

Inter-city transport hubs and intra-city polycentric structure: Evidence from high-speed rail stations and airports in China

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摘要: Transportation infrastructure plays a pivotal role in shaping urban spatial structure. Although numerous empirical studies have examined the impact of intra-city transport system on urban spatial structure, research on the impact of inter-city transportation infrastructure remains limited. This paper addresses this gap by accurately measuring the influence of inter-city transport hubs on urban spatial structure using calibrated nighttime light satellite images spanning from 2000 to 2020 in China. Through a series of time-varying difference-in-differences and event studies, we discover that the introduction of high-speed rail (HSR) stations and airports has a significant positive impact on polycentricity. However, the average effect masks great heterogeneity concerning the geographical location, transport accessibility, and local development level of these transport hubs. In cities experiencing population growth and a thriving service sector, HSR stations and airports situated far from the existing city center yet offering high accessibility play a crucial role in fostering urban polycentric development. These findings highlight the potential of inter-city transport hubs as effective policy tools for promoting urban polycentric development.

关键词: urban spatial structure, HSR station; airport; polycentric development; nighttime light image