A QUALITATIVE ASSESSMENT OF WEATHER INDEXED CROP INSURANCE IN ETHIOPIA

Thea Nielsen
Department of Agricultural Economics and Social Sciences in the Tropics and Subtropics
University of Hohenheim
Wollgrasweg 43
Stuttgart, 70599
Germany
Phone Number: 0049-711-45923771
Fax Number: 0049-711-45923934
Email: thea.nielsen@uni-hohenheim.de

ABSTRACT
This study assesses the potential of weather indexed crop insurance (WICI) to help smallholders cope with weather-related risks in Ethiopia. Focus groups discussions held with WICI policyholders and non-policyholders were analysed using a qualitative descriptive approach with overtones of grounded theory. The results demonstrate that WICI is not effective in helping smallholders cope with major weather-related risks. Inadequate understanding about WICI decreases its adoption, sustainability, and potential to enable households to reduce their risk exposure. We recommend increasing smallholder involvement in the design of policies, offering more effective training, and providing a variety of insurance products covering multiple weather risks.

KEY WORDS
cooping mechanisms; Ethiopia; natural disasters; risk; weather indexed crop insurance;
1. INTRODUCTION

In Ethiopia 85% of the population lives in rural areas and depends on rainfed agriculture (Block et al., 2008). Although Ethiopia is affected by various natural disasters, drought is the most frequent and devastating. Moreover, studies indicate that climate change could result in more intense and prolonged droughts (IGAD and ICPAC, 2008). Flooding is also an increasing concern (Murendo, 2009). Natural disasters can reduce production, income, investments, consumption, and food security. Coping mechanisms to reduce the impact of natural disasters can be ex-ante to smooth income in the presence of the threat of natural disasters and ex-post to smooth consumption after natural disasters actually occur. Income smoothing strategies, such as favoring traditional or drought-tolerant crops and plot diversification, not only may be limited in their ability to prevent income losses if the natural disaster occurs, but can also have high implied risk premiums, keeping households in poverty traps as they avoid investments that would otherwise increase their productive capacity (Dercon, 1996; Dercon and Christiaensen, 2010; Keil et al., 2009; Morduch, 1994, 1995; Rosenzweig andBinswanger, 1993; Skees et al., 2006). Consumption smoothing strategies, such as selling livestock, borrowing, asking for food gifts, calling in loans, and eating less, have proved limited in their effectiveness at smoothing consumption after a covariate risk occurs (Dercon et al., 2005; Kazianga and Udry, 2006; Kochar, 1999; Ravallion and Chaudhuri, 1997; Walker and Jodha, 1986; Zeller and Sharma, 2000) and may reduce future income opportunities (Rosenzweig and Wolpin, 1993), making the household vulnerable to either falling into or remaining in poverty traps. In Ethiopia households experiencing a drought at least once in the proceeding five years had a per capita consumption about 20% lower than households not experiencing a drought (Dercon et al., 2005). Another study found that for 63% of households, the most important sources to call on in “time of need”
have adjacent plots of land and that drought caused 32.7% of households to suffer from asset loss, income loss, and consumption loss (Hill et al., 2011). These studies, among others, demonstrate that households cannot effectively cope after a natural disaster.

The limits of existing coping mechanisms to smooth income and consumption create a need for alternative or complementary strategies, such as weather indexed crop insurance (WICI). WICI insures against a specific natural disaster and is sold in standard units, such as millimeters of rain, at the same rate in a given area. Payouts can be lump-sum, layered, or proportional and are based on an index serving as a proxy for losses incurred. If the insured event occurs, all policyholders receive the same payment per contracted unit payout regardless of the actual impacts from the event. This reduces the asymmetric information problems of adverse selection and moral hazard existing in conventional crop insurance (Just et al., 1999; Ramaswami, 1993). However, basis risk is a problem because, unlike traditional crop insurance, there are no field visits. Basis risk is when payouts do not match incurred losses. Potential clients of WICI can be at the micro-level such as smallholders, meso-level such as microfinance institutions, or macro-level such as governments. Because policyholders receive payouts if the insured event occurs, WICI increases the capacity of policyholders to bear risks which may enable them to invest in risky, more profitable enterprises and asset portfolios (Zeller et al., 1997; Zeller and Sharma, 2000). WICI thus has the capacity to reduce income smoothing activities and offers an alternative or complementary strategy for smoothing consumption via payouts.

