

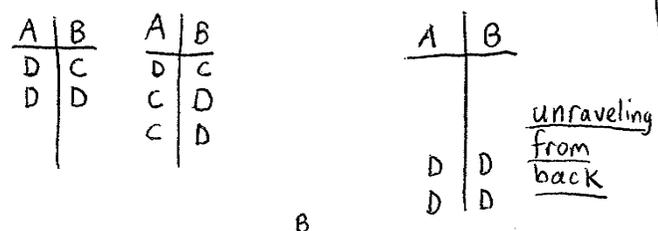
Repeated Interaction : cooperation

Lesson: In ongoing relationships, the promise of future rewards and the threat of future punishments, may sometimes provide incentives for good behavior today.

But for this to work, it helps to have a future!

- lame duck
  - retirement
  - economics majors' relationships
- } end effects

		B	
		coop	defect
A	coop	2, 2	-1, 3
	defect	3, -1	0, 0



		B	
		coop	defect
A	coop	2+0, 2+0	-1+0, 3+0
	defect	3+0, -1+0	0+0, 0+0

<< However, even a finite game has some hope. Let's see an example... >>

<< Finite game - is there hope of cooperation? ... >>

	A	B	C
A	4, 4	0, 5	0, 0
B	5, 0	1, 1	0, 0
C	0, 0	0, 0	3, 3

We would like to sustain (A,A) "cooperation"  
 But (A,A) is not NE in one-shot game.  
 The NE are (B,B) (C,C)  
 << also, there are some mixed NE. But this is okay for now. >>

We can't sustain (A,A) in period 2

But consider the strategy:

"play A, then { play C if (A,A) was played  
 play B otherwise }"

Is this a SPE?

In period 2: after (A,A) this strategy induces (C,C) ✓  
 after the other choices in period 1, this strategy induces (B,B) ✓

In the whole game:  
 • A → 4 + 3 = 7 ✓  
 • if defect → 5 + 1 = 6 ✓

temptation to defect today	≤	value of reward - value of punishment tomorrow
5 - 4	≤	3 - 1
1	≤	2 ✓

Lesson: If a "stagegame" has more than one NE then we may be able to use the prospect of playing different equilibria tomorrow to provide incentives (rewards and punishments) for cooperating today.

- There may be a problem of renegotiation

• <<continued from above >>

• Bankruptcy "bail out"

trade off:

ex ante efficiency  
ex post efficiency

	C	D
C	2, 2	-1, 3
D	3, -1	0, 0

B	P	E	B
D	C	C	C
D	C	C	C
D	D	C	C
		D	C
		D	D
		D	D

play C then

- play C if noone has played D
- play D otherwise

"Grim Trigger Strategy"

temptation today  $\leq$  (value of reward - value of punishment) tomorrow

3 - 2  $\leq$   $\delta [ 0 ]$  where  $\delta < 1$  because the game may end

value of (C,C) "forever"  $\rightarrow$   $2 + \delta 2 + \delta^2 2 + \delta^3 2 + \dots$

value of (D,D) "forever"  $\rightarrow$  0

Open Yale courses