Assessment of agriculture insurance linked to contract farming and government input subsidy scheme in Zambia

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Process evaluation report

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About this study

This process evaluation was submitted in partial fulfilment of the requirements of grant TW13.I.1091 awarded under Agricultural Insurance Evidence Programme. This version of the report is technically sound and 3ie is making it available to the public in this final report version as it was received. No further work has been done.

The 3ie technical quality assurance team comprises Bidisha Barooah, Benjamin Wood, Stuti Tripathi and Deeksha Ahuja, with overall technical supervision by Marie Gaarder.

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Contents

1. Introduction

Climate scientists now have high confidence that the incidence and the severity of extreme weather events is increasing, and will continue to increase as global warming proceeds (Alexander, 2016; Ummenhofer and Meehl, 2017). This means that farmers dependent on rainfed agriculture will face ever-increasing risks of crop damage due to these extreme weather events. In Zambia, nearly all smallholders are dependent on rainfed agriculture; in 2013, more only 16% of smallholder households had access to irrigation[1]. Farmers have always been exposed to weather risks, but evidence suggests that their current risk management and risk coping strategies are not sufficient to shield them from welfare losses due to these shocks. For instance, Arslan et al. (2015) show that farm households in Zambia suffer losses to both crop production and overall income in the face of weather shocks, despite undertaking measures to reduce potential losses ex ante and to cope with shocks ex post. In this environment, access to agricultural insurance should complement existing risk management strategies and help households cope with weather extremes.

1.1 Why this issue is important

Weather index based insurance (WII) products have been piloted in a wide range of countries across Africa, Asia and Latin America, as well as some developed countries (c.f. Marr et al. 2016 for a review). Despite global-, regional- and national-level interest in WII products, it is commonly acknowledged that weather index-based insurance has not performed as well as originally hoped, for a wide-variety of reasons (Hess and Hazell 2016; Binswanger-Mkhize 2012). Some of the key hurdles hypothesized to affect take-up include difficulty in understanding the concept of index-based insurance, and concern that a payout won't be made even though the farmer experiences poor rainfall (basis risk) (Hess and Hazell 2016; Ceballos 2015). Additional hurdles include the level of trust farmers have that a payout will be made when it should be made, influence of patterns of adoption within one's social network, the fact that premiums are often due at the beginning of the cropping season when cash constraints are binding, and understanding of how formal insurance complements existing risk management and coping strategies, amongst others (c.f. Boucher and Delpierre, 2014; Chantarat et al., 2013; Cole, et al., 2013; Gine et al. 2008). Thus, there remains a great deal of interest in determining which WII products can be successfully marketed, as well as the subsequent impacts on the well-being of farm household members.

During the first phase of this project, we have focused on a WII product being marketed by NWK, a cotton agro-processor, in Zambia. The WII product was first pilot-tested in Southern Province, and began roll-out in Eastern Province two years ago. And, they plan to expand coverage to Copperbelt in the upcoming rainy season this Autumn. The WII product covers both excessive low and high rainfall, with triggers established for two phases of the growing season. Smallholder cotton farmers sign up voluntarily for the insurance coverage at the beginning of the season, when they also receive their input packages from NWK. If a payout is not triggered, the cost of the insurance is deducted from the revenues they receive when they deliver their harvest to NWK. If a payout is

[1] Authors' calculations using the publically available Rural Agriculture and Livelihood Survey (RALS) dataset.

triggered, then the cost of the input package is covered, and they retain the full revenue from whatever harvest they deliver minus the insurance cost. Because farmers do not have to pay the premium at the beginning of the cropping season, the product is more attractive to farmers who are cash constrained in that time period. This feature of the product should make more attractive to a wider range of farmers; Casaburi and Willis (2017) document relatively high take-up rates for a similar insurance product offered to contract sugar farmers in Kenya.

In this first phase, we used a number of methods to evaluate the best way to structure an "encouragement" design to be implemented in the second phase. Given that enrollment in the WII is voluntary, this is the most practical method to implement a rigorous impact assessment in the second phase. To this end, we undertook two rounds of focus group discussions (FGDs), and we also analyzed a nationally-representative household dataset that contains relevant information on current exposure to weather extremes as well as current risk management and risk-coping mechanisms. Because uptake has been low and/or variable over time in certain pilot schemes, it is critically important to develop an effective encouragement design that increases demand in the initial years and creates sustained interest over time to foster continuous adoption.

