ABSTRACT

Economic activities often contribute significantly to global carbon dioxide emissions. The growth of economic activities, including population increases and prosperity, necessitates access to energy supplies, whether derived from fossil fuels or renewable sources, to meet the needs of industrial, transportation, and household sectors. The G-20 (Group of Twenty), as a highly influential global economic forum collectively representing approximately 65% of the world's population, 79% of global trade, 85% of the global economy, and accounting for approximately 78% of global carbon dioxide emissions, becomes an interesting subject of research to analyze its impact on the increasing global carbon dioxide emissions.

The objective of this research is to test the Environmental Kuznets Curve hypothesis and analyze the six factors influencing carbon dioxide emissions within the G-20 during the period from 2010 to 2020. This study employs a panel data regression analysis technique using the random effect model. Secondary data is utilized, comprising one dependent variable, which is carbon dioxide emissions, and six independent variables, namely GDP, GDP squared, primary energy consumption, population growth, trade openness, and financial development.

The findings of this research indicate that the Environmental Kuznets Curve hypothesis is proven among G-20 member countries. The variables GDP, primary energy consumption, population growth, trade openness, and financial development collectively influence carbon dioxide emissions within the G-20. On a partial basis, GDP, primary energy consumption, and population growth have a positive and significant impact on carbon dioxide emissions, while trade openness and financial development do not significantly affect carbon dioxide emissions within the G-20. Additionally, GDP squared has a significant negative impact on carbon dioxide emissions within the G-20.

Keywords : Environmental Kuznets Curve, G-20, CO_2 Emmisions, Random Effect Model