Chapter 9 – Strategic Commitment

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Strategic Commitment

• Strategic commitments are decisions that have long-run impacts and are hard to reverse
  – Example: Installation of additional production capacity

• These differ from tactical moves which are easy to reverse and have only short-run impacts
  – Example: A store cutting the price on certain items
Strategic Commitment

• To achieve the desired result, the commitment should be
  – Visible
  – Understandable
  – Credible

• To be credible, the commitment should be irreversible
Commitment Value of Announcements

• If a firm has an established reputation at stake, even announcement of intention to act can have commitment value.
• If the firm fails to match actions to words, its reputation will suffer.
• Smaller and newer firms cannot use announcements to indicate commitment.
Game Theory Example

- Extra and Atlantic both are considering building new grocery stores in Athens. Expected profits are (1\textsuperscript{st} number is for Extra, 2\textsuperscript{nd} is for Atlantic):

<table>
<thead>
<tr>
<th></th>
<th>Extra</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Build</td>
<td>360, 360</td>
<td>300, 400</td>
</tr>
<tr>
<td>Not build</td>
<td>400, 300</td>
<td>350, 350</td>
</tr>
</tbody>
</table>

What is the Nash Equilibrium?
Game Theory Example

• If Extra builds, then Atlantic’s optimal strategy is to build
• If Atlantic builds, then Extra’s optimal strategy is to build
• So Nash Equilibrium is for both stores to build

<table>
<thead>
<tr>
<th></th>
<th>Atlantic Not build</th>
<th>Atlantic Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra Not build</td>
<td>360, 360</td>
<td>300, 400</td>
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Reversible and Irreversible Moves

• Reversible moves are more likely to be matched by rivals than irreversible moves
• Evidence from U.S. airline industry supports this view
• U.S. airlines respond more quickly to price cuts by rivals than to moves like acquisition of another carrier
Strategic Commitment and Competition

- Strategic complements and strategic substitutes describe how a firm reacts to price/quantity change by a competitor.
- Tough commitments and soft commitments are concepts that capture actions by a firm that puts its competitors at a disadvantage.
Strategic Complements

• When a firm’s action induces the rival to take the same action the actions are strategic complements

• In Bertrand duopoly model prices are strategic complements

• A price cut is the profit maximizing response to competitor’s price cut

• Prices are usually strategic complements
Example of Strategic Complements

• Suppose Extra reduces the price of milk
• Atlantic responds by reducing the price of milk (assume that this response is the “best” or the profit maximizing response)
• Extra and Atlantic are strategic complements with respect to price
Strategic Substitutes

• When a firm’s action induces the rival to take the opposite action, the actions are strategic substitutes
• In Cournot duopoly model quantities are strategic substitutes
• A quantity increase is the profit maximizing response to competitor’s quantity reduction
• Quantity and capacity decisions are usually strategic substitutes
Example of Strategic Substitutes

• Suppose Atlantis decides to expand its stores and increase quantity
• Extra responds by closing one of its stores (i.e. reducing quantity)
• Atlantis and Extra are substitutes with respect to quantity
Soft Commitments and Tough Commitments (1)

• The immediate effect of tough commitment is an adverse impact on the rival
• Example: Extra invests in new freezer technology that reduces unit cost so that it can lower its price, forcing the rival to lower its price
• Tough commitment conforms to the traditional view of competition
Soft Commitments and Tough Commitments (2)

• The immediate effect of a soft commitment is a favorable impact on the rival

• Example: Atlantis closes a store, reducing quantity. Extra responds by expanding stores

• To understand why soft commitments may make sense, we need to look at both the direct and the strategic effects
Two Effects of Commitments

- A commitment may have a direct and a strategic effect on the firm’s profitability
- Direct effect is the change in the present value of profits assuming that the rival’s tactics are unaffected by the commitment
- The strategic effect is the further change in the present value of the firm’s profits due to the rival adjusting its tactics
The Value of Soft Commitment

• A firm that makes a soft commitment to raise its price may experience a negative direct effect on its profitability
• If the optimal response of the rival is to raise its price, the strategic effect can be beneficial
• If the strategic effect is sufficiently large, the net benefit from the commitment will be positive
An Analysis of Soft and Tough Commitments

- In the first stage, a firm makes either a soft commitment or a tough commitment
- In second stage, both firms make strategic responses
- For each type of commitment in the first stage, the second stage competition between the rivals will be either Cournot or Bertrand
## Scenarios We Will Discuss

<table>
<thead>
<tr>
<th>First Stage</th>
<th>Second Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft</td>
<td>Cournot</td>
</tr>
<tr>
<td>Soft</td>
<td>Bertrand</td>
</tr>
<tr>
<td>Tough</td>
<td>Cournot</td>
</tr>
<tr>
<td>Tough</td>
<td>Bertrand</td>
</tr>
</tbody>
</table>
Cournot After Soft Commitment

