

The Role of Risk in the Context of Climate Change, Land Use Choices and Crop Production: Evidence from Zambia.

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Abstract

The effects of climate change on yield and price volatility and associated producer responses have received much less attention than the impacts of changing mean temperatures and precipitations, if one excludes research on insurance instruments. This study examines the empirical importance of the risk environment on the impacts of climate change on farm land allocations and consequent effect on agricultural output in Zambia. We use a discrete-choice model (nested logit) consistent with a mean-variance utility function to model farm-level land allocation to crop production. Results indicate that risk-reducing decisions reinforce the trend to shift away from maize production. These decisions represent a form of adaptation to deteriorating growing conditions due to climate change. While this form of adaptation appears to pay off as a computation of per-capita daily available nutrients reveals, the opportunity cost of these decisions is evident after scenario in which yield variability is reduced to zero is simulated. Reduction of yield variability leads to land allocations that result in a sizable increase in total crop production and a significant increase in available per-capita daily calories. Important conclusions can be derived from this analysis. First, risk matters and it cannot be ignored. When the economic effects of climate change are considered, decision-making under uncertainty and risk should be at the forefront of the problems that need to be analyzed. Second, concentrating on farm-level effects of responses to climate change is not sufficient it is essential that the aggregate effects individual decisions are evaluated. Third, results indicate that increased efforts in risk management and in developing policies aiming at reducing risk can lead to significant positive outcomes.