

The Impact of Small-Scale Irrigation on the Income of Rural Households and Determinants of Its Adoption: Evidence from Dehana Woreda, Ethiopia

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Abstract : Farming irrigation plays a crucial role in rural development strategies, impacting both annual household income and livelihood. This research aims to evaluate the factors influencing irrigation participation and assess the impact of small-scale irrigation on rural households' annual income. The study collected data from 287 farmers in the Dahana district of northern Ethiopia. The research investigates the driving forces behind farmers' decisions to adopt small-scale irrigation and its effect on annual income gain. The findings reveal that several factors positively influence the probability of adoption, including access to credit, cultivated land size, livestock holding, extension contact, and the education level of the household head. Conversely, the distance to local markets and water schemes negatively affects the likelihood of adoption. To understand the differences in annual income between farm households that adopted irrigation and those that did not, a simultaneous equations model with endogenous switching regression is estimated. This accounts for the heterogeneity in the adoption decision and unobservable characteristics of farmers and their farms. The analysis compares the expected income gain under actual and counterfactual scenarios, considering whether the farm household adopted irrigation or not. The study reveals that the group of farm households that adopted irrigation has distinct characteristics compared to those that did not adopt it. Furthermore, the research demonstrates that the adoption of irrigation practices leads to an increase in annual income. Interestingly, the impact of small-scale irrigation on annual income is greater for the farm households that actually adopted irrigation compared to those in the counterfactual scenario where they did not adopt. Based on the findings, the researcher concludes that small-scale irrigation is a practical solution for meeting household financial needs in the study area. It is recommended that investments in small-scale irrigation continue to further improve the livelihoods of rural farming communities by enhancing annual income gains.

Keywords : small-scale irrigation, income, rural farm households, endogenous switching regression, user, non-user

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