



POLICY BRIEF

Ethiopian smallholder farmers' willingness to pay for crop micro-insurance

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incomes. Crop
micro-insurance
could be a solution.**



The context

Agriculture is the main source of income in Ethiopia, which puts farmers at risk when adverse weather events unfold. More than 70% of Ethiopia's workforce relies on the agricultural sector for their livelihood.¹ Smallholder farmers – who are responsible for 94% of the food crop production² – are particularly vulnerable to shocks such as weather events that impact their incomes. To combat this problem, the Global Green Growth Institute (GGGI), a financial technology (FinTech) firm Kifiya, and Ethiopia's Agricultural Transformation Agency (ATA) are exploring the option of creating a market for crop micro-insurance products to help Ethiopian farmers withstand adverse weather events.

More than 70% of Ethiopia's workforce relies on the agricultural sector for their livelihood, and smallholder farmers are vulnerable to shocks such as weather events that impact their incomes.

The study

Laterite assessed farmers' willingness to pay for two crop micro-insurance products and their preferences. The two products, which we refer to as “drought” and “hybrid” insurance, offer different levels of coverage at different price points. Hybrid insurance is a more comprehensive product, with higher associated premium costs. This study is based on a quantitative survey targeting 1,180 cereal smallholder farmers in four regions of Ethiopia (Amhara, Oromia, SNNPR and Tigray) belonging to the Agricultural Commercialization Clusters targeted by ATA. Smallholder farmers targeted own or use up to five hectares of land planted with at least one type of cereal crop, including teff, wheat, maize, sorghum and malt barley.

KEY FINDINGS

Affordability and absolute price – rather than the premium rate – are the main drivers of willingness to pay.



Willingness to pay for drought insurance decreases substantially with small increases in price. We find that farmers are only willing to pay a slightly higher premium for double the coverage. This suggests that rather than considering the rate (premium over coverage), farmers are concerned about the affordability of the premiums they are shown. Interestingly, the steepest decline in willingness to pay occurs between the ETB 200 and ETB 250 mark: the price of the premium for community based health insurance in Ethiopia (ETB 240).



Based on input costs reported by farmers, more affordable insurance (with a lower coverage level) would not sufficiently cover farmers' input costs. A coverage level of ETB 2,000 would cover the costs of about 38% of farmers; a coverage of ETB 3,000 would cover the costs of about 64% of farmers; while a coverage of ETB 4,000 would cover the costs of about 77% of farmers. The coverage also varies depending on the type of crop, e.g., the insurance covers fewer of the costs for wheat farmers, because they report higher input costs.



Price-anchoring plays an important role in determining farmers' willingness to pay for crop micro-insurance. In the survey, farmers were always presented with the cheapest option first. Farmers appear to use this first price as an 'anchor' for all other premium levels offered to them, and seem reluctant to pay more than this price, even for a more comprehensive insurance product. This anchoring effect has implications both for the marketing of insurance products in Ethiopia, and for future research.

Background

More than 70% of Ethiopia's workforce relies on the agricultural sector for their livelihood.¹ Due to the nature of agriculture, most households receive the majority of their income between November and January during the main harvesting season.

Households in target areas are cash strapped. Surveyed farmers reported a median household income of ETB 19,700 per year (approx. USD 630*), with a median annual per capita income of about ETB 4,125 (approx. USD 132). This corresponds to earnings of a little more than ETB 54 (USD 1.70) per family per day. Household income levels can vary significantly from year-to-year due to positive or negative shocks.

Farmers are vulnerable to shocks. Crop loss due to weather events, pests and diseases occurs regularly in Ethiopia, especially in rural areas: almost 90% of households have lost more than half of their crop at least once over the past five years. Farmers are especially vulnerable to drought, because most of the agriculture in Ethiopia is rainfed.

Households revert to coping and mitigation strategies to manage the risks they face due to crop loss (Figures 1 and 2).

* 1 ETB = 0.032 USD (using average exchange rate over period from 4/10/2019 – 30/3/2020)

Figure 1 / What do farmers do to mitigate shocks?

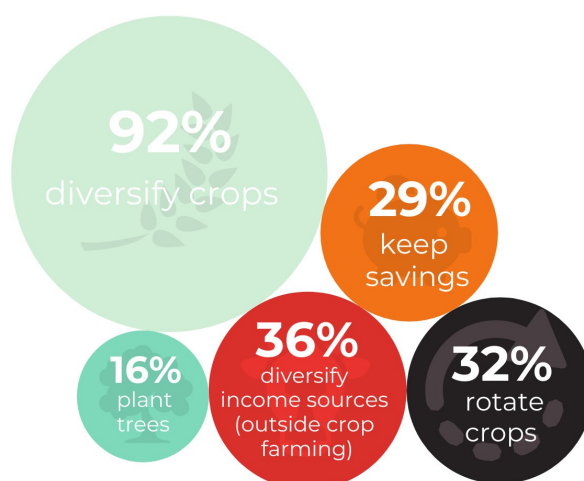


Figure 2 / How do they cope when shocks occur?



