

Risk Implications of Farm Technology Adoption in the Ethiopian Highlands

Risk implications of farm technology adoption vary by technology type. If properly implemented, the safety net program and the weather insurance programs currently piloted in some parts of Ethiopia are actions that could hedge against downside risk.

By Mahmud Yesuf, Menale Kassie, and Gunnar Köhlin, MAY, 2009

In countries where insurance and credit markets are thin or missing, production and consumption risks play a critical role in the choice and use of production inputs and adoption of new farm technologies. Adoption of new farm technology could increase production risk either by increasing yield variability or increasing probabilities of crop failure. It is therefore important to fully understand the risks of farm technology adoption so as to design appropriate adoption and conservation policies and risk-hedging strategies.

Findings from Ethiopia reveal that most of the conventional inputs are important determinants of mean output. But, these inputs (except for fertilizer inputs) are not equally important in explaining second (variance) and third moment (skewness) estimates. Fertilizer is found to be reducing yield variability but increasing the probability of crop failure. Adoption of soil and water conservation technologies is found to reduce the probability of crop failure despite having weak effect on average yield and yield variability.

Key Points

- Fertilizer adoption reduces yield variability, but increases the risk of crop failure.
- Adopting soil and water conservation technology has no impact on yield variability, but reduces the downside risk of crop failure.

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Policy implications and recommendations

This study has several important policy implications. First, the risk implications of farm technology adoption vary by technology type. For example, in the case of Ethiopian highlands, fertilizer adoption reduces yield variability, but increases downside risk; whereas soil conservation technology has no impact on yield variability, but reduces the downside risk of crop failure. Second, policies based on only the average yield and yield variability could be misleading. A production input could be risk-increasing in terms of yield variability. But, it could as well be risk increasing in terms of enhancing the probability of crop failure or downside risk. Third, policies that promote adoption of fertilizers should be complemented by strategies that hedge against downside risk. In this respect, if properly implemented, the safety net program and the weather insurance programs currently piloted in some parts of Ethiopia are actions in the right direction.

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ABOUT THIS BRIEF

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