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1 This paragraph is mainly based on Skees et al. (2006). WICI is also referred to as weather-index(ed) insurance, index-based (weather) insurance, weather-based crop insurance, and rainfall index insurance.
The supply of WICI in Ethiopia has been sporadic since 2006 when it first became available via two pilot projects. One pilot project involved the World Bank and the publicly-owned Ethiopian Insurance Corporation; however, it was discontinued because the premium was too high, rainfall was sufficient negating any payouts, and discussions on subsidizing the premium and constructing more rain gauges deteriorated. The other pilot project operated at the macro-level only and involved the World Food Programme (WFP) and Ministry of Agriculture. Potential beneficiaries – five million people previously identified by the Government’s Productive Safety Net Programme as transiently food insecure and directly affected by drought – were not made aware of WICI. This pilot was also discontinued because there was no shortage of rain, making payouts unnecessary. The rationale for terminating these pilots – that there was sufficient rainfall – exposes an inadequate understanding about WICI: policyholders should be satisfied even if payouts are not made in a particular year. The Nyala Insurance Company (NISCO) entered the WICI market after offering a type of traditional crop insurance called multi-peril insurance. In 2009 NISCO provided WICI to 137 haricot bean farmers whose premiums were paid for by a farmer’s union (IFAD and WFP, 2010). Since rainfall was lower than the predetermined threshold, half of the total insured value was paid. Basis risk was evident because yield losses varied greatly among beneficiaries (Degefa, 2010). NISCO also provides WICI against drought to smallholders through a pilot project developed by Oxfam America which differs from other pilots because a farmer-centric approach is emphasized, farmers learn about WICI through group activities, project staff regularly visit villages, and WICI policies can be used as credit guarantees at a local microfinance institution. WICI coverage has been expanded to other areas by NISCO and the company is experimenting with using weather data from
This paper focuses on the research question of whether WICI is effective in helping smallholders adapt to and cope with weather-related risks. Examining if WICI can help smallholders adapt to and cope with natural disasters is imperative due to their dependence on rainfall and the expected increase in extreme climatic events. The objectives of this study are to:

- Identify weather-related risks;
- Examine opinions of and experiences with WICI;
- Assess the ability of WICI as a coping mechanism for smallholders to adapt to and cope with weather-related risks; and
- Provide recommendations for improving WICI, if necessary.

The paper proceeds as follows: the second section presents the methodology; the third section presents results from FGDs and interviews with insurance company executives; the fourth section discusses the results in light of the research question and objectives; and the final section provides conclusions and recommendations.

2. METHODOLOGY

The methodology is a qualitative descriptive study with overtones of grounded theory. In qualitative descriptive studies, researchers seek an accurate account of events that most people observing the same event would agree is accurate (Maxwell, 1992). Grounded theory is integrated as we aim “toward analytic practices that will reveal an overriding story or set of themes grounded in a data set” (Tracy, 2010: 848). To derive themes from the data, codes are used to identify, develop, and relate concepts (Strauss and Corbin, 1998). Coding is the analytic
process “through which data are fractured, conceptualized, and integrated to form theory” (Strauss and Corbin, 1998: 3). Coding also rearranges data into categories to facilitate comparisons of objects within and between categories (Leonard and Rog, 1998). We present the frequency of codes in tables with conceptual ordering to organize and rate data according to criteria (Strauss and Corbin, 1998). Although this ranking fails to convey the manner in which these topics were discussed, we believe it allows greater insight into data and is convenient to more explicitly present results (Babbie, 2007). Memos, notes which describe and define concepts, identify methodological issues, and provide theoretical formulations (Babbie, 2007), are attached to quotations as well. We include direct quotations to provide rich first-hand accounts and demonstrate how codes and memos are linked to quotations.

