Agricultural Insurance and Adaptation to Climate Change

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• Introduction: Risk in agriculture
• Risk-layering and OECD’s Holistic approach to risk management
• How does climate change affect agricultural risk?
• Implications for the insurance market
• Questions of interest for the Session
Risk in Agriculture

- Production risk – weather, pests, diseases
- Ecological risks – pollution from fertilizer and pesticides
- Market risks – output and input price variability
- Regulatory risks – agricultural policies, food safety and environmental regulations

Here we will focus on how risks are affected by climate change and the implications for insurance and government intervention
Holistic approach to risk management focuses along 3 axes:

i. sources of risk

ii. risk management tools and strategies

iii. the role of government

Considers each element of risk management as part of a system: need to take into account

- policies’ interactions with all sources of risk
- interactions between risk management tools and strategies

In the process of carrying out (i) a thematic review of risk management in agriculture using a shared template, and (ii) micro-modelling analysis of farmer strategies
Risk Management

A basic risk management technique: segmenting risks into different layers

- Risk retention layer – frequent events but cause relatively limited losses. Farmers should manage this risk so as to smooth income.

- Market Insurance layer – risks that are more significant but less frequent. Scope for farmers to use insurance or options.

- Market failure layer – risks that generate very large losses at low frequencies. Difficult to pool this risk through insurance.
Challenges — (i) defining the underlying variable in the distribution of risk, (ii) having an up-to-date probability distribution, (iii) defining the boundaries of different layers
Insurability of Agricultural risk

Not all risks that affect agriculture have a corresponding insurance market because the premiums would be too high.

To have insurability of risk:

i. Risks for different agents have to be independent
ii. Need information to estimate the probability of risky event and evaluate damage
iii. Information has to be widely available across agents (to avoid moral hazard and adverse selection)
iv. The probability of occurrence has to be in a medium range: too high then premium too expensive, too low then difficult to estimate

Rare that agricultural risk satisfies all four conditions
The three layers of risk...
Climate change shifting the central tendency – big impact on pricing of insurance, and catastrophe load
Insurance layer either shrinks or the premiums need to increase substantially, farmers more exposed, government spends more due to more frequent extreme events.
Possible interventions

Options: (i) boundaries of layers can be readjusted, (ii) insurance is subsidized, (iii) innovative insurance to bring down costs, (iv) push back probability distribution through adaptation.
There may be a scope for subsidizing agricultural insurance, but... insurance must be put in the broader context of farmers’ adaptation to climate change.

Insurance redistributes risk between agents: it is not, by itself, a means of adaptation to structural changes.

- If appropriately designed, insurance can encourage adaptation.
- But, farmers will incorporate insurance subsidies in their production decisions, which can distort incentives to adapt.
Scope for intervention

Options: (i) boundaries of layers can be readjusted, (ii) insurance is subsidized, (iii) innovative insurance to bring down costs, (iv) push back probability distribution through adaptation
Take the opportunity to use insurance to bring structural change: shifting back the probability distribution. What incentives are needed?
Modifications of standard insurance
Individual contract with individual assessment & monitoring, but...
Lower premiums if management practices that reduce climate-related risks are adopted

Index insurance
A contract bases payment rate on value of a variable (e.g., rainfall) relative to a threshold, regardless of the actual losses sustained by the policyholder
• Area-Yield Index insurance
• Weather Index Insurance

But also...
extension services to better inform farmers about adaptation options
Questions for the session

What is the current state of agricultural insurance and risk management?

What information gaps? Role of government in filling gaps?

What type of interventions are countries introducing in response to climate change risks in agriculture?
  • are the boundaries of different risk-layers shifting?
  • providing extension services to facilitate on-farm resilience?
  • subsidizing standard crop insurance? With conditions?
  • Incentivizing index insurance for adaptation?

How does crop insurance fit into the broader set of risk-management strategies?
THANK YOU!!

I HOPE YOU REALIZE THIS IS GONNA RAISE OUR AUTO INSURANCE PREMIUM!!!