Index Insurance for Agricultural Risk Management
IMAGINE FOR A MOMENT:

You’re a smallholder farmer. You’re just near the poverty line, either above or below – just making ends meet or just falling short.

How do you manage? After a drought? Before?

How could a risk transfer tool like insurance change that?
COSTLY COPING FOR UNINSURED RISK

Reducing Consumption

• To protect remaining assets, households – especially the relatively poorer households – reduce consumption.

• This can lead to long-term negative impacts, particularly stunting of children under five.

• This, in turn, can lead to the intergenerational transfer of poverty.

Selling Assets

• Some households may sell off remaining assets to smooth consumption.

• Can place households in a poverty trap if the household no longer has the minimum assets necessary to maintain livelihoods.

• Can make the negative impacts of a shock last years.

Relatively poor insured households reduced use of this strategy 62%.

Relatively better-off insured distressed asset sales 70%.
INSURANCE ENABLES INVESTMENT

In an impact evaluation of an index-based insurance intervention in Mali, cotton farmers:

- Increased area cultivated 55%
- Increased use of loans for investment 34%
- Increased use of productive investments 50%

In Ghana, an interlinked credit and insurance intervention:

- Women increased their loan applications 15-17%
- Banks increased loan approval by 32% when payouts went first to paying the balance of the loan
- 54-60% of farmers are willing to pay above market prices for insured loans
So What is Index Insurance?

• Insures not the consequences of the weather events (lost yields, for example), but an external measure highly correlated with yields (the index).

• Index should be objectively and easily quantifiable, publicly verifiable, and not possibly manipulated by either the insurer or the insured.

• Payouts are based on predicted losses without individual loss verification.

• Has the potential to reduce the cost of insurance and speed up payouts.

IBLI Example: Forage Availability

GOOD YEAR

BAD YEAR
Countries of Research: Bangladesh, Burkina Faso, Dominican Republic, Ecuador, Ethiopia, India, Kenya, Mali, Mozambique, Nepal, Peru, Tanzania

Also: In partnership with the ILO, we support the Global Action Network (GAN) to advance index insurance globally.
So You’re Thinking About Index Insurance?

Components of a Successful Index Insurance Venture

1. Why to consider index insurance for agriculture
2. How to assess if index insurance is a good fit
3. The importance of identifying a feasible high-quality index
4. New innovations in contract design that increase value to farmers
5. What institutional structures have to be assessed
6. The challenges & opportunities for marketing and distribution
7. Ongoing challenges facing the successful scaling of index insurance
But How Does This Work in Practice?

Index-Based Livestock Insurance (IBLI) in East Africa
Toward Sustainable Risk Management for Pastoralist Herders: The Case of IBLI in Kenya and Ethiopia

A Sizeable Constituent

- Over 50 million pastoralists in Sub-Saharan Africa: over 20 million in the Horn of Africa

The Centrality of Livestock (HoA)

- **Median** pastoralist household holds 100% of their **productive assets** in livestock
- Livestock products and sales of **livestock** are 40% of income for average household
The Centrality of Livestock (HoA)

- Exports of livestock and livestock products exceed $1 billion annually, 90% from pastoral flock
- In the region, estimated contribution to the livestock economy at 40%

Vulnerability To Livestock Losses

- 75% of livestock losses, among pastoralists, due to drought
- Strong evidence of the asset-based poverty traps; premium on productive safety nets
- Between 2008 and 2011 Kenyan economy suffered US$ 12.1 billion in damages due to drought, over 70% due to livestock losses.
COMPONENTS OF A SUSTAINABLE INDEX-INSURANCE PROGRAM

1. Precise contract design;
2. Evidence of value and impact;
3. Establishing informed effective demand;
4. Low cost, efficient supply chain;
5. Policy and institutional infrastructure.
PRECISE CONTRACT DESIGN

- **Objective (Initially):** To insure against drought-related livestock mortality. *Asset Replacement.*

- **Index:** Predicted average livestock mortality.

- **Contract Evolution:** From Asset Replacement to *Asset Protection*

- **Index:** Seasonal Forage Availability

For references refer to https://ibli.ilri.org/publications/
Parameterizing contract features

Geographic Coverage – Delineating Index Units
• Should match risk profile of target production system
• Must take into account operational, administrative and practical considerations.

