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STUDY ON THE TEMPORAL-SPATIAL EVOLUTION RULES OF INTER-PROVINCIAL ECO-EFFICIENCY IN CHINA

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Abstract

To study the inter-provincial eco-efficiency in China from multiple perspectives and various aspects, this paper built the super-efficiency data envelopment analysis (US-DEA) model of undesirable outputs, convergence model, spatial correlation model and Malmquist index. The model constructed was used to analyze the convergence of inter-provincial eco-efficiency of different years based on the inter-provincial panel data from 2008 to 2017 in China. The spatial correlation of inter-provincial eco-efficiency was measured as well. Then this paper carried out the dynamic analysis of the inter-provincial total factor productivity. The results show that: ① The dynamic analysis indicates that the overall eco-efficiency in China has not changed much and the eco-efficiency does not have convergence; the horizontal analysis shows that the eco-efficiency of each province differs greatly; ② The analysis of the global Moran's I index in China shows that the absolute value of this index is relatively small, indicating that there is no spatial correlation between the eco-efficiency of all provinces in China; ③ According to the analysis of the Malmquist index in different years, it can be known that the year-on-year rise of this index is quite significant, resulting from the increasing inter-provincial production technological efficiency change . The inter-provincial technical efficiency change is not significant.

Keywords: convergence model, inter-provincial eco-efficiency, Moran's I index, Malmquist index, super efficiency DEA model

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