

Social Networks and the Decision to Insure: Evidence from Randomized Experiments in China

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- This paper studies the role of **social networks** in the diffusion of a new financial product: **weather insurance**
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 - Social interactions can be an important factor in the diffusion process: Social learning about product benefits or experience, imitation, etc.
- Using a large-scale field experiment in rural China, I investigate:
 - The effect of social interactions on the adoption of a new financial product
 - The monetary equivalence of the network effect
 - Mechanisms through which social networks operate

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- The monetary equivalence of the network effect equals 12% of the insurance premium
- Mechanisms including scale effect, imitation, and informal risk-sharing cannot explain the effect
- The social network effect is mainly driven by social learning about insurance knowledge and friends' experience

- I. Background
- II. Short-term effect of social networks on insurance demand
 - II.1. Experimental design
 - II.2. Causal effect
 - II.3. Monetary value
 - II.4. Mechanisms
- III. Effect of social networks over time
- IV. Conclusion

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Heavy rain, flood, windstorm, drought, etc.
 - Indemnity Rule: $200 \text{ RMB} \times \text{Loss}\%$

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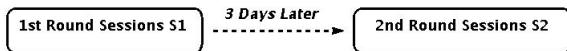
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- The maximum payout covers 30% of the gross rice production income or 70% of the production cost
- Experimental sites: 185 randomly selected villages in Jiangxi, China

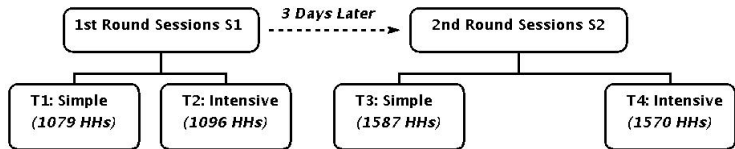
II.1 Experimental Design: Within-village Randomization

- *Two rounds of information sessions in each village:*



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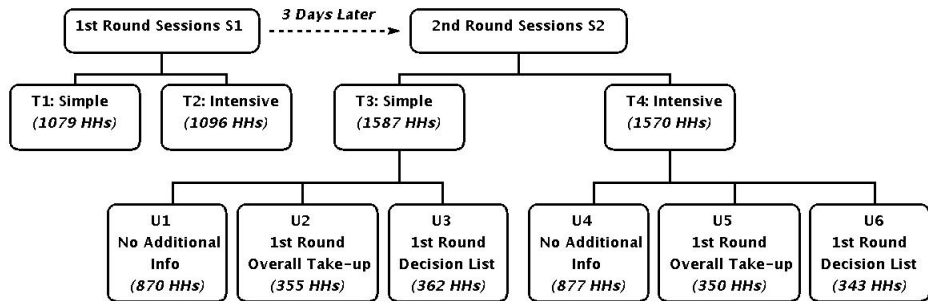
- *In each round, two types of information sessions:*
 1. Simple sessions: Distribute insurance flyer + introduce the contract briefly
 2. Intensive sessions: In addition to information covered in simple sessions, provide financial education about weather insurance products



Definition of social network: the fraction of five friends (named in a social network census) who were invited to an early round intensive session

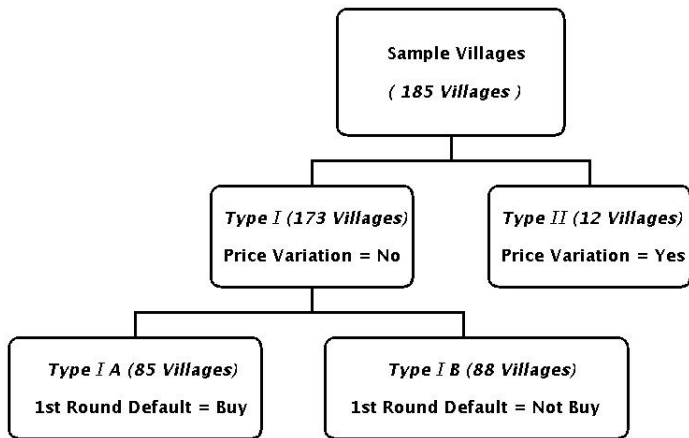
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- After the presentation in each second-round session, disseminate first-round take-up information to a subgroup



In all cases, households make decisions individually at the end of our visit

II.1 Experimental Design: Village-level Randomization



Social Network Effect

- For second-round participants, having one additional friend attending 1st round intensive session (financial education) increases their own take-up by 6.7 percentage points

