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Research on the Influence of Herders on the Response Behavior of Grassland Ecological Compensation Policy

Lihua Ping and Jun Ma*

School of Economics and Management, Inner Mongolia University of Technology,
P.R. China, 010051

Email: 861694412@qq.com; Corresponding Author Email: majun@imut.edu.cn

Abstract. This paper uses the survey data of 344 herders in Xianghuang Banner, Siziwang Banner, and Alxa Left Banner that implement grassland ecological compensation policy in Inner Mongolia Autonomous Region, combined with the Sustainable Livelihood Framework (SLA), and quantitatively analyzes the response of all aspects of livelihood capital to herders based on the SEM model the impact of grassland ecological compensation policy behavior. The government should proceed from the difference of each livelihood capital, combine the economic benefits of herders with the response to the grassland ecological compensation policy, and put forward policy improvement opinions based on the livelihoods of herders, with a view to improving the pastoralism for the government. The enthusiasm of households to respond to the policy provides a scientific basis for achieving the strategic goal of grassland ecological compensation.

1. Theoretical Framework and Research Hypothesis

1.1. "Livelihood Capital and Herders" Behavioral Response to Grassland Ecological Compensation

"Livelihood capital" mainly refers to the important resource base of the community and the resource endowments of different types of families. The Sustainable Livelihoods Framework (SLA) proposed by the UK Agency for International Development (DFID) classifies livelihood capital into five categories, namely natural capital, human capital, physical capital, financial capital and social capital.

The selection of herders' response behavior indicators to grassland ecological compensation is mainly based on their policy compensation content. The Grassland Ecological Compensation Mechanism, also known as the "Returning Pasture to Grassland Ecological Compensation Award", is a series of institutional arrangements implemented by the state in stages to protect the grassland ecological environment, change the development mode of animal husbandry, and promote agricultural development; subsidized ecological compensation refers to the central government provides subsidies to farmers and herders for grazing prohibition in accordance with a certain compensation rate per mu; incentive subsidies refer to the states subsidies for farmers who participate in grassland supplementary sowing, artificial forage, and shelters. Certain incentive standards give incentive subsidies. Based on the actual situation of the survey area, the participation of grazing prohibition and enclosure, artificial forage, and sheds are selected as the observable indicators of latent variables of the "response behavior of herders to grassland ecological compensation".

The livelihood capital status of herder households will affect herders behavior and cognition. Whether to participate in the prohibition of grazing, whether to participate in the grazing shed, whether to participate in the artificial forage in response to the grassland ecological compensation policy, in order to achieve the balance of grass and livestock and reduce livestock, is the decision of



the herders after weighing the family's existing livelihood capital stock result. Therefore, it is particularly important to explore the influence of livelihood capital on the behavioral response of herders' grassland ecological compensation policy. Then, in the context of the implementation of the current grassland ecological compensation policy, what is the status of the five livelihood capital of herders? What are the similarities and differences in the impact of the five livelihood costs on the response behavior of the herders' grassland ecological compensation policy?

1.2. Research Hypothesis

Based on the analysis framework of "livelihood capital→policy behavior response", according to the SLA, there are five categories: "physical capital (P), human capital (H), financial capital (F), natural capital (N), and social capital (S)". On the one hand, it analyzes the influence of the herdsman's livelihood capital ownership on the response behavior of the grassland ecological compensation policy, and makes the following assumptions based on the above existing research:

- H1: Material capital has a positive influence on the response of herders' grassland ecological compensation policy.
- H2: Human capital has a positive influence on the response of herders' grassland ecological compensation policy.
- H3: Financial capital has a positive influence on the response of herders' grassland ecological compensation policy.
- H4: Natural capital has a positive influence on the response of herders' grassland ecological compensation policy.
- H5: Social capital has a positive influence on the response of herders' grassland ecological compensation policy.

2. Data Source and Sample Description

This study selected three animal husbandry banner counties in the east, middle and west of Inner Mongolia Autonomous Region, namely: Xianghuangqi, Siziwangqi, and Alxa Left Banner as the main research areas. The data used in the analysis comes from the field survey conducted by the research team in typical areas where the grassland ecological compensation policy was implemented from September to November 2018. The survey is mainly based on questionnaires, and the method of face-to-face interviews with the herdsman and the investigators is adopted. 360 questionnaires were distributed and 344 valid questionnaires were obtained, with an effective recovery rate of 95.55%. The basic situation of the sample is shown in Table 1.

Table 1. Basic situation of the sample

Variable	Classification criteria	Frequency/time	Frequency/%	Variable	Classification criteria	Frequency/time	Frequency/%
Nation	Han nationality	63	79.79%	Age	Over 65	96	27.91%
	Mongolian	125	36.21%		55-64 years old	110	31.98%
Society Class	Ordinary herders	297	86.21%	Age	45-54 years old	86	25.00%
	CPC member	29	8.29%		35-44 years old	37	10.76%
	Village cadre	19	5.50%		Under 35	15	4.36%
	illiteracy	29	8.43%		60,000 - 80,000	194	56.40%
Educational level of head of household	primary school	186	54.07%	Total annual income of herders	80,000 or more	27	7.85%
	junior high school	63	18.31%		Less than 20,000	38	11.05%
	High school	35	10.17%		20,000 - 40,000	37	10.76%
	College degree and above	31	9.01%		40,000 - 60,000	48	13.95%

It can be seen from Table 2 that the subjects of the survey are mainly the Mongolian and Han people, with family income between 20,000 and 80,000, and herdsmen with a certain degree of education, and most of them are adult males. The situation of herders meets the actual situation and research needs of the pastoral area, and the sample is representative.