FGDs are the primary source of data. According to Bertrand et al. (1992: 199), FGDs allow “members of the target population to express their ideas in a spontaneous manner that is not structured according to the researchers’ prejudices (and)… provide more in-depth insights into how the population feels on specific issues and why they feel this way.” FGDs can bring forward reasoning behind actions, beliefs, perceptions, and attitudes (Carey and Smith, 1994) as well as “identify mechanisms, going beyond sheer association” (Miles and Huberman, 1994: 147). These are some disadvantages of FGDs: the potential impact of censoring and conforming (Carey and Smith, 1994); the effect of the researcher on the setting or individuals, called reactivity (Bickman and Rog, 1998); and the lack of consensus among researchers about how to evaluate qualitative methods (cf. Tracy, 2010; Koro-Ljungberg, 2008; Healy and Perry, 2000).

Suggested methods for evaluating qualitative research were considered throughout the research process: integrating data from multiple methods and sources, so-called triangulation; assessing if data interpretation is achieved through a logical and unprejudiced manner,
confirmability; debriefing and presenting research to peers to establish credibility; and comparing findings across similar and different respondents and organizations, transferability (Denzin, 1978 in Bickman and Rog, 1998; Hirschman, 1986, Robson, 1993, and Yin, 1994 in Riege, 2003: 81-84). To address triangulation, we compare our findings to those from other studies and also conducted semi-structured interviews with key stakeholders: officials at the WFP, Oxfam America, and the Ministry of Agriculture; insurance company executives from NISCO, Oromia Insurance Company, and the Ethiopian Insurance Corporation; and a general manager of a farmer’s union. A systematic system, described at the end of this section, was used to code data and elicit key themes to address confirmability. Research findings were presented to colleagues to address credibility. Finally, in terms of transferability, findings from FGDs were compared to key points from stakeholder interviews as well as by type and location.

FGDs were conducted separately with policyholders and non-policyholders of WICI covering drought for maize in two villages, Arorrecho and Tboone, and with policyholders and non-policyholders of multi-peril insurance for maize, teff\(^2\), and wheat in one village, Kechema (Table 1 provides more information about the settings of the FGDs). The intention was to hold FGDs only in villages where WICI was available; however, the cooperative manager of Kechema informed the researcher that WICI was available there and it was not until after the FGD had begun that the researcher was informed that policyholders had multi-peril insurance instead. Nevertheless, experiences in Kechema offer interesting comparisons. It was decided to conduct FGDs not only with policyholders, but also with non-policyholders to gather more information on weather-related risks and to understand their opinions about WICI as well as why

\(^2\) *Eragrostis tef*, a grass used to make injera, a flatbread.
they did not register for WICI. Villages were chosen based on locations of WICI policies and on the study’s operational constraints, namely budget and time. A key difference between the organization of the WICI policies in Tboone and Arorrecho is that in Tboone policies were organized by local funeral associations called *iddirs* where participants can store food or cash, whereas in Arorrecho policies were organized by the farmer’s union. Questions were pre-tested in a large group discussion with WICI policyholders and non-policyholders in Bofa village, Oromia Region.

Table 1: Background information on FGDs and their locations

<table>
<thead>
<tr>
<th>Village, Zone, Region</th>
<th>Insurance policy</th>
<th>Distance to closest city on dirt roads</th>
<th>Participants in FGDs</th>
<th>Main crops as reported by participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arorrecho, East Shewa, Oromia</td>
<td>WICI for maize</td>
<td>33 km southwest of Debre Zeit</td>
<td>8 policyholders 8 non-policyholders</td>
<td>Teff, wheat, maize, beans</td>
</tr>
<tr>
<td>Tboone, Gurage, SNNPR</td>
<td>WICI for maize via <em>iddirs</em></td>
<td>12 km northwest of Butajira</td>
<td>6 policyholders 6 non-policyholders</td>
<td>Wheat, teff, chat*, enset**, coffee</td>
</tr>
<tr>
<td>Kechema, East Shewa, Oromia</td>
<td>Multi-peril insurance for wheat, maize, and teff</td>
<td>10 km northwest of Adama</td>
<td>8 policyholders 8 non-policyholders</td>
<td>Teff, wheat, maize, beans</td>
</tr>
</tbody>
</table>

*Catha edulis*, a flowering plant chewed as a stimulant.  
**Ensete ventricosum**, used to make cojo, the staple food in Tboone that is bread-like.

