

[DOI: 10.20472/IAC.2017.031.009](https://doi.org/10.20472/IAC.2017.031.009)

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THE RELATIONSHIP BETWEEN ENERGY USE, GDP, CARBON DIOXIDE EMISSIONS, POPULATION, FINANCIAL DEVELOPMENT, AND INDUSTRIALIZATION: THE CASE OF TURKEY

Abstract:

This study investigates the relationship between energy use, GDP, carbon dioxide emissions, population, financial development, and industrialization utilizing ARDL and artificial neural network for Turkey. The data covers the period from 1968 to 2013. The study performed a two stage analysis. At the first stage, we examined the long run relationship and causality between variables. The variables are found to be cointegrated. The Granger causality test results shows that there is a unidirectional causality running from energy use to both carbon dioxide emissions and industrialization. According to the artificial neural network results, the most important effect on energy use comes from GDP. The predicted energy use from 1968 to 2013 has maximum absolute error of % 11.31 and minimum absolute error of %0.07. Neural network evidence shows that the R-square coefficient is 98% for the sample period.

Keywords:

Energy use, ARDL, Neural network, Turkey

JEL Classification: C10, Q43, C22