

Strategies for Ecological Environment Management of Leisure Agriculture in the Digital Era

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Abstract. In this paper, the data envelopment analysis method of the Super-SBM model is used to design the efficiency measurement method of recreational agro-ecological environment based on the units of inputs and desired outputs of multiple agro-ecological environment governance with input, desired output, and non-desired output indicators. On the basis of the efficiency measurement, spatial correlation analysis is used to characterize the efficiency and explore the key influencing factors of agro-ecological governance efficiency. Based on the official data, the author measured the governance efficiency in China by province, city, and region, and analyzed the global and local spatial correlation analysis with Fujian Province as an example, so as to propose the governance strategy. Taking Fujian Province as an example, the z-values of agro-ecological efficiency in major counties from 2010 to 2018 are all greater than 1.850. On the whole, agro-ecological efficiency is ranked in order from high to low in the eastern region, western region, and central region.

1. Introduction

Leisure agriculture ecological environmental governance is one of the general requirements for rural revitalization. However, for the time being, there are still many shortcomings in environmental governance in rural areas. The main reason lies in the rural point source and surface source cross-pollution, endogenous and exogenous pollution coexistence, production and life pollution superposition, excessive pesticides, chemical fertilizers, and agricultural films put into use in agricultural production [1–2]. In addition, industrial pollution in townships and villagers' living garbage pollution is increasing year by year, forests, water systems, and arable land resources have been destroyed, and the speed of rural ecological management cannot keep up with the speed of pollution [3–4]. In this case, the problem of rural ecological pollution is becoming more and more serious, if not paid attention to, then it will affect the physical and mental health of rural residents [5–7].

Agricultural development is facing a serious situation [8]. Promoting the study of agricultural eco-efficiency is related to national food security, and only by maximizing agricultural eco-efficiency and accelerating the transformation and upgrading of agricultural production methods can we make better

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use of environmental resources, and reduce environmental pollution [9–10]. The study of agroecological efficiency is a method to assess the relationship between the inputs that will help the work of sustainable agricultural development.

The governance and protection of agroecology often require a strong push from the government sector. Toledo Víctor et al. explored the origins and development of agroecology in Mexico in the context of the peasant social revolution and agrarian struggles, proposing a sustainable development strategy for agroecology [11]. Corson, M. S et al. pointed out that the reduction of biodiversity is closely related to the modernization of agriculture and centralized production, and analyzed the interaction between agro-ecological wilderness and biodiversity by combining ecological, social, and agricultural perspectives [12]. Maru, H et al. constructed the relevant assessment indicators of drought vulnerability by taking the smallholder economy in Ethiopia as an example and proposed the path of agroecological development through the method of quantitative indicator analysis [13]. Muñoz, E. F. P., and others pointed out that the requirements of agroecological development in Latin America, on the one hand, have contributed to its sustainable development and, on the other hand, have led to a contradiction in the availability of ecological food for some farmers, suggesting that agroecological improvements need to be harmonized with market changes [14].

With the rise of global environmental awareness, the governance and protection of agroecology have gradually been put on the agenda of more countries. Felipe et al. studied the development of eco-agriculture in the context of European countries and analyzed the dominant process of eco-agriculture in the development of society based on the conceptual evolution of agroecology [15]. Wezel, A pointed out that it led to serious biodiversity loss and eutrophication of water bodies and other environmental problems, and put forward the direction of the development of ecological agriculture [16]. Jan, M, on the other hand, for the Eastern European countries, explored the development of agroecology since the last century, pointed out that agroecology is an important guide to the sustainable development of agriculture, and identified the differences between intensive agriculture and agroecology [17].

This paper digitally measures the efficiency of recreational agroecological environment management with the help of data envelopment analysis, based on the assumption of variable scale payoffs, and adopts the non-radial, non-angle Super-SBM model as a measurement tool. Based on the units of multiple inputs and desired outputs of agroecological environment governance, a segmented linear convex contour curve connecting the effective production units is established using mathematical planning methods, and the efficiency can be accurately and efficiently estimated using nonparametric statistical estimation methods. After completing the measurement of governance efficiency, Moran's I index is used to conduct global and local spatial autocorrelation analysis to explore the spatial clustering patterns of various agricultural efficiencies, and at the same time to reveal the regional spatial heterogeneity and standard deviation ellipse is used to test the spatial direction and distribution trend. In the specific empirical study, the efficiency of some Chinese provinces and cities and the overall ecological environment management is measured by the data from the official website, and the statistical differences are studied by region. The influencing factors of efficiency differences are also analyzed from the global and local spatial correlation analysis, so as to better propose the strategy of ecological environment management for leisure agriculture.

