The Subjective Wellbeing Gains from Insurance that Doesn’t Pay Out

Kibrom Tafere*  Christopher B. Barrett  Erin Lentz  Birhanu T. Ayana

Cornell University, University of Texas at Austin & ILRI

*Email: kth56@cornell.edu

Nairobi
June 10, 2015
Introduction

• Uninsured risk causes welfare loss, distorts behavior and even causes poverty traps (Dercon & Christiaensen 2011, Carter & Barrett 2006, Rosenzweig & Binswanger 1993).

• Pastoralism is the primary source of sustenance; store of wealth.

• Cyclical movement of animals in search of forage and water a feature of pastoralism in Borana.

• Recurrent drought has eroded risk coping capacity.
  • Up to 35% of total herd can be lost during severe droughts (Desta & Coppock 2002, Lybbert et al. 2004).
  • Once people lose their animals, hard to “bounce back”.

Introduction
Introduction

- Conventional insurance largely unavailable - moral hazard, adverse selection, transaction costs, covariate risks.
- Index insurance is designed for such environments.
  - Insures an index that is strongly correlated with actual loss.
  - Makes payout based on an observable exogenous measure of loss (eg. rainfall, vegetation cover, area average loss).
Introduction


• Some new evidence that index insurance is welfare enhancing (Jensen et al. 2014a, 2014b, Janzen & Carter 2013).

  - Subjective wellbeing (SWB) - subjective assessment of one's life.
  - Considerable challenges in measurement of SWB.
Introduction

• Challenge: programs that do not generate physical or material impacts (Devoto et al. 2012, Finkelstein et al. 2012).

• Approach: disentangle the peace of mind of holding insurance and buyer’s remorse effects of lapsed insurance.
  • We find that current coverage generates statistically significant gains in SWB.
  • These gains more than offset the statistically significant buyer’s remorse effect of lapsed insurance policies that did not pay out.
This paper contributes to two sets of literature:

- **Literature on impact evaluation of programs.** We show that evaluation of programs based solely on conventional measures such as income and consumption may underestimate welfare impact (Devoto et al. 2012, Finkelstein et al. 2012).
Data

- Data: Borana zone of Southern Ethiopia.
Data

- IBLI was introduced in Borana zone in August 2012.
- Prior to the introduction of IBLI, baseline survey was conducted in March 2012.
  - 515 households in 17 study sites were interviewed.
  - Sampling was stratified at the reera level.
  - Sampling procedure: 15% of households were randomly selected in each reera on the condition that it generates at least 25 households.
- Follow up surveys in March 2013 and 2014.
  - If households interviewed in the baseline cannot be found, replacements from the same TLU class were interviewed.
Research Design

- Four seasons in Borana: long rainy, long dry, short rainy, and short dry.
- IBLI contracts are sold in two sales periods before the rainy seasons.
- Uses NDVI to identify premiums and make indemnity payouts.
- Indemnity payment is triggered when rainfall deviation $\leq 15$ percentile.
Research Design

- In each sales period, about 80% of sample households are randomly selected to receive discount coupons varying between 10%-100%.
- In SP1 and SP2 about 20% and 15% of households received comic book and information treatments, respectively.
- Some households received discount coupon or either information treatment only, some discount coupon and information treatment, and some none.
- In round 3, only discount coupons were distributed.
- Compliance to the research design not fully achieved.
Empirical Strategy

- Divergence between \textit{ex ante} and \textit{ex post} welfare effects:
  - Insurance can be welfare enhancing for risk averse agents \textit{ex ante}.
  - Once the risk has passed and coverage ends without indemnity payment, welfare reducing \textit{ex post}.
  - We exploit panel nature of the data and no indemnity payout during the study period to identify buyers’ remorse.

- Welfare measure: subjective wellbeing (SWB)
  - Individuals were asked to rank their economic condition on a five-step ladder: 1=very bad economic condition; 5=very good economic condition.
Empirical Strategy

- SWB challenging to measure:
  1. Different ways to elicit
     - We use alternative measures of SWB - Economic condition relative to other Borana pastoralists.
  2. Endogeneity
     - Randomize encouragement design.
  3. Time invariant optimism or pessimism.
     - We use fixed effects estimator.
  4. Reference points may differ across respondents.
     - Vignette correction: rescale SWB to generate interpersonal comparability.
Empirical Strategy

• Two step estimation strategy:

1. “Opt in” decisions likely endogenous, we estimate using LPM:

\[ Pr(\text{IBLI}_{ivt} = 1) = \omega + \phi_1 D_{iv1t} + \phi_2 D_{iv2t} + \phi_3 D_{iv(12)t} + \rho_1 A_{iv1t} + \rho_2 A_{iv2t} + \rho_3 A_{iv(12)t} + \rho_4 C_{iv1t} + \rho_5 C_{iv2t} + \rho_6 C_{iv(12)t} + \mu_1 P_{iv1t} + \mu_2 P_{iv2t} + \zeta X_{ivt} + \tau_i + \psi_{ivt} \]

We estimate the IBLI volume equation using Tobit model.

Controls: herd size, assets, income, gender, age, schooling, household composition.

