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Highway carbon unlocking efficiency study based on super-efficiency SBM-Malmquist V.2

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We use this protocol and it's working

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Abstract

Carbon Neutrality goals and Sustainable Development Goals (SDGs), as new requirements for global development at this stage, have raised higher requirements for achieving the coordination of economic efficiency and ecological development of transportation infrastructure, especially highways. To promote the achievement of Carbon neutrality goals and SDGs, this research intends to investigate the carbon unlocking efficiency of highways. In this paper, we take China as an example, use the data of 18 listed highway companies and their provinces from 2010-2021 to conduct the study, measure the static carbon unlocking efficiency by using the super-efficiency SBM model with undesirable outputs, combine with the Malmquist index model for the decomposition of the efficiency and the dynamic analysis, and use the Tobit regression model to analyze the factors affecting the carbon unlocking efficiency of the highway. The results show that (1)From a static perspective, the highway carbon unlocking efficiency shows a steady upward trend, and the highway carbon unlocking efficiency has been in a state of low efficiency in general, with obvious regional differences. (2)From a dynamic perspective, highway carbon unlocking efficiency changes are relatively flat, highway carbon unlocking efficiency change index is in the rising stage, relying on technical efficiency can effectively improve the level of carbon unlocking efficiency. (3)The regional economic level, industrial structure, and urbanization level have a significant positive correlation with carbon unlocking efficiency, while the level of scientific and technological development and the level of opening up have a negative effect.

Attachments

XLSX TOBIT.xlsx 27KB

XLSX SBM-MALMQUIST.xlsx 664KB

Troubleshooting

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