Interlinking Credit and Insurance:
EPIIICA: Ethiopian Project on Interlinking Insurance and Credit for Agriculture

Index insurance for agriculture in Ethiopia
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Shukri Ahmed, FAO
Rene Gommes, EU/JRC
Craig McIntosh, UC San Diego
Alexander Sarris, University of Athens
The interlocking puzzle of input use in agriculture:

- **Rain-fed agriculture exposes farmers to huge risks in the purchase of inputs:**
  - I pay for fertilizer today, will it rain tomorrow?
  - Risk is a commonly given reason for low input use in Ethiopian agriculture (Dercon and Christiaensen, 2009).

- **Most farmers need credit in order to be able to make the purchase of fertilizer + seeds in the leanest season.**
  - Research from Kenya indicating that many farmers indicate at harvest time they would like to use fertilizer in the next season, but then don’t.

- **The large correlated risks from weather make agricultural lending extremely risky.**
  - Most developing countries have very thin rural credit markets, rely on government subsidies and guarantees.
The interlocking puzzle of input use in agriculture:

Implication:
The presence of large correlated risks prevent:
- banks from lending to agriculture.
- farmers from using inputs.

Since the core source of correlated risk is weather, index insurance seems to provide a natural way to resolve this problem:
- Provision of insurance to lenders means that they can take on the risk of lending to agriculture.
- Provision of insurance to farmers means that they can afford to take on the risk of using and borrowing for inputs.
- Simultaneous provision of credit and insurance allows us to create ‘state-contingent loans’:
  - Receive inputs on credit, if the weather is bad you pay nothing back, if the weather is good you pay loan + premium + interest on both.
Obstacles to Credit Provision on the Supply Side:

- Banks in most developing countries very reluctant to lend to agriculture:
  - Correlated shocks mean that even if average default probability is low, portfolio risk from agriculture to lenders is huge.
  - Predominant source of correlated risks is weather, rainfall.
  - Pressure to forgive loans to farmers when default is caused by weather may be irresistible.
- Consequence: private capital to agriculture very scarce even in countries where agriculture provides the best avenue for export-driven growth.
Obstacles to Insurance uptake on Demand Side:

Recent research:

- Demand for index insurance products is typically quite low, even though they seem to solve a problem in a very natural way. Why?
  - Trust? Is a new institution credible when asking for money now in return for future promises of payouts?
  - Time inconsistency? Difficult to ask poor people to pay up front for a service whose benefits will not be realized immediately?
  - Credit constraints? The poor simply can’t afford the premia?

- In addition, Duflo, Kremer, & Robinson (2010) show that:
  - Time inconsistency is a major problem in the demand for fertilizer:
    - Farmers understand that yields are higher with fertilizer, but the time gap between costs and benefits makes purchase hard.

- So, on the demand side as well, linking credit and insurance may overcome the behavioral problems that are barriers to the uptake of index insurance products.
The Interlinking solution:

- Provide loans to farmers that are explicitly weather-contingent:
  - Farmers take loans to purchase inputs, insurance premium is added on to the loan amount and paid immediately to the insurer.
  - The beneficiary of the insurance policy is the bank itself, so if the weather index triggers the bank is paid with certainty (no intermediaries between bank and insurer).
  - The Cooperative Unions sit between the financial institutions and the borrowers and serve several critical roles:
    - First, they aggregate transactions and decrease the fixed costs of making loans.
    - Second, they are entities with the legal authority to contract with banks, much easier for formal financial institutions to deal with than smallholder farmers.
    - Third, they can use their extensive relationships with primary cooperative and farmers to serve as enforcers of the loan contracts, minimizing default risks.

- Credit contracts written with Unions.
Our research partners:

- **Nyala Insurance:**
  - Provide rainfall & frost-based index insurance to farmers in Northern Shoa, North & South Wollo, and Gojam.
  - Insurance is intended to cover the *inputs* to production, not the output of the farm.

- **Dashen Bank:**
  - Will provide credit to farmers that will be backed up by the Nyala product; serves as a form of collateral substitute in ag lending.
  - Contracting is done through Cooperative Unions, who recruit farmers through Kebele-level cooperatives. No loan contracts with farmers.
  - This means that Dashen can contract with only a few, financially sound and legally well-founded intermediaries, who in turn use their relationships with farmers to enforce contracts.
The research design:

- Randomized controlled trial to provide simple, statistically robust measures of impact.
- Two arm trial:
  - A control group receives no insurance and no credit.
  - A ‘standalone’ arm receives only the index insurance product; we don’t prevent the use of credit but we also don’t provide any explicit form of interlinking.
  - The ‘interlinked’ arm receives state-contingent loans.
- The study will then be conducted by comparing each of the two treatment arms to the control, and to each other.
  - Provides a simple, transparent measure of the impact of insurance, the impact of interlinked insurance, and the impact of the interlinking itself.
- Three years of household surveys to track farmer behavior.
The research design:

120 Kebeles selected by Nyala

Random assignment

Stand-alone Insurance (N=40)

T1a

T1b

Interlinked Credit & Insurance (N=40)

T2a

T2b

Control (N=40)

Ca

Cb

Credit users at baseline

Non-credit users at baseline

Survey experiment randomized at household level. For each Kebele:
- 6 coop households survey only
- 6 coop households survey + insurance promotion
- 6 coop households survey + promotion + price voucher
- 2 non-coop households

Subsidy to price of insurance randomized at Kebele level

18 coop household surveys
2 non-coop households
Longer-term question on supply side:

- Can the provision of index insurance crowd in private sector credit to agricultural markets?
  - Long history of government ‘amnesties’ on agricultural loans when drought occurs.
  - Historically, virtually all credit to ag has been provided or backed by the government.
  - Government is now interested in trying to have the private sector take over more of this role, but a viable commercial model has yet to emerge.

- The empirical strategy: Track over the course of time as index insurance is switched on in new parts of the country:
  - Use institutional data from Dashen to track the spatial coverage of agricultural lending to see the extent to which they expand credit in the places that the insurance will cover them.
Concluding Points:

- There is a surge of interest in the provision of index insurance products, but the modalities are still unclear.
- Our project focuses on:
  - Interlinking on the demand side
    - What are the determinants of uptake and how do they differ between the standalone and the interlinked treatment arms.
    - Experimental estimation of demand curves for insurance with and without interlinking.
  - What is the impact of the product on farmer behavior:
    - Does insurance provision increase the use of inputs by farmers?
    - Do we see an increase in yields as a result?
    - Can the provision of intelligent financial services be a part of triggering a ‘green revolution’ in Ethiopia?
  - Ultimately, can cooperation between index insurers and banks be the vehicle to expand private-sector credit to farmers?