

# Fact or Fiction: The Relationship between Carbon Linkage and Carbon Dioxide Environmental Kuznets Curve

Chien-Ho Wang\*    Chang-Ching Lin<sup>†</sup>    Wan-Jiun Chen<sup>‡</sup>  
Chia-Hsiang Hsu<sup>§</sup>

March 10, 2014

## Abstract

This study tested for cross-sectional dependencies between carbon dioxide (CO<sub>2</sub>) emissions and per capita gross domestic product (GDP) among countries in four regions: Africa, America, Asia, and Europe. When cross-sectional correlations are identified in a group of countries, panel data regression with common factors proposed by Pesaran (2006) is used to determine whether the environmental Kuznets curve (EKC) hypothesis is supported for CO<sub>2</sub> emissions in the respective regions. The empirical results show that a cross-sectional dependency is only absent among African countries and that cross-sectional dependencies are significant among the countries in Europe, Asia, and America. The primary factors responsible for such cross-sectional correlations are regional carbon leakage and GDP growth.

---

\*Corresponding author: Chien-Ho Wang, Department of Economics, National Taipei University, 3F36 Social Science Building, 151 University Road, San Shia, Taipei county, 237, Taiwan ROC, Email wangchi3@mail.ntpu.edu.tw.

<sup>†</sup>Institute of Economics, Academia Sinica, 115 NanKang Taipei Taiwan ROC, Email: lincc@econ.sinica.edu.tw.

<sup>‡</sup>Department of Economics, Chinese Culture University, 55, Hwa-Kang Road, 111 Taipei Taiwan ROC, Email cwj@faculty.pccu.edu.tw.

<sup>§</sup>Department of Economics, National Taipei University, 3F36 Social Science Building, 151 University Road, San Shia, Taipei county, 237, Taiwan ROC, Email: voyage0115@gmail.com.