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"Gheorghe Asachi" Technical University of Iasi, Romania

THE INITIAL EXPLORATION OF ENVIRONMENTAL CONSTRAINTS, INNOVATION INPUT AND ECONOMIC GROWTH IN CHINA- A RESEARCH ON THREE-DIMENSIONAL SYSTEMS

Mingran Wu[1,2*], Mengfei Guo[3], Jingrong Xu[4]

[1]*Nanjing University, Nanjing 210023*
[2]*Nanjing University of Posts and Telecommunications, Nanjing 210003*
[3]*Nanjing University of Finance and Economics, Nanjing 211501*
[4]*Jiangsu Second Normal University, Nanjing 210013*

Abstract

The synergetic evolution of the three-dimensional systems of environment, technology, and economy is a prerequisite for sustainable socio-economic development. How to measure and visualize the coordination degree and complex dynamic relationship of the "environment-technology-economy" system, and quantitatively analyse the actual impulse of environment and technology on the economy, has become a very meaningful research subject. Based on time series data of ecological environmental constraints, input of science and technological innovation and economic development in China from 2001 to 2023, this paper established the three system VAR model of "environment – technology – economy". Then, the impulse response function and variance decomposition method were used to examine the dynamic trajectory between the three and the impact proportion of the environment and technology on the economy. The results show that during the study period, there was a stable correlation between the three items. Specifically, eco-environmental constraints can effectively stimulate the country to invest in science and technology. Although the input is insufficient to remedy the loss caused by constraints, but can alleviate the pressure. In addition, the input of science and technology has vigorously promoted economic growth. In turn, economic growth also contributes to the increase of investment in innovation and the reduction of constraints. Based on these conclusions, this article not only suggests to establish the "environment-innovation-economy" composite system to conducts more theoretical research, but also urges the Chinese government to further magnify eco-environment regulation intensity and build a reasonable green technology investment system.

Key words: ecological environmental constraints, economic growth, dynamic relationship, input in scientific and technological innovation

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* Author to whom all correspondence should be addressed: e-mail: wumr1992@163.com.
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