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EFFECTS OF CHINA'S REGIONAL INDUSTRIAL STRUCTURE ADJUSTMENT ON CARBON EMISSION TRANSFER BASED ON GRAVITY MODEL

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Abstract

In China, there exist major differences in both the energy consumption and industrial structure between provinces and cities, leading to carbon emission transfer. Based on inter-provincial trade and industrial transfer, this paper measures the carbon emission transfer of China's sub-sectors and cities in 2007 and 2010 using the inter-provincial input-output model. The results show that, carbon dioxide transfers from economically developed regions and regions with a single industrial structure to economically underdeveloped regions or resource-intensive regions. The embodied carbon emission transfer mainly occurs between provinces and cities in the eastern, central and northeastern regions of China. A gravity model with a direction vector is constructed to analyse the influence of the regional industrial structure distance, environmental regulation distance, technical distance and geographical distance on carbon emission transfer. The results show that: there is a spatial proximity effect in carbon emission transfer; technical distance and industrial structure distance promote carbon emission transfer from economically developed regions to economically underdeveloped regions; the primary industry structure distance has a significant positive impact on the outflow of carbon emissions; The secondary industry structure distance and the carbon emission outflow show an "inverted U-shaped" relationship, while the tertiary industry structure distance and the carbon emission outflow show a "U-shaped" relationship; The carbon emission transfers from regions with strict environmental regulations to regions with loose regulations, thus verifying the existence of the "pollution haven hypothesis". This conclusion provides a reference for rationally dividing the responsibility for carbon emission reduction across various regions.

Key words: carbon emission transfer, distance, gravity model, regional industrial structure

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