ABSTRACT

Healthy economic growth is regarded as the most basic materials of any economy to increase the economic production, reduce the poverty and in general enhance the quality of life. World economy has witnessed huge change in the growth performance of countries since the onset of industrial revolution. The industrial revolution in the developed economies of West was made possible only due to the exploitation of fossil fuels which, in turn, was made possible by capital goods innovations that enabled this source of energy to be used efficiently. Thus the combination of the modern technology and energy use is found to be the crucial for the rapid development of economies. The industrialization in the West was accompanied by an energy transition away from traditional biomass, and towards modern fuels. The modern developed economies show that the energy consumption and economic growth go hand in hand, as these economies show high energy consumption as compared to the other less developed economies and these economies consume a fairly high proportion of total energy resources of globe. In order to spur the pace of economic growth, a number of theories have been developed which enriched the growth literature in emphasizing the distinct steps required for raising economic growth. The physical and biological theories has been highly relevant with the role of energy in day to day life, be it for undertaking any physical work, or the production of food by living organisms. However, the theories in economic literature ascribe little role to energy in determining the economic growth of any country. The classical economists declared that land, labour and capital are the main factors of production and they neglected the important role played by the energy in the production process as well as economic progress. Famous growth theories in the literature such as the Harrod-Domar growth model; and the subsequent, well-known theory commonly referred to as the Solow-Swan growth model, among others, claim that energy has nothing to do with the production function, and hence, energy has little relevance with the economic growth. Similarly, other theories proposed by Monetarists and subsequent Endogenous growth theorists also haven’t paid any
attention to the energy as a driving factor for economic growth. In this backdrop, the current study attempts to examine the relationship between energy consumption and economic growth in multivariate framework for the panel of 13 Asian countries. Besides, the study also investigates the relationship between the energy and economic growth for the individual countries. The results from the study prove the existence of bidirectional causality or feedback hypothesis for the selected panel of countries. However, in case of individual countries, the results are diverse, i.e. Japan represent feedback hypothesis, while as growth hypothesis is proven by India, Iran, Malaysia and South Korea. Furthermore, conservation hypothesis is proven by China, Pakistan, Thailand and Vietnam. Finally, Indonesia, Myanmar, Philippines and Turkey show no causality relationship between energy and economic growth. The results from the study may prove extremely helpful in making the decision of energy consumption with regard to boosting economic growth and economic sustainability among these selected countries. The study also found that there is increase in the energy supply especially in the resource rich economies. However, the energy demand is growing very rapidly among all the selected economies. In order to analyze the inequality in the energy use or the disparities in energy use among the selected countries, the study uses the tools of Gini coefficient. The results found that there are the evidences of energy inequality among the countries. However, this inequality has shown the declining tendency over the years but the decline in inequality is relatively very low. It is also found that the high income countries are the ones with high energy consumption. The study also purports to evaluate the possibility of energy inefficiency among the selected economies. The energy efficiency of the selected economies is calculated by the use of DEA methodology. The DEA analysis shows that there is inefficiency in the energy use among the economies. It is also found that the energy efficiency is very high in the high income countries, where as it is very low in the low income countries. Thus, these results suggest that the developing economies should increase their energy efficiency for their sustainable growth.