

Investigating the effect of explanatory antecedents on energy consumption in south africa: A bootstrap ardl analysis

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Energy generation from carbon fuels is a major contributor to greenhouse gas emissions, with fossil fuels being responsible for about seventy-five (75%) of global greenhouse gas emissions and nearly ninety percent (90%) of carbon dioxide emissions. Therefore, it is imperative to support the development of cleaner, more efficient, low-cost, sustainable, and energy-reliable alternative fuels. In this study, we examine the effect of oil prices, ecological footprint, banking sector development, and economic growth on energy consumption in South Africa. We employed the newly developed bootstrap autoregressive distributed lag (ARDL) model to investigate the short and long-term linkages between explanatory antecedents and energy consumption. Our findings reveal that economic growth and ecological footprint have a significant positive effect on energy consumption in both the short and long run in South Africa, indicating that rapid economic growth and improved environmental quality can lead to increased energy use. However, the ARDL results suggest that the industrial structure has a positive and significant effect only in the short run. Furthermore, oil price shocks have a negative and significant relationship with energy consumption in the short and long run, indicating that increased oil prices reduce energy use in South Africa. Based on our study's results, we propose several policy recommendations to government authorities, policymakers, environmentalists, and other stakeholders to develop an energy strategy that aligns with sustainable economic growth and environmental sustainability.

Keywords: Carbon fuels, Greenhouse gas emissions, Bootstrap ARDL, Energy consumption, Economic growth, Ecological footprint, Oil prices, South Africa

Biography

Khalifa Wagdi is a dedicated academic professional specializing in Accounting and Finance, currently serving as a faculty member in the Department of Accounting and Finance at the University of Mediterranean Karpasia in Northern Cyprus.