|  |  |  |  |
| --- | --- | --- | --- |
|  | | Actor B | |
| Cooperate | Defect |
| Actor A | Cooperate | n-1, n-1 | n-2-b, b |
| Defect | b, n-2-b | 0, 0 |

Assume n>=2;

Then 0<n-1; b=? n-2-b=?

If b>1, (assume n=2), then b>n-1>0>n-2-b (b>1>0>-b) 🡪 Prisoner Dilemma;

NE: both defect🡪 (0,0)

If b increases, 🡪 more likely to defect, the payoffs of cooperate decreases

If b<1, (assume n=2), then it depends on b’s range; 🡪**Coordination Game**

If 0<b<0.5, n-1>b>0>n-2-b (1>b>0>-b) 🡪 cooperation is risk-dominant, highest payoff

If 0.5<b<1 (especially when b approaches 1), it depends on n:

If n=2; n-1>b>0>n-2-b, when b approaches 1,the likelihood to defect increases

If n>=3, n-1(2)>b>n-2-b>0, cooperation> defect> cooperate>0🡪still PD (??)

**b: the riskiness of cooperation in the coordination dilemma.**

**In network component of the model assumes that players establish relationship with others in order o improve their payoffs in the *local ecology of game*.**

**Snijder’s stochastic actor-based model for network evolution applied in water solution policy arena**

**Ego adds or drops links from one time to another (based on the risk/payoffs), but the TYPE of relationships preferred by actors remain stable**

Partner selection:

Popularity is determined by (1)individual/nodal attributes; (2) network position

**Defining bridging and bonding social capital (Burt 2005)**

1. **Bridging Structure Provide Assurance in Low-Risk Coordination Dilemma(b<1): no incentive to lie or cheat on others**

**Thus: information transmission, to shorten the network’s average path length**

**1A(Open Two-Paths): find the alters that will maximize the number of actors (indirect ties with the other third actors; Granovertter’s weak ties); information may be less reliable, but cost is less;**

**1B(Popular Alters): find the alters with greatest centrality (links to most other nodes)**

1. **Bonding Structures Provide Crediable Commitment in High-Risk Cooperation Dilemma (b>1)**

**2A: reciprocity (Putnam, 1993)**

**2B: transitivity**

**In a closed network, trust can emerge to support cooperation within the repeated interactions of closed groups.**

**Example: a transitive triad, A trusts E, E trusts D; thus E is in a position to assure A of D’s trustworthiness. Furthermore, D is unlikely from providing untimely or unreliable information to A, because if D does so, it will influences the relationship between D and E.**

**The case of estuary watersheds (public good/common governance):**

**Expended network relationships can reduce the risks that traditionally make agencies reluctant to collaborate:**

* **Bridging relationships can help locate and evaluate potentially collaborative partners,**
* **Bonding relationships can ease the difficulties negotiations and reduces the need fo costly enforcement mechanisms**

**Data:**

**1999: 194 orgs in 10 estuaries**

**Actor/nodal Attributes**

1. **Three effects of ego and alters**

**Trust; similarity effect (trust similarity affects selection of contacts); the influence effect(in which alters’ trust affects ego’s level of trust)**

**2.Two other controls:**

1. **government actor (1/0)**
2. **predevelopment (7-prodevelopment, 1– proenvironmental)**