

Determinants of Micro-insurance Take-up: Evidence from a Randomized Experiment in China

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Motivation

- Rural households are vulnerable to risks such as flood, drought, which is one channel of poverty traps (Banerjee 2003).
- In many cases, insurance products do not exist to hedge for the risk, while in some other cases, such product exists, but the use is not widespread.
- Study ways to improve micro-insurance take-up is crucial because the increased demand of individuals is a prerequisite for scaling up the program to reach more people.

Questions

- This project studies the following potential determinants of insurance take-up through a series of field experiments:
 1. Price
 2. Financial literacy, trust, and social network
 3. Availability of multiple contracts
 4. Simulated experience through games
- This presentation focuses on item 2 and 3:

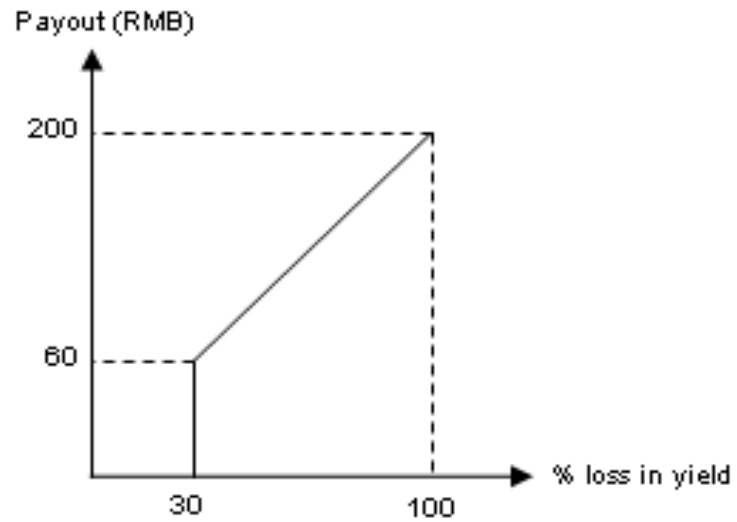
What is the effect of financial literacy and trust on insurance adoption? Can social network help diffuse information which improves insurance take-up? Can we satisfy farmers' heterogeneous demands and thus raise the overall take-up rate by providing multiple contracts?

Background

- Rural areas in China
- On average, more than 70% household income comes from rice production.
- No rice insurance before
- Insurance contract:
 - Price: 3.6 RMB after subsidy (original price 12 RMB)
 - Disaster causes 30% or more loss in yield:
Heavy rain, flood, windstorm, drought, etc.
 - Indemnity Rule: $200\text{RMB} \times \text{loss}\%$

Background

- Indemnity Rule:



Experiment #1:

Financial literacy, trust, and social network

● Question:

- Can we increase insurance take-up by improving farmers' financial literacy and trust on the program?
- Given that financial education is costly, if only a proportion of farmers received it, is it possible to extend the effect to untreated farmers through social network?

● Procedure:

- In each village, held two round sessions;
- Each round has two sessions, one simple and one intensive.

Experiment #1:

Financial literacy, trust, and social network

- Information presented during sessions:

- Simple session:

Around 20 minutes. Introduce the contract, including the insurance premium, amount of subsidy provided by the government, insurance responsibility, maximum payout, period of insurance, rules of loss checking and procedures of making payout.

- Intensive session:

Around 50 minutes. Introduce the contract, plus the following items:

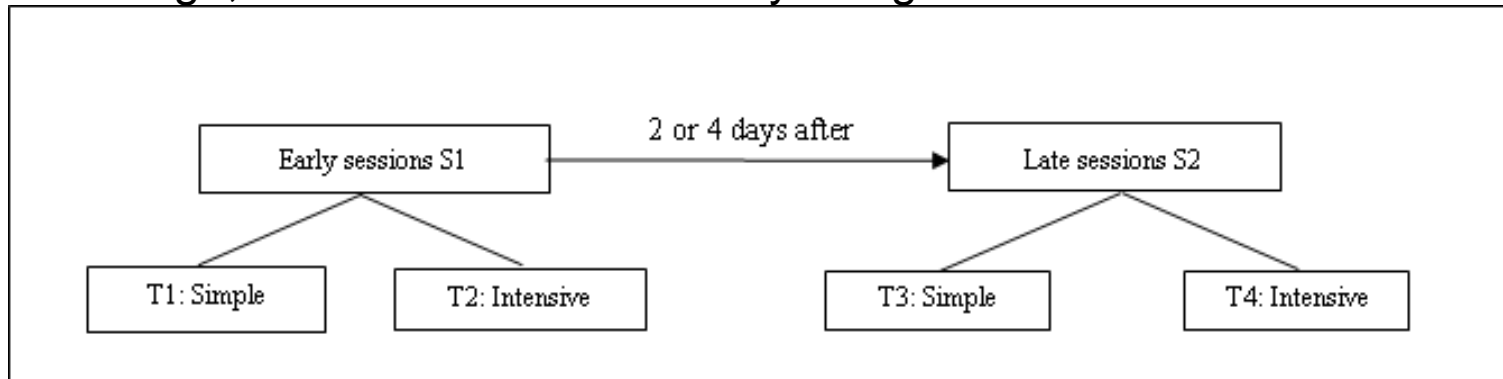
- 1) Explain what is policy-oriented agricultural insurance and how does that differ from commercial insurance products? Use examples to explain how to calculate the payout that you can get under different situations. Teach farmers to compute expected benefit of purchasing insurance, etc.