Participants were selected by people knowledgeable about policyholders and the background of farmers in each village. These people were the cooperative managers in Arorrecho and Kechema and the village headman in Tboone. They were told one day in advance to select eight participants with varying economic backgrounds, ages, and gender for each FGD. The sample is thus a convenience sample (Bickman and Rog, 1998). Between six and eight smallholders participated in each FGD which conforms to Krueger and Casey’s (2000) recommendation. Participants had a broad spectrum of ages, ranging from about 30 to 65 years,
and appeared to have varying economic backgrounds. Women, however, did not participate: they were either not at home, had family responsibilities, and/or did not want to participate. Before beginning each FGD, the moderator and researcher accompanied locals to the village and introduced themselves to and socialized with participants. A translator experienced in conducting FGDs and household surveys in the region served as moderator. If a participant dominated the conversation, the moderator kindly asked him to yield to others. Neither compensation nor gifts were provided.

To insure that a large amount of information was comprehensively obtained, verbatim transcripts were created and analyzed. During FGDs, the translator and researcher took extensive notes of verbal and non-verbal communication and key points were translated, allowing the researcher to ask additional questions. FGDs were audio recorded in Arorrecho and Kechema, though not in Tboone because the recording device malfunctioned. Nevertheless, the moderator provided very detailed translations and notes during FGDs in Tboone, resulting in transcripts comparable in quality to those from Arorrecho and Kechema. Main points were reviewed with key informants after FGDs. Audio recordings were transcribed word-by-word, resulting in verbatim transcripts which were checked twice for accuracy and completeness. Transcripts were analyzed with a computer program, ATLAS.ti (2009). First, each transcript was read over several times to bring out key themes, words, and quotes. Second, codes were created from the previously identified key words. Third, codes were linked to individual speakers. If a speaker referred to a code more than once within the same quotation, the code was linked just once to prevent overemphasis of views from loquacious speakers. For example, if a respondent said the word “drought” five times within the same quotation, the code “drought” was linked to this quotation only once. After assigning codes, the fourth step was to read over the transcripts to
ensure codes had been properly linked. Memos were attached to quotations throughout this process.

3. RESULTS

In this section we present key themes arising from FGDs relating to the research question of whether WICI is an effective method for smallholders to adapt to and cope with weather-related risks. Experiences in Kechema, the village where multi-peril insurance rather than WICI was available, are specifically presented at the end of this section before providing perspectives from insurance company executives. Quotations from participants are incorporated to allow for direct interpretations and to demonstrate, via footnotes, how codes and memos were linked.

Although WICI covered drought only, smallholders reported suffering from a variety of weather-related risks – flooding, drought, inadequate rainfall frost, unpredictability of rain, and hail. The frequency of each weather-related risk being mentioned by smallholders is listed in Table 2. Flooding was discussed the most and was particularly a concern in Tboone as flooding had destroyed enset, a crop used to make their staple food. Besides excess rain, insufficient rain via droughts and inadequate rainfall were other major weather-related risks. Frost and the unpredictability of rain were discussed in Arorrecho only. Frost had significantly reduced yields of some smallholders’ crops there. Hail was mentioned in Tboone just once. However, the fact that hail was mentioned once should not diminish its importance: the smallholder mentioning hail observed that it destroys all crops. Most participants who discussed weather-related risks mentioned more than one weather-related risk within the same quotation. For example, drought or inadequate rainfall was mentioned eight times within the same quotation as flooding. The following quotation from Tboone illustrates the many and varying weather-related risks:
Compared to our elders, the current farmers have good information on how to farm, how to grow crops, and how to harvest and there is good support and also extension agents, but there are problems anyway. There is high population, rain shortage, and weather fluctuation: one year it rains and the next year it does not rain. If we had constant rain then we could grow vegetables, but due to rain fluctuation we cannot grow crops.\(^3\)

This quote demonstrates the frustration of some smallholders: despite better technology and knowledge, it is difficult to improve their livelihoods because of unstable weather-related risks.

