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Abstract

The impact of land fragmentation on farmers' technical efficiency has been inconclusive in previous studies due to demand and supply side determinations. In this paper, panel data stochastic frontier model was applied to estimate the impact of land fragmentation on farmers' technical efficiency. A joint maximum likelihood estimation technique was employed to simultaneously estimate both Cobb-Douglass production frontier and inefficiency models. The study used the Ethiopian Socio Economic Survey (ESS) data of three rounds collected by the World Bank and Central Statistical Authority (CSA). From the estimation results, it was found that land fragmentation measured by number of plots and plot distance positively and significantly affects farmers' inefficiency. In addition, the study assessed the impact of land fragmentation on technology adoption so as to identify the possible mechanism through which land fragmentation could affect farmers' technical efficiency. The result suggests that plot distance could discourage farmers from adopting new technology while having many plots may encourage farmers to adopt chemical fertilizer. Agro ecological conditions, infrastructural variables and regional dummies that could influence production thereby technical efficiency of farmers were controlled in the estimation process. Expanding off-farm employment opportunities and land conservation investments could be policy direction to minimize further land fragmentation, sustain land resource and enhance agricultural productivity in the Ethiopia.