2. Digital Measurement of Leisure Agriculture Ecosystem Governance Efficiency

2.1. Construction of the rural ecological environment management efficiency evaluation model

Agricultural production obtains agricultural products and agricultural output value through land bearing, human work, technical inputs, and the use of resource factors, so agricultural production is a process involving multiple inputs such as land, labor, capital, and technology, and multiple outputs such as agricultural products and agricultural output value. For the efficiency measurement of multi-input and multi-output units, the traditional output/input ratio method can not be measured, while the data envelopment analysis method can be based on multiple inputs and multiple desired outputs of the unit, the use of mathematical planning methods, the establishment of a segmented linear convex iso-curve connecting the effective production units, that is, the production frontier, the use of non-parametric statistical estimation

methods can be accurate and effective estimation of the efficiency of the realization of the resource. The mathematical planning objective is minimizing inputs and maximizing desired outputs.

2.1.1. Super-SBM modeling

Data Envelopment Analysis (DEA) is used to evaluate the relative effectiveness between the same sectors, and it is widely used in operations research, management, and mathematical economics. The traditional DEA model is based on the measurement method of radial perspective, which can only start from the input or output perspective, which often leads to the measurement results are not fully consistent with the actual situation. In this paper, based on the assumption of variable scale reward, the non-radial and non-angle Super-SBM model is used to measure the efficiency of rural ecological environment management, and the specific model is:

$$\text{Min } \delta = \frac{\frac{1}{m} \sum_{i=1}^m \bar{x}_i / x_{ik}}{\frac{1}{s} \sum_{r=1}^s \bar{y}_r / y_{rk}} \quad \text{s.t.} \quad \begin{cases} \sum_{j=1, j \neq k}^n x_{ij} \lambda_j \leq \bar{x}_i, & \sum_{j=1, j \neq k}^n y_{rj} \lambda_j \geq \bar{y}_r \\ \sum_{j=1, j \neq k}^n \lambda_j = 1, & \bar{x}_i \geq x_{ik}, \quad \bar{y}_r \leq y_{rk}, \\ i = 1, 2, \dots, m; r = 1, 2, \dots, s; j = 1, 2, \dots, n (j \neq k) \\ \bar{y} \geq 0, \lambda \geq 0, s^- \geq 0, s^+ \geq 0 \end{cases} \quad (1)$$

Where δ is the DEA super-efficiency value, s^-, s^+ represents the slack variables of inputs and outputs respectively. The measurement process of the Super-SBM model is shown in Fig. 1. When $\delta \geq 1$, the decision unit is relatively effective.

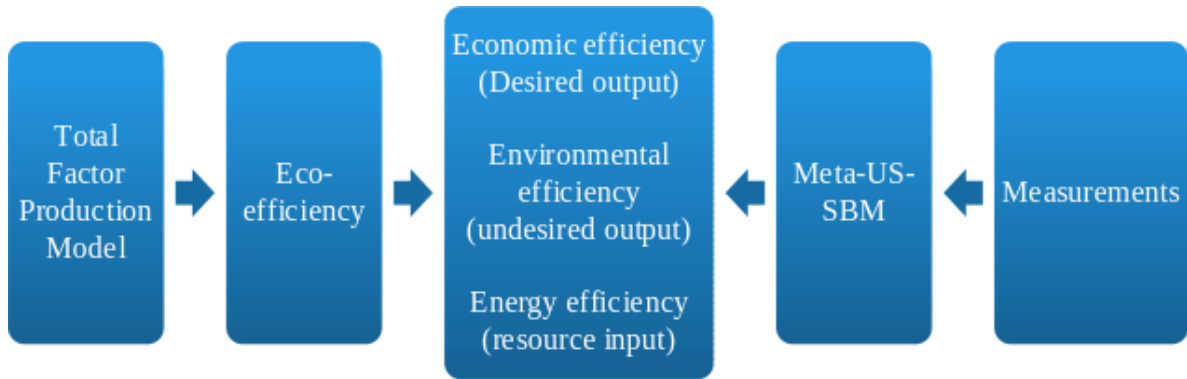


Figure 1: The measurement process of the Super-SBM model

2.1.2. Malmquist Index

In this paper, the Malmquist index theory and the DEA method are combined together to propose the DEA-Malmquist model. The specific formula for the Malmquist index is:

$$tfp = M^{t+1}(x^{t+1}, y^{t+1}, x^t, y^t) = \left[\frac{D_c^t(x^{t+1}, y^{t+1})}{D_c^t(x^t, y^t)} \times \frac{D_c^{t+1}(x^{t+1}, y^{t+1})}{D_c^{t+1}(x^t, y^t)} \right]^{\frac{1}{2}} \quad (2)$$

