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Shock Experience, Risk Aversion, and Farm Production: Evidence from Rice Farmers in Thailand

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Abstract

Rice is one of the most important crops for food security and rural livelihoods in developing countries. However, the current rice farming practices heavily rely on synthetic fertilisers and pesticides to achieve a higher rice productivity. Although rural households in developing countries are living in a highly vulnerable environment with a wide range of adverse shocks such as weather shocks and pest/disease shocks, there are few papers taking these aspects into account when simultaneously estimating their impacts on risk attitude and crop production. Farmers' behaviour under risks might explain low agricultural productivity and vicious cycles of poverty. Indeed, uncertainties caused by adverse shocks can affect rural households' risk attitude that leads to improper applications of inputs and, therefore, reduce their farming technical efficiency. This paper aims to (i) identify determinants of farmers' risk preferences, and (ii) investigate the influence of risk preferences on input use and farming technical efficiency in the context of weather and pest/disease shocks. We use a panel dataset of 1200 identical rice households collected in 2013 and 2017 from the Thailand – Vietnam Socio-Economic Panel (TVSEP) to address these research problems. The results from fixed-effects estimations with instrumental variables show that fertilisers and pesticides are risk-decreasing inputs in Thailand. In other words, rice farmers, who are more unwilling to take risks, tend to apply more fertilisers and pesticides. Besides, in the context of shocks, farmers appear to apply more inputs, however, these shocks are additional factors that negatively affect farming efficiency of rice production. More importantly, the estimation results from the four-quartile groups of asset values show that the correlation of farmers' risk attitude and technical efficiency are only significant in the two poorer groups. This further implies that more risk-adverse farmers in less wealthy groups overuse inputs and this improper application leads to lower farming efficiency. We suggest that the stimulation of policies on providing production insurance mechanisms and enhancing farmers' awareness of proper application is critical to mitigate adverse impacts of shocks and reduce overuse of chemical inputs.

Keywords: Farming efficiency, input application, rice production, risk preferences, shock experience