



“Gheorghe Asachi” Technical University of Iasi, Romania



IMPACTS OF LOW-CARBON TRANSITION ON EMPLOYMENT FROM SPATIAL PERSPECTIVE: CONSIDERING THRESHOLD CHANGE OF DIGITAL EMPOWERMENT

Hongfang Han^{1*}, Wenjie Sun², Runde Gu³

¹*Institute of New Structural Economics, National School of Development, Peking University, Beijing 100871, China*

²Department of Global Management, Seokyeong University, 124 Seogyong-ro Seongbuk-gu Seoul 02173, Korea

³Institute of Geographical Sciences, Hebei Academy of Sciences (Hebei Technology Innovation Center for Geographic Information Application), Shijiazhuang 050011, China

Abstract

Understanding the relationship between low-carbon transition and employment is critical for achieving environmental sustainability alongside job creation. Using China's *Low-Carbon City Pilot* (LCCP) policy as a quasi-natural experiment, this paper employs a spatial difference-in-difference (Spatial-Durbin DID) model to assess both the direct and spillover effects of LCCP on employment. We further construct a spatial moderation model and a threshold model to examine the moderating and threshold roles of digital empowerment (DEM). Using panel data from 277 Chinese cities (2007–2021), the results show that: (1) the LCCP policy promotes employment in both pilot cities and neighboring areas, while accelerating labor shifts from the secondary sector to the primary and tertiary sectors. (2) DEM moderates this relationship by weakening the local employment effect of LCCP but strengthening its positive spillover effect. (3) DEM exhibits dual-threshold effects on the relationship between LCCP and total employment, and a single-threshold effect on secondary sector employment, with an overall U-shaped trajectory. (4) Spatiotemporal analysis indicates a rising number of cities surpassing DEM thresholds, spreading from eastern to central and western regions, reflecting a trend toward greater regional balance.

Key words: digital empowerment, employment, low-carbon transition, Spatial-Durbin DID model

Received: February, 2026; Revised final: July, 2026; Accepted: August, 2026

* Author to whom all correspondence should be addressed: e-mail: hhf@cueb.edu.cn; Phone: +86 18511778015