

# **IMPACT OF ORGANIC WATER POLLUTANT EMISSIONS ON MALAYSIA'S MANUFACTURING SECTOR PRODUCTIVITY GROWTH**

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## **ABSTRACT**

The methods that use to measure productivity growth generally ignore the pollutants that are produced by the industrial process. For example, pollutant emissions generated as undesirable output beside the main output of Malaysia's manufacturing sector are excluded from the productivity accounting framework. This study aims an extended productivity measure that takes pollutants into account internalisation of Biochemical Oxygen Demand (BOD) as measure of organic water pollutant emissions into production function as un-priced input. Two models were generated from the production functions to measure manufacturing sector productivity growth. The first model was the decomposition of output growth into changes of capital, labour, intermediate inputs, BOD emissions and total factor productivity growth. The second model was the decomposition of labour productivity (output per worker), into capital deepening (capital per worker), material-labour ratio (material per worker) BOD emissions intensity (BOD emissions per worker) and total factor productivity growth. The results show that there was a slowdown in the contribution of total factor productivity growth in general and a negative impact of BOD emissions produced by the sector in particular compared with other productivity indicators of the sector when the BOD is internalised in the model.

Keywords: BOD emissions; economic impact; manufacturing sector; productivity growth