Table 2: Weather-related risks in Tboone and Arorrecho

<table>
<thead>
<tr>
<th>Weather-related risk</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding</td>
<td>14</td>
</tr>
<tr>
<td>Drought</td>
<td>13</td>
</tr>
<tr>
<td>Inadequate rainfall</td>
<td>13</td>
</tr>
<tr>
<td>Frost</td>
<td>6</td>
</tr>
<tr>
<td>Unpredictability of rain</td>
<td>4</td>
</tr>
<tr>
<td>Hail</td>
<td>1</td>
</tr>
</tbody>
</table>

Several key themes arose when analyzing the opinions of and experiences with WICI. These include: a mismatch between supply and demand of WICI; distrust in the insurance company; the desire for an expansion in insurance coverage and for more training about WICI; and a lack of knowledge and general confusion about basic WICI concepts. Most themes were coded, yet some arose from the coding process itself. Codes and their frequency are listed for policyholders and non-policyholders separately in Table 3. It is evident from Table 3 that WICI-related topics were discussed more by policyholders. This may be because there were more questions about WICI posed to policyholders and their having more experience with WICI.

\(^3\) This passage is coded with: population pressure, inadequate rainfall, and timing of rain. Weather fluctuation is not linked to this quotation since the speaker specified the timing of rain as the type of weather fluctuation.
Table 3: WICI-related topics in Tboone and Arorrecho

<table>
<thead>
<tr>
<th>WICI-related topic</th>
<th>Frequency among policyholders</th>
<th>Frequency among non-policyholders</th>
<th>Total frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire for expanded agricultural insurance coverage</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Desire for more training about WICI</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Incorrect statement about WICI policy conditions</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Lack of training</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Lack of knowledge about WICI</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Confusion about paying the premium (the amount, who pays, or whether the premium had been paid)</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Confusion about the conditions of payouts</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Concern about a too high premium</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Policyholders described interactions with insurance companies as an almost hit-and-run experience. In fact, none of the FGD participants reported being asked by the insurance company about either their problems or the potential demand for insurance before the product was offered. For example, a policyholder in Tboone said, “We learned about crop insurance from Nyala (NISCO). We did not get any training or information. They did not explain it at all and just came to register us.”⁴ There were similar experiences in Arorrecho where smallholders reported that they had interacted with the company for two days only: one day for training and the other for registration. The consequences of the limited interactions between smallholders and the insurance company are reflected in statements expressing the mismatch between the supply and demand of WICI. For example, several smallholders in Tboone preferred insurance for chat; however, the insurance company refused to insure chat and would insure maize only. In fact,

⁴ This quotation is coded with: lack of training. Although he refers to WICI as “crop insurance”, this is not coded as an incorrect statement about WICI policy conditions as participants often shortened WICI to crop insurance.
when asked about the major crops grown in Tboone, none mentioned maize. Moreover, smallholders in Tboone were puzzled as to why WICI covered drought, instead of flooding. A quote from a policyholder in Tboone expresses this confusion:

From past experience, there is not severe drought in this area, but other areas are much more affected by drought. So, why do we join the insurance when we don’t have severe drought? Also, the weather station mostly showed lower rainfall in Butajira\(^5\) than we have here, so that does not make sense either.\(^6\)

The lack of incorporation of smallholders’ tailored demands for WICI also occurred in Arorrecho. A policyholder there said the following:

The company came and asked us about how many days (of rain) is enough for our maize to grow and we told him that 10 days is enough. But, due to frost this year the maize was destroyed completely and not because of a rain deficiency. The insurance company asked about the rain only and not about other problems that affect maize. So, the company just got information about rain from us. Because of this, I am worried about getting compensated from the destroyed maize caused by frost this year.\(^7\)

These quotations demonstrate inadequate initial communications between smallholders and the insurance company.

Besides failing to adequately incorporate potential policyholders’ views before offering WICI, the insurance company also did not offer proper training about WICI. The following conversation in Tboone demonstrates the insufficient training and knowledge about WICI. After

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\(^5\) Butajira is a nearby city about 12 km away from Tboone on dirt roads.

\(^6\) This quotation is coded with: confusion about payout (because their payouts were based on the weather station in Butajira which has different rainfall amounts than in the village).

\(^7\) This quotation is coded with: frost. The memo “shows lack of in-depth pre-study” was also attached.
a policyholder explained that he had grown sorghum instead of maize after registering for WICI, the team leader of the iddir asked him why he has switched to sorghum if the insurance was for maize. The policyholder responded with a shrug and could not explain why. Another policyholder exclaimed, “Because farmers are not well-trained!”\(^8\) In Arorrecho, some farmers even thought they were signing up for aid when they registered for insurance.

