Meta-Frontier Analysis of Intensive and Semi-Intensive Fish Farms in Ghana

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Abstract

This study considers a cross sectional data of 210 farms to analyze the technical efficiency levels of intensive and semi-intensive fish farms in Ghana using the meta-frontier approach. This technique takes into consideration farms that operate under different technologies. It estimates technology gap that measures output from the frontier production function for the individual systems relative to the potential output that is defined by the meta-frontier function. The study finally identifies the determinants of technical efficiency. The results reveal that the intensive system of fish farming exhibit increasing return to scale, whilst the semi-intensive system exhibit decreasing return to scale. The combined effect of operational and farm specific factors are identified to influence technical efficiency of both systems although individual effects of some variables are not significant. The mean technical efficiency relative to the meta-frontier is estimated to be 0.68 for the intensive system and 0.79 for the semi-intensive farms. The study concludes that the semi-intensive system of fish farming is more technically efficient than the intensive system. However, increase in the scale of production in the intensive system to take advantage of economics of scale may enhance efficiency of production. Key words: Meta-frontier, intensive, semi-intensive, fish farms.