Crop micro-insurance as a solution

What is crop micro-insurance?

Crop micro-insurance can prevent the loss of income in bad years by providing payouts to farmers who experience crop loss. It enables them to cope with events that negatively affect their crop yields, without having to pay the high premiums associated with traditional insurance.

To help Ethiopian farmers withstand negative shocks, GGGI, Kifiya and Ethiopia's ATA are exploring creating a fund to help develop a crop micro-insurance market in Ethiopia. The fund, known as the Ethiopian Climate Insurance Guarantee Fund (ECIAF), has two aims: to help farmers pay for crop-micro insurance by providing a partial subsidy; and to act as a back-up mechanism to prevent insolvency of insurance firms for five years. The insurance products are expected to become commercially viable after five years. GGGI, Kifiya and ATA are considering two crop micro-insurance products under the ECIAF: drought insurance and hybrid insurance (Table 1).

Participants in this study were asked about their willingness to pay for the drought and hybrid insurance products at different coverage and premium rates. Each participant was asked for their willingness to pay for each insurance product (drought or hybrid) at a randomly selected coverage level (ETB 2,000 (USD 64) or ETB 4,000 (USD 128)), and a randomly selected premium rate (Figure 3).

Table 1 / Drought insurance vs hybrid insurance

Drought insurance

- Payout based on the difference between the current state of the vegetation in a crop production system (CPS) zone, and a historical average (vegetation index crop insurance or VICI)
- Has been sold on a commercial basis in Ethiopia with limited success

Hybrid insurance

- Drought insurance coverage (VICI product) + payout in the event that pests and diseases are present, measured by comparing current yield with historical yields of specific location (known as an "area yield index model")

Figure 3. / Coverage and premium levels discussed with participants

Drought insurance		Hybrid insurance	
ETB 2,000 coverage	ETB 4,000 coverage	ETB 2,000 coverage	ETB 4,000 coverage
5% (ETB 100)	5% (ETB 200)	15% (ETB 300)	15% (ETB 600)
7.5% (ETB 150)	7.5% (ETB 300)	20% (ETB 400)	20% (ETB 800)
10% (ETB 200)	10% (ETB 400)	25% (ETB 500)*	25% (ETB 1,000)*
12.5% (ETB 250)	12.5% (ETB 500)	30% (ETB 600)	30% (ETB 1,200)
15% (ETB 300)*	15% (ETB 600)*	35% (ETB 700)	35% (ETB 1,400)

* Commercially viable rates for each insurance type and coverage level (drought insurance: 15%, hybrid insurance: 25%)

Results: farmers' willingness to pay for crop micro-insurance

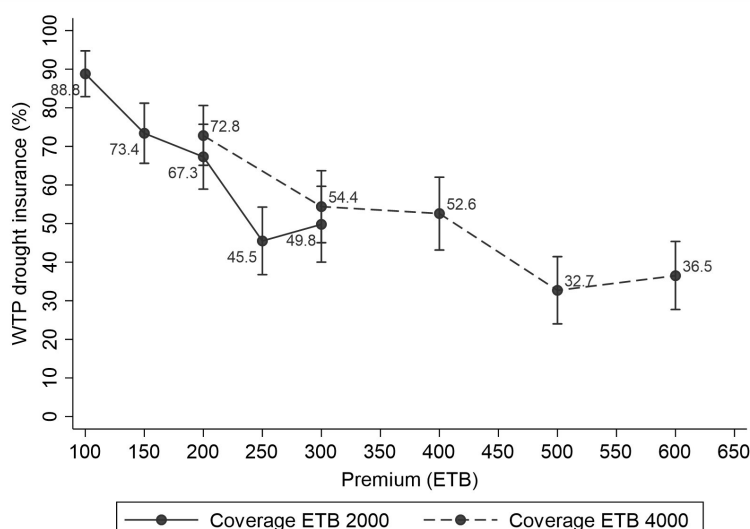
Farmers are price sensitive for the drought insurance product at both coverage levels (ETB 2,000 and 4,000). The demand curve for drought insurance in Figure 4 shows the association between the insurance premiums tested and the percentage of farmers that were willing to pay at a given premium rate. The willingness to pay decreases quickly with relatively small increases in price. On average, demand for the drought insurance decreases by 4-10 percentage points for each ETB 50 (USD 1.60) increase in premium. One explanation for the large drop in willingness to pay we see between ETB 200 and ETB 250 is the recommended price for community-based health insurance (CBHI): ETB 240 (USD 7.70) per family per year. Farmers may be anchoring at this price point.

