



## An Econometric Analysis for CO<sub>2</sub> Emissions, Energy Consumption, Economic Growth, Foreign Trade and Urbanization of Japan

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### ABSTRACT

This paper examines the dynamic causal relationship between carbon dioxide emissions, energy consumption, economic growth, foreign trade and urbanization using time series data for the period of 1960-2009. Short-run unidirectional causalities are found from energy consumption and trade openness to carbon dioxide emissions, from trade openness to energy consumption, from carbon dioxide emissions to economic growth, and from economic growth to trade openness. The test results also support the evidence of existence of long-run relationship among the variables in the form of Equation (1) which also conform the results of bounds and Johansen cointegration tests. It is found that over time higher energy consumption in Japan gives rise to more carbon dioxide emissions as a result the environment will be polluted more. But in respect of economic growth, trade openness and urbanization the environmental quality is found to be normal good in the long-run.

### KEYWORDS

Dynamic Causal Relationship; ADF and PP Tests; ADRL Bound Test; VEC Model

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