Where:

$$tfp = M^{t+1}(x^{t+1}, y^{t+1}, x^t, y^t) = Effch \times Tech \quad (3)$$

The specific formula for $Effch$, $Tech$ is:

$$Effch = \frac{D_c^{t+1}(x^{t+1}, y^{t+1})}{D_c^t(x^t, y^t)} \quad (4)$$

$$Tech = \left[\frac{D_c^t(x^{t+1}, y^{t+1})}{D_c^{t+1}(x^{t+1}, y^{t+1})} \times \frac{D_c^t(x^t, y^t)}{D_c^{t+1}(x^t, y^t)} \right]^{\frac{1}{2}} \quad (5)$$

$$pech = \frac{D_v^{t+1}(x^{t+1}, y^{t+1})}{D_v^{t+1}(x^t, y^t)} \quad (6)$$

$$sech = \left[\frac{D_v^{t+1}(x^{t+1}, y^{t+1}) / D_c^{t+1}(x^{t+1}, y^{t+1})}{D_v^t(x^t, y^t) / D_c^t(x^t, y^t)} \times \frac{D_v^{t+1}(x^{t+1}, y^{t+1}) / D_c^{t+1}(x^{t+1}, y^{t+1})}{D_v^t(x^t, y^t) / D_c^t(x^t, y^t)} \right]^{\frac{1}{2}} \quad (7)$$

The index of change in technical efficiency can be expressed as:

$$effch = pech \times sech \quad (8)$$

Therefore, the specific formula for total factor productivity, i.e., the efficiency of rural ecosystem management, is:

$$tfp = Effch \times Tech = pech \times sech \times tech \quad (9)$$

2.2. Inputs and outputs of agro-ecological efficiency

The SBM model based on non-expected outputs incorporates agricultural resources and the environment into the efficiency analysis framework, and it is important to select appropriate input and output indicators to measure agricultural environmental efficiency using the SBM model. In accordance with the above analytical framework for measuring agricultural environmental efficiency, and with reference to the existing literature research on measuring agricultural environmental efficiency, the selection of indicators for the representative research results on agricultural environmental efficiency is summarized as shown in Table 1, which can determine that the main indicators for measuring agricultural environmental efficiency include inputs, desired outputs, and non-desired outputs in three aspects.

Table 1: Indicators of representative research results on eco-efficiency

Inputs	Desired output	Non-desired outputs
Labor input, land input, fertilizer input, pesticide input, etc.	Total agricultural output	Carbon emission, COD, TN, etc.
Labor input, land input, machinery input, fertilizer input, etc.	Total agricultural output	COD, TN, TP, etc.
Labor input, land input, mechanical power input, etc.	Total agricultural output	COD, TN, TP, etc.
Labor input, land input, mechanical power input, etc.	Total agricultural output	COD, TN, TP
Number of agricultural employees, crop sowing area, etc.	Total agricultural output	Carbon emissions
Land, labor, fertilizer, machinery, etc.	Total agricultural output	COD, TN, TP

2.2.1. Agricultural input indicators

Factors of production refer to the elements and environmental conditions needed to carry out material production, which mainly includes human labor, material resources, and a combination of people. Drawing on the four factors of production and the theory of factors of production in Western economics, combined with the selection of input indicators of agricultural environmental efficiency in the relevant literature, it is determined that the input variables of agricultural production mainly include four aspects, namely, land input, labor input, capital input, and technology input.

(1) *Land input.* Agricultural land input is generally expressed by the sown area of crops, cultivated area, effective irrigated area, and so on. Considering the information overlap between the indicators, the sown area of crops, which is commonly used by scholars, is finally selected to represent land input.

(2) *Labor input.* According to the practice of most scholars, the agent of the labor investment chooses the farmers and fisheries practitioners, and the difference in labor type and quality is not considered.

(3) *Capital Input.* Asset investment is an important input for agricultural production. Considering that farmers' capital is mainly used for purchasing production materials such as fertilizers and pesticides, the amount of fertilizer applied is chosen as a proxy indicator for capital input.

(4) *Technical Inputs.* The popularization and use of agricultural machinery, biotechnology, and other advanced technologies have greatly increased agricultural output. Therefore, the power of agricultural machinery is selected to represent the technical input.

2.2.2. Agricultural industry indicators

In addition to the desired outputs such as agricultural products and agricultural output value, the agricultural production process will also get some undesired by-products such as CO, COD, TN, TP, etc., and these pollutant emissions are undesired and are known as non-desired outputs. Therefore, the measurement of agricultural output indicators mainly includes two aspects of agricultural desired output and agricultural non-desired output.

(1) *Agricultural desired output indicators.* Regarding the selection of agricultural desired output indicators.

