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Risk & Insurance I: Costs of Uninsured Risk & the Challenges of Informal Risk Sharing

AFEPA 2011 Summer School
Thursday Morning

Goals Today

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- Costs of uninsured risk
- Individual responses to risk (self-insurance)
- Informal risk sharing
  - The basic idea
  - Barrier 1: Moral hazard
  - Barrier 2: Covariate shocks
- Crop Insurance
  - Basic idea and challenges
  - Introduction to index insurance
- This Afternoon: Research on Index Insurance

How does risk cause poverty traps?

Risk and Poverty Traps

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- When insurance markets don't exist, risk can lead to poverty traps via three avenues:

Avenue 1: Ex-Post asset reduction

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- If I'm hit with a shock (drought, freeze, unemployment, …) and don't have insurance I'm screwed.
- I may lose assets (cattle die, land washed away, …) or I may need to sell assets → very difficult to build stocks back up (permanent ***physical capital*** reduction).
- Example: Mongolia Livestock Crisis
- I may have to pull kids out of school → very hard for kids to catch up (permanent ***human capital*** reduction).
- I may need to feed kids less → could have permanent cognitive implications (permanent ***human capital*** reduction).

Avenue 2: Ex-ante risk reduction actions

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- To earn higher returns, I usually have to take on higher risk
- If I don't have insurance and I'm risk averse, then I may decide to stick with the safe, but low return activity.
  - This is a form of self-insurance (income smoothing)
  - It's costly because I forego higher average earnings.
- If I do this year after year, it's very hard to climb out of poverty.
- So ex-ante risk reduction actions can be very costly.

Avenue 3: Negative spillover to credit market

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- Demand side:
  - Banks typically require borrowers to post land (or other major asset) as collateral.
  - If I don't have insurance, I may not be willing to risk losing my land, EVEN THOUGH the project I could undertake is very profitable.
  - So some people will voluntarily stay out of the credit market because credit contracts imply too much risk.
- Supply side:
  - Lenders, especially locally-based banks and micro-finance institutions, are not geographically diversified.
  - If a drought hits, then all farmers are likely to simultaneously default on their loans.
  - Thus banks restrict the size of their loan portfolio that goes to agriculture.
  - So some farmers are involuntarily shut out of the credit market.
- End Result:
  - Missing insurance markets → credit markets are limited from both the demand and supply side.
  - Farmers unable (or unwilling) to get credit that would permit investment → poverty persists.

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Income & Consumption Smoothing

Income and Consumption Smoothing

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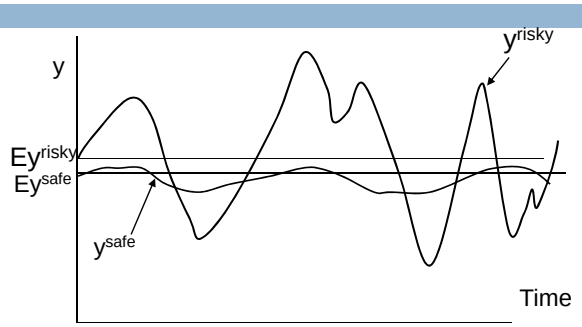
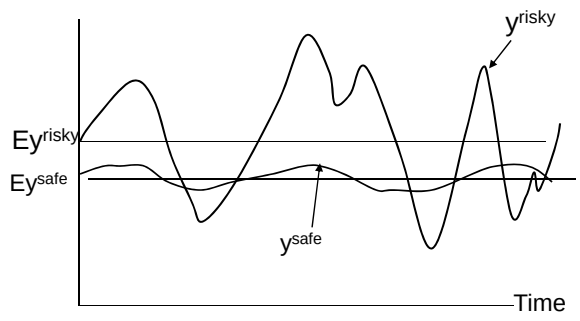
- What is income smoothing?
  - Income smoothing is just the ways by which households allocate their resources (i.e., the activities they choose) in order to reduce the variability of income.
- What is consumption smoothing?
  - Consumption smoothing is just the ways by which households shift consumption after a shock (positive or negative) to achieve a less variable consumption stream over time.

