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Quantifying Heterogeneity, Heteroscedasticity, and Publication Bias effects on Technical Efficiency Estimates of Rice Farming: A Meta-Regression Analysis

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Abstract

There has been increasing interest in the use of meta-regression analysis to evaluate the effects on efficiency estimates of publication bias, study characteristics and heteroscedasticity. However, there is no study considering these issues for rice farming efficiency despite a rapidly growing literature on rice. This study attempts to fill the gap and investigates how rice efficiency estimates are influenced by study characteristics such as estimation methods used, functional form choice, and data in addition to heteroscedasticity and publication bias. The sample consists of 443 observations extracted from 175 primary studies on the technical efficiency of rice farming published in English over the last three decades. These studies were identified through a systematic search from online databases and publisher websites. The study employs several commonly used models (e.g., ordinary least squares, tobit, fractional regression, weighted least squares and random-effects meta-regression models) to assess the reliability of its estimates. The results show that there is no clear evidence of publication bias effects on efficiency estimates, but we do find that efficiency estimates are affected by study-specific characteristics. These findings have implications for practitioners and policymakers with interest in designing studies, estimating models, and interpreting or using generated results.

Biography

Phuc T. Ho just graduated with a PhD in Agricultural Economics from the UWA School of Agriculture and Environment. His studies were sponsored by an Australia Award Scholarship. His PhD thesis is on "Profit efficiency and rice variety choice in rice farming in Vietnam: a stochastic frontier analysis approach". He has a bachelor's degree (2009) in Agricultural Economics from University of Economics, Hue University, Vietnam, and a master's degree (2014) in Agricultural and Resource Economics from Kasetsart University, Thailand, where he received the joint sponsorship of IDRC-SEARCA Scholarship (Philippines) and Vietnamese Government Scholarship. He has taught at the University of Economics, Hue University, after completing his bachelor's degree. His research interests include efficiency and productivity analysis, impact evaluation of technology adoption, economics of production and consumer behavior, forecasting, and planning.

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