Distrust as well as unequal awareness and training about WICI was evident in the FGDs. Negative sentiments and distrust towards the insurance company were expressed when participants discussed their brief communications with the insurance company not only by the speakers themselves, but also through non-verbal communications from other participants. For example, some shook their heads in disbelief when others spoke of the limited interactions with NISCO. An extension agent for Tboone also reported that farmers did not trust the insurance company because different employees came to the village with each infrequent visit. There was unequal awareness and training about WICI among policyholders as well as between policyholders and non-policyholders. A policyholder and team leader of an iddir in Tboone elaborated these problems, saying:

Insurance is motivated because of the payout, but the problem is that farmers do not understand! Farmers were told that they would get a payout based on the weather station in Butajira and then the farmers said why would we pay a premium if the weather station is in Butajira? Also, the union of Miskan Woreda didn’t give attention and training to this area to bring more farmers to buy indexed insurance. On my side I want to buy indexed

\(^8\) This quotation is coded with: lack of training.
insurance in the future because I know a lot about it. I am living in risk and I want to be insured against this risk. The big problem is the lack of knowledge among the farmers!\(^9\) Non-policyholders also spoke of poor communication about WICI within villages, explaining that they had not been made aware of WICI by the insurance company or by others in the village. Both policyholders and non-policyholders indicated a strong desire for more training.

Limited training was reflected in confusion about premiums and payouts as well as through incorrect statements made about the policy’s conditions. In Arorrecho the farmer’s union had paid for the first premium and told policyholders that they would have to pay the next premium themselves; however, this was not clearly communicated and some policyholders were first made aware of this during the FGD. Miscommunication occurred in Tboone as well, where policyholders were unsure whether the premium had been paid at all. The insurance company came to Tboone to ask for the premium, but the farmers informed the company that they did not have money at that time and instead could pay the premium in later months; however, the insurance company never returned. Some farmers paid the premium to *iddirs* in installments anyway, but after hearing rumors that WICI is “useless” they demanded their money back.

According to a team leader of an *iddir* the premium had not been paid to NISCO. Also worrisome were incorrect statements policyholders made about policy conditions, such as their belief that they would be compensated if their crops were destroyed from other natural disasters or a failure of improved seeds. A policyholder in Arorrecho even thought he would receive compensation if his crops were destroyed because of any reason: “If there is any risk, we can get a payout. From risk or other problems, we can get a payout from the company.”\(^10\) In Tboone

\(^9\) This quotation is coded with: confusion about payout, lack of knowledge about WICI, and lack of training.

\(^10\) This quotation is coded with: incorrect statement about WICI policy conditions.
policyholders were confused about why payouts were based on a weather station in Butajira which receives less rain. Moreover, some thought payouts were based on the rainfall on their individual plots.

The last quote we provide is from a policyholder in Arorrecho. This policyholder elaborated on interactions between poor training and insufficient knowledge about WICI, as well as their consequences:

Since insurance is so new, there are no changes (in the production system). The company did not make farmers aware of the insurance and farmers just registered and thought that they were signing up for aid. When I told my friends that I was coming to this discussion today, my friends asked me, “What is weather indexed crop insurance?” This shows that farmers still do not understand about weather indexed crop insurance. In general, there is no impact from indexed crop insurance yet because farmers do not understand what it is in the first place.\(^\text{11}\)

This quote summarizes the difficulties experienced with WICI and demonstrates there are many opportunities for improving WICI. Nevertheless, despite infrequent communication, scanty training, and poor knowledge as well as confusion about WICI, policyholders and non-policyholders remain interested in expanding their agricultural insurance coverage. In fact, the desire for expanded agricultural insurance coverage was the most frequently discussed insurance-related topic during the FGDs. In Arorrecho, policyholders wanted to be insured for other crops as well as for their oxen, while in Tboone they were interested in insuring chat.

Experiences in Kechema where multi-peril insurance was available provide interesting comparisons. Similar to smallholders in Arorrecho, smallholders in Kechema wanted insurance

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\(^\text{11}\) This quotation is coded with: lack of knowledge about WICI.
coverage expanded to include oxen. Misaligned supply and demand was also implied in Kechema: although multi-peril insurance covers a variety of natural disasters, flooding was not mentioned as being a risk. Instead, drought and inadequate rainfall were the primary concerns. Confusion about payments also prevailed: when policyholders sought payouts after insufficient rainfall they were told that the union had failed to pay their premiums. Unlike in Arorrecho and Tboone, smallholders in Kechema reported that they were trained well. Indeed, the person responsible for training was available throughout the year. This contrasts sharply with scenarios described in Arorrecho and Tboone.

