Measuring Energy-saving Technological Change:
International Trends and Differences

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Abstract

Technological change is essential for balancing economic growth and environmental sustainability. This study measures and documents energy-saving technological change to understand its trends in advanced countries over recent decades. We estimate sector-level production functions with factor-augmenting technology using cross-country and cross-industry panel data and shift–share instruments, thereby measuring and documenting energy-saving technological change. Our results show how energy-saving technological change varies across sectors, countries, and time and the extent to which it contributes to economic growth and its differences across countries.

KEYWORDS: Non-neutral technological change; capital–labor–energy substitution; growth accounting; sectoral productivity.
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