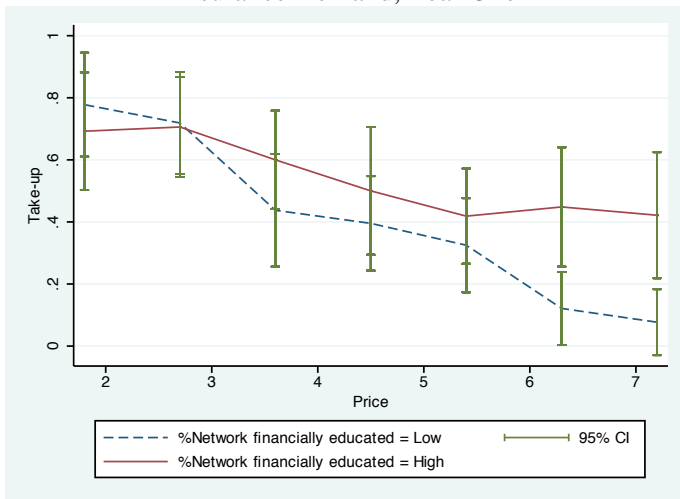
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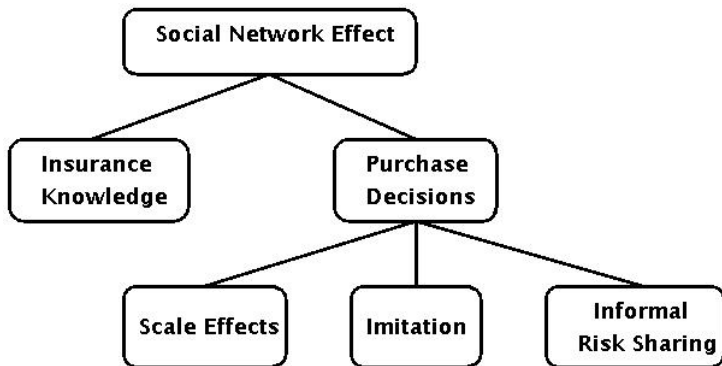
- For second-round participants, having one additional friend attending 1st round intensive session (financial education) increases their own take-up by 6.7 percentage points
- The effect is around 45% of the direct financial education effect
- The network effect is equivalent to reducing the insurance price by 12%

Figure 3. Effect of Having Friends Attending Financial Education on Insurance Demand, Year One



II.4 Mechanisms of the Social Network Effect

- Possible mechanisms:



II.4 Mechanism I: Insurance Knowledge

Do social networks diffuse insurance knowledge?

- Strategy A: Compare the effect of financial education on both take-up and insurance knowledge between first and second round sessions

$$\begin{aligned} \text{Outcome}_{ij} = & \omega_0 + \omega_1 \text{Intensive}_{ij} + \omega_2 \text{Second}_{ij} \\ & + \omega_3 \text{Intensive}_{ij} \times \text{Second}_{ij} + \omega_4 X_{ij} + \eta_j + \epsilon_{ij} \quad (9) \end{aligned}$$

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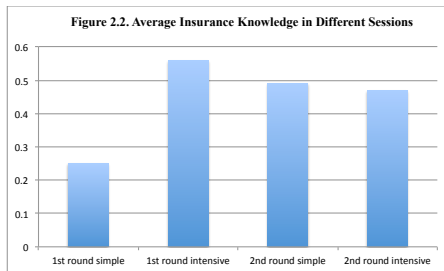
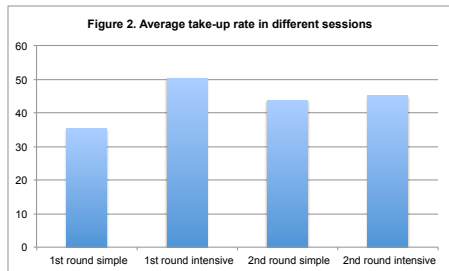
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- Strategy B: Test the effect of social networks on improving insurance knowledge

$$\text{Knowledge}_{ij} = \lambda_0 + \lambda_1 \text{Network}_{ij} + \lambda_2 \mathbf{X}_{ij} + \eta_j + \epsilon_{ij} \quad (10)$$

II.4 Mechanisms: Diffusion of Insurance Knowledge I

- Financial education effect is large and significant in the first round, but it makes no difference in the second round
- Second round intensive session has a lower take-up and level of insurance knowledge than first round intensive session:
 - Learning from friends is less effective than formal financial education
 - Less attention in the second round



II.4 Mechanisms: Diffusion of Insurance Knowledge II

- Diffusion of insurance knowledge is more effective when friends better understand financial education materials

Table 7. Did Social Networks Convey Insurance Knowledge?

