

Optimal packages: A review of impact assessment approaches of bundling crop insurance, credit and inputs for smallholder farmers in Africa

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1 Introduction: background of credit and input constrained farming

African farmers are mainly smallholder farmers, with average farm size of 1-2 hectares. They tend to be constrained in investing in productivity-enhancing technologies because of limited household resources combined with a lack of access to external finance. Smallholders' access to credit provided by banks or special rural credit institutions has hardly been established. One of the constraints on such lending is the limited amount of collateral to securitize the repayment of the loan. This means that the bank will have little recourse against defaulting borrowers. As a result, high-return economic cropping activities which typically require significant up-front investments (e.g., enhanced seeds and fertilizers) are hampered by these credit constraints.

It is known that the provision of insurance can encourage higher supply of credit. However, more insight into the impact of linking crop insurance and credit is needed since there is a lack of information in the literature regarding the potential effect of bundling insurance and credit. In this conference paper we will elaborate on the methodological approaches, which foster lesson-sharing, empirical findings and describe the encountered challenges in impact assessment.

2. The theoretical appeal of bundling crop insurance, credit and inputs

Linking credit and insurance can transfer part of the risk of lending from the farmer to the insurer. African farmers are exposed to a high degree of weather-related risks. Especially drought can severely affect crop yields and destabilizes farm incomes. Smallholder farmers in Africa have, till now, limited options in managing these crop risks because of severely underdeveloped insurance markets. Insurance is an ex-ante measure to cope with crop losses by smoothing farm income. Neither credit nor insurance markets are likely to emerge independently in low-collateral environments and incomes are likely to stagnate.

Even if lenders are willing to grant loans without or low level of security, they will need to be more stringent with credit supply conditions to account for the default risk as a result of harvest failure. Insurance can ease the conditions of credit provision with respect to interest rate, collateral, and deposits (i.e., cash collateral).

Thus bundling can have an impact on both the implied demand for credit and the supply thereof. Optimal packages can be derived using the analysis of the supply and demand sides. These 'conditional equilibrium' analyses are up to now lacking to guide the recommendations as to how packages can be attuned to smallholders.

3. Methodological approaches of impact assessment with respect to insurance, credit and input bundles

The attribution of production changes to each source of change is the objective of an impact assessment. This assessment requires the combination of baseline and endline data whereby measures of relevant indicators should be available at the start and several years after implementing the bundle. Importantly, to avoid confounding impact of the bundle and general trends, it is imperative to collect data from smallholders receiving the bundle (so-called treatment cases) and smallholders not selected to receive these bundles (so-called control cases).

The ideal approach would be to measure the impact by means of a randomized controlled trial (RCT) so that eventual differences between groups can be attributed unbiased to the bundle. In case an RCT is not feasible, dynamics of the rolling out of the intervention is exploited by using for example

difference-in-differences designs to gauge impact, possibly augmented with propensity score matching to create a superior counterfactual. Given reluctance to conduct RCTs an alternative is to use encouragement designs. With an encouragement design uptake is encouraged (for example by marketing campaigns or visits by loan managers) for a random group of farmers (or a randomly chosen group of villages); but nobody will be excluded from uptake. If uptake is highly correlated with the randomly assigned encouragement, unbiased impacts can be measured (in line with a normal RCT).

However, most empirical studies are based on ex-post cross-sectional data. Such an approach is unlikely to yield unbiased assessment of impact. Moreover, research has focussed mainly on determinants of adoption rather than the impacts on adopters.

Quantifying the isolating impact is inherently difficult since several modalities are bundled. Hence, the intervention is multi-dimensional. Impact assessment of insurance is often embedded with access to production finance and input supply as well as collective action and pre-harvest assessment. Since smallholders do not have options to choose between modalities only two groups are generally distinguished (e.g., treatment group of smallholders with access to the bundle and a control group). The modalities of the bundles need to be modified so as to test their individual effectiveness. Quantifying the attribution of each modality is more challenging than quantifying the overall impact. To study the impact of each modality would require a (full) factorial experimental design, which is often practically infeasible or not desirable. However, evidence to bear on how farmers' uptake of packages responds to composition and to price are useful in recommending improved packaging.

4. Reviewing type of bundles and their impact where implemented

In the current conference paper insurance bundles in Africa are reviewed in which authors are contributing (i.e., LIMA scheme in Zambia, ACRE in Kenya, and PlaNet Guarantee in Burkina Faso and Mali). Additional key cases are supplemented for which basic summary data is publicly available.

Description of the case studies will focus specific on reported determinants of adoption (e.g., farm and farmer characteristics), methodology used for impact assessment, reported insurance related characteristics (e.g., insurance uptake, premiums and pay-outs) and reported impact of the bundle (does uptake of the risk management tool affect farm investments, production levels, producer income, and food security).

The analysed cases are quite diverse with respect to type of insurance (i.e., indemnity-based versus index-based) and modalities of the bundle (e.g., mandatory versus voluntary insurance if requesting for credit, group-based versus individual-based). Reviewing the current state of affairs reveals that empirical evidences of linkages is partly addressed. Cases report impact with respect to improved loan recovery rates by banks, increased funding capacity, lower interest rates of the principal loan, lower cash deposits or more competitive interest rates of the cash collateral.

While first successes in current cases are observed, the question can be raised if all the ingredients are needed and what a change (in package or grouping) would imply for the price and conditions of the loan. The way forward is in creating more competitive financial service packages for small-scale farmers such that insurance premiums that lower the credit risk are (partially) set off by more competitive credit provision.

5. Concluding remarks

Linking crop insurance with rural credit and input potentially offers important advantages to smoothen and enhance smallholders' income. The reviewed cases provide an opportunity to analyse the impact of the credit-insurance-input-extension model and addresses shortcoming in current impact assessments. The ultimate goal is to enhance the agricultural productivity of smallholder farmers by improving the contribution that insurance products can make in providing farmers with access to inputs that can reach larger numbers of smallholders at lower costs.