

Do Energy Demand Management Policies Affect Energy Consumption? Evidence from Nonlinear and Structural Break Tests

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Abstract

The main objective of this study is to answer this important and basic question whether demand management policies can affect the energy consumption in Iran economy or not? Energy consumption management policies will be effective only if the energy consumption time series contains a unit root or in other words if it is nonstationary. When the energy consumption variable is stationary the effect of shocks to the variable will be temporary and vanish after a few periods. In this regard, we can answer the main question of this study using the unit root tests. The main problem with conventional unit root tests like ADF, ... is that when there is a structural break or nonlinearities like asymmetric adjustment in the underlying series these tests can result in incorrect results. Consequently, in this paper instead of conventional tests like ADF we have used three alternative tests including Zivot and Andrews (1992), Lee and Strazicich (2003) and Kapetanios et al. (2003). The first two, incorporate structural break in unit root test and the latter assumes nonlinear exponential smooth transition autoregressive (ESTAR) process as an alternative in the unit root test. In this paper we have used annual data for per capita energy consumption (in Residential, Industry, Transportation, Agriculture sectors and overall economy) over the 1967-2016 period. The results show that the energy consumption in Residential sector is stationary which means that the energy consumption management policies have no