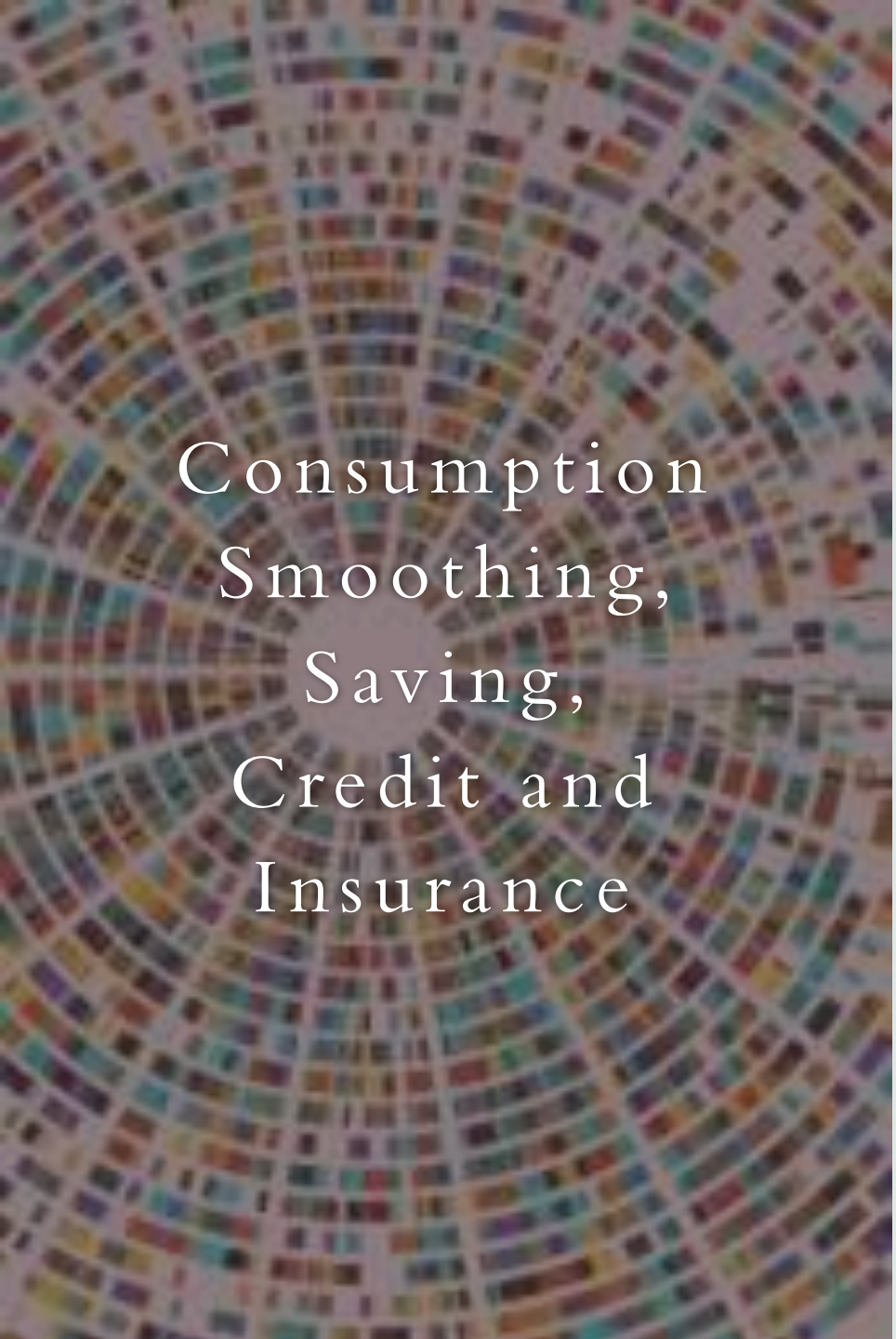

Lecture 8-4
Risk & Insurance

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with adaptation from

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Outline

Risk

- Implication of risk and uncertainty
- How do the poor manage risk?
- Welfare costs of uninsured

