecological corridors for Amur tiger in Northeastern China. *Acta Theriol. Sin.* **2017**, *37*, 317.
9. Oke, A.O.; Kamolshotiros, P.; Popoola, O.Y.; Ajagbe, M.A.; Olujobi, O.J. Consumer behavior towards decision making and loyalty to particular brands. *Int. Rev. Manag. Mark.* **2016**, *6*, 43–52.
10. Lei, S.; Qiao, Q.; Gao, X.; Feng, J.; Wen, Y.; Han, Y. Ecological Awareness, Policy Perception, and Green Production Behaviors of Farmers Living in or near Protected Areas. *Forests* **2023**, *14*, 1339. [CrossRef]
11. Liu, Y.; Cao, M.; Xiong, J.; Wu, N.; Chen, Z.; Shu, Y. Impact Assessment of Natural Forest Protection Project Policies on National Nature Reserve. *Cent. South For. Inventory Plann.* **2016**, *35*, 5–9. (In Chinese)
12. Luo, W.; Zhong, F.; Wang, G. Satisfaction level and its influencing factors of peasant for desertification land sealed protection policy: A case study in Gansu Province. *Acta Ecol. Sin.* **2020**, *40*, 2636–2646. (In Chinese)
13. Changhai, W.; Shixiong, C.; Yali, W.; Qiang, L.; Chongde, H.; Kaichuang, S. An Analysis on the Cost-Benefit in the Nature Reserves within Qinling Mountains (IV): Optimization of Protection Policy. *J. Northwest For. Univ.* **2012**, *27*, 248–253. (In Chinese)
14. Zhong, Z.; Jiang, W.; Li, Y. Bridging the gap between smallholders and modern agriculture: Full insight into China's agricultural cooperatives. *J. Rural. Stud.* **2023**, *101*, 103037. [CrossRef]
15. Shen, Y.; Jinmin, W.; Luyao, W.; Bin, W.; Xuelan, Y.; Yang, H.; Rui, W.; Chandio, A.A. How do cooperatives alleviate poverty of farmers? Evidence from rural China. *Land* **2022**, *11*, 1836. [CrossRef]
16. Gongbuzeren; Wenjun, L.; Yupei, L. The Role of Community Cooperative Institutions in Building Rural–Urban Linkages Under Urbanization of Pastoral Regions in China. *Front. Sustain. Food Syst.* **2021**, *5*, 612207.

17. Jin, Q.; Dang, H.; Wang, H.; Zhang, Z. Exploring cooperative mechanisms in the Chinese agricultural value chain: A game model analysis based on leading enterprises and small farmers. *Agriculture* **2024**, *14*, 437. [CrossRef]
18. Kong, Y.; Zhang, X.; Li, X.; Pastpipatkul, P.; Liu, J.; Feng, C. Analysis of the driving path of e-commerce to high-quality agricultural development in China: Empirical evidence from mediating effect models. *Front. Sustain. Food Syst.* **2024**, *8*, 1371254. [CrossRef]
19. Rupprecht, C.; Fujiyoshi, L.; McGreevy, S.; Tayasu, I. Trust me? Consumer trust in expert information on food product labels. *Food Chem. Toxicol.* **2020**, *137*, 111170. [CrossRef]
20. Wang, H.H.; Wang, Y.; Delgado, M. The Transition to Modern Agriculture: Contract Farming in Developing Economies. *Am. J. Agric. Econ.* **2014**, *96*, 1257–1271. [CrossRef]
21. Stringer, R.; Sang, N.; Croppenstedt, A. Producers, Processors, and Procurement Decisions: The Case of Vegetable Supply Chains in China. *World Dev.* **2009**, *37*, 1773–1780. [CrossRef]
22. Ren, Y.; Bian, Y.; He, T. Characterizing the Land Shareholding Cooperative: A Case Study of Shanglin Village in Jiangsu, China. *Sustainability* **2017**, *9*, 1175. [CrossRef]
23. Lee, C.-C.; Zeng, M.; Luo, K. How does climate change affect food security? Evidence from China. *Environ. Impact Assess. Rev.* **2024**, *104*, 107324. [CrossRef]
24. Kalinin, A.M.; Samokhvalov, V.A. Effectiveness of financial support to agriculture: General assessment and inter-budget effec. *Stud. Russ. Econ. Dev.* **2020**, *31*, 565–572. [CrossRef]
25. Tan, S.; Zhong, Y.; Yang, F.; Gong, X. The impact of Nanshan National Park concession policy on Farmers' income in China. *Glob. Ecol. Conserv.* **2021**, *31*, e01804. [CrossRef]
26. Khudoynazarovich, K.S. Economic issues of ensuring economic efficiency in agricultural production and the use of innovative agricultural technologies. *SAARJ J. Bank. Insur. Res.* **2021**, *10*, 16–22. [CrossRef]
27. Huang, X.; Song, J.; Yang, L.; Zhong, L.; Yan, K. Ecotourism certification and regional low-carbon sustainable development: A quasi-experimental study based on the Prototype-zone of National Ecotourism Attractions in China. *J. Clean. Prod.* **2023**, *423*, 138731. [CrossRef]
28. Charness, G.; Gneezy, U.; Imas, A. Experimental methods: Eliciting risk preferences. *J. Econ. Behav. Organ.* **2013**, *87*, 43–51. [CrossRef]
29. Carson, R.T.; Groves, T. Incentive and Informational Properties of Preference Questions. *Environ. Resour. Econ.* **2007**, *37*, 181–210. [CrossRef]
30. Zawojska, E.; Czajkowski, M. Re-examining empirical evidence on stated preferences: Importance of incentive compatibility. *J. Environ. Econ. Policy* **2017**, *6*, 374–403. [CrossRef]
31. Hosseinzadeh, A.; Moeinaddini, A.; Ghasemzadeh, A. Investigating factors affecting severity of large truck-involved crashes: Comparison of the SVM and random parameter logit model. *J. Safety Res.* **2021**, *77*, 151–160. [CrossRef]
32. Wan, L.; Wang, W.; Pan, X. Estimation of Non-Market Value of Chaohu Water Resources Based on the Choice Experiment Method. *Ecol. Econ.* **2017**, *33*, 169–174. (In Chinese)
33. Lingohr, S. Rural Households, Dragon Heads and Associations: A Case Study of Sweet Potato Processing in Sichuan Province. *China Q.* **2007**, *192*, 898–914. [CrossRef]
34. Ma, W.; Abdulai, A. The economic impacts of agricultural cooperatives on smallholder farmers in rural China. *Agribusiness* **2017**, *33*, 537–551. [CrossRef]
35. Silva, E.; Dong, F.; Mitchell, P.; Hendrickson, J. Impact of marketing channels on perceptions of quality of life and profitability for Wisconsin's organic vegetable farmers. *Renew. Agric. Food Syst.* **2014**, *30*, 428–438. [CrossRef]
36. Zhang, X.; Fan, D. Can agricultural digital transformation help farmers increase income? An empirical study based on thousands of farmers in Hubei Province. *Environ. Dev. Sustain.* **2023**, *26*, 14405–14431. [CrossRef]
37. Guo, X.; Lung, P.; Sui, J.; Zhang, R.; Wang, C. Agricultural Support Policies and China's Cyclical Evolutionary Path of Agricultural Economic Growth. *Sustainability* **2021**, *13*, 6134. [CrossRef]
38. Zeng, Y.; Guo, H.; Yao, Y.; Huang, L. The formation of agricultural e-commerce clusters: A case from China. *Growth Change* **2019**, *50*, 1356–1374. [CrossRef]

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