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“Development on the margin”

Accounting for Farmers’ Risk Preferences in Modelling Land Use Decisions in Marginal Environments

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Abstract

Real world decision-making entails an element of risk, which is particularly true for land use decisions by smallholder farmers in marginal environments. Consequently, an individual’s level of risk aversion may be a crucial determinant of such decisions. However, in microeconomic models attempting to explain decision-making processes a measure of individuals’ risk preferences is usually lacking. We address this shortcoming by testing the explanatory power of several hypothetical and non-hypothetical measures of risk preferences in an econometric model explaining land use decisions in a fragile upland area of Vietnam.

In the mountainous district of Yen Chau, maize has become the dominant cash crop accounting for 65 % of farmers’ total cash income, on the average. Considerable output price fluctuations and adverse environmental effects in terms of soil erosion imply that this specialisation in maize production is a relatively risky livelihood strategy. Among others, the level of risk a farmer faces will depend on (1) the characteristics of the maize variety used and (2) the farm-level degree of specialisation on maize production. Hence, the objectives of this study are to investigate (1) determinants of farmers’ choice between riskier and less risky maize varieties, and (2) determinants of the farm area share allocated to maize, accounting for farmers’ risk preferences as an explanatory factor in both decisions. Based on data collected in a random sample of 300 households, we estimate a two-stage regression model, where a probit regression identifies determinants of variety choice, and a subsequent OLS regression identifies factors influencing area allocation, accounting for possible unobserved factors affecting both variety choice and area allocation. Whereas such unobserved factors commonly include the level of risk aversion, we test the explanatory power of different empirical measures of risk preferences in our model, in addition to other potential influencing factors related to farmers’ resource endowment and market access. The measures include hypothetical choices about changing the household’s sole income earning activity and selling an inheritance, self-assessment questions eliciting the level of risk aversion, a non-hypothetical measure based on Holt and Laury lottery-choice task decisions with actual payouts, and a factor analysis based index combining several measures.

Keywords: Econometric modelling, land use decisions, risk preferences, Vietnam