***The impact of low-carbon energy transition on green growth in Latin America: case study of 14 Latin American countries***

Hwang Young Kyu,Universidad Autónoma de Madrid,+34 628632353,young.hwang@estudiante.uam.es

Ángeles Sánchez Díez,+34 650309880 Universidad Autónoma de Madrid, angeles.sanchez@uam.es

**Overview**

The prevailing economic growth model prioritizing economic is no longer valid due to a great need for a sustainable and balanced growth model encompassing both economic expansion and environmental sustainability and the natural resource conservation, which is important to explaining carbon neutrality and the sustainable development goals. In this context, the green growth is drawing global attention among the policymakers and academics as a new growth strategy to reconcile economic growth and development with environmental sustainability.

**Methods**

The impact of renewable energy transition on green economic growth is examined in this study by a rigorous econometric analysis of the panel data of the 14 Latin American countries from 2003 to 2020 with special focuses on: identifying the primary mechanisms by which renewable energy transition affects green economic growth, assessing the heterogeneous effects of renewable energy transition considering geographical location and natural resources dependency, and evaluating the spatial spillover effects of renewable energy transition on green economic growth.

**Results**

The results of this study confirm that the transition to renewable energy significantly boosts green economic growth; but its effect differs significantly by country’s geographical location, fossil fuel dependence, and mineral resource dependence. This study also identifies five mediating variables between renewable energy transition and green growth: capital investment, dependency on hydropower in electricity generation, residential electricity consumption per capita, human capital, and the creation of formal jobs. Lastly, a negative spatial spillover effect of renewable energy transition is found in the Latin American region.

**Conclusions**

Based on the empirical findings of this study, the following conclusions can be drawn:

First, the positive impact of the renewable energy transition on green economic growth has been confirmed to be robust. This is evident from various standard linear regression models, as well as MG, AMG, and CCEMG estimators, all of which provide consistent estimation results even in the presence of slope heterogeneity.

Second, capital investment, hydroelectricity dependency, per capita residential electricity consumption, human capital, and formal jobs creation were found to have significant mediation effects between renewable energy transition and green economic growth in the LA region. Among these factors, capital investment and human capital were found to have a partial positive mediating effect, whereas residential electricity consumption per capita had a complete positive mediating effect, meaning that the impact of the transition to renewable energy on green economic growth was entirely conveyed through per capita residential electricity consumption. In the cases of hydroelectricity dependency and formal job creation, they showed a partial negative mediating effect, indicating that the positive impact of the transition to renewable energy on green economic growth was partially counteracted by these two factors.

Third, the significant heterogenous effect of renewable energy transition on green economic growth was observed in the LA region. Specifically, the impact of renewable energy transition varies significantly based on a country's geographical location and its dependence on minerals and fossil fuels. Central American countries exhibited a stronger positive effect of renewable energy transition compared to their South American counterparts. Furthermore, countries with a high dependence on minerals and fossil fuels showed a significant and stronger positive impact of renewable energy transition on green economic growth. When using an aggregated measure of resource dependency (total natural resource rents) instead of a disaggregated measure (dependence on minerals and fossil fuels), a similar pattern was observed.

Lastly, based on the estimates from the spatial panel regressions, a significant spatial correlation among the fourteen LA countries was confirmed, indicating that the green economic growth in the LA region shows a significant spatial dependence. According to the estimates, the renewable energy transition was found to have a substantial negative spatial spillover effect (siphon effect). This implies that a local country's renewable energy transition negatively impacts the green economic growth of its neighboring countries.

**References**

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