

Background

With two-thirds of the population dependent on agriculture for a livelihood, crop insurance is an important element of agricultural risk management in India. The Government of India (GoI) has historically focused on crop insurance as a planned mechanism to mitigate the risks of natural perils on farm production. In 1999, GoI established the National Agricultural Insurance Scheme (NAIS) to reduce farmers' vulnerability to natural disasters. The NAIS offers insurance for food crops, oilseeds, and selected commercial crops through state-owned insurer, Agriculture Insurance Company of India (AICI). With about 25 million farmers insured, it is the largest crop insurance program in the world.

NAIS is based on an indexed approach known as the area yield-based approach, where the index used is the crop yield of a defined area called an insurance unit (IU, e.g., an administrative block). The actual yield of the insured crop, measured by crop-cutting experiments in the IU, is compared to historical yields. If the former is lower than the latter, all insured farmers in the IU are eligible for the same rate of indemnity payout. Individual crop insurance would have been virtually impossible given the large number of very small landholdings. Using the area yield-based approach also has other merits. Most importantly, it mitigates moral hazard and adverse selection.

NAIS is funded by post-disaster government contributions, entailing an open-ended and highly variable fiscal exposure for GoI. Farmers' premiums are subsidized; the annual claim/farmers' premium ratio is higher than 100 percent. At the end of the crop season, aggregate claims exceeding the farmers' premium are funded 50-50 by the state and central governments. India's post-disaster funding arrangement was necessitated by the lack of an actuarially sound premium rating methodology, which means that estimating payouts is not feasible. This system is not optimal for GoI's budget management and delays claims settlement, leading to distress of farmers and exposing farmers to a vicious debt cycle.

To address these challenges, in 2005 the Government formed a joint task-force with AICI and requested the World Bank to provide non-lending technical assistance (NLTA) in modifying the crop insurance program and in improving insurance coverage.

Highlights

- With 25 million farmers insured, the National Agricultural Insurance Scheme (NAIS) in India is the largest crop insurance scheme in the world.
- The Indian Government moved from a social crop insurance scheme to a market-based crop insurance program with actuarially sound premium rates, up-front subsidies, and participation of private insurers.
- The World Bank provided technical assistance to support modification of NAIS based on international best practice and in-country experience.

Objectives

The objectives of the NLTA were to:

- Review current underwriting methodology;
- Develop an actuarially sound pricing methodology based on international best practice;
- Develop product design and pricing methodology for new weather index insurance products;
- Suggest cost-effective catastrophe risk financing solutions for the public crop insurance company AICI.

Outcomes

Key outputs of the NLTA include:

- Development of a best practice, standard, actuarially-sound pricing procedure using an experience-based approach for area-yield insurance;
- Detailed inputs into the design of the modified NAIS (mNAIS), which has been launched recently in 50 districts (available to 10 million farmers, of which possibly 3 million may participate in the first year);
- Development of commercial weather-based crop insurance products;
- Building of AICI's capacity to transition NAIS to a market-based approach;
- Policy dialogue with various line ministries about the fiscal impact of the modified NAIS as well as the welfare implications of the modified scheme;
- Designing prototype actuarial software; pricing over 200 insurance products; advising on use of mobile technology for improving crop cutting data quality and timeliness.

Main Features of the mNAIS

- **Actuarial regime.** The *mNAIS* scheme operates on an “actuarial regime” in which the government’s financial liability is predominantly in the form of premium subsidies given to AICI and funded ex-ante, thereby reducing the contingent and uncertain ex-post fiscal exposure currently faced by the government under NAIS and reducing delays in claims settlement.
- **Up-front premium subsidies.** AICI receives premiums (farmer collections plus premium subsidies from the government) and is responsible for managing the liability of the *mNAIS* through risk transfer to private reinsurance markets and risk retention through its reserves. It is financially able to operate on a sustainable basis.
- **On-account partial payment.** The *mNAIS* product continues to be based on an area yield-based approach, with a provision for an early part payment to farmers (in season) based on weather indices.
- **Small Insurance Units.** Crop-cutting experiments to assess crop yield estimates are lowered from Block level to Village level to reduce basis risk (i.e., the mismatch between the actual, individual crop yield losses and the insurance indemnity).
- **Cutoff dates.** Adverse selection is reduced through the enforcement of early purchase deadlines ahead of the crop season.
- **Additional benefits.** Additional benefits are offered for prevention of sowing, replanting, post harvest losses, and localized risk, such as hail losses or landslides.

Lessons Learned

1. State-of-the-art tools should be developed in close collaboration with the client, and second-best technical solutions should be deployed when necessary to reflect on-the-ground realities and political and economic considerations. Drawing on international best practice and in-country experience, the actuarially sound pricing methodology helps attract international reinsurance capacity. Such pricing methodology ensures the financial sustainability of the program and its relevance to the country context. An open approach helped close collaboration with the client, leading to drawing on their country and domain knowledge to a significant extent, a process which also enabled the Bank team to learn from the client’s experience and knowledge.

2. Technical tools can pave the way for policy dialogue. The actuarial tools by themselves were the defined output sought by the client. These actuarial tools were used as the basis for a shift from ex-post to ex-ante funding. They were also used to demonstrate efficiency and the political and economic gains possible through faster claims settlements. The tools therefore helped translate technical work into a policy dialogue.

3. Extensive institutional capacity building and technical inputs for both the implementing agency and policymakers is critical. Agricultural insurance is a highly specialized line of business that requires intensive institutional capacity building. Major efforts were undertaken to ensure that the proposed technical recommendations would be fully understood and implemented. Intensive training was provided to AICI technical staff through technical documents, monthly teleconferences, and quarterly on-site visits.

4. Combine traditional and innovative crop insurance. Although much development literature and debate on traditional versus new generation (weather-based) insurance, technical grounds were used to demonstrate the benefits of combining the two approaches, based on their respective comparative advantages. Weather-based indices are used for on-account partial payment of claims in case of adverse mid-season conditions, while area yield indices are used for final payment of claims.

Glossary

Area-yield based insurance: Insurance scheme under which insurance payments are based on an area-yield estimate determined by harvest production measurements taken at a series of randomly chosen Crop Cutting Experiments locations.

Crop cutting experiment: Sampling process by which crop yields are statistically estimated in each insurance unit.

Further Reading

World Bank (2007). India – National Agriculture Insurance Scheme: Market-based solutions for better risk sharing. Washington, DC.

World Bank (2010). Enhancing Crop Insurance in India. Washington, DC.

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