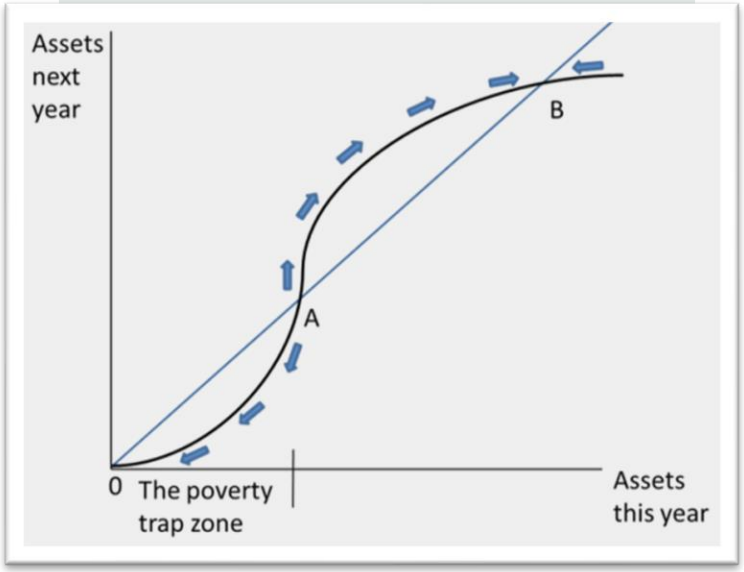
Insurance

- Asymmetric information of insurance
- Group-based insurance
- Index insurance and its challenges

IMPLICATION OF RISK AND UNCERTAINTY

- Risk makes income (and consumption) volatile
- What could be risk that causes income shock?
  - drought/flood/natural disaster, death, illness, price/market, crop fails, violence, political issues
- Covariate risk vs. idiosyncratic risk

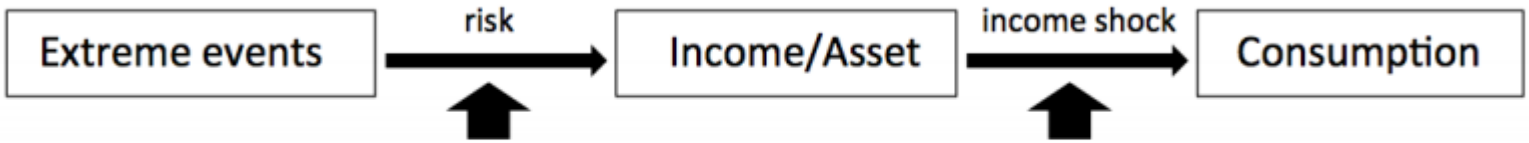
IMPLICATION OF RISK AND UNCERTAINTY



- Risk can keep people in poverty traps
  - Getting out of poverty trap requires steps they might be too risky (to get high returns means to involve in high risk)
  - Ex-ante risk coping: diversify to reduce income risk (but lose gains from specializing)
  - The poor cannot get loans
- Risk can force people into poverty traps
  - Cannot recover from temporary setbacks (drought, illness, death of animal)
- When you see poverty traps, look for underlying market or institutional failures (i.e., in credit or insurance markets)

How do the poor manage risk?

- The poor are still largely uninsured in the absence of insurance and credit markets.
- Their risk management and coping strategies could further carry regressive long-term poverty costs.



Risk management strategies

Ex-ante
- Diversification (off farm, multiple crops, migration)
- Low risk (low return) portfolios

Risk coping strategies

Ex-post
- Self insurance (saving in the form of buffer assets)
- Informal group-based insurance (reciprocal transfers, loans)
- Labor reallocation (including child labor)

*also read Slide 3 Lecture 8-2

The welfare costs of uninsured risk 'ex ante'

- Low-return portfolio choices of the poor
  - In India, Ethiopia, Kenya, Tanzania, Thailand: 25-50% loss in mean return of the poor relative to the rich due to conservative assets/income portfolio choices