(2) *Agricultural non-desired output indicators.* Agricultural non-desired output is comprehensively considered in terms of the impact of agricultural production on the atmospheric environment, water environment, and soil environment. Therefore, the agricultural non-desired output indicators mainly include the amount of agricultural air pollution, the amount of agricultural water pollution, and the amount of agricultural soil pollution.

According to the selection and analysis of agricultural input and output indicators, the input and output variables of agricultural environmental efficiency are obtained as shown in Table 2, the agricultural environmental efficiency is effectively measured and evaluated.

3. Characteristics of the Spatial Evolution of Agro-Ecological Governance Efficiency

3.1. Exploring the impact of agro-ecological governance efficiency

After constructing the measurement model of agroecological environmental governance efficiency, in order to further put forward the corresponding governance strategies, this paper adopts the spatial correlation analysis method to characterize the efficiency and explore the key influencing factors of agroecological governance efficiency.

Through the spatial and temporal characterization of agro-environmental efficiency, it is found that the agro-environmental efficiency of most municipalities is moderately low and there is a large efficiency gap between municipalities, and the reasons for its formation are more complicated. Therefore, it is necessary to explore what factors lead to the temporal changes and regional differences in agri-environmental efficiency and to find out the main factors that cause agri-environmental efficiency to rise or fall.

Table 2: Input and output variables for environmental efficiency in agriculture

Primary Indicators	Secondary Indicators	Variables and description
Input Indicators	Land Inputs	Crop sown area
	Labor input	Number of workers
	Capital input	Amount of fertilizer applied
	Technology input	Agricultural machinery power
Desired Output Indicators	Total agricultural output	Total output value of agriculture, forestry, animal husbandry and fishery
Non-desired output indicators	Amount of agricultural air pollution	Carbon emissions
	Amount of agricultural water pollution	Chemical oxygen demand emissions
		Total nitrogen emissions
		Total phosphorus emissions
	Amount of agricultural soil pollution	Pesticide loss Mulch residue

3.2. Spatial evolution of agro-ecological governance efficiency

3.2.1. Global spatial autocorrelation

The fundamental starting point of spatial autocorrelation relies on the first law of geography, which can reveal the regional structural patterns of spatial variables. The flow of spatial autocorrelation analysis is shown in Figure 2. We can be used to reflect whether there is spatial dependence of agricultural efficiencies in space and to explore the spatial clustering pattern of agricultural efficiencies. The global spatial autocorrelation is generally analyzed by Moran's I index.

Moran's I index is calculated as:

$$I = \frac{n}{S_0} \times \frac{\sum_{i=1}^n \sum_{j=1}^n w_{ij} z_i z_j}{\sum_{i=1}^n z_i^2} \quad (10)$$

Among other things:

$$z_i = \left(x_i - \frac{\sum_{i=1}^n x}{n} \right) \quad (11)$$

$$S_0 = \sum_{i=1}^n \sum_{j=1}^n w_{ij} \quad (12)$$

For the global Moran's I index, a two-sided test is usually applied, utilizing the Z test. For the weight matrix, the rook first-order spatial weight matrix was chosen for this study:

$$w_{n \times n} = \begin{bmatrix} w_{11} & w_{12} & \cdots & w_{1n} \\ w_{21} & w_{22} & \cdots & w_{2n} \\ \cdots & \cdots & \cdots & \cdots \\ w_{n1} & w_{n2} & \cdots & w_{nn} \end{bmatrix} \quad (13)$$

