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A brief analysis of China's agricultural water price pricing methods

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Objectives

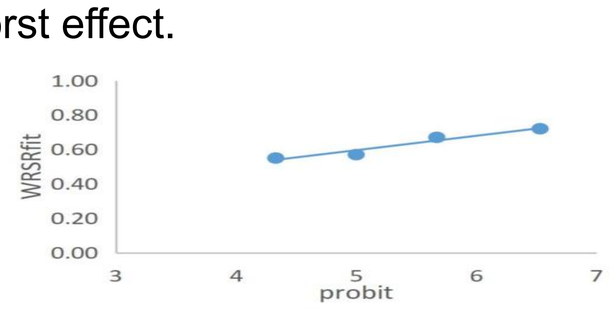
The comprehensive reform of agricultural water price is a key measure to promote the efficient and sustainable use of water resources, and the establishment and improvement of agricultural water price formation mechanism is an important prerequisite for realizing the efficient and sustainable use of water resources. At present, China's agricultural water price pricing model is mainly based on the combination of traditional economic analysis and the actual situation of irrigation areas, and there is no unified agricultural water price pricing method. Therefore, the comprehensive analysis of the pricing method of agricultural water price in typical regions in China can provide a reference for the reform of water price in irrigated areas in the comprehensive reform of national agricultural water price.

Methods

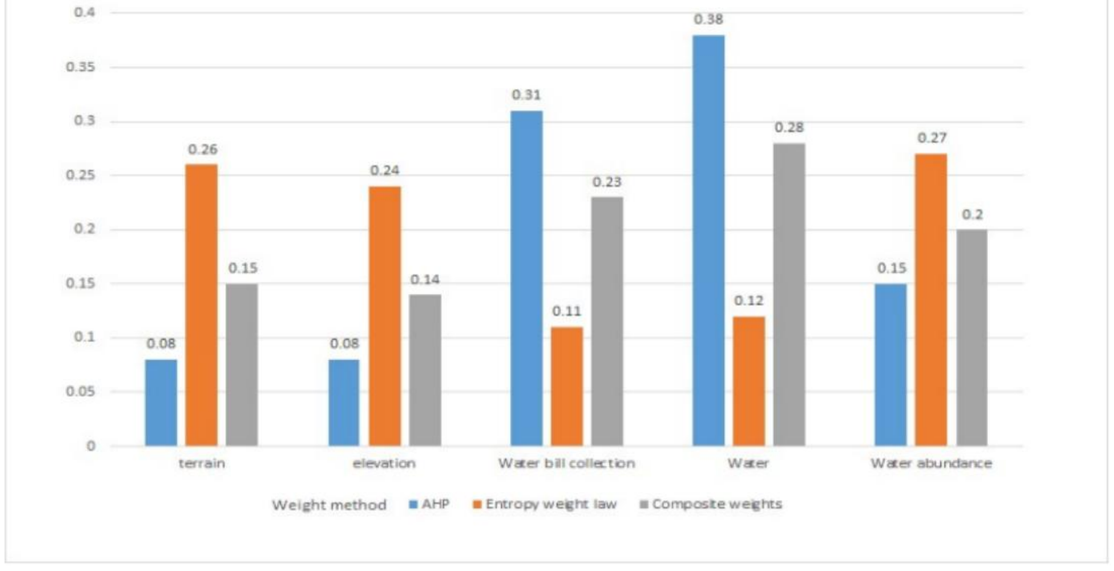
Based on the existing literature on agricultural water price pricing methods in China, the current agricultural water price pricing methods in typical irrigation areas in 20 different regions in China were analyzed, and the game theory combination empowerment rank and ratio method was used to analyze the specific analysis of agricultural water price pricing methods in irrigated areas based on the characteristics and implementation results of irrigation areas.

Results

From Table 6, it can be seen that the weighted rank and ratio WRER ranking of the four agricultural water pricing methods are full cost water price (0.55), two-part water price (0.57), terminal water price (0.67) and stepped water price (0.72), indicating that stepped water price is the best applied to agricultural water price pricing, followed by terminal water price and two-part water price, and the full-cost water price has the worst effect.



Agricultural water pricing methods	WRSR	Probit	WRSRfit	sort
Full cost water price	0.55	4.33	0.54	4
Two-part water prices	0.57	5.00	0.59	3
Terminal water price	0.67	5.67	0.65	2
Tiered water rates	0.72	6.53	0.72	1



Weight method	terrain	elevation	Water bill collection	Water	Water abundance
AHP	0.08	0.08	0.31	0.38	0.15
Entropy weight law	0.26	0.24	0.11	0.12	0.27
Composite weights	0.15	0.14	0.23	0.28	0.20

Conclusions

Game theory combination weighted rank sum ratio method is a relatively simple and universal method, through the ranking of each index participation calculation, eliminate the interference of outliers, improve the level of statistics and reanalysis, and weighting is to consider the different effects of different indicators on the comprehensive evaluation, increase the weight coefficient, on the basis of the original rank method to make the rank sum ratio method more in line with the objective reality, this method provides a new idea for the evaluation of agricultural water price pricing method. However, the selection of evaluation indicators can continue to expand, adding other factors that affect the agricultural water price pricing method, such as the impact on the environment after the implementation of the agricultural water pricing method and the maintenance rate of field supporting projects, etc., the increase of indicators does not affect the use of the method, and the method objectively evaluates the optimal agricultural water price pricing method. At the same time, this method can be used to evaluate the operation status of multiple irrigation areas in a province, so as to summarize the comprehensive reform effect of agricultural water prices in the province.