



Methodological Evaluation of Smallholder Farm Systems in Ghana Using Difference-in-Differences Models for Cost-Effectiveness Analysis

Robert Owusu¹, Nana Agyeipong²

¹ Food Research Institute (FRI)

² Department of Advanced Studies, Food Research Institute (FRI)

Published: 06 August 2011 | **Received:** 16 March 2011 | **Accepted:** 06 July 2011

Correspondence: rowusu@hotmail.com

DOI: [10.5281/zenodo.18924718](https://doi.org/10.5281/zenodo.18924718)

Author notes

Robert Owusu is affiliated with Food Research Institute (FRI) and focuses on Environmental Science research in Africa.

Nana Agyeipong is affiliated with Department of Advanced Studies, Food Research Institute (FRI) and focuses on Environmental Science research in Africa.

Abstract

Smallholder farming systems in Ghana are crucial for food security and rural development. However, their economic viability is often questioned due to high operating costs. A difference-in-differences approach was employed to analyse changes in farm costs before and after implementing specific interventions. Data were collected from two groups of smallholder farmers: those who received training and inputs (intervention group) and a control group that did not receive these supports. The model accounts for potential confounders through regression analysis. The DID model revealed significant cost reductions in the intervention group, with an estimated reduction of 20% in total farm costs compared to the control group. This finding suggests that targeted interventions can substantially improve economic efficiency among smallholder farmers. This study provides empirical evidence supporting the use of DID models for assessing the cost-effectiveness of agricultural support programmes in Ghanaian smallholder farming systems. The findings suggest that policymakers should prioritise funding and resource allocation to smallholder farmers, particularly those who have demonstrated responsiveness to training and inputs. Future research could explore longer-term effects and scalability of these interventions. The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, econometric, randomized, precision, productivity, stochastic, impact*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge