

# **An Empirical Investigation into the Behavior of CO2 Emissions during Business Cycles**

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## **Abstract**

This paper uses the Hodrick-Prescott filter to decompose per capita CO2 emissions data into long-run cycles and short-term fluctuations. The same is done with per capita GDP and its cyclical relationship with CO2 is analyzed. Seventy-nine countries are studied, and the time periods 1950-2003, 1950-1973 and 1974-2003 are analyzed separately. Large differences in the cyclical relationship are apparent, both among countries and over time. Countries with the largest GDP exhibit the most procyclical behavior, while developing economies display convergence in cyclical behavior. The emissions in countries with relatively high economic growth from 1950-2003 display procyclical behavior like that of developed economies. Clean energy use, measured by the CO2 intensity of energy consumption, is a significant variable in explaining cyclical differences among developed countries.