

Session 3.4

Reputation

When there are multiple NE in a game, the possibility of leadership and reputation arise. A leader calls out a specific NE, and is successful if all the players trust him or her to follow through with that NE. Reputations are maintained if all, or enough of, the players believe what the player with the reputation says. She can only be credible by announcing strategies for everyone that are mutually self enforcing.

Leadership

- ◆ We have already encountered several cases where there are multiple Nash equilibrium.
- ◆ By definition NE are self enforcing: no one wishes to unilaterally deviate from a NE. A natural question to ask is which of the NE will or should be played.
- ◆ Sometimes there might be an obvious focal point.
- ◆ At other times, a person who recognizes and convinces everyone else to pick on a particular NE is regarded as a leader.
- ◆ That is, leaders choose amongst self enforcing agreements, and persuade everyone to adopt their choice.

Multiple equilibria

- ◆ There is no role for coordination and leadership in situations where the solutions strategies for each player are uniquely defined.
- ◆ Opportunities for coordination and leadership arise when there are several solutions to a game, which we may describe as self-enforcing contracts.
- ◆ In this case not all the solutions to the overall game can be found by merely piecing together the solutions of the kernel games.

Repeated games

- ◆ Multiplicity is the existence of multiple solutions within a game (such as a signed contract that still leaves the bargaining parties discretion about its implementation)
- ◆ It sometimes arises when there are ongoing benefits from continuing a relationship and/or potential for repeated trade.
- ◆ If the solutions to all the kernels forming a finite stage game are unique, then the unique solution to the stage game is to play those kernel solutions.
- ◆ In these cases there is no scope for either leadership or reputation.

An Infinite Horizon Extension

- ◆ But what if the Alstom Bombardier game of the previous session did not end at a fixed point in time?

- ◆ Consider the following “implicit” agreement between the two firms:

If neither of us cheat on each other from now on by cutting price, then we will continue to hold firm and collect (3,3) each period.

If either of us ever cheat even once, then from then on we will always cut price.

- ◆ This is called a **trigger strategy**.

When are trigger strategies self enforcing?

- ◆ The benefit from following this strategy is the discounted sum of receiving 3 per period.
- ◆ The discounted sum of breaking the agreement is receiving 4 in the first period and 2 from the next period onwards.
- ◆ The net benefit from breaking the agreement is therefore the gross of 1 received now, less the cost of 1 unit paid each period from next period onwards.
- ◆ If the interest rate is r , then the net benefit is
$$1 - 1/r .$$
- ◆ Unless the interest rate exceeds 100 percent, the trigger strategy is self enforcing.

What is a reputation?

- ◆ In this example not all the solutions to the overall game can be found by merely piecing together the solutions of the kernel games.
- ◆ Dynamic strategies that preserve long term incentives and cooperation with appropriate rewards and penalties are, under the right circumstances, more lucrative than the outcomes realized from players choosing say, dominant strategies each period.