BENCHMARKING OF ELECTRICITY DISTRIBUTION LICENSEES OPERATING IN SRI LANKA

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DECLARATION

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ABSTRACT

Electricity sector regulators are practicing benchmarking of electricity distribution companies to regulate allowed revenue to each company. Mainly this is done by using the relative efficiency scores produced by frontier benchmarking techniques. Some of these techniques, for example Corrected Ordinary Least Squares method and Stochastic Frontier Analysis have econometric approach to estimate efficiency scores, while method like Data Envelopment Analysis uses Linear Programming to compute efficiency scores. Using the relative efficiency scores, the efficiency factor (X-factor) which is a component of the revenue control formula is calculated. The approach used by the regulators to derive X-factor by the relative efficiency scores is varying among regulators.

In electricity distribution industry in Sri Lanka the allowed revenue for a particular distribution licensee is calculated according to the allowed revenue control formula as specified in the tariff methodology of Public Utilities Commission of Sri Lanka. This control formula contains the X-factor as well, but it has been kept zero, since there were no relative benchmarking studies carried out by the utility regulator to decide on X-factor.

In order to produce a suitable benchmarking methodology this dissertation focuses on prominent benchmarking techniques used in international regulatory regime and analyses the applicability to Sri Lankan context, where only five Distribution Licensees are operating at present. The main challenge was to produce robust efficiency scores using frontier techniques for lower sample size (i.e. five) where in contrast many countries have large number of distribution companies or licensees (i.e. large sample size).

Importantly this discussion gives directing signals to the utility regulator on possibility to control allowed revenue of Distribution Licensees according to their efficiencies.

Key words: Data Envelopment Analysis, Corrected Ordinary Least Squares, Distribution Licensees.

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LIST OF ABBREVIATIONS

Abbreviation	Description
CAPEX	Capital Expenditure
CEB	Ceylon Electricity Board
COLS	Corrected Ordinary Least Squares
DEA	Data Envelopment Analysis
DL	Distribution Licensee
GWh	Giga Watt Hours
HV	High Voltage
LECO	Lanka Electricity Company (Private) Limited
LKR	Sri Lanka Rupee
LV	Low Voltage
MV	Medium Voltage
MWh	Mega Watt Hours
O&M	Operations and Maintenance
OLS	Ordinary Least Squares
OPEX	Operational Expenditure
PPI	Partial Performance Indicators
PUCSL	Public Utilities Commission of Sri Lanka
SFA	Stochastic Frontier Analysis