

Does electricity drive the development of manufacturing sector in Malaysia?

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OPEN ACCESS

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Specialty section:

This article was submitted to Energy
Systems and Policy, a section of the
journal *Frontiers in Energy Research*

Received: 26 February 2015

Paper pending published:
20 March 2015

Accepted: 06 April 2015

Published: 22 April 2015

Citation:

Husaini DH and Lean HH (2015) Does
electricity drive the development of
manufacturing sector in Malaysia?
Front. Energy Res. 3:18.
doi: 10.3389/fenrg.2015.00018

This paper investigates the relationship between electricity consumption, output, and price in the manufacturing sector in Malaysia. We find that electricity consumption, output, and price are cointegrated in the long run. In addition, it has been found that the relationship between electricity consumption and output is positive. In the long run, we find a unidirectional causality from manufacturing output to electricity consumption. This result indicates that the development of manufacturing sector stimulates greater demand for electricity. Government needs to make sure that the planning of electricity supply in the future is in line with the economic development planning to avoid shortage in electricity supply. In the short run, a unidirectional relationship runs from electricity consumption to output is found. A decrease of energy usage in production might reduce the output growth in short run. Hence, we suggest improving the efficiency of electricity usage and some cost-effective sources of energy.

Keywords: electricity consumption, manufacturing output, granger causality, bounds testing for cointegration

Introduction

Manufacturing sector is the second largest contributor of Malaysia's GDP. There are five main types of energy used in Malaysia namely petroleum product, natural gas, coal and coke, electricity, and biodiesel. To be specific, petroleum product is the highest energy used (70%) followed by electricity (15%), natural gas (11%), coal and coke (3.22%), and biodiesel (0.01%)¹. Industrial sector uses electricity the most for production activities compares to other sectors. Particularly, the average growth of electricity consumption in industrial sector was 7% for the period of 1978–2011. Besides, the average growth of electricity generation was 7.6% for the same period of time. These statistics show that the supply of electricity meets its demand.

However, if we compare the output growth with electricity consumption, it clearly shows that the average growth of electricity consumption is greater than the average output growth. The average output growth was 5.9% from 1979 to 2011 while the average output growth in manufacturing sector was only 1.4%. Hence, we can say that the growth of electricity consumption did not drive the economic development much in the country as well as the manufacturing sector.

Numerous studies have researched the relationship between energy consumption and economic growth at the macro level. However, little studies have focused at the micro level such as manufacturing sector. Lean and Smyth (2010a,b) called for further research to explore the impact

¹ Average percentage share of energy mix that used for the period of 1978–2011. Detail information of energy mix used in the manufacturing sector is not available in Malaysia.