Interviews with insurance company executives from NISCO, the Ethiopian Insurance Corporation, and Oromia Insurance Company were conducted to supplement discussions with smallholders. According to these executives, major setbacks to the use and expansion of WICI in Ethiopia are insufficient or unavailability of weather and yield data, high basis risk, lack of affordability because of high reinsurance rates and excessive administrative costs, and a direct communication link with the rural community. Surprisingly, none mentioned misunderstandings among smallholders about the insurance product itself. Using satellites to determine payouts was viewed as a suitable means for reducing program costs and overcoming problems of insufficient or unavailable weather data. Offering WICI to groups rather than individuals was preferred because of reduced costs and the lack of trust and experience by farmers with insurers. Although WICI may not be profitable in the short-run, the executives were optimistic that it will prove profitable in the long-run. Insurance company executives view WICI as the future of insurance in Ethiopia since the majority of its population depends on agriculture and WICI is simpler and less expensive to implement than traditional crop insurance.
4. DISCUSSION OF RESULTS

Before discussing the results, we present some disadvantages of the methodology and setbacks experienced during the research process. First, the analysis would have benefited from more FGDs though this was not possible due to time and budgetary constraints. It would have been interesting to conduct FGDs with participants of Oxfam America’s pilot project in Tigray Region to research, for example, if knowledge about WICI had been improved through the project’s farmer-centric approach. Second, including women’s perspectives would have buttressed our research. Third, a less linear research process of design, collection, analysis, and reporting could have provided more data and a more thorough analysis. Discussing with FGD participants again after first analyzing the transcripts to clarify unclear topics and to solicit participants’ opinions on key themes would have solidified our findings. Fourth, generalizing findings is problematic because of non-randomization in the research design. Nonetheless, despite these drawbacks, we are confident that the description of FGDs is accurate and that most participants and observers would agree to its accuracy. Moreover, the main themes arising from the FGDs and recommendations given below can be used by policymakers and insurance companies to improve WICI without waiting for a confirming study.

WICI against one natural disaster and for one crop only is inadequate to help smallholders effectively cope with weather-related risks. Although drought and inadequate rainfall were major concerns, flooding and other natural disasters were as well (Murendo, 2009). In fact, the discussion in Tboone indicated that smallholders were most concerned with flooding because it can destroy their staple crop. The many weather-related risks faced by smallholders and their preference to insure other crops besides maize signal that offering multiple WICI policies insuring different crops against various natural disasters may be more relevant and
appealing. Such a system would allow smallholders to choose which natural disaster(s) and crop(s) to insure depending on their production system and preferences. Hill and Robles (2011) investigated the willingness of smallholders in Ethiopia to buy flexible weather insurance policies, called weather securities, in an experimental game and pilot. They found that flexible policies could accommodate farmers’ heterogeneous needs and were well-understood. Another type of insurance which could be offered is multi-peril insurance because it insures multiple risks and may be easier to understand because payments are based on actual yield losses incurred from the insured event. Nevertheless, its disadvantages include the necessity of field visits as well as asymmetric information problems.