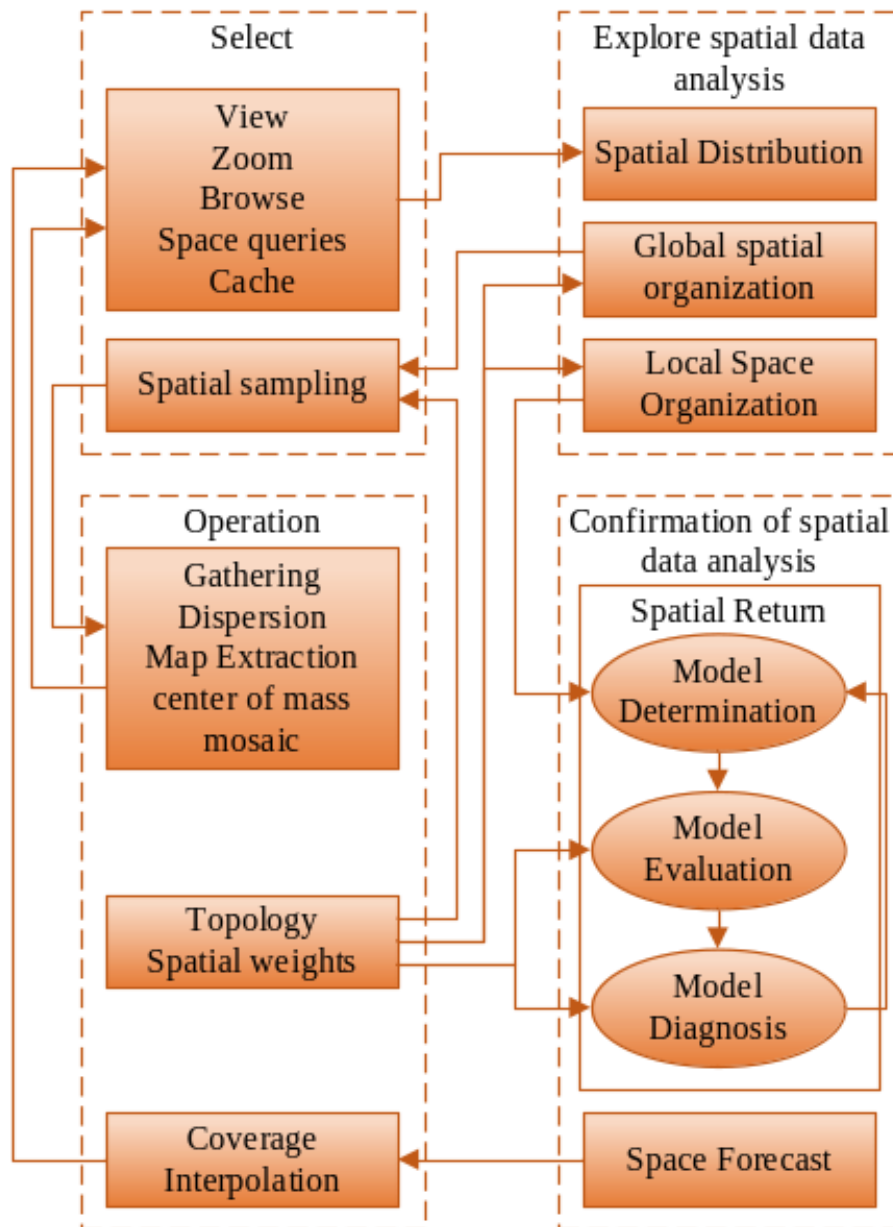


Figure 2: Spatial autocorrelation analysis process

3.2.2. Local spatial autocorrelation

Commonly used indicators to reflect local spatial autocorrelation include Local Moran's I index and G index for hotspot analysis:

$$I_i = \frac{z_i}{S_0} \times \sum_{j=1, i \neq j}^n w_{ij} z_j \quad (14)$$

$$z_i = \left(x_i - \frac{\sum_{i=1}^n x_i}{n} \right) \quad (15)$$

$$S_0 = \frac{\sum_{j=1, i \neq j}^n z_j}{n-1} - \left(\frac{\sum_{i=1}^n x_i}{n} \right)^2 \quad (16)$$

3.2.3. Standard deviation ellipse test for spatial data

The expression for the center of the ellipse is:

$$SDE_x = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{X})^2}{n}} \quad (17)$$

$$SDE_y = \sqrt{\frac{\sum_{i=1}^n (y_i - \bar{Y})^2}{n}} \quad (18)$$

$$\tan \theta = \frac{\left(\sum_{i=1}^n \tilde{x}_i^2 - \sum_{i=1}^n \tilde{y}_i^2 \right) + \sqrt{\left(\sum_{i=1}^n \tilde{x}_i^2 - \sum_{i=1}^n \tilde{y}_i^2 \right)^2 + 4 \left(\sum_{i=1}^n \tilde{x}_i \tilde{y}_i \right)^2}}{2 \sum_{i=1}^n \tilde{x}_i \tilde{y}_i} \quad (19)$$

$$\sigma_x = \sqrt{2} \sqrt{\frac{\sum_{i=1}^n (x_i \cos \theta - y_i \sin \theta)^2}{n}} \quad (20)$$

$$\sigma_y = \sqrt{2} \sqrt{\frac{\sum_{i=1}^n (x_i \sin \theta + y_i \cos \theta)^2}{n}} \quad (21)$$

