Sequential Games

A Sequential Game
• Our basic payoff matrix assumes that strategies are enacted at the same time, as in odds or evens
• In many games, the moves take place in sequence
  – In chess, one player moves
  – Then the other player moves

A Sequential Game
• A firm is considering entering a new business. After it enters, or doesn’t, the incumbent can either expand or maintain his capacity.

A Sequential Game
• A firm is considering entering a new business. After it enters (or doesn’t), the incumbent can either expand or maintain his capacity.
• The incumbent threatens that it will expand capacity if the new firm enters. If it does, the new firm will lose money.

A Sequential Game
• A firm is considering entering a new business. After it enters, or doesn’t, the incumbent can either expand or maintain his capacity.
• The incumbent threatens that it will expand capacity should the new firm enter the business. If it does, the new firm will lose money.
• A simple test: Is it then in the interest of the existing firm to expand? If so, the threat to expand is credible. If not, it is simply a bluff.

The Payoff Strategy
The Payoff Strategy

Entrant
Incumbent
Incumbent

Stay Out
Enter
Expand
Not Expand

Stay Out
Enter
Expand
Not Expand

(10, 15)
(-5, 5)
(0, 20)
(0, 10)

The choice is easy; expand. The incumbent’s threat to expand is not credible because it is not in his self-interest.

How to be Credible

- How can the incumbent firm make its threat credible?
  - It wants to expand, but also wants to keep the new entrant out.
How to be Credible
• How can the incumbent firm make its threat credible?
• It could, for example, sign a binding contact on a new building.

Suppose it spends $15 on a new building.
– If it actually expands, the money is not lost.
– If it doesn’t the money is lost forever.
The potential entrant will stay out because the threat to expand is now, thanks to the advance commitment, credible.

How to be Credible
• This example illustrates the importance of credibility and how to achieve it.

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• An example: Independence Day
  – Important to be the holiday blockbuster
  – With this title, the promise to come out is credible.

Another Illustration
• I am thinking of hiring you to do some work.
  – I get $60 of benefit
  – You give up $40 of leisure
  – We agree on $50.
• However the agreement is not enforceable.
Another Illustration

- I am thinking of hiring you to do some work.
- However the agreement is not enforceable.
- Should you show up and do the work?

The Payoff Strategy

In short, you know it will be in the employer’s interest not to pay once the work is done. So, the work will never get done.

There is an important missing element: the employer’s right to sue for non-payment. The legal system plays an important role. Suppose the courts would award $60 if the employer failed to pay.
Because we have a legal system and contracts are enforceable, you will do the work and get paid. We have a win-win situation.

Some Extensions

• If I pay you in advance, we have the same issue

• Without a legal system, we would pass up many valuable opportunities for contracts and exchange of goods and services.

Some Extensions

End

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