

Hidden Information and Market Failures for Crop Insurance in the Philippines



Farmers across the developing world face risk from hazards such as weather, pests, and crop disease, but largely lack insurance to manage these risks. One reason for this lack of viable insurance products may be that farmers know their plots and risks better than insurers, and react accordingly. In the Philippines, researchers offered insurance on randomly assigned plots to farmers, and found that farmers preferred to insure the plots that faced more risk. Farmers also invested less in fertilizer for insured plots, and those plots suffered from more preventable (pests and crop disease) than natural (flood and typhoon) damage. The findings suggest that information that is unavailable (at least in part) to insurance providers – the susceptibility of agricultural plots to damage and farmers' effort to prevent damages – may be a substantial barrier to the functioning of crop insurance markets.

Policy Issue

Farming households in developing countries face enormous risks from natural hazards such as pests, droughts, and floods. Not only are these constant threats to farmer livelihoods, but they can limit farmers' access to credit, and lower their investment into planting. Despite the prevalence of these risks, insurance markets have largely failed to emerge, potentially because of information problems in the markets.

This study examined two possible causes for this failure, associated with information asymmetries, or hidden information, when farmers know more about their plots and investments than insurers. The first, adverse selection, can occur when farmers choose to buy insurance on plots that are most likely to suffer losses (e.g., low-lying, flood-prone plots), but the associated risk characteristics of these plots may be difficult for the insurance company to identify. The second, moral hazard, is a result of insured farmers applying less effort to taking care of their farm when aware that it is insured against certain risks.

This study was designed to test for these possibilities by using randomization to offer partial insurance to groups of farmers, first eliciting their preferences for which plots to insure, then measuring if having insurance changed the level of investment into different plots. Understanding how these asymmetries affect farmer behavior may be a crucial part of developing functioning insurance markets for farmers in the developing world.



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PROGRAM AREA

Agriculture

TOPIC

Insurance

TIMELINE

2010-2012

Evaluation Context

Rural poverty accounts for 80 percent of the Philippines' overall poverty rate, and agricultural production remains a major source of livelihood for the rural poor. Recognizing vulnerability to risk as a major constraint to agricultural productivity and improved welfare, the Philippine government created the Philippine Crop Insurance Corporation (PCIC) in 1989 to provide a "multi-peril" crop insurance product for rice and corn farmers, designed to help ameliorate the consequences of the many agricultural risks posed by typhoons, floods, droughts, and various pests and crop diseases. In a country that is affected by about 19 typhoons in a typical year, the need for such insurance is especially pertinent. However, take-up remains low, and no private market for crop insurance has developed.

The study took place in the Bicol region of the Philippines, situated among a "typhoon belt" where risks to agricultural production are particularly high. The research focused exclusively on rice cultivation, which is the major agricultural activity of the region.

Details of the Intervention

Over three consecutive farming seasons (two dry seasons and one wet season), the research team invited farmers tilling at least two irrigated rice plots to participate in the study. Participants could then enter a lottery where there was about a 70 percent chance that at least one of their plots would receive free crop insurance for that season. To see if farmers preferred to have certain plots insured over others, before the randomization, the farmers were asked to rank their plots in order of priority to receive insurance. Each farmer's first-choice plot was allowed a slightly higher chance of receiving free insurance to motivate them to rank plots in accordance with their actual preferences. Farmers were then entered into a lottery and randomly allocated to one of three groups:

Group A (66.5%; Full Randomization): Received insurance on a random half of their plots.

Group B (3.5%; Choice): Received insurance on a first-choice plot and a random half of remaining plots.

Group C (30%; Comparison group): Received no insurance.

The product paid out per hectare of insured land in proportion to the share of harvest lost to specific causes. As most farmers had limited or no experience with crop insurance, a member of the research team explained the product and claims process in person while providing informational materials, including an explanatory comic strip. The research team also followed up with insured participants through in-house visits and text message reminders throughout each season.

Independent surveyors conducted three surveys throughout each farming season: a baseline before the randomization, a follow-up survey after planting, and an endline survey after harvest.

Results and Policy Lessons

Damages from preventable causes (i.e. pests and crop diseases) were higher on randomly insured plots by about 25% when compared to non-insured plots. In contrast, there was no difference in typhoon and flood damage across insured and non-insured plots of the same farmer. This difference suggests that farmers may respond to risk-mitigating insurance cover by reducing effort to prevent damages (i.e. moral hazard).

The findings also suggest that farmers used less fertilizer on insured plots. Taken together, these findings suggest innovations in monitoring that limit moral hazard while keeping transaction costs low may be necessary for insuring against preventable kinds of losses.

Moreover, farmers preferred insurance on plots that were low-lying and prone to floods, characteristics that are mostly unobserved by the insurance company. The plots selected by the farmers to be prioritized for insurance coverage had 20% higher damages from flooding than other plots in their portfolios, suggesting the presence of adverse selection as farmers preferred to insure their more vulnerable plots. This finding suggests that insurance companies may need better assessment tools to help them identify risk characteristics (e.g. more precise altitudinal data to assess flood risk) and vary premiums based on this information.

The identification of both moral hazard and adverse selection at work help explain why insurance markets have failed to develop and point the way to creating more viable products for farmers in the developing world.

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