- 2) To improve farmers' trust on this program, distribute a government document which includes the development and payout information of the same rice insurance product in other areas, the development and payout of some other agricultural insurance offered by the same insurance company, and detailed contact information of people who are in charge of the program, etc.

Experiment #1: Financial literacy, trust, and social network

● Design:

In each village, households are randomly assigned to one of the four sessions.



➤ ***Effect of financial literacy and trust:***

Compare take-up(T1) with take-up(T2)

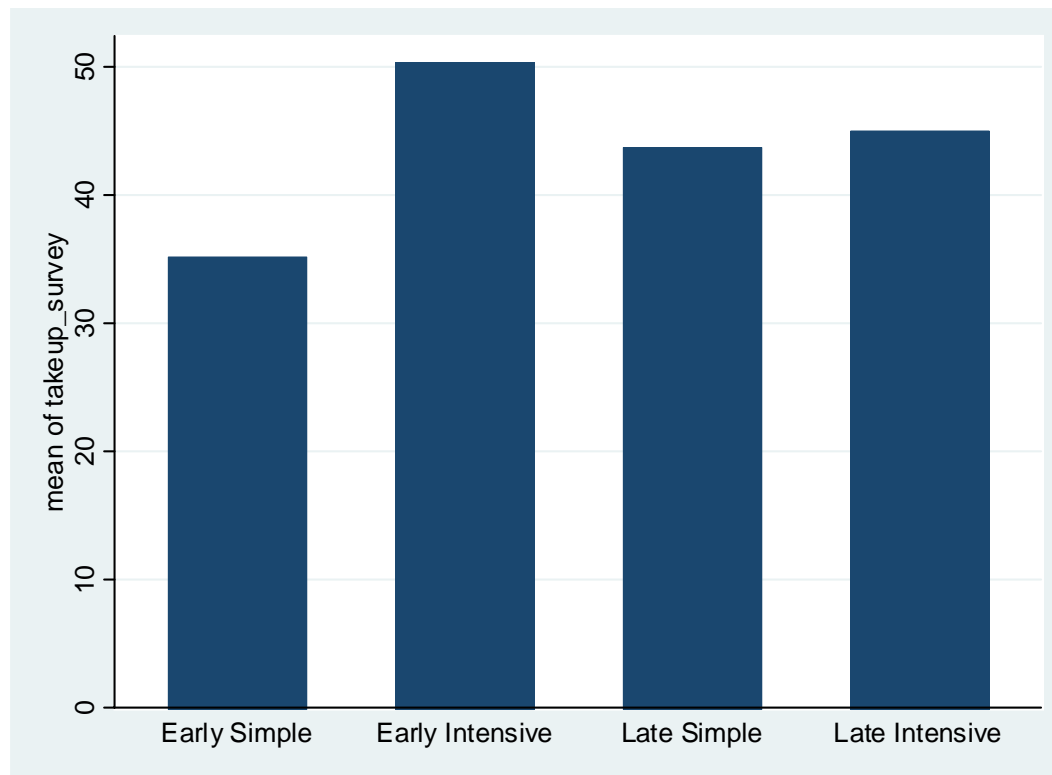
➤ ***Effect of social network:***

Compare {take-up (T2) – take-up (T1)} with
{take-up (T4) – take-up (T3)}

Experiment #1: Financial literacy, trust, and social network

- Result:

