The Impact of Green Technology Innovation on the Global Value Chain Posittion of China 's Manufacturing Industry

Topic: Trade and Global Value Chains Policies (1)
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(1) The research questions.
Green technology is a new type of technology committed to reducing environmental negative impacts and promoting sustainable development. Does green technological innovation, and if so, how does it affect the global value chain (GVC) position of China's manufacturing industry? In the current academic circles, there are two main viewpoints on the impact of green technological innovation on the manufacturing value chain. Yuan and Dai (2017) found that green technological innovation has a positive promoting effect on the GVC position of the manufacturing industry. Li et al. (2022) and Song et al. (2021) suggest that the impact of green technological innovation on manufacturing GVCs is not a simple linear relationship but may involve complex non-linear effects.
There are two reasons that may account for the divergence in research conclusions. One is the measurement indicators. These studies employ methods such as SFA (Stochastic Frontier Analysis), DEA (Data Envelopment Analysis), or single measurement indicators to gauge green technological innovation. However, these indicators are characterized by a lack of directness and clarity, as well as a low correlation with policies and technologies. Meanwhile, there is a lack of consideration and measurement of forward and backward participation in GVCs based on the share of value added in the measurement of GVC position indicators. Second, the non-linear relationship between green technological innovation and GVC position revealed by empirical analyses may be the result of the existence of certain moderating effects.
In view of the above differences, this paper conducts a thorough analysis of the impact of green technological innovation on GVC position.
(2) The data used.
OECD national input output tables (IOTs)
OECD Inter-Country Input-Output (ICIO) Tables
OECD Trade in value-added (TiVA)
UIBE GVC Database
CNRDS PSID Database
EPS Database
China Statistical Yearbook on Environment
China Industry Economy Statistical Yearbook
(3) The method used.
a. This paper reconstructs the measurement method of green technology innovation by combining PCT data and OECDâ€™s search strategy to account for green patent applications. Based on input-output value-added accounting, a GVC position index that includes forward and backward participation in the global value chain is constructed.
b. Taking environmental regulation and absorption capacity as moderating variables into the research framework of the impact of green technology innovation on the GVC position of China 's manufacturing industry, this paper analyzes the possible impact directions and mechanisms of green technology innovation as a whole and its moderating variables on GVC upgrading, and proposes research hypotheses of the overall impact, moderating effects and impact mechanism of green technology innovation on GVC upgrading.
c. Use panel regression method to conduct rigorous verification of the above assumptions such as benchmark model, endogeneity test, robustness test and heterology analysis. Finally, we analyze the moderating effects of environmental regulation and absorption capacity on the impact of green technological innovation on the GVC position of Chinaâ€™s manufacturing industry through

mechanism tests.
(4) The novelty of the research.
a. This paper reconstructs the measurement method of green technology innovation by combining PCT data and OECDâ€™s search strategy to account for green patent applications. Based on input-output value-added accounting, a GVC position index that includes forward and backward participation in the global value chain is constructed.
b. By incorporating environmental regulation and absorptive capacity as moderating variables into the research framework of the impact of green technological innovation on the GVC position of Chinaâ€™s manufacturing industry, we offer a more comprehensive exploration of the non-linear effects of green technological innovation on the GVC position under varying levels of absorptive capacity and environmental regulation. This facilitates the formulation of targeted policy measures.