

Producer Insurance and Risk Management Options for Smallholder Farmers

Vincent H. Smith

Professor, Department of Agricultural Economics and Economics,
Montana State University &
Director, AEI Agricultural Policy Research Program

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The Issues

- Many smallholder households face extraordinary challenges with respect to income and food security
- Most of those households earn the majority of their real incomes from crop and livestock operations
- Crop yields and livestock production are subject to substantial production risks (as well as price risks for marketable surpluses)
- Perceived and real production and financial risks associated with new more productive technologies may inhibit their adoption

The Issues (cont'd.)

Analysts and policy makers have therefore become increasingly concerned about:

- A. How smallholder farmers manage and cope with risk
- B. The potential for governments and international agencies to improve and expanding the array of risk management strategies available to those very poor farmers.

Potential Policy and Aid Agencies Facilitated Risk Management Initiatives

- Agricultural insurance schemes
- Improving access to credit from commercial financial intermediaries (microfinance, etc.)
- Facilitating local coping mechanisms
- Providing improved technologies (seed, fertilizer, etc.)
- Targeted disaster aid and cash transfers
- “Traditional” development programs such as Ag R and D, extension, irrigation programs, transport and communications infrastructure

Incentives for the Adoption of New Risk Management and Coping Strategies

- Risk aversion (most smallholder farmers appear to exhibit moderate risk aversion)
- Most smallholders do, however, want to avoid the consequences “extreme left tail” catastrophic loss events (perfect or near perfect income and consumption smoothing is not the goal – too expensive relative to the benefits)
- Currently smallholders already use many risk management and risk coping strategies
- These existing strategies largely define how smallholders will assess the benefits and costs of new risk management strategies such as index insurance (Wright, 2014; Binswanger-Mkhize, 2010).

Short Term Smallholder Risk Management and Risk Coping Strategies

- On farm enterprise diversification
- Off farm work
- Crop loss mitigation
- Spatial diversification of farm activities
- Explicit self-insuring strategies such as food storage and holding livestock assets
- Borrowing or receiving gifts from extended family members
- Borrowing from individual lenders (e.g., wealthier farmers), semi-formal community organizations, or local financial credit institutions

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Longer Term Smallholder Risk Management and Risk Coping Strategies

- Improvements in land quality
- Investing in farm specific or community irrigation systems
- Investments in livestock herds as a longer run enterprise diversification strategy
- Resource sharing arrangements among villagers to obtain risk reducing inputs like agricultural chemicals at a lower cost.
- Longer term social arrangements through marriages, extended family relationships, etc. that provide spatial diversification and more broad based informal insurance

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Informal Insurance Programs

- Informal insurance schemes take many forms (based on extended family, semi-formal groups within a village, etc.)
- May be implicit or explicit arrangements
- Indemnities provided by group members to the household in need
- Premium for any given household is the promise to provide help to other group members when they are in need
- Schemes are inexpensive, flexible, and address liquidity issues (for example, no need to pay premiums prior to the occurrence of a loss)
- However, the insurance may fail when most needed because of extreme adverse events that affect all group members

Commercial and Other Formal Insurance Programs

- All risk (Multiple Peril) Insurance based on a farm's yields
 - Almost universally viewed as commercially infeasible in either a developed country or developing country setting because they are expensive to deliver and manage
- Weather or Satellite Plant Growth Image Based Index insurance
 - Advocated as a potentially commercially feasible alternative by at least some analysts and policy makers

Commercially Provided Index insurance at the smallholder level

- Solves moral hazard and, to a large extent adverse selection problems and cheaper to offer but:
 - Basis risk is a real issue
 - Relatively large per hectare fixed costs of supplying coverage to individual farmers who manage one or two hectares of land
 - Reinsurance and financial capital cost incurred by primary insurers are not trivial
 - Loading factors required tend to be in the range of 25 percent of the expected indemnities
 - Farmers are generally unwilling to pay more than about a 9 percent loading factor for crop insurance coverage

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Basis Risk Example (from Smith and Watts, 2010)

Rainfall Index-Area Yield Correlation	Probability of Indemnity Event		
	No Indemnity	Small Indemnity ^A	Large Indemnity ^B
0.40	0.661	0.179	0.159
0.60	0.590	0.219	0.192
0.80	0.479	0.316	0.205
0.90	0.377	0.429	0.194

Using Government and Foreign Aid Agency Resources to Support Index Insurance for Smallholders

- Central question is whether this is the most efficient use of government or foreign aid agency funds to accomplish any of the desired goals
- The evidence suggests that using the funds in other ways to facilitate risk management and coping strategies may be more efficient: for example:
 - Subsidizing adoption of soil conservation practices through cash payments (Marennya et al)
 - Providing insurance at the group level within a local community (de Janvry et al)
 - Predictable disaster aid programs may that be more cost effective
- Little evidence that index insurance will provide much incentive for the adoption of new technologies by smallholders, not least because most don't purchase the insurance unless it is subsidized.

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Index Insurance and the Provision of Credit

- Two Potential Credit Related Uses of Index insurance
 - Providing index insurance to credit institutions based on their total farm loan portfolios as an incentive to supply credit in rural markets by protecting them against extensive defaults in the case of area wide adverse events
 - Allowing credit institutions to bundle an index insurance product with loans to a farmer
- In either case, the indemnity is likely to accrue to the lending institution

Index Insurance and the Provision of Credit (cont.)

- Both approaches increase the price of a loan to smallholders (unless the index insurance is subsidized) with adverse effects on their input purchase and net incomes
- Moral hazard problem exists with respect to the lending institution's incentive for "strong loan management" practices

Summary

- Smallholders already use many risk management and risk coping strategies
- Formal index insurance targeted to smallholders seems more likely to be a substitute than a complement for those strategies
- Index insurance targeted to local community groups or provided to credit institutions maybe more effective but:
- No guarantee that is necessarily the case

Summary

- Some evidence that if smallholders use micro-insurance then they will adopt improved seed technologies they perceive as riskier but very few buy the insurance in the first place (unless perhaps it is subsidized).
- However, investing government and aid agency funds in other more traditional ways to mitigate the frequency and consequences of “extreme left tail events” for smallholder households and/or encourage technology adoption seems likely to have higher returns, but this is a relevant research question.