

Disaggregated Energy Consumption and Sectoral Outputs in Thailand: ARDL Bound Testing Approach

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Abstract: *From an economic perspective, energy-output relationship studies have become increasingly popular in recent times, partly fuelled by a need to understand the effect of energy on production outputs rather than overall GDP. This study dealt with disaggregated energy consumption and output of some major economic sectors in Thailand. ARDL Bound Testing approach was employed to examine the co-integration relationship. The Granger causality test of the aforementioned ARDL framework was done to investigate the corresponding causality effect. Results showed that, from year 1980 to 2010, productivity of most scrutinized industries was highly reliant on crude oil and natural gas. However, coal usage in transportation and agricultural industries can be reduced without affecting productivity. Few recommendations are given thereafter for Thailand to better manage their imported and local energy sources.*

Keywords: Sectoral outputs, disaggregated energy consumption, ARDL Bound testing, Thailand, economic growth.

Introduction

Presently, the interest and attention on energy studies have been increased among researchers in order to address the problems caused by repetitive occurrence of energy crises since the first oil shock in the early 1970s (particularly in 1973 and 1979) until the recent massive drop in oil prices. Such crises have substantially heightened many countries' energy bill and affected the nations' productivity growth, causing energy sources to become one of the major growth constraints in term of output growth. This setback, in particular, has motivated numerous researchers to focus on energy-outputs relationship studies rather than the common energy-GDP study, such as Liew, Nathan, and Wong (2012); Costantini and Martini (2010); Ghali and El-Sakka (2004); Collard, Fève, and Portier (2005). Liew et al. (2012) specified that the advantage in investigating the energy-output relationship is to specifically pinpoint the dependency of other sectors on the energy sector in a particular country. In relation to this and taking a step further, this study is contributing to the existing literature through the introduction of a new approach in disaggregating the overall energy sector into sub-energy sectors to provide a more precise picture on the dependency of economy sectors according to specific type of energy.

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