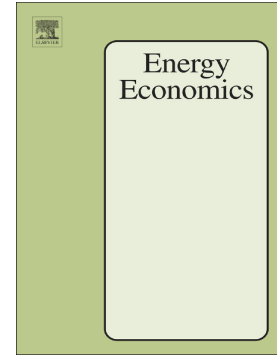


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The Energy Consumption and Economic Growth Nexus in Top Ten Energy-Consuming Countries: Fresh Evidence from Using the Quantile-on-Quantile Approach

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## The Energy Consumption and Economic Growth Nexus in Top Ten Energy-Consuming Countries: Fresh Evidence from Using the Quantile-on-Quantile Approach

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**Abstract:** This paper empirically examines the inter-linkages between energy consumption and economic growth in top ten energy-consuming countries i.e. China, the USA, Russia, India, Japan, Canada, Germany, Brazil, France and South Korea. We use the quantile-on-quantile (QQ) approach of Sim and Zhou (2015) to explore some nuanced features of the energy-growth nexus and to capture the relationship in its entirety. The results show a positive association between economic growth and energy consumption, with considerable variations across economic states in each country. A weak effect of economic growth on energy consumption is noted for the lower quantiles of economic growth in China, India, Germany and France, which suggests that energy as an input has less importance at low levels of economic growth. A weak effect of economic growth on energy consumption is also noted for the highest quantiles of income in the United States, Canada, Brazil and South Korea, which indicates that energy demand decreases with the increase in economic growth as these countries have become more energy efficient. The weakest effect of energy consumption on economic growth is observed at lower quantiles of energy consumption in China, Japan, Brazil and South Korea. The results of the present study can help in the design of energy development and conservation policies for sustainable and long-term economic development.

**Keywords:** Energy Consumption, Economic Growth, Quantile-on-Quantile Approach

**JEL Classifications:** C22, Q43

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