Temporal Coverage – Setting out potential payout periods
• Dependent on seasonality, production system, timing of risk impact & need etc…

Fitting the index to the risk
• There are numerous ways to generate the index from the data source.
• The various steps, and their sequencing, have a bearing on the index reading and thus risk coverage

Pricing (Payout Structure, Payout Frequency)
• Balance between risk coverage and price suitable to target client
• Growing proliferation of Index Insurance Products/Contracts. No clear signal of product quality or risk-protection value (insurance or lottery).

• Lack of clear mechanism for distinguishing quality offers disincentive for designing high value contract

• Resolving key tension of balancing scale and precision

Critical need for developing standard, universally accepted metrics for identifying and signaling product quality (e.g., bond rating agency)

(Jensen and Barrett, 2016 AEPP)
EVIDENCE OF IMPACT AND VALUE

Given the increasing interest in II, important to have rigorous evidence on IBLI impacts

Established a multi-year evaluation infrastructure based *largely* on panel household data.

IBLI baseline carried out before launch of IBLI sales in pilot areas:

- Marsabit survey: 925 households over 16 locations – currently 5 rounds of panel data
- Borana survey: 515 households over 17 kebeles – currently 4 rounds of panel data

Research Design: price inducement (varying levels of discount coupons) & an information encouragement (extension games) to identify impact
ASSESSING “BASIS RISK”

Covariate risk is important but household losses vary a lot …

…and the index does not perfectly track covariate losses.

Only such study of index-insurance products that we know off. Crucial for assessing value and precision of the contract.

Jensen, Barrett & Mude 2014
Despite incomplete coverage, strong of IBLI benefits.

IBLI covered households:

- *Increase investments in maintaining livestock* through procurement of veterinary and vaccination services

- *Experience improved production outcomes*: increases milk productivity and the value of milk produce

- *Demonstrate improvements to MUAC*, a strong predictor of child malnutrition

- *Has positive effect on subjective wellbeing* (the “peace of mind” effect)

- Demonstrate more *effective post-drought coping behaviors*: 36% reduction in likelihood of distress livestock sales; 25% reduction in likelihood of reducing meals

- For a summary of IBLI impact results: *Jensen, Barrett Mude, 2015 ILRI Research Brief*
SOCIAL PROTECTION AND PUBLIC PROVISION

• Positive IBLI impacts at the hh level, do not necessary justify investing scarce development or social protection funds in IBLI.

• What is opportunity cost vis-à-vis comparative interventions (HSNP – Cash Transfer Program)? Research Design in Kenya strategically overlaid with HSNP

Results

• Both IBLI coverage and HSNP participation increase household income from milk, income per AE, and Mid-Upper Arm Circumference (MUAC) of children.

• From a total cost point of view, HSNP and IBLI are similar in terms of impact.

• From marginal cost perspective (more important for scaling out), IBLI considerably more cost effective than HSNP

Note that this refers to IBLI product where client pays full risk premium plus loading of 40%
ESTABLISHING INFORMED EFFECTIVE DEMAND

Two Key Elements

Initial **appropriate targeting of risk and program coverage areas** are critical. Are there credible reasons for expecting sufficient and scalable demand?

**Capacity Building, Training, Extension and Marketing.** Need for developing learning tools and building the capacity of the range of service providers and stakeholders. Generating informed demand requires product awareness and understanding.
ESTABLISHING INFORMED EFFECTIVE DEMAND

Impacts Based Targeting

- As II pilots proliferate, selection of target locations increasingly more opportunistic
- Sustainable scaling requires strategic selection of program development to target areas with high likelihood of impact and demand.

General prerequisites for II product impact:
- Target population vulnerable to systematic, quantifiable and covariate risk
- Risk is a key driver of livelihood and income vulnerability
- Available (or potentially available) insurance and delivery infrastructure

(Jensen and Barrett, 2016 AEPP)

(Mills et al., 2015 Cornell Working Paper)
Establishing Informed Effective Demand

Capacity Development, Training, Extension and Marketing

- Actors across the delivery chain need to have a clear understanding of their roles, and to develop the capacities to execute them effectively.

- Fundamentally, for sustainable scale, the client needs to understand the product and trust the delivery mechanism.

IBLIs Capacity Development Strategy

- Level 1: Knowledge and tools for government and insurance industry policy makers
- Level 2: Knowledge, skills and job aids for IBLI/KLIP sales agents and promoters
- Level 3: Awareness raising for potential clients
ESTABLISHING INFORMED EFFECTIVE DEMAND

**Level 1: Knowledge and tools for government and insurance industry policy makers**

**Automated IBLI Contract Design Tool**
- Facilitates ease of contract design parameterization and historical assessment, enabling faster capacity uptake of insurers, regulators etc.