- Risk also reduce the poor's incentive to invest, adopt new technology and use fertilizer
  - In India, Ethiopia, Malawi, Zimbabwe: These ex-ante risk reduction behavior could reduce capital accumulation by up to 40%
  - The mega flood 2011 in Thailand and Cambodia reduced rice farmers' farm investment

The welfare costs of uninsured risk 'ex post'

- Substantial and long-lasting welfare losses from covariate shocks
  - Ex: Famine in Ethiopia 1984 could lead to lower income growth (of *minus* 10-15%) in 1990s

- Shocks could place long-term impacts on human capital accumulation
  - Ex: In Indonesia, investment in education declined after the 1997 financial crisis, especially among the poorest

The introduction of insurance

- Insurance → protect rural livelihoods and escape poverty
  - Provide safety net to prevent collapse of vulnerable populations into poverty
  - Enhance investment incentives among the poor
  - Induce financial deepening by crowding-in credit supply and demand
- Insurance → pre-finance effective emergency response and recovery (from shocks)

What is being transacted in an insurance contract?

- Resources across states of nature;
- Insurer says:
  - If your harvest fails (bad state of nature), I'll pay you
  - If your harvest is high (good state of nature), you pay me

The insurer's profitability depends on:

- The probability he must pay out a claim
- The size of the claim

Can insurance be sustainably offered in the low income countries?

Information asymmetry	Transaction cost	Covariate nature of risk
Fraud	Trust	Limits on scope and duration

Asymmetric information in insurance

- The insurer knows less than the insured about
  - His intrinsic riskiness (TYPE)
  - The things he does that affect the probability of an insurance payout (ACTIONS)
  - Damages
  - If the cost of overcoming the above lists is too high, the insurance market fails

Adverse selection

- Riskier types are more likely to demand insurance
- If insurer bases premium on average riskiness, low risk types leave the market

Moral hazard

- The greater the insurance coverage, the less incentive to act in ways that reduce risk
- And, the probability of the insurer having to make a payout increases

Informal risk sharing arrangements (IRSA)

- Local people (family, friends, villagers) have good information about each others'
  - Types
  - Actions (similar logic as microfinance)
  - Thus, they can insure each other (with low transaction cost): group-based insurance
- But, there are some limitations:
  - Information is not perfect, and enforcement can be a problem
  - Good for idiosyncratic risks but not very useful against covariate risks (earthquakes, droughts, floods)
  - The poorest are often excluded from the risk sharing network

"Insurance across households within communities"

Index Insurance

- Insurance payouts are based on some external index
  - correlated with farmer's yields, but
  - exogenous to farmer's characteristics and actions
- What does the index base on?
  - Rainfall or water level in a reservoir
  - Satellite imagery (vegetative index) - NDVI
  - Area yields (average yields in a specified area)
- Insured farmer gets payment when the index hits the strikepoint/threshold
- Can mitigate covariate risk (risks that simultaneously affect many people in a region)

https://www.web.ricult.com/post/ndvi-a-tool-for-precision-farming

Watch example of weather index insurance:
https://olc.worldbank.org/content/weather-index-insurance-bangladesh

Challenges to insurance

- It is hard to sell to the poor
- Farmers need to clearly understand the costs and benefits of insurance
  - Farmers always pay the premium, but infrequently receives an indemnity payment.
  - Farmers may not receive an indemnity payment (as index is high) even though yields are low.
  - If farmer does not understand 'preventative' nature of insurance, she may become disillusioned if she pays but does not receive anything.
- State-dependent benefits are not easy to grasp
- Most small farmers have never had insurance (of any type)

Why low demand?

- Despite benefits of insurance, demand for crop insurance is low when farmers must pay actuarially fair prices to get it.
- In index insurance, payouts depend on an index, which is only imperfectly correlated with farmer's loss.
  - The mismatch between the index and the loss is called "basis risk"
- Basis risk worsens the worst-case outcome → an extremely risk-averse person may not want to buy insurance (Clarke, 2016)
- Cole et al. (2013, India) vary price discounts. Demand is low and very elastic
  - Demand would be low even if payout/premium ratio was very high
  - Plus, when farmers buy, they buy insurance for a very small portion of their land