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# Effect of Improved Potato Varieties Adoption on Farmers' Income in Ethiopia: An Endogenous Switching Approach

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**Abstract :** In Ethiopia, improved potato varieties are essential for food security, but smallholders' adoption of improved technologies limits their productivity. For this study, data was collected based on a structured questionnaire randomly collected from the 329 sample farmers (158 adapters and 171 non-adopters). We estimate the adoption of improved variety and causal impact using Endogenous Switching Regression (ESR), and a propensity Score Matching (PSM) was used to test the treatment effect. This helps us estimate the effect of improved potato variety on smallholder farmer income by controlling for the role of the selection bias problem stemming from both observed and unobserved heterogeneity. According to the result, key determinants influencing adoption include livestock ownership, access to extension services, and farming experience, which positively affect the likelihood of adopting improved varieties. In contrast, access to irrigation negatively correlates with adoption, suggesting that farmers with reliable water sources perceive less need for improved varieties. The ESR model result confirmed that improved potato variety adoption increases the smallholder farmer income with an estimated gain of 8.77%. Thus, to improve the potato variety of the farming households, the government should give due emphasis to potato production, and the extension services need to be strengthened.

**Keywords :** adoption, improved potato varieties, endogenous switching regression, Ethiopia
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