Analysis of Technical Efficiency in the Banking Sector with Respect to Inputs and Outputs

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The efficiency of a bank is examined by using Data Envelopment Analysis (DEA), which is a non-parametric analytical technique. DEA is an approach for evaluating the performance of a set of peer entities called Decision Making Units (DMUs). DEA technique was introduced by the company Charnes, Cooper and Rhodes in 1978 to measure the technical efficiency of decision making units. This technique has been extensively applied in performance evaluation and benchmarking of schools, hospitals and banks.

The efficiency score in the presence of multiple input and output factors is defined as:

Efficiency = weighted sum of outputs / weighted sum of inputs

This study seeks to test the technical efficiency of a state bank in Sri Lanka. Two specifications of DEA were developed for analysis. The first model used in this study aims to measure technical efficiency in intermediation. For this specification, loans and advances, interest income and other incomes were considered as outputs of the bank while interest expenses, personnel costs, premises and establishment expenses were considered as its inputs. The second model aims to measure the technical efficiency of the asset transformation. For this specification loans and advances and other earning assets were considered as outputs while number of deposits, other loanable funds and number of employees were considered as inputs. According to the DEA technique, the number of inputs and outputs is always restricted by the number of DMUs in the sample. The difference between efficient DMUs and inefficient DMUs depends on the number of inputs and outputs which are used in the DEA model.

The technical efficiency of National Savings Bank, Sri Lanka was measured by applying DEA with data from 2001 to 2010. These data are taken at a specific time period, from 1st January to 31st December each year. Microsoft Excel was used to solve the model. Data for this study were taken from the Annual reports of National Savings Bank from 2001 to 2010.