

Does Electricity Consumption have Significant Impact towards the Sectoral Growth of Cambodia? Evidence from Wald Test Causality Relationship

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Abstract

It is recognized that energy-output relationship studies from an economic perspective have become popular among researchers recently. This study deals with the electricity consumption and outputs of some major economic sectors in Cambodia. The newly developed ARDL bound testing approach has been employed to examine the cointegration relationship. The Granger causality test of the aforementioned ARDL framework has also been used to investigate the corresponding causality effect. Analysis and discussion based on the data of Cambodia, for the period of 1980 to 2010, are presented. Interestingly, there is no any cointegration relationship identified between electricity consumption and sectoral outputs. But, causality effect has been identified from electricity consumption towards the sectoral outputs. Based on the findings, few recommendations have been made in the hope of systematizing the energy more efficiently within the scrutinized sectors.

Key words: Sectoral Outputs, Electricity Consumption, ARDL Bound Testing, WALD test.

1. Introduction

The modelling of electricity consumption in every country is important since this source is getting expensive. The energy crisis during the 1970s and high energy prices had negatively affected the economic performance of every sector within the Asian region. In Cambodia, high GDP growth rate over the past 10 years has stimulated substantially-increasing demands for electricity within the country (Poch and Tuy, 2012). The recently published news from the Business Monitor Online (2010) stated that the quality of electricity supply in Cambodia ranked at 121 out of 133 countries; the reason is that the country's power supply services have been heavily damaged by war. Nevertheless, the Cambodian government is recuperating under the support from the World Bank, ADB, Japan, USA, and European Countries (General Directorate of Energy, MIME). At present, the electricity supply in Cambodia is fragmented into 24 isolated power systems centred in provincial towns and cities; all are fully reliant on diesel power stations. The per capita consumption is only about 48 kWh/year and less than 15% of households have access to electricity (urban=53.6% and rural=8.6%). The amount of electricity consumption in the private sector is 0.5%, the service sector takes up 40%, and the industrial sector consumes 14% (World Bank, 2008).

MIME added that the main problem is that electricity-supplying companies such as Independent Power Producers (IPP) and Electricite Du Cambodge (EDC) have distributed their cost energy into the smallest unit. This has made energy expensive and the supply well below Cambodia's level of consumption³. In addition, since Cambodia is a medium-income developing country, being heavily dependent on imported energies can restrain the country's economic growth⁴. This problem is further aggravated when the energy sources are not managed properly. So, the main challenge for the Cambodia government now is in meeting the rising electricity demand of a growing economy. Efficient management of electricity usage can ensure economic growth consistency. Thus, it is crucial that considerable importance is put into identifying the relationship between electricity consumption and sectoral outputs, since this

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³ Poch and Tuy (2012) added that electricity cost in Cambodia remains one of the highest in the region and also the world. Meanwhile, the electricity import rate from neighboring countries is increasing.

⁴ Cambodia mainly imports electricity from Thailand and Vietnam. The total electricity import in 2009 and 2010 are 842.40 million kWh and 1547.31 million kWh, respectively. The percentage change is recorded as 83.68% (EAC Annual Report, 2010).