There has been a lot of support from the government through both the Ministry of Finance and the Ministry of Agriculture. Initially agriculture insurance attracted value added tax (VAT) of 15% on the risk premium, but through lobbying the government waived the VAT and introduced a levy of only 3% for all insurance products targeting small scale scale farmers. This tax waiver can essentially be considered as low cast premium subsidy by the government.

Additionally, the government has included insurance as one of the components under its input support programme. The Farmer Input Support Programme (FISP) weather index insurance product is distributed in connection with the Zambian Ministry of Agriculture's Fertilizer Input Support Program. In 2014/2015 season, the Zambian Ministry of Agriculture initiated a pilot project delivering the FISP input subsidy in 13 districts, through pre-paid bank cards (so-called Electronic Voucher system) rather than via centrally procured and directly delivered inputs. Though the insurance component of the programme still needs to be refined so that it becomes a viable product, the initiative does highlight high-level government interest in developing insurance products for smallholders.

In addition to the government, there is also strong interest amongst agro-processors. For instance, the Cotton Board is supportive of the cotton ginners participating on such schemes. Risk Shield organised a full day workshop where both the cotton companies and Cotton Board attended to share the experiences of NWK. And, the Pension and Insurance Authority, the regulator of insurance companies, has supported the development of microinsurance products specifically targeting small scale farmers.

There are three key questions we address with this proposed work, of which the first refers to Phase 1 work. **First,** do targeted messages increase adoption of agriculture insurance, and/or reduce dis-adoption? **Secondly,** what is the impact of agriculture insurance on household decisions on risk management, e.g. crop and labor diversification, investments on- and off-farm; and, risk coping, e.g. skipping meals, taking

children out of school, selling assets? **Third,** what are the impacts on indictors of household food security and wellbeing, e.g. consumption per capita, dietary diversity and income and/or asset levels**?**

Finally, while the insurance scheme is currently being, or will be, implemented, they are still in early years, and we are optimistic that we can use the knowledge gained under Phase 1 to design a second phase based on an "encouragement design", and collecting both baseline and endline data. While everyone at baseline will have been eligible for one or two years beforehand, we can restrict the baseline sample to those who reside in geographic areas that have not yet received a payout, a random variable.

1.2 Relevance of the Evaluation

In Phase 1, the goal is to develop a successful encouragement design for Phase 2, and there is a critical knowledge gap in determining the most effective ways of encouraging farmers to enroll in WII programs. Outreach to farmers might include trainings, using videos as part of the training, leaving posters and other literature with local shed managers, and periodically touching base with farmers via SMS messages. Our over-arching evaluation questions included the following:

A. Can current training materials be improved to increase farmers' attention to, and comprehension of, the WII product?
B. What mechanisms and/or materials are effective at addressing some of the key barriers thought to hinder adoption of WII products, such as lack of trust of the insurer, concerns with basis risk, and lack of experience with the real value of payouts on the part of the farmers?
C. How often should farmers be contacted throughout the year, and via what mechanisms?

There is a nascent literature on the role of information dissemination and message design to improve insurance uptake (Bauchet et al., 2011; Dalal and Morduch, 2010). This literature focuses on the need to address non-price barriers to increase uptake of agricultural insurance, such as farmer lack of trust in the product or the insurer (Carter, 2014; Cole et al., 2010; Gine et al., 2008), the influence of social networks (Gine, Karlan and Ngatia, 2013), the need to situate formal insurance policies within the households overall risk management and coping strategies (Mobarak and Rosenzweig; Gine et al, 2008), and information targeted towards basic financial literacy in addition to specific information about the product (Cummins and Mahul, 2009; Dalal and Morduch, 2010; Gine, Karlan and Ngatia, 2013).