2. In stage two we estimate using Ordered Logit model:

\[ SWB_{ivt} = \alpha + \beta \text{TTLU}_{\text{Ins}_{ivt}} + \theta \text{TTLU}_{ivt} + \pi \text{TTLU}_{\text{Lap}_{ivt}} + \delta X_{ivt} + \gamma_i + \varepsilon_{ivt} \]
Empirical Strategy

There are at least two ways IBLI can influence SWB

- Non-monetary (psychological) benefits or costs:
  - Insurance may reduce stress about adverse outcomes (give peace of mind): ($\beta > 0$)
  - Insurance could increase stress if basis risk is high, and it’s like lottery: ($\beta < 0$)
  - Buyer’s remorse: ($\pi \leq 0$)

- Monetary benefits or costs effect on net income/wealth
  - Premium payment reduces net income/wealth, indemnity payment increases it, net indemnity payments will influence SWB. This effect is captured by $\theta$.

We estimate the aggregate effect of IBLI on SWB as:

$$\Delta \overline{SWB}_{ivt} = \beta' \overline{TLU_{Ins}}_{ivt} + \pi' \overline{TLU_{Lap}}_{ivt} + \theta \overline{NI}_{ivt}$$
### Results

**Table:** Ologit regression of vignette corrected SWB using IBLI uptake

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vignette adjusted SWB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted IBLI uptake</td>
<td>0.822***</td>
<td>0.719***</td>
<td>0.863***</td>
</tr>
<tr>
<td>Predicted lapsed IBLI</td>
<td>-0.454***</td>
<td>-0.439***</td>
<td>-0.443***</td>
</tr>
<tr>
<td>Number of TLUs owned</td>
<td>0.014**</td>
<td>0.012*</td>
<td>0.012*</td>
</tr>
<tr>
<td>Asset Index</td>
<td>0.283***</td>
<td>0.239***</td>
<td></td>
</tr>
<tr>
<td>Annual income ('000 Birr)</td>
<td>0.003</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Household head gender (M=1)</td>
<td></td>
<td></td>
<td>0.733**</td>
</tr>
<tr>
<td>Household head age</td>
<td></td>
<td>-0.042</td>
<td></td>
</tr>
<tr>
<td>Household head age squared</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td></td>
<td></td>
<td>-0.224***</td>
</tr>
<tr>
<td>Household head grade</td>
<td></td>
<td></td>
<td>0.055</td>
</tr>
<tr>
<td>Observations</td>
<td>1,530</td>
<td>1,530</td>
<td>1,530</td>
</tr>
<tr>
<td>Number of households</td>
<td>550</td>
<td>550</td>
<td>550</td>
</tr>
</tbody>
</table>
Table: Ologit regression of vignette corrected SWB using #TLU insured

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vignette adjusted SWB</td>
<td>0.137***</td>
<td>0.138***</td>
<td>0.144***</td>
</tr>
<tr>
<td>Predicted TLUs insured</td>
<td>-0.077***</td>
<td>-0.071***</td>
<td>-0.074***</td>
</tr>
<tr>
<td>Predicted lapsed TLUs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of TLUs owned</td>
<td>0.015**</td>
<td>0.012*</td>
<td>0.012*</td>
</tr>
<tr>
<td>Asset Index</td>
<td></td>
<td>0.325***</td>
<td>0.290***</td>
</tr>
<tr>
<td>Annual income ('000 Birr)</td>
<td>0.003</td>
<td>0.003</td>
<td>0.617**</td>
</tr>
<tr>
<td>Household head gender (M=1)</td>
<td></td>
<td></td>
<td>0.617**</td>
</tr>
<tr>
<td>Household head age</td>
<td></td>
<td>-0.037</td>
<td>0</td>
</tr>
<tr>
<td>Household head age squared</td>
<td>0</td>
<td></td>
<td>-0.192***</td>
</tr>
<tr>
<td>Household size</td>
<td></td>
<td></td>
<td>-0.192***</td>
</tr>
<tr>
<td>Household head grade</td>
<td></td>
<td>0.058</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>1,530</td>
<td>1,530</td>
<td>1,530</td>
</tr>
<tr>
<td>Number of households</td>
<td>550</td>
<td>550</td>
<td>550</td>
</tr>
</tbody>
</table>
## Results

**Table: Aggregate effect of IBLI on SWB**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ SWB</td>
<td>0.210***</td>
<td>0.218***</td>
<td>0.230***</td>
</tr>
<tr>
<td>Observations</td>
<td>1,530</td>
<td>1,530</td>
<td>1,530</td>
</tr>
</tbody>
</table>

---

*Kibrom Tafere*  
*June 10, 2015*  
*IBLI & SWB*
• IBLI has a positive, statistically significant effect on wellbeing, even after premium payment

• Ex post of contract, purchasers exhibit some buyer’s remorse in the absence of indemnity payments.

• But the positive effect of IBLI coverage is substantially higher than the negative effect of buyer’s remorse.

• **Even with prospective buyer’s remorse, IBLI purchase improves SWB.**

• And ... SWB identifies welfare gains otherwise not easily observable.