VARIABLES	Strategy A				Strategy B
	Insurance Take-up (1 = Yes, 0 = No)		Insurance Knowledge (0 - 1)		
	(1)	(2)	(3)	(4)	(5)
Intensive Financial Education Session (1 = Yes, 0 = No)	0.141*** (0.0259)		0.314*** (0.0120)		-0.00129 (0.0167)
Second Round (1 = Yes, 0 = No)	0.0901*** (0.0309)		0.245*** (0.0142)		
Intensive Financial Education Session *Second Round	-0.138*** (0.0422)		-0.323*** (0.0200)		
%Network Receiving 1st Round Financial Education		-0.106 (0.167)		0.128 (0.103)	0.356*** (0.0475)
%Network Receiving 1st Round Financial Education *Average Network Insurance Knowledge		0.621*** (0.209)		0.312** (0.122)	
No. of Observation	3,433	1,255	3,259	1,255	1,255
Village Fixed Effects and Household Characteristics	Yes	Yes	Yes	Yes	Yes
R-Squared	0.093	0.118	0.233	0.137	0.132

II.4 Mechanisms: Diffusion of Insurance Knowledge II

- Diffusion of insurance knowledge is more effective when friends better understand financial education materials
- Having one additional friend assigned to a 1st round intensive session improves one's own insurance knowledge by 7.2 percentage points

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Do social networks diffuse peers' purchase decisions?

$$\text{Takeup}_{ij} = \delta_0 + \delta_1 \text{TakeupRate}_j + \delta_2 \text{TakeupRateNetwork}_{ij} + \gamma_3 X_{ij} + \epsilon_{ij} \quad (13)$$

- IV for 1st round take-up rate: Default options

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- IV for 1st round take-up rate: Default options
- IV for take-up rate of friends in social network:
 1. Default \times %Network in 1st round sessions
 2. % 1st round network in the intensive session

II.4 Mechanisms: Diffusion of Peers' Decisions

- Friends' decisions do not have a significant effect if this info is not explicitly revealed. But if it is revealed, its effect becomes significant.

Table 9. Effect of Peers' Decisions in 1st Round Sessions on 2nd Round Take-up (IV), Year One

VARIABLES	First Stage:		Insurance Take-up (1 = Yes, 0 = No)	
	1st round overall take-up%	Network 1st round take-up%	No Information Revealed	Revealed 1st Round Decision List
	(1)	(2)	(3)	(4)
Default	0.121*** (0.0326)			
Default * % Network in 1st Round Sessions		0.2829*** (0.0614)		
%1st Round Network in Intensive Session		0.112*** (0.0372)		
1st Round Overall Take-up Rate (Village level)			0.0711 (0.430)	0.460 (0.790)
1st Round Network's Take-up Rate			0.0996 (0.252)	0.969** (0.383)
No. of Observation	2,137	1530	920	610
Village FE and Household Characteristics	No	Yes	Yes	Yes
R-Squared	0.120	0.1648	0.115	

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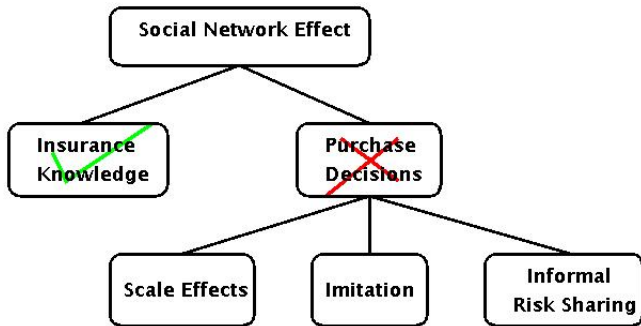
- Friends' decisions do not have a significant effect if this info is not explicitly revealed. But if it is revealed, its effect becomes significant.
 - Reason 1: It takes time for decisions to be diffused
 - Reason 2: Disclosing purchase decisions carries the risk of "losing face" (Brown et al 2011; Qian et al 2007; Zhao et al 2005)

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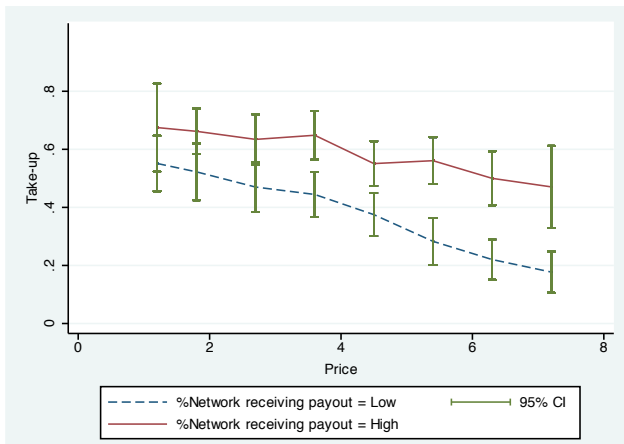
II.4 Mechanisms: Conclusion

- There is something special about social networks in rural communities:
 - They do not convey each other's purchase decisions, even though people do care about such information
 - They do effectively convey what other people know



Year two: Learning from friends' experience

In the second year, observing an above-median share of friends receiving payouts improves insurance demand significantly. The effect is equal to about 54% of the impact of receiving payouts directly, and is equivalent as reducing the average insurance premium by 35%



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- Potential policy interventions to improve take-up:
 - Combining subsidy policies with dissemination of peers' decisions
 - Providing financial education to a subset of farmers and relying on social networks to multiply its effect on others
 - Disseminating information on payouts when they are made