BRICS countries technological development trajectories in the pursuit of technological sovereignty

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ABSTRACT

In the context of geopolitical tensions and global order transformation, the BRICS countries strive to strengthen their technological sovereignty. However, the dynamics of their scientific and technological development reveals structural heterogeneity, both in development pace and in the gap between national and global technological frontiers. This study analyzes the technological development trajectories of the BRICS countries relative to the global technological frontier using production function theory and general scientific methods based on World Bank open data. The results identify which countries lag significantly behind the frontier and which are actively shifting it. The findings help shape science and technology policy directions and diversify strategic partnerships within BRICS. For Russia, considering BRICS as an institution of multilateral coordination and dialogue, it should serve not as a substitute for national technological strategies, but as a mechanism for diversifying partnerships, knowledge and market access, and joint infrastructure and standards development. The paper contributes to the analysis of technological sovereignty in BRICS countries through the comparison of national development trajectories with the global technological frontier.

JEL Codes:

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