Reviewing the WII training of marketing materials of a crop WII product in Ghana and a livestock WII in northern Kenya, it is also clear that staff marketing those WII products also feel that helping the farmer to "feel" the experience of receiving a payout. This is done both through posters and videos that have similar storylines. Succinctly, two farmers are discussing a new WII product, one is skeptical, a third farmer who benefited from a payout then joins them and explains how great it is to receive a payout in a time of need, the interested farmer purchases insurance but the skeptical one does not, and then extreme weather hits and the farmer with insurance is very happy and the one without regrets the decision. Though research was and is being done on these products, there has been no formal evaluation of these types of outreach products on farmers

subsequent purchase decisions, though informal discussions with the researchers indicates that they believe they are successful. In terms of dissemination, the researchers also feel that multiple visits within the year were vital in promoting uptake.

While existing research discusses what elements might make outreach efforts more successful, actual evidence is still anecdotal. Our first phase research results thus **contribute important insights to the existing evidence** in a number of ways. First, we have systematically collected information on marketing and outreach materials and dissemination strategies, primarily based on information obtained during two rounds of FGDs. While the first round focused on obtaining information on farmers' comprehension of the insurance product and their opinions on strategies for dissemination, the second round followed a more structured format in order to elicit farmers' understanding and responses to different training and outreach materials. This is the first such evidence generated in the context of WII insurance in a developing country that we are aware of. Secondly, understanding how the WII product compliments existing strategies has been hypothesized to be an important factor in developing materials that will increase uptake of WII. In addition to collecting such information during the second round of FGDs, we also analyzed a nationally representative farm household dataset to determine the exposure of households to weather and other risks, as well as current risk management and risk coping strategies. This information will be used to inform the design of outreach materials that emphasizes the value of WII as part of an overall household risk mitigation strategies.

1.3 Overview of Report's Structure

Following 3ie's formative evaluation report guidelines, the second section will present the context in which the intervention took place, followed by a third section which give the intervention description and the theory of change. In the fourth section, we present our monitoring plan. Section 5 presents our evaluation questions and primary outcomes, and section six discusses our evaluation design, data and methods. Section 7 gives the studies timeline of activities. Section 8 presents the main findings of our evaluation, and section 10 presents the major challenges and lessons learned. The main body of the report is then followed by the appendices.

2. Context

2.1 Study population

The focus of our intervention is on farmers who grow cotton and who typically contract with NWK, a large cotton agro-processor. These farmers are concentrated in Southern, Central, Eastern and Copperbelt provinces; though the second phase work will include only farmers located in Eastern and Copperbelt provinces. NWK typically contracts about 70,000 farmers per year, providing cotton farmers with an input package at the beginning of the season, which is repaid at the end of the season once the farmer makes delivery. During the 2013/2014 and 2014/2015 seasons, NWK piloted a combined insurance package that included weather index-based crop insurance in Southern Province. For the 2015/2016 season, the insurance product was made available for all 70,000 farmers who signed up for contracts with NWK at the beginning of the season in Southern, Central and Eastern provinces. As with inputs, the cost of the insurance is deducted from

the farmers total payment received at the time of delivery. Marketing of the product was done by group meetings held in villages where cotton farmers lived and then again at the NWK offices when the farmers came in to sign their contracts. In the 2015/2016 season, 52,000 farmers signed up for the insurance and 18,000 did not[2].

2.2 Rationale for study site selection

For the focus group discussions (FGDs), we first went to villages in Southern and Central provinces, areas where farmers were more likely to be exposed to previous dissemination efforts on WII products. In the first round, we used a less formally structured FGD format, to elicit information on current understanding of WII by FGD participants as well as their opinions how to improve both the product itself as well as marketing and information dissemination strategies. In the second round of FGDs, NWK shed managers helped to select 10 villages in Eastern and 5 villages in Copperbelt. The NWK WII had been available during the previous 2 seasons in Eastern, though with more limited outreach efforts than had been implemented in Southern. Nonetheless, we only went to villages located in sheds where no payouts had been triggered in either season. The product is not yet available in Copperbelt, so the shed managers help select 5 villages that he thought were representative of villages with cotton growers in the area.