- If farmer chooses a risky activity (say the export crop) his income trajectory may look like…

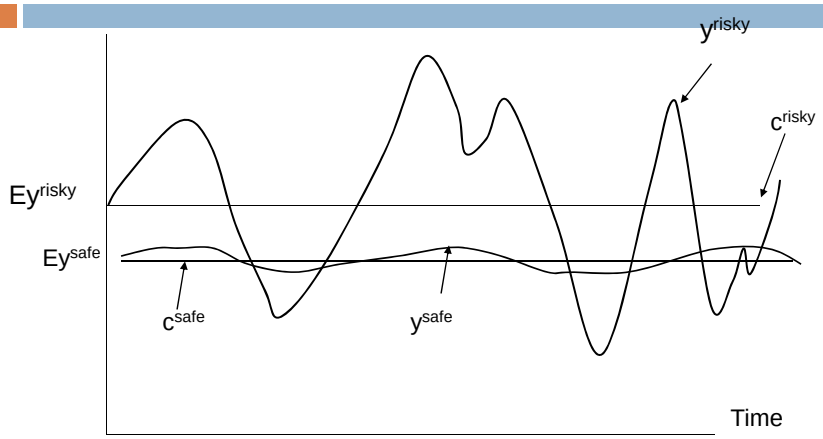


- On average, he knows he'll get Ey^{risky}
- But in any given year, income can be very high or very low
- If instead he chooses safe activity his income looks like..
  - Lower variability
  - But also lower expected income: $Ey^{safe} < Ey^{risky}$

So which activity does he choose?



- If consumption smoothing opportunities are perfect…



- He will always choose the activity with highest expected income

- If consumption smoothing opportunities are non-existent…

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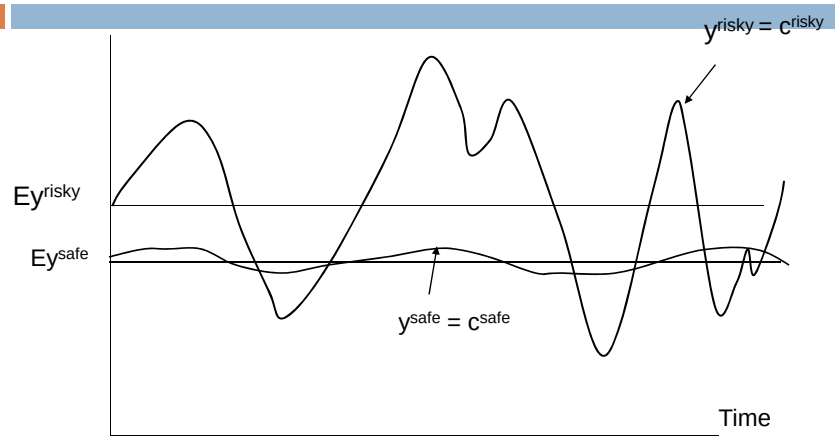

- Then it depends…on what??
  - Individual's willingness to bear risk (how big risk premium is).

How do people go about…

- Consumption smoothing?
  - Savings, lending in good years;
  - Borrowing, dis-saving, selling off assets… in bad years;
  - Insurance;
- Income smoothing?
  - Choose safe activities;
  - Diversify:
    - Crops (types and across space);
    - Jobs/Activities (types and across space);
    - Migration;

Summary: Double Whammy of Wealth and Risk

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- People face tradeoffs in risk-return decisions.
  - Higher expected returns tend to imply greater risk
- Decision to undertake high risk activity depends on:
  - Ability to smooth consumption after shocks occur;
  - Willingness to accept a given amount of non-smooth consumption
- Whammy #1: Wealthier people have better consumption smoothing opportunities;
  - Why?
- Whammy #2: Even in the absence of consumption smoothing, wealthier people have lower risk premiums and are thus more willing to bear risk
  - Non-separability: In the absence of complete state contingent markets, resource allocation will be heterogeneous across households;
  - Will depend on preferences towards risk.
  - If preferences vary with wealth (DARA), then missing markets → wealth sensitive resource allocation

Double-Whammy Summary

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- Whammy #1: Wealthy people are ***more able*** to bear risk because they have better consumption smoothing capacity (wealth biased credit & insurance markets).
- Whammy #2: Wealthy people are ***more willing*** to bear risk (DARA).
- For both reasons, wealthy are more likely to do high-risk/high return activities.
- Two Important Implications:
  - Poor may be stuck in "poverty trap";
  - Wealth inequalities reinforced and widened over time

Crop insurance

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- …to blackboard…

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