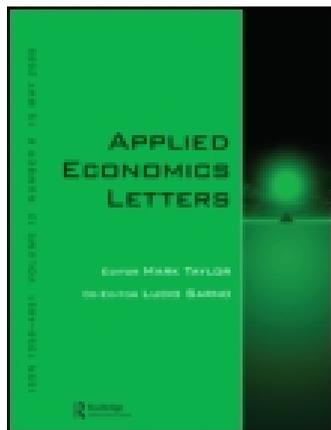


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# Technical efficiency and technological change in Malaysian service industries

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This article examines the total factor productivity (TFP) growth by decomposing it into technical efficiency and technological change for the 20 service industries in a developing country – Malaysia from 1987 to 1992. On average, the TFP growth of the service industries experienced positive TFP growth of 1.8%. The contributing factors for TFP growth was technical efficiency while technological regress was found to dampen the TFP progress.

## I. Introduction

Malaysia has moved into the second tier of newly industrialized economies. Malaysia's gross domestic product (GDP) during 1971–1990 and 1990–1999, grew at an average rate of 6.7 and 8.1% per annum respectively, outperforming other ASEAN economies (Malaysia 1971, 1990 and 2000). This success was mainly attributed to the manufacturing sector. However in recent years, the service sectors have emerged as one of the dominating sectors. For instance, in 2000, the service sector's percentage contribution to GDP in Malaysia excluding government services was 45.2%. Yet, very little attention has been given in regards to the performance and sustainability of these sectors. Hence, measuring the TFP creates an avenue to measure the performance of these sectors while providing valuable guidance on issues of sustainability. Thus, this article intends to bridge the existing research gap by examining the TFP growth in the selected service sectors.

This article contributes in the following ways. First, the nonparametric frontier analysis was used to assess the TFP. Second, while many studies concentrated on the manufacturing sectors (Kalirajan and Tse, 1989; Tham, 1997; Mahadevan, 2002a) this article examines the service sector. Third, the use of more disaggregated data (industry level) significantly reduce some of the weaknesses of the aggregated production function in assessing TFP (Felipe, 1999).

## II. Methodology and Data

By means of a panel data of 20 service industries, given the inputs, TFP indices are measured using the Malmquist index that measures the output distance functions. The Malmquist output-based productivity index between period  $t + 1$  and  $t$  is given as specified by Färe *et al.* (1994) as follows:

$$Mo(y^{t+1}, x^{t+1} | y^t, x^t) = \left[ \frac{d_o^t(x^{t+1}, y^{t+1})}{d_o^t(x^t, y^t)} x \frac{d_o^{t+1}(x^{t+1}, y^{t+1})}{d_o^{t+1}(x^t, y^t)} \right] \frac{1}{2} \quad (1)$$

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