**Digital Platforms**
- For a range of learning, tracking, regulating, and capacity development processes
ESTABLISHING INFORMED EFFECTIVE DEMAND

Level 2: Knowledge, skills and job aids for IBLI sales agents and KLIP promoters

For effectively reaching scale, require standardized, cost-effective tools… leverage developments in ICT based instructional design

- IBLI e-Learning curriculum
- IBLI Digital learning aids
- IBLI mobile learning applications
  - Allows for wide accessibility with customizable features.
  - Learning assessments, performance tracking, impact testing, incentive delivery (gamification)
ESTABLISHING INFORMED EFFECTIVE DEMAND

Level 3: Awareness training for potential clients

- Radio talkback shows
- Extension videos
- Cartoons
- Posters
- Village *barazas*
- Village credit and savings groups
- Communications strategy review being undertaken
LOW COST, EFFICIENT, DELIVERY MECHANISMS

• Pastoralist rangelands offer quite a challenge for delivery of the IBLI product

• Delivering related services (sales, indemnities, information), very costly

• Mobile and digital solutions could potential solve may of the delivery challenges

• Developed mobile sales transactions applications with back end MIS for insurance companies.
LOW COST, EFFICIENT, DELIVERY MECHANISMS

To reach scale:

• will need to leverage technology to reduce the cost of product administration and delivery

• Will need sufficient number of physical agents to effect sales, deliver information and extension, and build product salience.

• Effective institutional mechanism for coordinating and regulating the contract development and insurance provision system.
LOW COST, EFFICIENT, DELIVERY MECHANISMS

Sales, even on the back of digital platforms will require some agency. How to make required agent structure sustainable?

Crowdsourcing Livestock Market Information Systems
POLICY AND INSTITUTIONAL INFRASTRUCTURE

• Sustainable, large-scale index insurance program requires a clear and well articulated policy structure

• No example of unsubsidized private market for index insurance in developing countries. Globally only 7% of transaction volume is purely private.

• Experience and evidence suggests that for programs to go to scale they need to build on strong, well-coordinated public and private sectors

• What are the key roles for each sector?
MOVING TOWARD SCALE

- Growing body of evidence continues to highlight the socioeconomic and risk-management value of index insurance programs, and the logic of public support.

- Going to scale will require careful research and development efforts to unlock the barriers, and an alignment of policy and technological forces.

INVESTMENTS NEEDED IN:

- Development of internationally recognized product quality metrics

- Data infrastructure for contract design, validation and impact assessments (ex-ante for strategic targeting, and ex-post for value assessment).

- Development of digital platforms for cost-efficient product and information delivery and capacity development
THE IBLI PROGRAM IS A COLLABORATION OF MANY PLAYERS
So Where Do We Go From Here?

New Directions for Index Insurance
CHALLENGES REMAIN

Market & Demand

Quality & Client Value

Better Managing Risk Portfolios
THE “VISA” MODEL
Village Insurance-Savings Accounts

The VISA Model

Farmers attend regular savings group meetings where they learn about insurance and can enroll to make small savings contributions toward the purchase of the insurance.

Per standard savings group procedures, they store their savings in a lock box.

MFI staff attend monthly meetings, share insurance information, and collect savings for transfer to the bank.

MFI staff deposit funds into the appropriate dedicated individual savings accounts in the branch office.

Purchases are aggregated at the branch level, transferred to the national office, and submitted to the insurance company in aggregate.
### THE VISA MODEL & KEY CHALLENGES

<table>
<thead>
<tr>
<th>Challenges</th>
<th>VISA Solution</th>
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<tbody>
<tr>
<td>Insurance companies are not interested in small sales</td>
<td>VISA groups aggregate small purchases into one larger purchase</td>
</tr>
<tr>
<td>Farmers are not familiar with insurance &amp; how it works</td>
<td>MFI can work with existing groups to educate about insurance</td>
</tr>
<tr>
<td>Farmers may not know or trust insurance companies</td>
<td>Farmers are already highly engaged with the MFI</td>
</tr>
<tr>
<td>Farmers may not have the premium ready at the right time</td>
<td>Can save early to have premium ready at time of purchase</td>
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BETTER COVERING THE RISK PORTFOLIO

Drought Tolerant Seeds + Index-Based Insurance = Comprehensive Risk Management

Insurance can protect even when DT varieties fail.
SMART(ER) SUBSIDIES

• When you think about it, public entities already subsidize risk – after the fact.