Willingness to pay for drought insurance at a commercially viable rate is high. About 50% of farmers are willing to pay the commercially viable rate (ETB 300)

with a coverage of ETB 2,000 (margin of error: +/- 12 %). About 37% of farmers are willing to pay the commercially viable rate (ETB 600) for drought insurance with a coverage of ETB 4,000 (margin of error: +/- 18 %).

Farmers are only willing to pay a slightly higher premium for double the insurance coverage for both insurance products. This suggests that rather than considering the coverage level, farmers consider the affordability of the premiums they are shown. Comparing willingness to pay levels for the two insurance products at the same price points, we find that the proportion of farmers willing to pay for insurance is almost the same, irrespective of coverage. This suggests that farmers are either much more conscious of the price point than the benefits of the insurance product; or that the benefits of additional coverage were not explained adequately to the farmers during the survey.

Figure 4. / Willingness to pay for drought insurance



For hybrid insurance, willingness to pay is low and there is no significant difference in willingness to pay between the different premium rates.

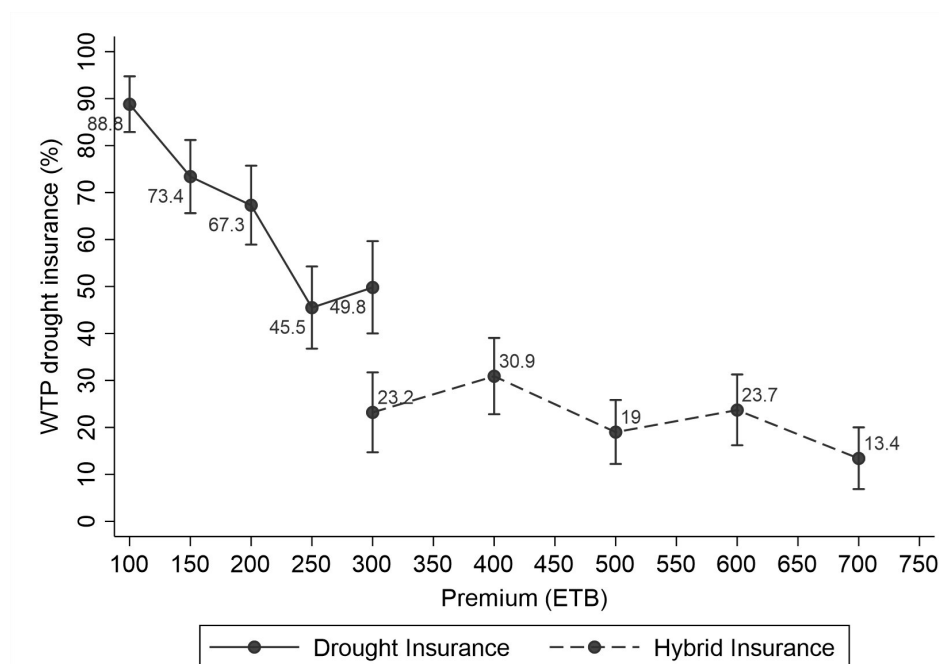
Willingness to pay for hybrid insurance is lower for higher price points, but the decrease in willingness to pay for small increments in price is less acute than in the case of drought insurance. This is partly explained by the fact the hybrid insurance is more expensive, so is less affordable for most farmers. However, a closer look at the data reveals that this is not the only explanation.

Price-anchoring plays an important role in determining the willingness to pay for hybrid insurance. In the survey, questions about the cheaper insurance product (drought insurance) were followed by questions about willingness to pay for the more comprehensive and therefore expensive product (hybrid

insurance). Farmers appear to use this first price as an 'anchor' for all other premium levels offered to them, and seem reluctant to pay more than this price, even for a more comprehensive insurance product (Figure 5). This may explain why willingness to pay for hybrid insurance is low. This corroborates the hypothesis that farmers are price sensitive, as is the case for the drought insurance.

The strong anchoring effect means we cannot interpret the results for hybrid insurance to accurately reflect farmers' willingness to pay for that product. It also suggests that when presenting several insurance products to households in rural areas there is a real probability that households will go for the cheapest insurance option, rather than the option that provides them with the best value and breadth of coverage.