4. Evaluation and Correlation Analysis of Agro-Ecological Environment Management Efficiency

4.1. Empirical analysis of the efficiency of ecological environmental governance in leisure agriculture

4.1.1. Measurement of overall ecological management efficiency based on Super-SBM

The data of agricultural production input-output factor indicators of each province from 2003 to 2018 were substituted into Super-SBM, and the ratio relationship between desired output and non-desired output in the non-desired output-based EBM model was set to 1:1 to measure the agro-ecological efficiency of provinces, municipalities directly under the central government, and autonomous regions, and their time change trends. The year-by-year measurement results of China's agroecological efficiency are shown in Figure 3. The overall agroecological efficiency increased from 0.784 in 2003 to 0.948 in 2018, showing an overall upward trend and an increase of 20.92%. The agroecological efficiency shows a two-stage development pattern in the trend of time change. In the first stage, the overall agroecological efficiency in China shows an M-shaped trend, with the efficiency value decreasing from 0.784 in 2003 to 0.767 in 2010, a decrease of 1%. In the second stage, from 2010 to 2018, China's agricultural eco-efficiency is in a rapid upward trend, with the efficiency value rising from 0.767 in 2010 to 0.948 in 2017. This stage is due to the fact that, on the one hand, the state and the relevant governmental environmental protection departments strongly demand that all units and departments at all levels must always adhere to the modern agro-ecological production mode of coordinated development of resources and the environment, and the timely formulation of a series of combined measures such as the norms for the use of chemical fertilizers and pesticide use norms and a series of other combined measures, which have pushed the level of China's agricultural eco-efficiency up significantly. On the other hand, under the influence of agricultural environmental pollution in previous years, agricultural workers gradually realized that unilaterally relying on improving the efficiency of agricultural production is far from enough and that the consequences of failing to control environmental pollution in a timely manner are far-reaching, therefore, agricultural workers gradually began to pay attention to environmental management in the process of agricultural planting and fertilizing, which has greatly improved China's level of agricultural eco-efficiency.

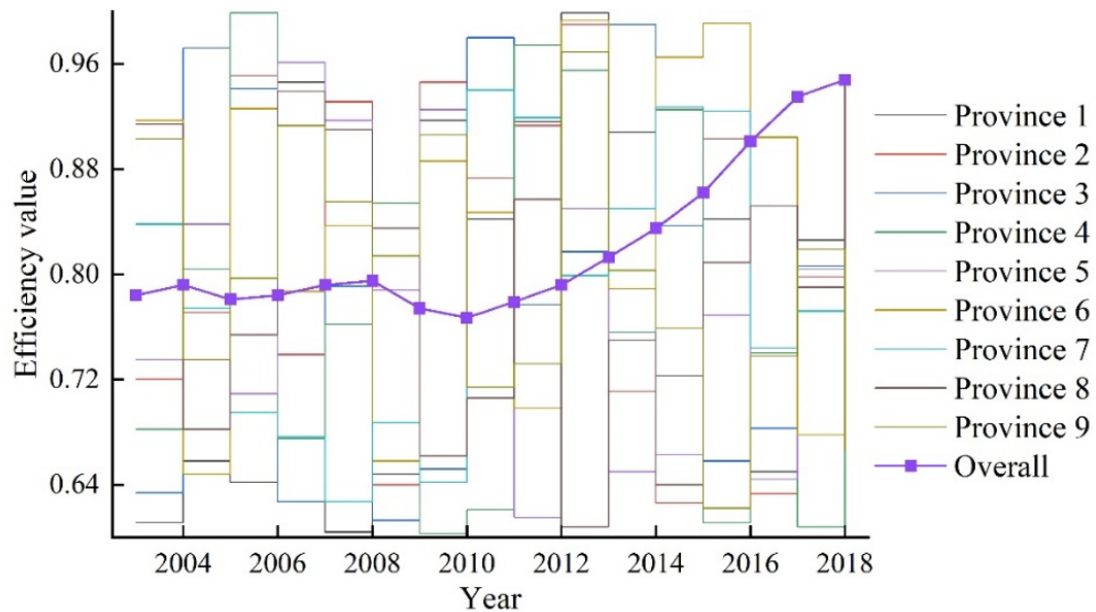


Figure 3: Results of year-by-year measurement of agro-ecological efficiency

4.1.2. Analysis of regional differences

China is divided into three major regions: east, central, and west. The results of agroecological efficiency measurements in the three major regions of China, east, central, and West, from 2003 to 2018 are shown in Figure 4. The average values of agroecological efficiency in China's eastern, central, and western regions during 2003–2018 were 0.863, 0.716, and 0.854, respectively. Overall agroecological efficiency was ranked in ascending order as eastern region, western region, and central region. In terms of horizontal and vertical comparisons, the time-varying trends of agroecological efficiency in the country as a whole and in the eastern, central, and western regions can be roughly categorized into two stages. In the first stage, during the period 2003–2009, the agroecological efficiency was ranked in ascending order as western region > eastern region > nationwide > central region. During this period the agroecological efficiency of the western region is in the leading position in the country, higher than the national average, while the agroecological efficiency of the central region lags far behind the national average. The second stage is the period 2009–2018, where agroecological efficiency is ranked in ascending order as eastern region > western region > national > central region. During this time period, the agroecological efficiency of the eastern region increased rapidly, surpassing the western region and leaping into the leading position in the country, while the agroecological efficiency of the central region lagged behind the rest of the country despite a relatively large increase in agroecological efficiency.