In phase 2, our sample will only include households located in sheds in Eastern with no experience of a payout, while all households located in NWK sheds in Copperbelt may fall into the survey sample. We chose to go to areas with relatively more exposure to WII outreach campaigns in order to get feedback on that material from participants who have at least some familiarity with the product. In the second round, however, our goal was to elicit feedback on specific elements of potential outreach materials to be used as part of the encouragement design in the second phase, thus motivating our choice of villages in specific Eastern and Copperbelt sheds.

Finally, we used a dataset that is representative at the national and provincial levels.

2.3 Current situation of agricultural insurance in the study area

As noted above, the NWK cotton insurance product was piloted in a few sheds in Southern, Central and Eastern provinces since the 2013/2014 season, and was expanded to cover all sheds in the 2015/2016 season in these three provinces. We note here that the 2015/2016 season was predicted to be a drought season across many areas of Zambia including Southern, and parts of Central and Eastern. Enrollment rates in that year were quite high across the provinces, particularly Southern. Overall, nearly 75% of more about 70,000 contract farmers enrolled in the product. These high rates were primarily due to the fact that NWK distributors allowed farmers to enroll in the insurance scheme after the season had begun. This was a “lesson learned” by NWK, particularly since their re-insurer did not fully re-imburse NWK, though NWK did honor all of the insurance contracts.

[2] Note that we had originally intended to also work with a maize WII being offered by the government coupled with their Farm Input Support Program (FISP). Due to serious delays in the roll-out of the FISP, we were forced to abandon activities associated with the FISP.

In the 2016/2017 season, a total of 4,338 farmers enrolled in the insurance scheme, out of 46,346 farmers enrolled in sheds which offered the insurance product. Unlike the previous season, both the total number of farmers contracted and the insurance enrollment rate were lower. The total number of contracted farmers was lower primarily due to the low cotton prices at planting, particularly relative to soybean, and so many farmers switched to soybeans or other legume crops. The enrollment rate of 10% reflects the fact that the enrollment period ended before the coverage period (as should be the case), and we expect that this rate will be consistent with future observed rates for those who are only exposed to the basic training. Overall, the NWK scheme, with a few years of pilots and a few more years of experience rolling out the product more broadly, has worked out many of the issues hampering upscaling the product. However, evidence suggests that it takes farmers time to learn about how the product really operates and its potential benefit. This is highlighted by the fact that a higher fraction of farmers enrolled in the insurance scheme in Southern province, where outreach efforts have been more intensive, versus Eastern, where such efforts have been limited by resource constraints.

As noted above, the very wide-scale government input support programme is piloting an insurance product, but it is still in the early stages and not yet operating in a viable manner. There have also been other small pilots supported by donors and NGO's, but none of these products has yet been successfully upscaled.

Finally, as discussed in more detail in the results section, cotton-growing households have a number of risk management practices and risk coping strategies already at their disposal, from adopting "sustainable land management" (SLM) practices to relying on coping mechanisms such as seeking assistance from friends and relatives in their social networks, selling livestock and other assets, and reducing consumption in the short term. However, relatively few farmers adopt SLM practices, while selling livestock and reducing consumption can be very costly coping strategies in terms of future well-being of household members. It is also worth noting that access to credit from any source is very limited, and is thus not a viable coping mechanism for most households.

3. Intervention description and theory of change

Though the overall goal of the both Phase 1 and Phase 2 assessment is to evaluate the impact of a WII product on smallholder, cotton-farming, household welfare, in Phase 1, we focused on developing an "encouragement design to be implemented in Phase 2. In phase 2, the intervention is the WII product being marketed to smallholder cotton growers. In Phase 1, the "intervention" might best be characterized as a series of activities aimed at developing an encouragement design that can be successfully implemented in Phase 2.

As is well known, designing a successful encouragement design for voluntary programs is often difficult, leading to take-up rates that do not differ substantially between treatment and control areas. We also know that NWK is not interested in offering subsidies to many households, and in any case, the budget for Phase 2 would not allow for significant monetary incentives. Instead, we will rely on developing and disseminating additional marketing and outreach materials in order to induce greater participation among the treatment vs. control households.

