

Evaluating Poverty Impacts of Base of the Pyramid Irrigation Technology Supply: IDE's Rolling Baseline Approach to Household Income Impact Assessment

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Abstract

In countries with a history of multiple and spatially overlapping agricultural development projects, it is difficult, if not impossible, to find proper 'treatment' and 'non-treatment' groups and derive the 'treatment effect' as a proxy for attributable household income impact. In self-selected groups of irrigation technology customers, confounding variables make income comparisons even more difficult. We present a methodology for assessing changes in household income attributable to technology adoption by smallholder farmers in Nepal. The rolling baseline survey methodology was developed to evaluate the work of IDE, a non-profit organization that develops and promotes market-based supply chains of low-cost micro-irrigation equipment for households living at the bottom of the pyramid. Household income is calculated yearly by estimating the gross margins of farm and off-farm activities, before and after technology adoption. Pre-adoption household incomes of successive cohorts are used to construct a proxy control for exogenous factors such as price fluctuations and weather conditions. This paper describes the design and implementation of the method in Nepal and tests assumptions underlying the methodology related to inter-cohort variation and recall bias. These tests indicated the need to adapt the initial design incorporating two additional design elements in the survey framework: a more robust exogenous factor coefficient, calculated using measured income changes in a control cohort, and a recall bias coefficient, based on test-retest scores from cohorts reporting annual income in two measurements with changing recall periods. The adapted rolling baseline methodology is suited to evaluate income changes attributable to technological innovations with impact over short periods of time.

Key words: Impact evaluation, Rural development, Farm economics, Survey methodology, Experimental methods and Nepal

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