

# **Changes in Total Factor Productivity Growth and Technological Progress in Paddy Sector of Sri Lanka**

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## **Abstract**

The objective of this study is to analyse regional differences in total factor productivity, efficiency and technological change in the paddy sector by using Malmquist productivity indices (Total factor productivity index) for the period 2002 -2008. For this purpose, panel data were collected for seven districts from annual reports of Central Bank of Sri Lanka and Department of Agriculture. Due to the non- availability of reliable input price data the study uses data envelopment analysis to derive Malmquist productivity index and it examines efficiency change, technical change, pure efficiency change and scale change in the paddy sector of Sri Lanka. Based on the results, it was found that over the period, total factor productivity growth was positive and on average, technical efficiency change contributes 0.6% to the 0.5% of the total factor productivity growth while pure technical efficiency change did not contribute to increase it. Therefore, most of the total factor productivity growth measured for paddy production is ascribable to the technical efficiency change and it was achieved by the scale change. On the contrary, the effects of technical change actually lower the total factor productivity index by 0.1%. The period of positive growth coincided with an increase in usage of fertilizer and new rice varieties while the declines may have been caused by intensification of paddy production in other districts. Certain districts such as Polonnaruwa, Ampara, Hambantota and Anuradhapura, exhibited slightly higher rates of total factor productivity change than others, which seems to have been contributed by higher investment in irrigation, increased adoption of tractors, higher population density and a better agro climatic environment. This good performance of the paddy sector was due to good progress in technical efficiency change rather than technical change. This study highlights the fact that technical change has been the main constraint of achievement of high levels of productivity during the reference period in Sri Lanka.

**Keywords:** Data envelopment analysis, Malmquist index, total factor productivity, technological change