As discussed above, there has been limited research and anectdotal evidence on how outreach and marketing materials can be made more effective. We initially had planned 5 activities, or inputs, in order to develop the encouragement design; but as documented in the mid-term report, we were not able to fully undertake two activities due to the timing of the Phase 1 initiation. Instead, we undertook the following Activities:

1. Summarize lessons learned from materials developed for WII programs in Zambia (NWK, FISP), previous WII pilots and programs, e.g. publications, discussions with staff of WII programs implemented in other countries, marketing materials that have been used, etc.
2. First round of Focus Group Discussions and Key Informant Interviews, with the objective of getting broad feedback on perceptions of the insurance product itself, farmers ability to understand specific features of the product, the types of materials and messages farmers would find useful, and the timing and number of contacts, in addition to the basic training.
3. Analyze a national-representative dataset covering rural smallholders in Zambia, with the aim of understanding the current level of exposure to extreme weather events, as well as current risk management and risk coping strategies.
4. Second round of Focus Group Discussions. In this round, we used "concept-testing", to analyze the effectiveness of different training, outreach and marketing materials. The concept elements tested for a number of materials are: 1) Attention, 2) Comprehension, 3) Motivation, 4) Personal Relevance, and 5) Cultural Appropriateness.

The outputs, described in more detail in section 8 below, are lessons learned from each activity with explicit recommendations for designing training sessions and developing outreach and marketing materials that effectively increase demand for the WII product by smallholder cotton farmers. The outcome is an effective encouragement design that will be implemented in Phase 2, and the impact is a successful impact evaluation.

The primary assumption relating the outputs to the outcome is that our work has generated a sufficient amount of information on which to generate an effective encouragement design. While we have obtained excellent information from the FGDs the key informants, and the results of the data analysis, there remains some risk that the additional activities we will undertake and materials we will disseminate under the encouragement design do not induce a sufficient increase in WII uptake rates for treatment groups in Phase 2. Moving from the outcome to the impact, key assumptions include the following: 1) that there are sufficient resources to fully implement the encouragement throughout the life of the project, 2) that there are limited spillovers across farmers located in the different NWK sheds, and 3) that the WII product is offered throughout the duration of the project.

4. Monitoring Plan

Given the nature of Phase 1 activities, and the short duration of the project, our monitoring plan consisted of ensuring that the timeline of activities was met, that outputs from each activity were delivered on time, and that the mid-term and final reports were delivered to 3ie on time.

5. Evaluation Questions and Primary Outcomes

Our primary outcome of interest is an effective encouragement design that induces higher subscription rates of the WII product among farmers located in treatment areas. The main objective of the phase 1 was to collect all relevant information required to develop an effective encouragement design. The main evaluation questions were as follows:

A. Can current training materials be improved to increase farmers' attention to, and comprehension of, the WII product?
B. What mechanisms and/or materials are effective at addressing some of the key barriers thought to hinder adoption of WII products, such as lack of trust of the insurer, concerns with basis risk, and lack of experience with the real value of payouts on the part of the farmers?
C. How often should farmers be contacted throughout the year, and via what mechanisms?

The first question addresses developing materials that both capture farmers' attention and leads to a high degree of understanding of the WII product amongst the farmers. The second question addresses understanding the concerns farmers express once they have learned about the WII product, so that materials can be developed which place WII insurance in the broader context of their risk management strategies. The final question addresses the timing of interventions throughout the year, and mechanisms can be cost-effectively utilized to ensure "presence" throughout the year.

6. Evaluation Design, Data and Methods

The main methods used in undertaking phase 1 research included: 1) review of lessons learned by other WII projects, 2) analyzing a rural household dataset to understand current exposure to weather risks, and current risk management and coping strategies, 3) A first round of FGDs to elicit information on farmers' comprehension of WII, and opinions on materials currently being used to promote the WII product, and 4) a second round of FGDs, with structured sessions designed to "concept-test" current materials along five elements: 1) Attention, 2) Comprehension, 3) Motivation, 4) Personal Relevance, and 5) Cultural Appropriateness.

