

# Savings Devices and Weather Insurance for Farmers in Senegal and Burkina Faso



Farmers in Sub-Saharan Africa, especially those in the Sahel region, face a wide range of risks to their welfare and livelihoods, such as drought, price fluctuations, and family illness. This study in Burkina Faso and Senegal evaluated the impact of weather insurance and three savings devices on a variety of investment and welfare outcomes, and tested if demand for the products differed among men and women. Farmers who purchased insurance realized higher average yields and were better able to manage food insecurity and shocks than those who used the savings devices offered. Female farmers were less likely to invest in the insurance, however, suggesting that gender differences in demand for financial products may disadvantage women.

## Policy Issue

Farmers in many developing countries are subject to a multitude of hazards, from droughts, to price dips, to illness. In West Africa, for example, almost every rural household manages farmland and is exposed to the risk of unpredictable rainfall.<sup>1</sup> Research indicates that poor, rural households are unable to fully insure against such shocks,<sup>2</sup> and that an inability to manage risks have long-run welfare implications.<sup>3</sup> While there is a fast-growing policy interest in offering financial products to help rural households manage risk, the evidence is still scant as to which products are the most effective. A combination of financial products may allow households to best manage multiple shocks. While weather insurance may help rural households manage the impact of widespread drought, it will not help a farmer manage losses localized to his fields. Similarly, improved access to savings accounts may allow households to quickly respond to unexpected illness, but it will have little value in helping households manage large or repeated shocks, like drought. This study contributes to a fast-growing body of research on the demand for, and impact of, financial instruments that help households manage risk.

## Evaluation Context

The Sahel, the belt of land that lies along the southern edge of the Sahara desert, is one of the poorest and most vulnerable regions in the world. With low rainfall, frequent droughts, floods, and now, desertification, the region is a very a difficult and risky place to farm. Yet agriculture is the main source



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of livelihood for the majority of people in the Sahelian countries of Burkina Faso, Chad, Mali, Mauritania, Niger and Senegal. Not surprisingly, farming families in this region are prone to food insecurity and malnutrition.<sup>4</sup> Most participants in this study cultivated less than six hectares of land.

## Details of the Intervention

Researchers evaluated and compared the impact of weather insurance and three savings devices on farm inputs, agricultural output, and household welfare, and tested if demand for the products is different among men and women. The randomized evaluation was conducted with approximately 800 individuals in rural areas of Senegal and Burkina, specifically in Kaffrine Region (Senegal) and around Bobo-Dioulasso (Burkina Faso).

The evaluation was conducted with 14 rotating savings and credit associations (ROSCAs) and 17 farmers' groups. ROSCAs had to hold regular meetings in order to be eligible for the study. ROSCAs in both countries were only composed of women, while farmers groups were entirely male in Senegal and mixed in Burkina Faso.

Twenty participants at a time were invited to sessions where they received 6,000 CFA (about \$12), information about a certain product or financial device, and the option to allocate some or all of the money to the financial product offered to them.<sup>5</sup> At each session, the researchers randomly assigned individuals to be offered one of four products:

- 1) *Insurance*:** An index insurance product that provided protection against too little rainfall for the main crop in the area (groundnuts in Senegal, maize in Burkina Faso).
- 2) *Low-commitment savings for inputs*:** Participants were encouraged to save for agricultural inputs through earmarking. They placed money for agricultural inputs in an envelope labeled "agricultural savings", kept at home
- 3) *High-commitment savings for inputs*:** Participants placed money for agricultural inputs in an envelope labeled "agricultural savings" and the treasurer of the ROSCA or farmers group kept the envelope. To withdraw money the participant had to go through the treasurer and record the amount of money withdrawn and for what purpose. The treasurer of the group was encouraged not to give out the money until the input fair one month later. Participants earned interest on the savings, with varied interest rates across experimental sessions.
- 4) *High-commitment emergency savings*:** Participants placed money for emergency expenses in an envelope labeled "emergency savings" that was managed by the treasurer of the ROSCA or farmers group. All withdraws took place through the treasurer, who was encouraged to only give out the money for emergency purposes. Participants earned interest on the savings, with varied interest rates across experimental sessions.

One month after the original experimental session, participants attended fairs where they were given the option of purchasing inputs. Participants in Groups 3 and 4 received the remaining money that had saved with the group treasurer and any interest that was due to them. Participants in Group 4 (savings

for emergencies) were offered the opportunity to save again with the group treasurer for further safe keeping over a three-month period at the same interest rate as before. Outcomes were measured one month and six months after offering the insurance and savings devices (during the growing season and after harvest).

## Results and Policy Lessons

*Demand for the products:* Demand for insurance was significantly higher than for the savings devices. A majority of individuals offered the emergency savings product invested more than 4,000FCFA. In Burkina Faso, most participants offered the emergency savings device at the experimental session invested the entire lump sum they received. In contrast, a majority of individuals offered the insurance product invested amounts lower than 1,500 FCFA.

*Farm inputs and output:* The average input use and production behavior of those offered insurance and those offered savings treatments were not significantly different on average. However, those who actually purchased insurance invested significantly more in agricultural inputs than those who did not. Higher use of inputs also resulted in higher yields for those who purchased insurance. Investing an additional 1000FCFA (US\$1.6) in weather insurance led to a 10 percent increase in yields.

*Household welfare:* Individuals offered the insurance product were better able to use their own savings to manage shocks that occurred during the study period (4 percentage points higher), relative to those offered one of the savings products. The savings devices did not produce a significant increase in household savings, food security, or consumption.

*Gender differences:* Women invested significantly less in the insurance product, almost 30 percent less. Given the positive impacts of purchasing insurance on agricultural investment, yields, and welfare, the results suggest that this lower take-up of agricultural insurance disadvantages women.

Researchers hypothesize the gender differences stem from the higher levels of health-related risks women face, such as the risks of childbirth or risks of lost income as a result of caring for sick children. In an environment in which these costs are uninsured and fall primarily on women, a rainfall insurance product carries less value for women than for men.

Further work is needed to understand whether this is indeed the main factor behind the gender difference in demand and, if it is, to understand how financial products can be better designed to meet the different risk needs of women.

## Sources

1. Karlan, Dean, Isaac Osei-Akoto, Robert Osei, and Chris Udry. "Examining underinvestment in agriculture: Measuring returns to capital and insurance." *à paraître* (2011).

2. Townsend, R.M. 1994. Risk and Insurance in Village India." *Econometrica: Journal of the Econometric Society*, 62(3): 539-591.

3. Dercon, Stefan. "Growth and shocks: evidence from rural Ethiopia." *Journal of Development Economics* 74, no. 2 (2004): 309-329.

4. World Bank. "Transforming Agriculture in the Sahel." Available at:  
<http://www.worldbank.org/content/dam/Worldbank/document/Africa/transforming-agriculture-in-the-sahel-background-note-english.pdf>