Figure 5. / Willingness to pay for drought vs hybrid insurance (ETB 2,000 coverage)



Note: Farmers consistently report a lower willingness to pay (WTP) for hybrid insurance compared to drought insurance, even when offered at the same coverage and premium rate

Design & implementation considerations

Income and vulnerability patterns suggest that the most vulnerable households are least likely to be able to afford crop micro-insurance.

Income per capita is strongly associated with willingness to pay for both the insurance products. Households that are struggling financially (e.g., single-headed households) and households that have experienced a shock in the past or are at a greater risk of experiencing a shock in the future (e.g., 'older' households at a greater risk of losing a source of income, having a case of severe illness or experiencing a death in the family) will be less able to sustain payments for crop micro-insurance. Given their lower resilience, these households would also benefit most from the protection the insurance could provide them.

Different regions are exposed to different levels of shocks.

Households in different locations face very different realities and sets of risks. While the sample we work with is not representative at the regional or woreda level, it does provide a sense of the span of regional differences. For example, we found that the proportion of farmers reporting a serious negative shock over the past 12 months ranged from 6% in woredas such as Farta in Amhara, to 59% in woredas such as Sullulta in Oromia. The frequency of exposure to crop loss over the past five years ranges

from 1.2 shocks in Gonji Kolela (Amhara), to three in Seharti Samri (Tigray).

Accounting for varying input costs, ETB 4,000 coverage would cover the input costs of most farmers, while ETB 2,000 coverage would cover costs for less than half.

The median household spends about ETB 2,250 per year purchasing input costs such as seeds, fertilizer and pesticides. An estimated 92% of farmers in sampled woredas purchase their inputs on the market, and the spend on inputs varies depending on the crops purchased. For example, wheat farmers face higher input costs on average than maize and sorghum farmers. Fertilizer accounts for slightly more than half of the spending on inputs.

Figure 6. / Percentage of farmers whose input costs would be covered by crop micro-insurance

Coverage level	% farmers covered
ETB 2,000	38%
ETB 3,000	64%
ETB 4,000	77%

Policy take-aways



1. Adapt insurance products to regional and local contexts, and take farmer preferences into account.

Crops and shocks vary widely across regions and impact farmers in different ways. A one-size-fits-all approach is not likely to meet the needs of farmers.

2. Link the marketed premiums to input costs.

Though farmers indicate a preference for the cheaper insurance products, we have shown that these products are unlikely to cover the input costs of most farmers and would therefore not meet the goal of the fund.

3. Clearly communicate the benefits of the insurance, while being mindful of farmers' price sensitivity.

The strength of the anchoring effect seen in this study suggests that premiums must be carefully priced, also relative to other types of insurance, and potential financial benefits clearly explained in order to get buy-in from farmers.

REFERENCES & NOTES

REFERENCES

¹ African Development Bank (AfDB). (2020). African Economic Outlook 2020: Developing Africa's workforce for the future.

² Gebreselassie, A., and Bekele, T. (2013). A Review of Ethiopian Agriculture: Roles, Policy and Small-Scale Farming Systems. In D. Kalweit & W. G. Kopin (Eds.), *Global Growing Casebook* (pp. 36–65).

METHODOLOGICAL NOTE

This study involved 1,180 quantitative interviews with eligible smallholder farmers across the four main regions (Amhara, Oromia, SNNPR and Tigray) of Ethiopia, covering five target crops (maize, barley, sorghum, wheat and teff). Eligible smallholder farmers were those owning or using up to five hectares of land planted with at least one type of cereal crop belonging to the Agricultural Commercialization Clusters targeted by ATA. We pre-screened farmers using proxy indicators of formal educational attainment, a high income or more than two years of crop loss over the last five years to ensure our sample had a low likelihood of having zero willingness to pay. A zero willingness to pay would limit our ability and statistical power to make statements about farmers' willingness to pay for crop micro-insurance.

This study followed a bounded-design approach, followed by an open-ended question. We first asked the farmer whether he/she would buy the insurance at a random rate, selected from five different options. We then followed up with an open-ended question on the maximum price that the respondent would be willing to pay. The second question ensured that if the absolute premium rates shown were too high, we would still have data points enabling us to estimate willingness to pay.

The sample was randomly divided in two different groups of equal population size: the first group was assigned an insurance coverage of

ETB 2,000, the second group of ETB 4,000. Randomly selecting both the coverage and the rate values ensured that the values were completely independent from any other socio-demographic characteristics of the respondent.

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