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**DRIVING GREEN DEVELOPMENT THROUGH INNOVATION: AN  
EMPIRICAL ANALYSIS**

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**Abstract**

With the rapid development of science and technology and the deepening of globalization, innovation plays an important role in green development. Quantitative research and innovation drive green development, which is conducive to realizing the synergistic effect of economy, society and environment and promoting sustainable development. In this paper, institutional innovation, technological innovation and financial innovation are used to construct an index system, entropy weight method is used to measure innovation, green total factor productivity is used to represent green development, and SBM-GML model is used to measure green development, and fixed-effect panel data model is constructed to empirically test the promoting effect of innovation on green development. The findings are as follows: (1) Overall, institutional innovation, technological innovation and financial innovation have significant positive promoting effects on green development, among which, when institutional innovation, technological innovation and financial innovation increase by 1%, green production factors will increase by 1.803%, 1.857% and 1.234% respectively. (2) From the perspective of sub-regions, the effect of institutional innovation on green development in western China is small and not significant; the influence of technological innovation variables on the economic development of the three regions shows little difference, and the western region benefits the most, followed by the central region. Financial innovation has a significant positive impact on green development in the eastern region, while in the central and western regions, the impact of financial innovation on green development is not significant. (3) Institutional innovation and financial innovation play a significant role in promoting technological innovation, in which financial innovation and institutional innovation work together to promote technological innovation. This study quantitatively analyzes the impact and role of institutional innovation, technological innovation and financial innovation on green development, and provides empirical research for strengthening innovation-driven strategy and promoting green development.

*Key words:* financial innovation, green development, institutional innovation, panel data model, technological innovation

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