

Energy-Growth Causality: Asian Countries Revisited

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ABSTRACT: Understanding the impact of energy consumption on economic growth is an important consideration in the formulation of both energy and environmental policies. Motivated by this development, this paper empirically re-examines the direction of causality and the sign (in the panel sense) between energy consumption (EC) and the gross-domestic product (GDP) for seventeen selected Asian countries. Results reveal long-run stable equilibriums in these countries, while the EC brings about a positive impact on GDP. Causality runs from EC to GDP in the short-run, while the long-run causal linkage exists from GDP to EC. This indicates that energy is a force for economic growth in the short-run, but in the long-run, the EC is fundamentally driven by economic growth. Efficient coordination and cooperation towards the implementation of energy conservation policies to support sustainable economic development should be in the regional agenda.

Keywords: Energy consumption; Panel analysis; Economic growth; Asian countries

JEL classifications: Q43, C32

1. Introduction

Energy consumption has steadily increased over the past few decades in Asian countries due to the population increment and industrial expansion¹. Energy consumption is expected to increase to 159.3 quadrillion BTU in 2015, 187.8 quadrillion BTU in 2020, 217.0 quadrillion BTU in 2025, 246.9 quadrillion BTU in 2030 and 277.3 quadrillion BTU in 2035. The average annual percentage change from 2007 to 2035 in Asia is 2.8 percent, which is higher than other regions, such as the Middle Eastern countries (2.2 percent), Central and South America (1.8 percent), and Africa (1.8 percent) (EIA, 2010; Table 1, 9).

The major users of energy were China and India, who continue to lead the world in relation to economic growth and energy demand growth. Together, China and India accounted for about 10 percent of the world's total energy consumption in 1990 and 20 percent in 2007 (EIA, 2010). China and India's other significant increases include a fast-paced growth in population, rapid economic growth and industrial expansion into other areas of the Asian region.

¹ According to EIA (2008), Asia's total primary energy consumption in 1990 was 47.4 quadrillion British Thermal Units (BTU). This number doubled to about 127.1 quadrillion BTU in 2007.