6.1 Sampling Strategy and Data Used

For the first round of focus group discussions, we met with farmers in Southern and Central provinces, who were more likely to be familiar with the WII product. In this first stage, our objective was to obtain feedback on farmers' current understanding of the product and of training and outreach materials currently in use. In the second round of focus group discussions, we met with farmers in Eastern and Copperbelt provinces, where phase 2 will be implemented. In Eastern, cotton farmers were able to purchase the WII product last year but training and outreach activities have been less intense than in Southern and Central provinces. Additionally, we only went to areas where no farmers had experienced a payout from WII. The WII product will rolled out in the Copperbelt province in the next season, so farmers there had not yet been exposed to any outreach activities. Our objective for the second round of focus group interviews was to obtain feedback on five elements critical to developing effective outreach strategy to implement in phase 2, described more fully below in section 6.2.

For the data analyses, we used data from a nationally representative household survey implemented in 2012 by the Central Statistics Office (CSO) of Zambia, in collaboration with the Indaba Agricultural Policy Research Institute (IAPRI) and Michigan State University. The Rural Agricultural Livelihood Survey (RALS) collects detailed demographic and farming information, including information relevant for assessing households risk management and risk coping strategies. Risk management refers to actions that a household can take beforehand to minimize the impact of shocks when they do occur; in this paper, we will focus on farming techniques that reduce crop losses when a weather shock occurs. Risk coping refers to actions that farmers can take to reduce losses to household welfare after a shock has occurred. Payouts from a WII product act as a risk coping mechanism.

While we do not have GPS coordinates for the households, we do know the wards in which households are located. This enabled us to match historical rainfall data to the wards. Specifically, the rainfall variables used in the analyses are based on data from the National Oceanic and Atmospheric Administration's Climate Prediction Center (NOAA-CPC), the Africa Rainfall Climatology version 2 (ARC2) dataset[3]. The dataset contains dekadal rainfall observations covering the period 1983-2012. The spatial resolution of the dataset is .1 degrees, which is about 10 kms at the equator.

6.2 Tools and methods used

We developed guidelines for the first-round of FGD's and key informant interviews, which are found in Appendix J. The second-round of FGD's, we developed structured sessions to elicit information following the "concept-testing" framework. Concept testing is used to ensure that communications materials are developed based on effective concepts that connect with the intended audience (Healthcompass, n.d.; Schwartz, 1987). While there are many examples in the marketing literature, we used the concept-testing elements described in Healthcompass (n.d.). The five elements are: 1) Attention, 2) Comprehension, 3) Motivation, 4) Personal Relevance, and 5) Cultural Appropriateness. Each FGD began with an introductory training session, which included the use of a poster.

To measure attention, we recorded all of the images and words that participants remembered from the poster, approximately 20-30 minutes after the introductory presentation ended, and the poster was wrapped up and stowed away. To measure comprehension, we recorded questions asked after the introduction. Additionally, about 40 minutes after the introduction, FGDs were divided into smaller groups, and the groups were then given 5 multiple choice questions to answer. To measure motivation broadly, we recorded comments that were given after the introduction. We also tested whether certain messages were effective as reminders to enroll before the enrollment period ended. For this session, we read out four potential short messages, which were also given to participants written in the local language. The objective was to determine which types of SMS messages were likely to be motivational, as many farmers do have cellphones. For personal relevance, we asked farmers to describe their current risk management and risk coping mechanisms, and how WII products "fit" into their current

[3] See http://www.cpc.ncep.noaa.gov/products/fews/AFR_CLIM/AMS_ARC2a.pdf for more information on ARC2.

strategies. We did not have a session explicitly on cultural sensitivity, but we were able to draw relevant feedback through responses to the poster, the short messages, and from participants comments after the introduction. A full report on the results from the second round of FGD's is given in Appendix K.

For the statistical analysis of the rainfall-data augmented RALS data, we used STATA to generate weighted descriptive statistics and to run regressions on outcomes of interest.

