Electricity Demand for Sri Lanka: A Time Series Analysis

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With an electricity demand of 290 kWh per capita per year in 2001, Sri Lanka's electricity demand has been growing at an average of 6.0% per year from 1986 to 2001 while the peak demand increased on an average of 6.5% per annum from 540MW to 1445 MW. Despite strong growth, Sri Lanka's per capita electricity consumption was about 60% of that of its neighbours, India and Pakistan, which have much lower per capita income levels to that of Sri Lanka.

As far as known there are three previous econometric estimations conducted on energy demand in Sri Lanka. Hope and Morimoto (2003) tested the causal relationship between electricity supply and GDP using Yang's regression analysis. They found out that every MWh increase in electricity supply will contribute to an extra output of around US$ 1120 - 1740 for Sri Lanka. They have used data for the period of 1960- 1998. Amarawickrama and Hunt (2005) in their study on proposed electricity reforms of Sri Lanka, found out that the long run income elasticity of demand is 1.1 and the long run price elasticity of demand is -0.003. Amarawickrama and Hunt used static Engle and Granger two step methodology over a time period of 1971-2002 using Eviews econometric package. The third study is the electricity demand forecast by the generation planning branch of the Ceylon Electricity Board. The econometric method used is not mentioned here but the forecast results are similar to Amarawickrama and Hunt (2005) as mentioned above.

Accurate energy demand forecast is very important to a capital constraint developing country like Sri Lanka where electricity import/export is not available at the moment and in the near future. This study tries to find out how the different estimation methods behave in terms of measuring the elasticity of demand and forecasting the future demand in the context of Sri Lankan electricity supply industry. The forecasted electricity demand using these different econometric techniques are then compared to see if the policy decisions vary based on the chosen econometric method. The chosen econometric methods are: tatic Engle and Granger method (Static EG);Dynamic Engle and Granger method (Dynamic EG);Johansen Method (Johansen); Paseran Shin and Smith method (PSS);Fully Modified Ordinary Least Squares method (FMOLS); and Structured Time Series Method (STSM).

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