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Energy Consumption and Sectoral Outputs in Laos: ARDL Bound Testing Approach

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ABSTRACT

This study investigates the relationship between different types of energy consumption and outputs of the main economic sectors in Laos, where energy shortage is a major challenge faced by the economy. Our empirical analysis suggests that coal consumption and the outputs of the agricultural, services, transportation, and industrial sectors are co-integrated in the long-run. The industrial outputs and electricity consumption are co-integrated in the long-run as well. At the same time, the Granger causality of ARDL framework has been employed to identify the causality effect among the variables under studied. The causality direction shows different causality effect running from the sectoral outputs towards different types of energy. Based on the causality results, few recommendations have been suggested to organise the energy more effectively within the sectors in Laos to overcome energy shortage.

Keywords: Agriculture Outputs, Services Outputs, Industrial Outputs, Energy Consumption, Laos

INTRODUCTION

Energy is an important input in most production activities, but recent energy crises have gradually become a constraint for most countries' development as it increases the energy prices radically. This is particularly devastating in developing countries since they are still searching for alternative platforms to increase their energy accessibility within the country. On the bright side, energy crises have motivated researchers to conduct different studies to formulate energy policies and to study its impact on economics. Conventionally, energy studies are often carried out to identify the correlation between total energy consumption and aggregate output or overall gross domestic product (GDP)¹. However, such study is less appropriate because different sectors may require different types of energy. So, there is a need to study the energy-output relationship on sectoral basis. This paper intends to fill this gap in the empirical literature.

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¹See for instance, Esso (2010), Erbaykal (2008), Olusegun (2008), Chiou-Wie, Chen & Zhu (2008), Masih & Masih (1998), and Glasure & Lee (1997).