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ANALYZING THE IMPACT OF ECO-INNOVATION AND ENVIRONMENTAL REGULATIONS ON GREEN DEVELOPMENT EFFICIENCY

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Abstract

This study examines the critical role of eco-innovation and environmental regulation in enhancing green development efficiency in China, using provincial-level data from 2008 to 2020 to probe the internal transmission mechanism between eco-innovation and green development efficiency under the performance and cost-based environmental regulations. The basic model is analyzed using different analytical models, including the ordinary least square, feasible generalized least square, and the system generalized method of moments. This paper further constructed the spatial Durbin and dynamic panel threshold models to examine the moderating role of environmental regulation in the relationship between eco-innovation and green development efficiency and the spillover effect of eco-innovation. The results reveal that eco-innovation positively and significantly promotes green development efficiency. It is worth noting that effective implementation of such environmentally driven eco-innovation initiatives ensures lower energy consumption, reduced waste, and optimized resource utilization, promoting environmental sustainability. The analysis consistently demonstrates the existence of a spatial spillover effect. This affirms that innovation in environmental sustainability is viable and highly beneficial in promoting green total factor energy efficiency. Again, environmental regulation significantly moderates the nexus between eco-innovation and green development efficiency positively. This underscores the need for a regulatory framework within a threshold that complements and enhances the impact of eco-innovation on environmental performance to benefit the broader economy and society. Comparatively, the eastern part recorded a lower efficiency of green development than the national level in 2008.

Key words: China, environmental regulation, eco-innovation, green development efficiency, sustainable development

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