7. Study Timeline

As noted above, we undertook 4 main activities. The timeline to undertake and complete outputs for each activity is provided below

1. Review of Literature and other Experiences: Jan 1 – Mar 31, 2017
2. Statistical Analysis of RALS dataset: Feb 1 – Aug 31, 2017
3. First round FGDs and Key Informant Interviews Feb 1 – Mar 31, 2017
4. Second round of FGDs May 15 – July 31, 2017

8. Findings from the Evaluation

Results from Literature Review and other Experiences, lead to three main findings:

- Visual aids, such as posters, leaflets and even short skits captured on video are very important in helping farmers understand the insurance product details, as well as provide context to expected benefits
- The issue of trust between the farmer and the insurer – that the farmer believes s/he will be paid when payment is due, must be directly addressed in the marketing campaign, a
- Having received a payout is a strong determinant of continued enrollment; knowing a friend or relative who has received a payout also increases farmers' likelihood of purchasing insurance. Marketing materials need to help people feel as though they know someone who has personally benefited from insurance, e.g. testimonials from those who have received a payout.

Results from the analysis of the nationally-representative dataset collected on rural smallholders in Zambia (RALS), lead to four key findings:

- Households are currently exposed to rainfall shocks. Households facing a 20% deviation from long-term mean rainfall are 30% more likely to report suffering three or months of food insufficiency. These results are consistent with results reported in Arslan et al. (2015), who find that greater rainfall shocks lead to lower income per capita.
- Very few risk management or risk coping mechanisms – such as investing in "sustainable land management" techniques, having access to financial resources, participating in local groups – are effective at mitigating the impacts of rainfall shocks.
- The above largely results due to the fact that wealthier, more educated farm households are more likely to invest in sustainable land management techniques and to have access to a wider range of risk-coping mechanisms. So, after controlling for wealth and education, there is no additional benefit provided by these mechanisms in terms of mitigating losses due to shocks.
- All three above indicate that there is ample scope to develop a WII product that compliments existing risk management and coping mechanisms.

Results from the first round of Focus Group Discussions and Key Informant Interviews, lead to three key findings:

- Farmers stressed the need to make outreach materials available in local languages
- Farmers stressed the need for more contact throughout the year in order to maintain comprehension of the WII product and to sustain interest. In other words, “intensity” of treatment throughout the year is important.
- Many participants in the first round had attended trainings on the WII product, but comprehension was often limited many months after the training.

Results from the second round of Focus Group Discussions and Key Informant Interviews, lead to three key findings:

- It is critical to test the design and content of outreach materials; feedback from the FGDs will be invaluable in updating current materials and generating new materials.
- Clearly addressing basis and remainder risks is crucial. Combining this with results from the statistical analysis indicates that materials and delivery need to stress that this product can complement existing risk management and coping mechanisms.
- Comprehension was quite good when testing farmers about ½ hour after the introductory presentation. Also, participants really enjoyed this session and it appears to be an effective way to engage participants and increase comprehension, as the participants discuss their understanding with others in their group.
- As with first round FGD participants, farmers expressed the need to have greater presence in the field throughout the year. The fact that comprehension does seem to diminish over time underscores the need to carefully design a cost-effective encouragement design that nonetheless includes more intense treatment through each year.

Tying results from both rounds of Focus Group Discussion and Key Informant Interviews into lessons learned from other WII projects on marketing and outreach activities:

- Other projects have found different materials to be very effective. One is the use of videos, particularly those that capture the experience of receiving a payout. A second is the use of wallet-sized laminated cards that depict how the insurance product works in a clear and concise way. Due to time and resource limitations, we were not able to test these in Phase 1, but we will do so in the initial part of Phase 2.

9. Implications of study findings

The main implications of the study findings is that training, outreach and marketing strategies can be developed and refined to increase uptake of the WII product by smallholder cotton farmers in rural Zambia. The statistical analyses show that farmers in Zambia face significant exposure to rainfall shocks, but that current management and coping strategies are only modestly effective in reducing losses to household welfare due to these shocks. The literature review, key informant interviews, and FGD’s all suggest that farmers are interested in WII products in general, but that information on the WII product can be more effectively and consistently provided through a wide variety of mechanisms.

10. Major Challenges and Lessons Learned

Given the short duration of phase 1, we had limited time and resources to test two potentially effective components for the encouragement design. These are video clips and the wallet-sized, laminated WII information cards. We anticipate developing and testing these two components at the beginning of phase 2.

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