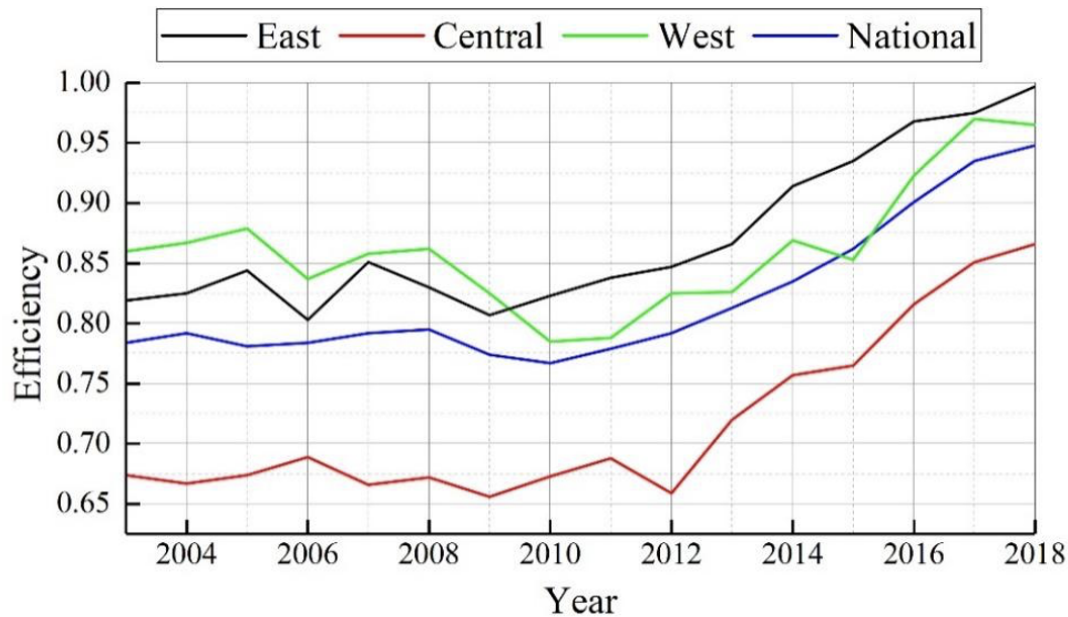


Figure 4: The results of agro-ecological efficiency measurement in three major regions

4.2. Spatial analysis of agro-ecological governance efficiency

4.2.1. Global spatial autocorrelation of agro-ecological efficiency

In order to further study the correlates of recreational agroecological management efficiency, this paper takes Fujian Province as an example to conduct spatial correlation analysis. Table 3 demonstrates the spatial autocorrelation results of agroecological efficiency in 70 counties in Fujian Province from 2010 to 2018, and Monte Carlo simulation was chosen to test Moran's I 900 times. According to the measurement results, the z-value of agroecological efficiency in major counties in Fujian Province from 2010 to 2018 was greater than 1.850, and the agroecological efficiency in each year of the study period of the global autocorrelation Moran's I index passed the significance test of 0.05, indicating that the agroecological efficiency of Fujian Province shows positive spatial correlation. That is to say, the spatial distribution among agroecological

efficiencies in China does not present complete randomness but exhibits spatial aggregation with similarity. It is characterized by the clustering of counties with high agroecological efficiency with counties with high efficiency, and the clustering of counties with low efficiency with counties with low efficiency, and the distribution is characterized by differential ordering.

Table 3: Spatial autocorrelation results of agroecological efficiency

Year	Moran's I	SD	Z	P
2010	0.1806	0.0711	3.2862	0.0173
2011	0.2110	0.0772	3.2981	0.0195
2012	0.2468	0.0759	1.8955	0.0016
2013	0.2177	0.0740	2.9334	0.0141
2014	0.2190	0.0799	3.0470	0.0028
2015	0.1964	0.0730	2.8483	0.0135
2016	0.1980	0.0635	3.0366	0.0107
2017	0.1737	0.0605	2.0103	0.0134
2018	0.1936	0.0743	3.5735	0.0132

4.2.2. Local spatial autocorrelation of agro-ecological efficiency

In order to analyze the spatial agglomeration changes of agroecological efficiency in counties of Fujian Province in different years, the spatial autocorrelation indices and scatter plots of agroecological efficiency in the main years of 2010, 2014, and 2018 were calculated and plotted. The local spatial autocorrelation results in different years are shown in Fig. 5, and Figs. (a), (b), and (c) show the measurement results in 2010, 2014, and 2018 in turn. The estimated values of Moran's I in 2010, 2014, and 2018 are 0.132, 0.271, and 0.286, respectively. The major years of the counties' "high-high agglomeration", "low-low agglomeration", "high-low agglomeration" and "low-high agglomeration" spatial structure existed in each major year, and each major year's number of counties with "high-high" and "low-low" agglomeration is more than the number of counties with "high-low" and "low-high" agglomeration in all major years. Overall, agroecological efficiency is distributed in the region in localized clusters of high values in the south and low values in the north.