Cournot equilibrium before

Cournot equilibrium after

$Q_{\text{Atlantis}}$

$Q_{\text{Extra}}$

$R_A$

$R_{E_{\text{before}}}$

$R_{E_{\text{after}}}$
Cournot After Soft Commitment

- Extra shifts its reaction function to the left, committing to produce less (than pre-commitment level) for every level of Atlantis’ output
- Atlantis’ reaction hurts Extra by making its output fall further
- Atlantis produces more than what it produced without Extra’s soft commitment
Bertrand After Soft Commitment

Bertrand equilibrium before

Bertrand equilibrium after

$P_{\text{Atlantis}}$

$R_E^{\text{before}}$

$R_E^{\text{after}}$

$R_A$

$P_{\text{Extra}}$
Bertrand After Soft Commitment

• Extra commits to charge a higher (than the pre-commitment level) price for every price level picked by Atlantis
• Atlantis’ reaction provides a even higher price (for both firms)
• Both firms benefit from Extra’s soft commitment
Cournot After Tough Commitment

Cournot equilibrium before

Cournot equilibrium after

$Q_{Atlantis}$

$Q_{Extra}$

$R_A$

$R_E^{before}$

$R_E^{after}$
Cournot After Tough Commitment

• Extra commits to a higher than previous output for every output choice of the rival
• Atlantis’ reaction function makes the equilibrium output of Extra even higher
• Atlantis produces less than what it produced without the tough commitment from Extra
Bertrand After Tough Commitment

Bertrand equilibrium after

P

Bertrand equilibrium before

P

P_Atlantis

P_Extra

R_E^{after}

R_E^{before}

R_A
Bertrand After Tough Commitment

• Extra commits to a lower price by shifting its reaction function to the left
• Atlantis’ reaction further lowers the equilibrium price
• Both firms end up hurt by Extra’s tough commitment
## Strategic Effects of the Commitments

<table>
<thead>
<tr>
<th>Extra’s commitment</th>
<th>Second Stage Competition</th>
<th>Strategic Effect on Extra</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft</td>
<td>Cournot</td>
<td>Negative</td>
</tr>
<tr>
<td>Soft</td>
<td>Bertrand</td>
<td>Positive</td>
</tr>
<tr>
<td>Tough</td>
<td>Cournot</td>
<td>Positive</td>
</tr>
<tr>
<td>Tough</td>
<td>Bertrand</td>
<td>Negative</td>
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Can the Negative Strategic Effect be Forestalled?

• If the direct effect is positive and the strategic effect negative, can the firm forestall the latter?

• Example: The net present value of cost-reducing commitment is positive. Can the negative strategic effect be avoided by refusing to lower the price?
Can the Negative Strategic Effect be Forestalled?

• If the profit maximizing strategy (after the commitment) is to lower the price, rival will assume that the firm will do so

• It is difficult to convince a rival that your firm will act against its own interest in the second stage
# A Taxonomy of Strategic Commitments

When Second Stage Actions are Strategic Substitutes

<table>
<thead>
<tr>
<th>Firm 1’s Strategy</th>
<th>Commitment Posture</th>
<th>Commitment Action</th>
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<tbody>
<tr>
<td>Top-Dog Strategy</td>
<td>Tough</td>
<td>Make</td>
</tr>
<tr>
<td>Submissive Underdog</td>
<td>Tough</td>
<td>Refrain</td>
</tr>
<tr>
<td>Suicidal Siberian</td>
<td>Soft</td>
<td>Make</td>
</tr>
<tr>
<td>Lean and Hungry Look</td>
<td>Soft</td>
<td>Refrain</td>
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# A Taxonomy of Strategic Commitments

When Second Stage Actions are Strategic Complements

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<td>Tough</td>
<td>Make</td>
</tr>
<tr>
<td>Puppy Dog Play</td>
<td>Tough</td>
<td>Refrain</td>
</tr>
<tr>
<td>Fat Cat Effect</td>
<td>Soft</td>
<td>Make</td>
</tr>
<tr>
<td>Weak Kitten</td>
<td>Soft</td>
<td>Refrain</td>
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Factors that Influence the Strategic Effect

• In general, commitments that lead to less aggressive behavior from the rivals will have beneficial strategic effect

• If the rival is a potential entrant rather than an existing firm, a tough commitment to price aggressively may deter entry
Factors that Influence the Strategic Effect

• If the rival is an existing firm and there is excess capacity in the industry, aggressive pricing may invite retaliation.

• If the products are horizontally differentiated, the strategic effect may be relatively less important since the rival does not have the incentive to react.
Flexibility and Option Value

• The value of commitments lies in creating inflexibility
• However, when there is uncertainty, flexibility is valuable since future options are kept open
• Commitments can sacrifice the value of the options
Commitment-Flexibility Tradeoff

- By waiting, a firm preserves its option values
- At the same time, the firm also may allow its competitors to make preemptive investments
- Example: Philips decides to delay its CD manufacturing plant in the U.S., allowing Sony to build its plant first
Preserving Flexibility

• Modify the commitment as conditions evolve
• Delay commitment until better information is available on profitability
• Make unprofitable commitments today to preserve valuable options in the future