The relationship between economic growth and carbon dioxide emissions

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(1) Overview

Along with the economic development, world primary energy consumption will also be increased. Since greenhouse gas emissions are mostly in the form of carbon dioxide emissions from burning fossil fuels such as coal, oil and gas, how to take both the economic growth and carbon dioxide emissions reduction targets into account will be the public authorities' tasks. Therefore, this paper will discuss the relationship between economic development and carbon dioxide emissions by applying 70 countries from 1973 to 2007.

(2) Methods

In our empirical work, we divided data based on historical and geopolitical factors into the five areas, such as European Union (EU), Southeast Asia, America and the Middle East and Africa. Furthermore, we investigated the case that countries participate in emission trading by separating countries into regular market or voluntary market. We also adopt panel data model and FGLS methods to implement our empirical analysis.

(3) Results

The coefficients of fossil energy consumption and proportion of industrial added value accounted for GDP are positively significant. From the empirical results form European Union, Southeast Asia and the Americas areas, CO2 emissions increase will be improved through economic growth, that is we find the evidence to support the inverted-U shape EKC. Results for international voluntary market is also in line with the inverted-U shape EKC, that means the effectiveness of CO2 emissions reduction will be achieved through financial transactions. As to the results for regular market, EU Emissions Trading Scheme (EU ETS) supports the N-shape EKC, indicating that the negative relationship between economic growth and environmental pollution.

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