

COMPARISON OF PROFIT EFFICIENCY OF BLACK TEA PROCESSING IN COMPANY OWNED AND PRIVATELY OWNED FACTORIES

SHANAZ THAMIEM¹, L.H.P. GUNARATNE¹ AND K.G.M.C.P.B. GAJANAYAKE²

¹*Department of Agricultural Economics and Business Management
Faculty of Agriculture, University of Peradeniya*

²*Department of Plantation Management
Faculty of Agriculture and Plantation Management
Wayamba University of Sri Lanka.*

Introduction

The tea sector plays a vital role in the Sri Lankan economy contributing around 68% of total agricultural export earnings (Central Bank of Sri Lanka, 2006). It occupies approximately one third of the total agricultural land and provides direct and indirect employment to more than 1.2 million people (Sri Lanka Tea Board, 2007). The Sri Lankan tea industry has the potential to face emerging trends in the global market in terms of resource endowment and climatic suitability to get the maximum profit. However due to inefficient planning and improper technological usage, a continuous slump in profits can be observed compared to other competing countries. Since a substantial amount of resources are already allocated to the industry, it may not be advisable and feasible to further assign resources in order to enhance production and profitability. Therefore, increasing efficiency is the first option to maximize profits at the given level of resources. Accordingly, there is a need to examine the possibility of improving efficiency by reallocating existing resources. Against this background, this study attempted to estimate and compare the profit efficiency of regional plantation company-owned tea factories (RPC) vs. privately-owned tea factories (PVT) in Sri Lanka using Data Envelopment Analysis (DEA).

Data and methods

The approach proposed by Farrell (1957) to measure efficiency was formulated in mathematical programming and named as

Data Envelopment Analysis (Charnes et al. 1978). First it was assumed as constant returns to scale (CRS) and later it was extended to account for variable returns to scale assumption (VRS) (Banker et al.1984). The basic assumption in DEA is that if a given producer is capable of producing Y units of output with X inputs, then the other producers or firms in that particular industry should also be able to do a similar thing if they were to operate efficiently. DEA constructs a piecewise linear frontier over the data to compare the efficiency of the firms within an industry and compare each decision making unit against a peer or combination of peers. DEA measures the efficiency of decision making units in input-orientation where the firm tries to minimize input usage and in output-orientation where the firms try to maximize outputs. Profit efficiency is defined as the maximum achievable profit given the factor prices and the level of fixed factors of that firm (Berger et al.1993).

Data collected for the period from January 2006 to August 2006 pertaining to 240 tea processing factories from eight main tea cultivating districts of all three elevation regions were used for the analysis. The profit efficiencies were estimated using DEAP 2.1 version (Coelli 1996) by specifying the normalized profits as output and the factor prices (normalized prices of green leaf, normalized wage rate, normalized fuel wood price and normalized electricity cost) as inputs of each factory, i.e., decision-making units. The study used the assumption of variable returns to scale to concentrate on the scale of operation of each factory and the