Average take-up rate in different sessions



Experiment #1: Financial literacy, trust, and social network

● Estimation Strategy:

i - household, *j* - village

- To test the effect of financial education and trust:

$$Takeup_{ij} = \gamma_0 + \gamma_1 Intensive_{ij} + \gamma_2 X_{ij} + \eta_j + \varepsilon_{ij}$$

$$H_0 : \gamma_1 > 0$$

- To test whether there is diffusion of knowledge between early and late participants:

$$Takeup_{ij} = \delta_0 + \delta_1 Intensive_{ij} + \delta_2 delay_{ij} + \delta_3 Intensive_{ij} * delay_{ij} + \delta_4 X_{ij} + \eta_j + \varepsilon_{ij}$$

$$H_0 : \delta_1 > 0$$

$$\delta_2 > 0$$

$$\delta_3 < 0$$

Experiment #1:

Financial literacy, trust, and social network

- **Data:**

- Household background;

- Rice production and sales;

- Disasters experienced, risk coping methods, insurance purchased and reimbursement;

- Risk altitude, perception of future disasters;

- Understanding of insurance and financial literacy;

- Social network;

- Session attendance;

- Take-up decisions.

- **Sample size:**

- Around 5,000 households in 190 natural villages.

Experiment #1: Financial literacy, trust, and social network

● Regression results:

- 1) The financial literacy and trust treatment that we provided during intensive sessions has a significantly positive effect on insurance take-up in early sessions;
- 2) In late round, attending simple or intensive sessions does not make any difference.
- 3) The average take-up rate of late sessions is significantly higher than that of early simple sessions, however, it is lower than that of early intensive sessions.

	Insurance take-up		
	First round	Second round	Combined
Intensive (0 = No, 1 = Yes)	0.14*** (0.0259)	0.01 (0.031)	0.1404*** (0.0259)
Late Session (0 = No, 1 = Yes)			0.0715** (0.031)
Intensive * Late Session			-0.1259*** (0.04)
# of observations	2137	1303	3440
Village fixed effects	YES	YES	YES
Household characteristics	YES	YES	YES
R-square	0.1288	0.0734	0.0875

Notes: Dependent variable is individual take-up decisions;
 Columns (1) and (2) estimates the effect of extra information provided during intensive session on take-up for first round and second round participants, respectively; column (3) tests the effect for the whole sample.
 *** significant on 1% level, ** significant on 5% level, * significant on 10% level.

Experiment #1:

Financial literacy, trust, and social network

- Explain the result:

1. Why is the take-up rate of late intensive session lower than that of early intensive session?

Late participants thought they already knew information provided during sessions and thus paid less attention to it.

2. There are two explanations of why intensive sessions do not make any difference among late participants (*social network effect*):

- Late participants are affected by early participants' behavior (Conformity or learning from behavior);
- The extra information provided in early intensive sessions has already been diffused to late participants before they attend sessions.

Next, show estimations to separate two explanations in point 2.

Experiment #1:

Financial literacy, trust, and social network

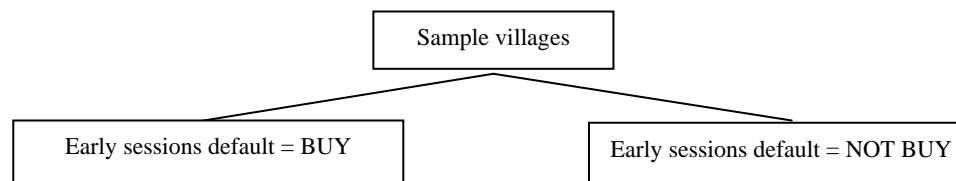
- Why is it important to separating the two mechanisms of social network?

To understand why social network matters, what did people actually learned from social network, and thus determine what kind of policies can most effectively improve insurance take-up.

- To separate these two explanations, study the effect of early take-up rates on late participants' decisions:

1. *Randomization in early sessions (village level): Default Options*

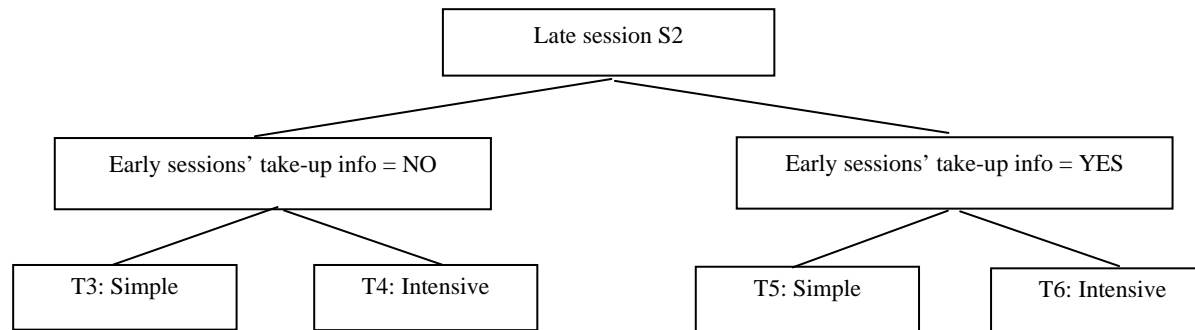
This is to generate exogenous variations in the take-up rate of early sessions.