5. Governance Strategies for Leisure Agriculture Ecosystems

Based on the measurement and spatial evolution analysis of the efficiency of agro-ecological environmental governance, combined with the actual situation, the author proposes the corresponding strategies for ecological environmental governance as follows:

First, promote eco-industry agglomeration. In order to give full play to the agglomeration effect of environmental protection enterprises, attract energy-saving and environmental protection enterprises to gather to form an eco-industrial park, and improve the degree of environmental protection industry agglomeration, we should cultivate environmental protection science and technology industrial bases, and promote the scientific division of labor in environmental protection industry technology research and development. Strengthen the independent innovation research and development capacity and scientific and technological achievements transformation capacity, to provide technical support and service support for rural ecological environmental governance.

Second, optimize the rural governance pattern. Individual interests in rural areas need to be subordinate to the interests of the overall development of the region, give up the excessive pursuit of economic benefits brought about by ecological problems, constantly promote the balance between environmental and economic interests, and promote the transformation of the rural economy green ecological development. Changes in the pattern of governance are related to the adjustment of the pattern of interests, and in rural ecological environmental governance, the industrial adjustment should pay attention to the principle of benefit-sharing, avoiding the concentration of excessive resources on a particular industry.

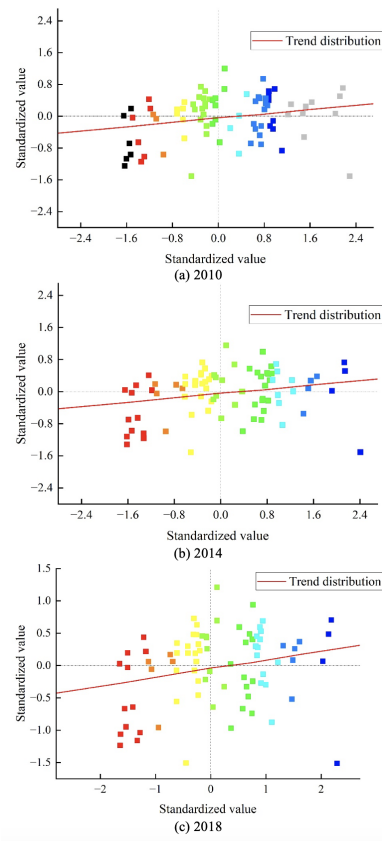


Figure 5: Local spatial autocorrelation results for different years

Third, build a rural green ecological development chain. Eco-agricultural industrial parks can be used as the basis of the ecological economy, through the orderly promotion of biological prevention and control instead of chemical prevention and control, organic fertilizer instead of chemical fertilizer, and mechanized informationization instead of traditional agricultural production methods. Combine the agricultural economic, social, and environmental benefits of citrus, kiwi, and tea, cultivate green markets, and establish trading platforms for green food, low-carbon travel, and other green consumption markets.

Fourth, improve the ecological governance mechanism. Institution building is the key to ecological governance. The ecological environment is an important factor affecting regional development, and institutional arrangements can find a balance between ecological interests and economic interests, forcing the main body of governance to follow the rules to choose the main body behavior.

6. Conclusion

In this paper, based on the input-output indicators of agroecology, the Super-SBM model was used to realize the measurement of leisure agroecological management efficiency, and the spatial autocorrelation and local autocorrelation models of agroecological efficiency were constructed by using Moran's I index. Taking the major counties in Fujian Province as an example, the z-value of agroecological efficiency was greater than 1.850 from 2010 to 2018, and the global autocorrelation Moran's I index of agroecological efficiency for each year during the study period passed the significance test of 0.05, which indicated that the agroecological efficiency of Fujian Province showed positive spatial correlation.

Based on the analysis of eco-environmental governance efficiency, the governance of leisure agriculture eco-environment should start from the aspects of industrial form, overall layout, eco-development chain, and governance mechanism. Promote the agglomeration of eco-industry by improving the allocation of resource elements. Optimize the governance pattern of rural areas from the perspective of personal interests through good planning of rural industries. Promote the formation of a sustainable ecological development chain through top-down green ecological design. Improve the level of ecological governance through the clarification of governance objectives and the improvement of assessment mechanisms.

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