3. Research Methods And Model Analysis

3.1. Model Selection

The variables of the five aspects of herdsmen's livelihood capital and policy response behavior are mostly latent variables that cannot be accurately and directly observed, and there may be collinearity, and traditional regression models cannot measure latent variables with strong subjectivity. This research involves a large number of subjective variables. Therefore, this study selects the structural equation model (SEM). SEM has a comparative advantage in dealing with multicollinearity, correlation between multiple variables and measuring subjective variables.

3.2. Structural Equation Model

The structural equation model integrates factors and path analysis statistical methods to verify the relationship between explicit variables, latent variables, interference or error variables, so as to obtain the direct, indirect and total effects between variables .

3.2.1. *Structural model.* Explanation of the causal connection model between the latent variables η and ξ of the structural model, the equation is expressed as follows:

$$\eta = B\eta + \Gamma\xi + \zeta \quad (1)$$

The relationship between the resource endowment in the five aspects of herders livelihood capital and the response behavior of grassland ecological compensation awards is essentially an SEM model. The latent variables of the structural equation are physical capital (P), human capital (H), financial capital (F), natural capital (N), social capital (S), and response behavior of grassland ecological compensation (GEC). Observe the variables are 18 questionnaire design indicators. The causal path of 5 livelihood capital variables (P, H, F, N, S) and response behavior (GEC) constitutes the structural model of SEM.

4. Conclusions and Policy Implications

4.1. Conclusion

Based on the analysis of the livelihood capital theory in the SLA framework, this paper uses SEM to fit the data obtained from the survey, and finally obtains the herdsmen's physical capital, human capital, financial capital, natural capital, social capital, and ecological compensation response behavior. The synthetic variables of, and empirical analysis, the main conclusions are as follows:

- The behavior of the shed is the main response to the grassland ecological compensation. The survey area involves most severely degraded grasslands, and due to climatic reasons, the pasture is easily covered by heavy snow in the fall and winter. The measures of the shed are actively promoted by the local government. Moreover, the technology is relatively mature, and most herders are more inclined to adopt this response method based on their own conditions.

- The positive impact of social capital is the most significant. The main driving force of the response to the grassland ecological compensation award is the social capital of herdsmen. In our country's agro-pastoral culture, family relations play an important role. Also, because of the vast pastures and the distance between their residences, the social capital of most herds Language is a scarce resource, most of which use relatives as the main social network. Herdsmen are easily affected by social resources. "Follow the crowd" responds to the policy, which plays a vital role in the implementation of my country's agricultural and animal husbandry policies. Moreover, the richness of social networks will also increase the opportunities for herders to choose non-livestock industries for employment, and the more they will have a fuller understanding of grassland ecological compensation

and their response will be more positive.

- The influence of physical capital, human capital, and financial capital on the response behavior of the compensation policy is positive. Structural adjustments such as captive feeding, grazing prohibition and enclosure, artificial forage, and introduction of livestock species in pastoral areas require high requirements for sheds, forage storage, and processing facilities, which require a large amount of early-stage capital investment, because the government subsidizes grassland construction and the funds for the transformation of sheds are not sufficient, and herders with lower financial capital cannot respond to the policy and can only continue the existing production methods; the grassland ecological compensation policy is a new project, and highly educated herders have a higher awareness.

- Natural capital is negatively correlated with the response behavior of herders' grassland ecological compensation rewards. In most pastoral areas, herders have relatively poor possession of arable land resources and woodland resources, and pasture, as the basic means of production for herders to engage in animal husbandry, is also a decisive condition for herders to respond to ecological compensation. The larger grassland area owned by farmers, the more they rely on grassland resources for their livelihoods, and the less willing to respond to policies, the greater the chance that they will choose to stay in the pastoral area and continue to graze. For herders with small pastures to maintain their livelihoods, they need to seek changes and actively respond to policies to reduce the time cost of animal husbandry and increase the rate of slaughter.

4.2. Policy Recommendations

The grassland compensation policy is not only an ecological project but also a livelihood project for herders. Only when the livelihoods of herders are guaranteed can the herders respond positively, so that the continuation of the compensation policy can be guaranteed. Based on the conclusions of this research, the following policy recommendations are put forward:

Encourage herders to join herders' mutual aid organizations, strengthen communication between the government and herders, increase grassland network coverage, strengthen collective activities of herdsmen in Ganei, such as the Nadam Conference, further strengthen the relationship between herders, expand their social networks, and reduce the size of the grasslands. The poor network causes information communication obstacles among herders, thereby increasing their social capital stock.

The government should increase subsidies for the construction of shantytowns, labor production materials, etc., increase investment in supporting the construction of animal husbandry infrastructure, and at the same time increase subsidies for the transportation and agricultural tools purchased by herders; consolidate the nine-year compulsory basic education, consider the popularization of preschool education in pastoral areas according to local conditions, provide equal educational opportunities for herdsmen's children, and focus on solving practical problems such as the construction of pastoral areas, the shortage of teaching staff, and education funds; the government departments should combine the natural and cultural characteristics of pastoral areas to diversify farmers' income channels, innovate the rural financial service system, actively provide credit assistance, and raise the standards of rewards and subsidies.

In order to solve the problem of herdsmen's over-reliance on the grassland and ease the ecological pressure on the grassland, it is necessary to increase employment and promote ecological migration. Not only "blood transfusion" through transfer payments to herders, but also "blood-making" through the discovery and assistance of characteristic industries in pastoral areas, such as tourism, to achieve synergy between "blood-making" and "blood transfusion"; strengthen the training of youth skills and provide employment Opportunities to implement preferential policies for housing and buying houses to encourage ecological migration.

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