

# **Factor Determinants of Decomposed Total Factor Productivity Growth: Evidence from Japanese Manufacturing Firms**

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## **Abstract**

To decompose total factor productivity (TFP) growth into technical progress (TP), technical efficiency change (TEC), allocative efficiency change (AEC) and scale efficiency change (SEC) and to identify the factors that determine each TFP component, this paper applies a stochastic frontier approach to Japanese manufacturing firm-level data from 2000 to 2006. Empirical results show that TFP have increased in almost every industry due to enhancing TP, which had been supported by slightly improving AEC and SEC. However, deteriorating TEC provides major concern in promoting TFP growth. Regarding determinant factors, the quality of employees, imports and outsourcing represent most important determinants of TEC, whereas foreign ownership represent that of TP. The impact of firm size on SEC is significantly negative across industries, and AEC determinants are also identified. The effects of the other factors are less systematic and vary across industries.

JEL Classification Codes: D24; C23; O47

Keywords: Stochastic frontier, total factor productivity, technical efficiency, technical progress, scale efficiency, allocative efficiency, Japanese manufacturing

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