Does reputation promote industry cooperation and credit cooperation of farmer cooperatives?

Presenter: Simeng Zhang

Shenyang Agricultural University
1. Introduction
2. Theoretical Framework
3. Coupling Mechanism
4. Case Study
5. Conclusion
1. Introduction
Smaller farmers face a shortage of financial services, making it hard to purchase materials.

Financial institutions

shortage of financial services

hard to purchase materials

Farmer’s cooperatives

1. Flexibility
2. Convenience
3. Cover a wide range
1. What is the triggering condition of credit cooperation?
2. What are the conditions of co-existence of credit cooperation and industrial cooperation?
2. Theoretical Framework
Market position improvement, revenue increase: satisfaction of participation constraints

Members participation

Contract enforcement

Interconnected transaction and reputation constraints: satisfaction of incentive constraints
3. Coupling Mechanism
**Assumptions**

**Good members**: usually do not break the contract

**Bad members**: break the contract through various forms of non-cooperation behavior

Use $\alpha$ to represent the specific type of member, where:

$\alpha = 0$ indicate that the members are good, their probability of encroaching on the interests of the cooperative is basically 0.

$\alpha = 1$ indicate that the members are bad, and such members decide when to default or when the principal and interest of the cooperative shall be returned, according to whether they can maximize their own interests.
Good members: usually do not break the contract

Bad members: break the contract through various forms of non-cooperation behavior

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(2) Utility Function

$$U = -\frac{1}{2}V^2 + \alpha (V - V^e) + (1 - V) \times (\omega - r)$$

$V$ is the actual fund encroaching rate of members, $V^e$ is the cooperative’s expectation of $V$

$0 \leq V \leq 1$, $0 \leq V^e \leq 1$

$-\frac{1}{2}V^2$ to represent the diminished utility of members after they encroaching on cooperative’s interest
(2) Utility Function

\[ U = -\frac{1}{2}V^2 + \alpha(V - V^e) + (1 - V) \times (\omega - r) \]

\( \alpha(V - V^e) \) is the utility that members can get from the "unexpected" fund encroaching from cooperative
(2) Utility Function

\[ U = -\frac{1}{2}V^2 + \alpha(V - V^e) + (1 - V) \times (\omega - r) \]

(1 − V)× (ω − r) is the utility that members get through industrial cooperation;

ω is the profit margin of the member who borrowed money from cooperatives and invest these fund into agricultural production;

r is the actual interest cost of credit cooperation.
(2) Utility Function

\[ U = -\frac{1}{2}V^2 + \alpha(V - V^e) + (1 - V) \times (\omega - r) \]

if \((\omega - r)>0\), the total utility decreases when \(V\) increase; while total utility increases when \(V\) increase if \((\omega - r)<0\).
(2) Utility Function

When the members are good, $\alpha=0$.

The utility function will be: $U = -\frac{1}{2}V^2 + (1 - V)(\omega - r)$.

For $0 \leq V \leq 1$, member’s utility $U$ takes the maximum value when $V=0$. 
(2) Utility Function

When members are bad ones, $\alpha = 1$,

the utility function will be: $U = -\frac{1}{2} V^2 + (V - V^e) + (1 - V)(\omega - r)$.

When $V=0$, $V^e$ will be very small and be tread as 0, and there are some chance $U \geq 0$.

For this possible positive utility, even bad members are encouraged to take cooperative strategy.
4. Case Study
Rixing Sheep Cooperative is located in Anhui Province, People’s Republic of China. All members are sheep farmers. Since the initiation in 2010, Rixing has conducted credit cooperation, and members involved in this has dramatically increased from 18 in 2010, to over 600 in 2016.
(1) Scale restriction: the maximum loan amount of each member is 10% of the total equity

(2) Term limitation: the term of loans is always limited to 3-6 months, no longer than 1 year

(3) Fund usage restrictions: the use of loans is limited within agricultural production
5. Conclusions
We find that the reputation of the members is the key to the emergence of industry cooperative and the credit cooperation simultaneously. When the cooperative perceive a prior probability than is greater a certain threshold, the cooperative industry cooperation and credit cooperation may emerge, be produced, and under certain conditions, a perfect Bayesian equilibrium and a coupling development can be achieved; the higher the net income in industrial cooperation, the higher the discount rate, the greater the possibility that non-cooperative members adopt a cooperative strategy.
Thanks for your listening