FONDATION POUR LES ÉTUDES ET RECHERCHES SUR LE DÉVELOPPEMENT INTERNATIONAL

Interlinking insurance with credit to enhance smallholder agricultural productivity: a pilot application to Ethiopia

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Agriculture is the main sector of the Ethiopian economy. It accounts for a little under 50 percent of the gross domestic product, provides employment for 80 percent of the population, generates about 90 percent of the export earnings and supplies about 70 percent of the country's raw material to secondary activities. Over 95 percent of the cultivated land is under small-holder peasant agriculture.

policy brief
23
April
2011
note brève

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Most of Ethiopian agricultural production takes place under rainfed conditions and is exposed to weather variability. Furthermore, the use of improved inputs, such as fertiliser and improved seeds is very low. Fertilizer use, while profitable, is risky, and lack of cash and access credit are compounded by the lack of weather related insurance, leading to low levels of input use and inefficient production choices. Weather index insurance provides a possible way out of this low productivity trap. However, stand-alone weather index insurance contracts have met with indifferent demand and low uptake by the intended beneficiary populations and will anyways not address a lack of credit availability.

Indeed, private bank credit for smallholder agriculture is almost completely nonexistent in Ethiopia. Virtually all agricultural production credit available is given via government guarantees, a system that sharply restricts overall access to credit and hampers the long-term growth of agricultural productivity. Given this pairing of high risk with limited credit supply, barriers to the growth of agricultural finance come from both the supply side as well as the demand side. On the supply side, private banks and microfinance institutions find it very risky and expensive to provide credit to rural smallholders, thus rationing the supply of credit or making available contracts that maybe too expensive or too demanding on collateral. On the demand side, apart from the situations where farmers may not have adequate collateral, even in situations where credit is available farmers may find it too risky to borrow.

The Ethiopian Project on Interlinking Insurance with Credit in Agriculture (EPIICA) seeks to address this multiple market failure by explicitly interlinking rural credit with weather index insurance. Our project addresses supply-side issues by providing weather insurance directly to the country's major private bank, Dashen. The bank becomes the beneficiary on a weather insurance policy, removing the dominant source of covariate risk from their portfolio and enabling an expansion into agricultural financing that would otherwise be insurmountably risky. The project addresses demand-side constraints by then marketing this interlinked product directly to cooperativized farmers as a state-contingent loan; in the good state of nature the farmers will need to pay back the loan, the premium payment on the insurance, and the interest on both, but in the bad state of nature the farmers will owe nothing. By reducing the risk of weather-driven default for borrowers, we hope to crowd in credit demand and enable a first-order expansion of agricultural productivity as farmers are able to use credit to transition to a higher-risk, higher-yield farming technology.

There are two types of product, that will be marketed to farmers. One is a standalone index insurance contract, that insures an amount per hectare roughly equal to the cost of modern inputs (fertilizer and seeds), and pays when rainfall in a nearby rainfall station is below levels determined by water requirements for given crops, periods, and locations. The idea is to insure the cash advances of farmers for input purchases. The second product involves the insurance product above, but at the same time a bank loan that covers the cost of inputs, as well as the premium of the insurance. 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 bank in turn lowers accordingly the repayment obligation of the farmer. A private insurance company and a private bank have agreed to implement this product in regions that exhibit good but unrealized agricultural production potential. The products will be tested in the field via a two-armed randomized trial, with the standalone and interlinked arm

each being compared to a pure control group that is offered neither product.

Our project focuses on the existing agricultural supply chain, which is composed of village-level cooperatives of 200-300 farmers, organized in turn underneath Cooperative Unions (CUs), which are apex organizations of several individual village (Kebele) level cooperatives. The CUs will serve as signatories on the interlinked loans, ensuring that they use their considerable power to ensure that loans to this new private entity are repaid. In addition, the use of the Unions as intermediaries helps to keep costs down by exploiting existing supply chains to aggregate together demand. The CUs aggregate farmer demands for inputs and loans, from village cooperative level demands, which in turn aggregate individual farmer demands, and provide the lowest level direct contact with farmers, for both loans and inputs. Also as the CUs are entities with the legal authority to contract with banks, they are much easier for formal financial institutions to deal with than individual village cooperative or 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.

The implementation of such a product is subject to a host of difficulties. The following are highlighted.

1. Considerable attention needs to be paid to the design of an appropriate rainfall based index. The index must be simple to understand, readily observable, and correlate with losses due to rainfall at farm level. It is quite difficult to achieve all three of the above attributes with one index. The reason is that rainfall at the individual farms may not be strongly correlated with the rainfall observed at the station (basis risk). This may erode the confidence of the recipients to the index and the insurance product. While it is possible to construct indices that are much better correlated with individual farm yields, they tend to become more complicated and difficult to explain to non-specialists, the more accurate they become.
2. Compounding this problem is the issue of data availability and quality. Rainfall data, for instance may not be available for long pereiods, and may have large gaps. This can affect the design of any weather index.
3. The joint cost of insurance and credit maybe quite high, thus making the products expensive and hence affecting demand negatively. This despite the fact that the separate costs of standalone insurance plus the equilibrium rate of interest of a pure credit product may be higher than the joint cost of the interlinked product. In the Ethiopian case the government limits the rate of interest on agricultural loans, and this affects negatively the supply of loans. On the other hand the availability of insurance may induce private banks to extend loans even at the controlled low interest rate.
4. The insurance company and the financial institution must work jointly to understand design and market the relevant products.
5. To measure impact, one needs to put a proper impact evaluation design in place based on randomized selection of beneficiaries. This presents considerable challenges that must be agreed with the participating insurance and bank, as well as with representatives of the beneficiaries.

Designing new credit and insurance contracts in a country with no private ownership of land and no history of private bank lending to agriculture is a challenge. The promise of the project, however, is that by bringing together private-sector financial institutions and a novel set of contracts, it may be possible to undo the interlocking set of market failures that have bedevilled smallholder farmers in this very risk-prone environment. By making Cooperative Unions

signatories on the loan contract, we hope to be able to trigger a form of informal mutual insurance between cooperatives within a Union and between members of a village-level cooperative, inducing them to pool risks that are not covariate. By further providing external insurance against the more severe weather-based correlated risks we hope to provide an investment environment in which smallholder farmers are willing to undertake risky but productivity-enhancing investment in their farms.

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policy brief 23 April 2011 note brève