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Technical Efficiency of Farming Systems and its Determinants in East Gojjam, Ethiopia

BAMLAKU ALAMIREW ALEMU, ERNST-AUGUST NUPPENAU

Justus Liebig University, Institute for Agricultural Policy and Market Research, Germany

Abstract

Following the seminal work of Farrell (1957) and the influential Shultz's (1964) "poor but-efficient" hypothesis, several studies have been conducted in different countries to examine technical efficiency of smallholder farmers. In Ethiopia, however, the literature is scanty. More importantly, little has been done on the investigation of efficiency variations across agro-ecologies. It is to be noted that studies considering agro-ecological zones will have important policy implications to identify appropriate development strategies thereby enhancing the current performance of the agricultural sector. The present study is, therefore, an attempt to fill an existing gap by examining the level of technical efficiency and its determinants across agro-ecological zones in eastern Gojjam, Ethiopia. From our sample, it can be observed that there exists a 64% of variation in the total output due to technical inefficiency. Therefore, maximum likelihood estimates were preferred to OLS to avoid biased results. From the stochastic frontier analysis, the mean technical efficiency (ranging from 36.15% to 92.66%) was found to be 75.08%. The results of the F-test in ANOVA show that there exists a statistically significant difference in technical efficiency between agro-ecologies with dega areas scoring the highest. Maximum likelihood estimates also indicate that the coefficients for land, draft power, labour, and fertilisers are positive and highly significant. Since education, proximity to markets, and access to credit were found to reduce inefficiency levels significantly, future endeavours may need to look into mechanisms by which farmers can get access to better ways of farming through trainings, onsite visits by extension agents, improved market outlets and reduced liquidity constraints.

Keywords: Agroecology, cereal production, Ethiopia, technical efficiency, stochastic