Forecasting the demand for commercial energy and its influencing factors in Sri Lanka

A commercial energy plan is a must for a developing country like Sri Lanka, as the availability and access to commercial energy are key components that determine growth in all sectors of the economy. The inability of the country to meet its current demand for commercial energy has deterred many local and foreign investors. Therefore a study of identifying the main aspects affecting this demand for commercial energy and its short term forecasting makes a significant contribution to the country's energy plan. Commercial energy sources in Sri Lanka consist of petroleum products, electricity and coal. A great deal of diversity can be found in the consumption pattern within the petroleum sector, as different products are used for different purposes at varying costs. Of the petroleum products; super petrol, auto diesel, kerosene and furnace oil are singled out for analysis considering their higher contribution to the level of local commercial energy consumption.

A combination of time series analysis and multiple linear regression was carried out and the fitted models were investigated for their adequacy. The time series analysis utilizes monthly demand figures for the period 1977-2000, while annual demand was used for the multiple regression model fitting. The seasonal time series models; SARIMA(0,1,4)(0,1,2)12, SARIMA(0,1,5)(0,1,2)12, SARIMA(0,1,4)(0,1,2)12, SARIMA(0,1,2)(0,1,1)12 and SARIMA(0,1,4)(0,1,1)12 were adequate for short term forecasting of the demand for electricity, super petrol, auto diesel, kerosene and furnace oil respectively.

The regression analysis implied that the demand for electricity in the country is mainly determined by the Per capita income. Thus, pricing policies adopted by the government do not directly influence the demand but may be useful in improving the overall efficiency of electricity use. The demand for Super petrol is affected both by its price and the per capita

income. The price of super petrol and price itself affect the demand for auto diesel. When considering the demand for furnace oil, its price, the mid year population and the price of auto diesel are the most significant. The positive cross price elasticity of demand for auto diesel with respect to the price of super petrol is indicative of the fact that auto diesel also functions as a substitute for super petrol. On the other hand auto diesel is not being utilized as a substitute for furnace oil.