- If default = BUY: need to sign off if you don't want to buy insurance
- If default = NOT BUY: need to sign on if you want to buy insurance

Experiment #1: Financial literacy, trust, and social network

2. *Randomization in late sessions (household level): Dissemination of take-up information in early sessions.*



- T3&T4: Presentation → Decision
- T5&T6: Presentation
 - Outcomes in early sessions (%take-up or decision list)
 - Decision

Experiment #1:

Financial literacy, trust, and social network

- To test whether the default option makes a difference in early session take-up rate and thus is a valid IV for that:

$$Takeup_{ij} = \alpha_0 + \alpha_1 Default_j + \alpha_2 X_{ij} + \varepsilon_{ij}$$

$$H_0 : \alpha_1 > 0$$

- To test the effect of early participants' behavior on the take-up decisions of late participants:

$$Takeup_{ij} = \beta_0 + \beta_1 TakeupInfo_j + \beta_2 X_{ij} + \varepsilon_{ij}$$

$$H_0 : \beta_1 > 0$$

Experiment #1: Financial literacy, trust, and social network

● Results:

1. Offering default options creates substantial exogenous variation in the take-up rate of early participants.
2. Improving the take-up rate of early participant and disseminating that to later participants can increase their take-up rates.
3. However, the decisions of early participants does not have any effect on late participants if we did not explicitly reveal that.

	Insurance take-up		
	Early Session	Late Session	
		Info=Pre Take-up	Info=None
Default (0 = Not Buy, 1 = Buy)	0.121*** (0.0328)		
Take-up rate in early session		0.4879*** (0.2493)	0.0492 (0.3132)
# of observations	2175	1371	1303
Household characteristics	YES	YES	YES
R-square	0.1097	0.121	0.0731

Notes: Dependent variable is individual take-up decisions;
 Columns (1) estimates the effect of default options on take-up rate by restricting the sample to early session participants, columns (2) and (3) focus on the sample of late sessions and estimate the effect of early round take-up rates on later round take-up decisions;
 *** significant on 1% level, ** significant on 5% level, * significant on 10% level.

Experiment #1:

Financial literacy, trust, and social network

- Summary of results:

- Improving farmers' financial literacy and trust on the insurance company can significantly increase micro-insurance take-up rate;
- Social network can help diffuse financial knowledge and trust on the program to untreated farmers.
- Providing financial education to a subset of farmers and using dissemination of that knowledge through social networks is a cost-effective way of enhancing insurance take-up.

Experiment #1: Financial literacy, trust, and social network

- Future works:

Currently we are treating the whole village as a social network, the next step is to use information from social network survey and farmer status survey to do more detailed analyses.

Experiment #2: Multiple contracts

- Questions:

Farmers have heterogeneous demands for insurance. Can we improve the overall take-up rate by providing a menu of contracts rather than a single one?

- **Contract #1:**

The maximum payout is 200 RMB per mu. The insurance premium is 12 RMB per mu, farmers pay 3.6 RMB per mu after a 70% government subsidy (8.4 RMB).

- **Contract #2:**

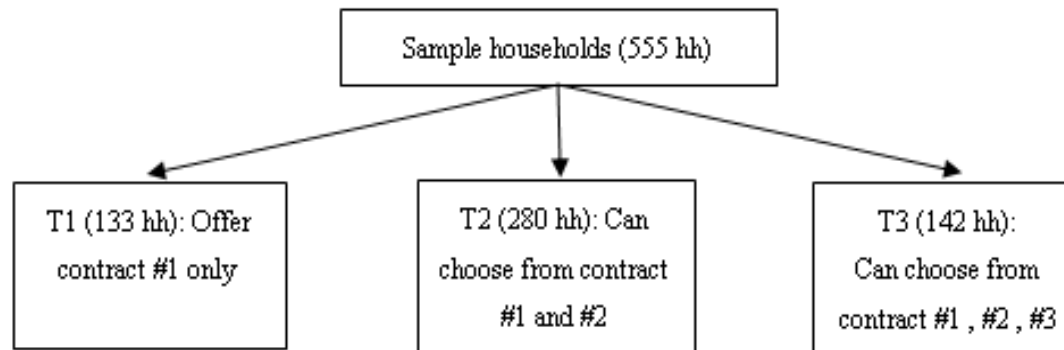
The maximum payout is 400 RMB per mu. The insurance premium is 24 RMB per mu, farmers pay 12 RMB per mu after a 50% government subsidy (12 RMB).

