

Does High-Technology Trade Impact Environmental Quality? Evidence from the STIRPAT Analysis

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Abstract: The environmental implications of high-technology trade (HTT) are theoretically ambiguous and empirically contested. This study tests for non-linearity in the HTT-environmental quality (HTT-EQ) relationship across 29 economies over the 2007-2022 period, using a dynamic-panel STIRPAT specification with the bias-corrected LSDVC estimator and the Environmental Performance Index (EPI) as a composite environmental measure. The empirical specification mirrors the EKC structure, but with HTT replacing income as the dependent variable. A statistically significant U-shaped relationship emerges, with a turning point at an HTT-to-GDP share of 23.24%; below this threshold, scale effects dominate; above it, technique and composition effects prevail.

Keywords: High-Technology Trade, Environmental Quality, STIRPAT, EPI

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