ABSTRACT


This research is generally aimed at studying the production capability, technological change, technical efficiency and the sources of growth of medium and large enterprise using the concept of stochastic production frontier function. In particular, the aim of the study is to analyze: (1) the performance of Indonesian manufacturing industries such as production, input elasticity, economic of scale, (2) the technological change and its impact on the use of production factor, (3) the level of technical inefficiency and its causes, and (4) the total factor productivity growth of medium and large enterprise.

The estimation model for production function used translog stochastic production frontier using labor, capital, raw materials, and exogenous technology as inputs. The calculation of input elasticity, economic scale, technological change, technical inefficiency and the total factor productivity growth follows inefficiency model in time varying conditions of technical inefficiency using pooled data (cross section 6 sectors from 1997 to 2002). The model was estimated using the maximum likelihood estimation method by choosing the estimation of technical efficiency effect model (TE-Effect Model).

The result showed that: (1) the translog stochastic production frontier model could explain the production phenomenon and inefficiency effect occurring in manufacturing industries in Indonesia, (2) the economic of scale of Indonesian manufacturing industries was in the condition of increasing return to scale with the output elasticity on labor higher than that on capital, (3) medium scaled industries tended to be more efficient than large scaled industries whose sources of inefficiency had already been identified, among them are production capacity, access to financial market, export activities, tax, and energy utilization which had a positive impact on the effort to decrease technical inefficiency, while the use of women’s labor tended to bring about the increase of technical inefficiency, (4) technological change indicated the availability of technological progress but the change was decreasing rate which would supposedly result in the technological stagnation in the future, and (5) the technological change was the main source of the growth of total productivity factor then followed by the change of economic scale and technical efficiency.

Keywords: Indonesian manufacturing, stochastic production frontier, total factor productivity, technological change, technical inefficiency