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INFLUENCE OF DIFFERENT ENVIRONMENTAL INSTRUMENTS ON GREEN INNOVATION: EVIDENCE FROM 285 CITIES OF CHINA

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Abstract

Green innovation is the key measure to improve environmental efficiency and enhance environmental protection, but it is difficult to effectively drive green innovation only relying on the market mechanism. Therefore, exploring how to motivate green innovation through environmental instruments is essential for the sustainable development. Applying a spatial econometric model to panel data of 285 prefecture-level cities in China, this study estimates the dynamic impacts of the command and control and market-based instruments on green innovation, taking into account regional and innovation type heterogeneity. The results of the spatial econometric analysis show that the command and control instrument inhibit green innovation in the current period. Moreover, while the market-based instrument has no significant effect on green innovation in the current period, it significantly induces green innovation in the lagging period, which supports the Porter hypothesis. The sub-sample regression results reveal that the market-based instrument only induces green innovation which is less innovative both in the central and western regions. In addition, the market mechanism in the western regions should be improved. Finally, policy recommendations for the government are presented to improve China's environmental instrument system to promote green innovation. This study fills the gap in the literature by comparing the effects of command and control and market-based instruments, especially in developing countries.

Key words: command and control instrument, green innovation, market-based instrument, prefecture-level cities, spatial metrology

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