

The Effectiveness of Energy-related Tax in Curbing Transport-related Carbon Emissions: The Role of Green Finance and Technology in OECD Economies

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Abstract : Being responsible for the largest source of energy-related emissions, the transportation sector is driven by more than half of global oil demand and total energy consumption, making it a crucial factor in tackling climate change and environmental degradation. The present study empirically tests the effectiveness of the energy-related tax (TXEN) in curbing transport-related carbon emissions (CO₂TRANSP) in Organization for Economic Cooperation and Development (OECD) economies over the period of 1990-2020. Moreover, Green Finance (GF), Technology (TECH), and Gross domestic product (GDP) have also been added as explanatory factors which might affect CO₂TRANSP emissions. The study employs the Method of Moment Quantile Regression (MMQR), an advanced econometric technique to observe the variations along each quantile. Based on the results of the preliminary test, we confirm the presence of cross-sectional dependence and slope heterogeneity. Whereas the result of the panel unit root test reports mixed order of variables' integration. The findings reveal that rise in income level activates CO₂TRANSP, confirming the first stage of Environmental Kuznet Hypothesis. Surprisingly, the present TXEN policies of OECD member states are not mature enough to tackle the CO₂TRANSP emissions. However, the findings confirm that GF and TECH are solely responsible for the reduction in the CO₂TRANSP. The outcomes of Bootstrap Quantile Regression (BSQR) further validate and support the earlier findings of MMQR. Based on the findings of this study, it is revealed that the current TXEN policies are too moderate, and an incremental and progressive rise in TXEN may help in a transition toward a cleaner and sustainable transportation sector in the study region.

Keywords : transport-related CO₂ emissions, energy-related tax, green finance, technological development, oecd member states

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