

## Weather index insurance for climate resilience: An experimental implementation in Kyrgyzstan

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- Introduction
- Literature review → research question
- **Data**: sample selection, experimental design, descriptives
- Empirical strategy
- Empirical results
- Conclusion

## Introduction: Motivation and Background

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- <u>Problem</u>: **index insurance** is promising but lacks demand
- Previous studies:

-	+
Basis risk, premium	Insurance experience, subj.
(Cole et al., 2013; Hill et al., 2013)	climate risk (Cole et al., 2013; Hill et
	al., 2013) & recently suffered
	climate risk (Chantarat et al., 2009)

→influence of trust underresearched! (Platteau et al., 2017)

"Objectivity & fairness" and "similarity & agreement" (Earle, 2004)

→trust, understanding and peer interaction are intertwined:

"Observational learning" & "peer imitation" (Manski, 2000)

How do understanding, trust and peer imitation affect marketable, non-subsidized index insurance adoption?



07/2018: insurance experiments with Krygyz smallholders







\* Source: National Statistical Committee of the Kyrgyz Republic (2017).

### **Experimental design**

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#### **Step 1:** Receive money:

- Fixed costs
- (Fertilizer)
- (Index insurance)
- (Savings)



**Step 2:** Simulate weather event



**Step 3:** Receive new endowment

 $\rightarrow$  Play five rounds

## Descriptive results: farm & risk information (1)

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Cultivated land size (in ha)	Share (in %)	Average production sold (in %)				
≤ 1	67.26	21.97				
1 <x 2<="" td="" ≤=""><td>16.15</td><td>46.16</td></x>	16.15	46.16				
> 2	16.59	49.92				

Table 1: Farm size and average production sold

**NOTE**: Data are weighted.



**NOTE**: Data are weighted and based on a multiple choice question.

## **Descriptive results:** farm & risk information (2)

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% yield lost

mean yield

lost



#### Figure 3: Average yield lost (in %)

# Descriptive results: Insurance demand





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Average Marginal Effects (AME) on ...

... overall insurance take-up rate of 80.89 percent

#### Table 2: AME Heckman 2-Step Estimation (selected variables)

		(1) Insurance adoption		(2) Insurance contract	
<u>Game</u>	Aver. insurance option bought/group (1-3)			1.099***	(0.0938)
<u>character-</u> <u>istics</u> <u>Individual</u> <u>character-</u> <u>istics</u>	% insurance purchasers/group (0-100)	0.007***	(5.77e-04)		
	Presence insurance company (0/1)	-0.0598**	(0.0298)		
	Level of trust in big companies (1-5)	0.0356**	(0.014)	-0.035	(0.032)
	1.understand insur.#0.insur. experience 1.understand insur.#1.insur. experience	0.003	(0.058) (0.036)	0.190	(0.170)
	Inverse Mill's ratio (IMR)			0.241*	(0.130)
	Observations	574 (126 farmers)		472 (125 farmers)	
	(Pseudo) R-squared	0.6553		0.4333	

**NOTE**: Serial correlation robust standard errors in parentheses: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Other covariates are (1): previous rain deficit, round, female, age, education, no. HH members, financial stability, subjective discount rate, rainfed prod., land size, % prod. sold, yield loss##main farmer, danger prod. loss,

(2) financial endowment. Data are weighted

- **Background**: Index insurance can improve farmers' climate resilience & contribute to rural welfare!?
- **Goal**: Drivers for a successful implementation. Recent studies without practical success...
- Novelty:
  - 1. Study design replicates real farm & market conditions
  - 2. Focus: peer imitation, trust and understanding
  - 3. Kyrgyzstan

## Conclusion (2)



### • Conclusions:

Major adoption determinants:

- 1. Sophisticated insurance **understanding** (+\*\*)
- 2. **Peer imitation** (+\*\*\*)
- 3. Presence insurer (-\*\*) & (stated) trust (+\*\*) = distrust

Group sessions/promotions & trust-building activities!!!

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# Thank you for your attention! Any questions?



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