- **Contract #3:**

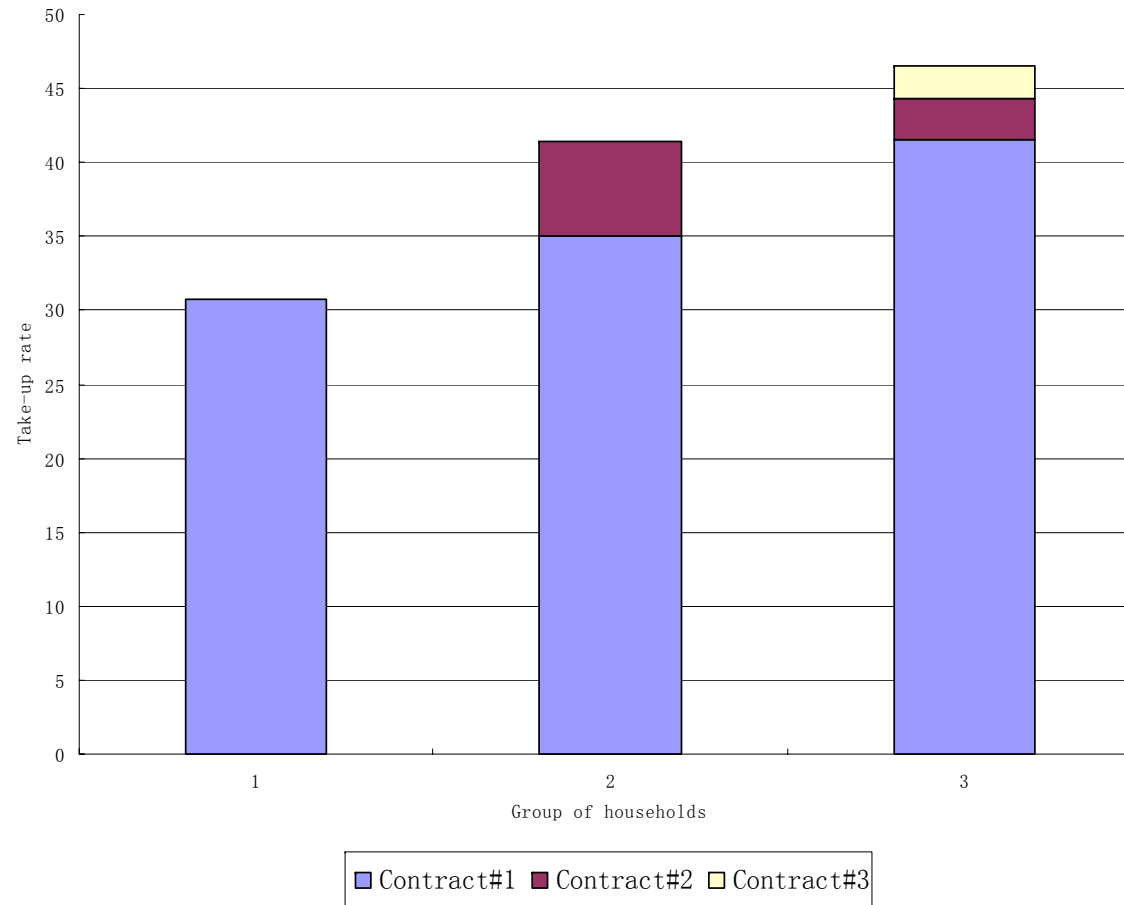
The maximum payout is 600 RMB per mu. The insurance premium is 36 RMB per mu, farmers pay 21.6 RMB per mu after a 40% government subsidy (14.4 RMB).

Experiment #2: Multiple contracts

- Experimental design:



Experiment #2: Multiple contracts



Experiment #2: Multiple contracts

● Summary of results:

- Giving farmers more choices can significantly improve the overall insurance take-up rate;
- However, more farmers choose the basic contract when they are facing multiple contracts, a very small proportion of farmers choose advanced contracts.

● Possible explanations:

- Compromise effect
- Menu effect: trust, signaling of product quality, etc.

Thank You!