Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Microcredit and Agricultural Technical Efficiency: Analysis of Poultry Production in Dormaa Municipality of Ghana

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Abstract

The importance of poultry globally cannot be undermined. Albeit, current constraints of the Ghanaian poultry sector have resulted in its penchant importation of poultry products to meet the supply deficit. Studies have linked this menace mainly to credit access constraints faced by farmers. This study therefore examined the impact of microcredit on the Technical Efficiency (TE) of poultry farmers and its role on Ghana's quest to be sovereign in protein supply. Farm level data were collected from 67 borrowers ($\geq$ 2 years) and 45 non-borrowers, randomly selected from the Dormaa Municipality of Ghana, using key informant interview and semi-structured questionnaire. We applied the Cobb-Douglas Stochastic Frontier Production Function with Technical Inefficiency (TI) incorporated, to estimate farm-specific TEs and the effect of microcredit on poultry farmers' TE. The results revealed that 51.2 % of deviation of the observed output from the frontier output and 81 % of variation in total output were related to TI presence, implying a bigger room for improvement. Albeit, farmers produced at Increasing Return to Scale (i.e. return to scale = 1.10). Enhancing TE therefore requires investments to improve the chicks, drugs and especially feed quality (i.e. have positive impact on productivity), whilst reducing the cost of labour and services which influenced productivity inversely. In addition, access to microcredit, education and farming experience significantly reduces TI whereas high income and off-farm income significantly increased farmers' TI. Addressing the challenge of pretreatment characteristics and selection bias that are not considered under the TI model, we adopted the Generalised Propensity Score (GPS) matching, considering microcredit as a continuous treatment variable, for justification. The estimated dose-response function based on a balanced distribution of carefully selected covariates again shows that farmers' TE increase as their level of microcredit received increase. This can improve productivity and domestic supply.

In conclusion, the GPS is superior to binary treatment approaches due to its ability to answer the counterfactual question "what would have happened to a given unit of farmers had they received a different level of treatment". Ghana's quest to be protein sovereign can be fulfiled if smallholder poultry farmers' access to microcredit is ensured.

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Keywords: Counterfactual, dose-response function, generalised propensity score, microcredit, return to scale, technical efficiency