Confusion about premiums, payouts, and even basic information about WICI exposes the insufficient training given to smallholders about WICI. This poor training reported by FGD participants was confirmed in interviews with an extension agent for Tboone and with the general manager of the farmer’s union for Arorrecho. The deficiency in training is problematic for several reasons. First, incorrect statements made about coverage indicate that if natural disasters occur which are not covered by the policy, policyholders will predictably be confused, frustrated, and angry when they receive no payouts. Second, if policyholders do not understand basis risk correctly – as was the case in Tboone where some thought payouts were based on the amount of rainfall on their individual plots – insurance may lose its appeal in the future (Hill et al., 2011). Third, understanding the product is important in determining whether individuals purchase a policy (Hill and Viceiszsa, 2010). Fourth, as indicated by policyholders and key stakeholders, the lack of training may reduce trust in the insurance company. Trust is found to be a critical component of demand for WICI (Hill and Viceiszsa, 2010). These reasons indicate that insufficient knowledge about WICI is likely to affect short- and long-term demand for WICI.
WICI has the potential to help smallholders exit poverty traps by enabling them to change risk management strategies which can smooth income, such as by engaging in higher return production activities. Nevertheless, policyholders explained that there are no changes yet in their production system or in the amount of credit taken as a result of WICI. They explained that WICI is not understood well enough and that it is too new of a technology to impact production or credit decisions. Of course, having and understanding WICI may not necessarily lead to changes in policyholders’ production or credit decisions. Instead, policyholders may adjust risk management in other areas, such as by giving less loans and gifts on a reciprocal basis or reducing savings. More research on whether WICI enables policyholders to adjust risk management capable of lifting them out of poverty traps should be conducted. A game experiment conducted in rural Ethiopia found that WICI had a positive effect on hypothetical fertilizer purchases (Hill and Viceisza, 2010). Whether changes in the production system or in other risk management activities exist in non-hypothetical situations should be examined.

Insurance company executives prefer to offer WICI to groups rather than individuals. Studies have demonstrated benefits of offering WICI to groups such as reduced cost, better understanding of WICI, a higher willingness to purchase WICI, and the potential to reduce basis risk (Hill et al., 2011; Hill and Robles 2011; Skees et al., 2006). The manager of the farmer’s union near Arorrecho also commented that because trust greatly influences the willingness to purchase insurance, farmers prefer that insurance is organized by iddirs. However, this study found that confusion about WICI remains when iddirs are responsible for organizing WICI. There is a danger of insuring groups: in Tboone, some iddir members demanded their premiums back, making other members unsure if they themselves were insured. Insurance company executives were also enthusiastic about the potential of using data from satellites rather than rain
gauges. However, this may result in more abstraction and confusion about WICI among smallholders. Although satellite data may reduce program costs and basis risk depending on their accuracy, the disadvantage of this technology being difficult to understand by smallholders could be a major impediment their adoption of WICI.

5. CONCLUSIONS

The limits of traditional mechanisms for smallholders to adapt to and cope with natural disasters create a need for alternative or complementary strategies, especially with the expected increase in the frequency and severity of extreme climatic events in Ethiopia. We find that WICI policies insuring against only drought fail to enable smallholders to cope with weather-related risks because smallholders reported suffering from multiple natural disasters. Therefore, insurance companies should consider offering a variety of WICI products or multi-peril insurance. This would allow smallholders to insure against natural disasters they consider most significant. Discussions with policyholders elicited their inadequate understanding and training about WICI as well as confusion about basic WICI concepts. Their poor knowledge not only reduces the adoption and sustainability of WICI, but also decreases its potential to enable households to reduce risk exposure and change risk management strategies such as by changing the production system, consumption, and/or finances. Critical areas for improvement by insurance companies offering or planning to offer WICI include a better understanding of the weather-related risks and needs of potential policyholders before offering a product, as well as intensively training potential policyholders once a suitable product is designed. While offering WICI to groups rather than individuals has the advantage of being less expensive to implement, we find that problems remain with this approach. As WICI is still in its developmental stage, it is
important that insurance companies receive support for training, pooling risk, helping relevant stakeholders connect, and perhaps even subsidizing premiums.\textsuperscript{12} Moreover, studies need to be conducted on whether WICI is most effective at reducing smallholder’s vulnerability to natural disasters when it is offered at the micro-, meso-, or macro-level (Barnett et al., 2007; IFAD and WFP, 2010). WICI by itself is clearly no silver bullet and should be coordinated with different policies to help households cope with natural disasters. The desire for an expansion of insurance coverage as well as the interest and optimism about WICI among smallholders and insurance company executives signals the potential for future demand and supply. Although WICI has the means to be an alternative or complementary strategy to traditional coping mechanisms to smooth income and consumption, improvements must be made in its design, marketing, and training.

\textsuperscript{12} Skees et al. (2006) suggest that subsidies, if provided, should aim at market failures in the premium caused by individuals incorrectly assessing information about low probability events and by suppliers adding ambiguity loads to premiums because of the low probability events.
REFERENCES