• Subsidies could be applied to cover the most catastrophic events, with farmers having the option to top-up insurance to cover less catastrophic risk layers. This could create a minimum market size for insurance companies to enter the market; it may also increase farmer trust in insurance b/c government is putting their money there.

• Or, perhaps, “learning” subsidies may be effective; farmers need time to learn about new financial technologies.
SAFE MINIMUM STANDARDS

• At a **MINIMUM**, we should make sure we are not making difficult situations worse.

• To assess safe minimum standards you must ask key quality questions, such as: how often and how much a contract pays out, and the probability it will fail.

• For example, a study of 270 rainfall based index insurance products in India from 1997 – 2007 showed that **when there was a 100% loss at the sub-district level, average payment made was only 12%**.
What Could Happen with Low Quality Insurance?

HARM TO FARMERS

If farmers experience an insurable, catastrophic loss and the contract fails, they could be left **worse off** than if there had been no intervention at all.

“The season was bad. We could not pay back our credit. We were forced to sell our goats and sheep to pay off our debt and the insurance.”

“The farmer who has had a bad harvest and does not get insurance payouts still has to pay the insurance fees. This is a double penalty for him.”
What Could Happen with Low Quality Insurance?

“But after the shock last year when we did not receive anything, it really discouraged us.”

“Their [the sales agents] attitude shows that they just want to make profit on us. It is not to help us.”

LONG TERM

This kind of loss of trust in insurance as a tool could ruin the insurance market for future high-quality products with high potential for development impact.
5 THINGS YOU CAN DO NOW TO SUPPORT RISK MANAGEMENT

<table>
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<tr>
<th>Needs Assessment</th>
<th>Identify where shared risk is a key constraint to growth for smallholder farmers and where insurance or other risk management tools can crowd in new investment and prudent risk-taking. These are the areas where development impacts will be maximized.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resources</td>
<td>Determine the near- and long-term goals, objectives, resources and political will available to support index insurance in the country. Be sure to also assess private sector infrastructure for marketing and distribution, as well as the technical expertise needed to implement.</td>
</tr>
<tr>
<td>Data</td>
<td>Improve and increase the collection of high-quality data on production, weather and other related factors. High-quality data, especially for index insurance products, can help to craft interventions that are both high-impact and highly scalable.</td>
</tr>
<tr>
<td>Quality</td>
<td>Ask basic quality questions about any proposed index insurance intervention. Low-quality products can damage the insurance market for future interventions or even leave farmers worse off than if they had purchased no insurance at all.</td>
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<tr>
<td>Evaluation</td>
<td>Invest in long-term research and impact evaluations. Promoting resilience through risk management requires rigorous testing to find out what works and how to best integrate risk management programs into broader development strategies to maximize impact.</td>
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</table>
Index insurance is an innovative financial tool grown to affordably protect smallholder farmers when they lose crops to drought. Traditional indemnity-based insurance, which pays out for verified losses, does not work for small-scale agriculturists due to its high costs. Index insurance avoids these costs by tying payments on an index based on data from satellites or weather stations, or on estimates of average losses in an area.

If index-based insurance is implemented responsibly and can be effectively designed, it can have significant impacts for the target population, including:

- Reduce reliance on foreign aid in the case of disaster
- Preservation of assets in the case of disaster
- Assistance of small producers by providing mechanisms in the case of disaster
- Increased on-farm productivity investment in good years
- Increased access to finance for investments in low-income, so-called “high-risk” farmers

While index-based insurance for agriculture is a promising tool for development, it must be implemented responsibly and meet the potential. The commercialization of low-quality products can make farmers worse off. If these had been an intervention at all, it also damages the market for insurance, both now and in the future, compromising future high-quality interventions that could make a difference in the lives of farmers and the economies of target areas.

The following steps provide a pathway to understanding how and when index insurance is appropriate and has true chance to achieve agricultural development impact.

I want feedback if you have it!
SUMMARY OF KEY POINTS

• Index insurance can’t solve all our problems, but it can enable smallholder agriculturalists to invest more into growth opportunities, and to avoid costly coping strategies when a shock occurs.

• More work needs to be done to ensure that the contracts brought to market are **quality** and **well-implemented** so they can actually protect farmers as intended and achieve development impact.
Feed the Future Innovation Lab for Assets & Market Access

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