Oligopoly

An oligopoly is a market dominated by a small number of strategically inter-dependent firms. Strategic here since the firms actions directly affect those of the other firms. Since there are a small number of firms, they realize the interaction amongst themselves. This creates an incentive to act strategically since: “They know that I know that they know that I know that…”

Under monopolistic competition and perfect competition there were so many buyers and sellers that no one firm could affect any other firm.

Why do oligopolies exist?

1) economies of scale – arise because of minimum efficient scale
   - Construction companies at the local level
   - Biotech companies
   - Multinational corporations
   - Railroad companies

2) Reputation as a barrier
   - Strategic barriers
   - Government created barriers
     - US steel companies
     - Zoning

How to capture this strategic interaction among firms?

Mostly use Game Theory
This captures explicitly the strategic interaction between firms.
Strategies
- Dominant strategy
  - Weakly vs. strictly dominant strategy
- Dominated strategy
Oligopoly

- Classic example of the prisoners dilemma
  - Two people (Colin and Rose) have committed a crime – say murder
    - They were both seen beating two people – one person got away and the other - less fortunate, person was actually murdered
    - No body was ever found – only these two people know where it is.
    - If they both keep their mouths shut then they will only get convicted of assault – each gets 5 years
    - However, if one (i.e. Colin) confesses and agrees to a plea bargain then they get 3 years but the other individual (Rose) gets 30 years
    - If they both confess then they each get 20 years

Example – A game between Super Powers

- If neither firm launches then there are no casualties on either side – i.e. deaths for each county =0
- If the US decides to launch and Cuba does not launch right away, US loss of life will be 60 million while in the USSR loss of life will be 120 million
- If US does not launch but the USSR does, US loss is 150 million and USSR loss is 40 million
- If both launch at the same time, US loss of life=100 million and USSR loss of life=80

Example – A game between Super Powers

- Also assume that the goal of each country is to minimize the number of dead citizens
  - With that goal stated though – each country would like to destroy the other if it would not lead to any loss of life in their own country
- Payoff matrix:

**Figure 4 The Prisoner’s Dilemma**

<table>
<thead>
<tr>
<th>Rose’s Actions</th>
<th>Colin’s Actions</th>
<th>Confess</th>
<th>Don’t Confess</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confess</td>
<td>Colin gets 20 years</td>
<td>Rose gets 20 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rose gets 3 years</td>
<td>Colin gets 3 years</td>
<td></td>
</tr>
<tr>
<td>Don’t Confess</td>
<td>Colin gets 30 years</td>
<td>Rose gets 5 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rose gets 30 years</td>
<td>Colin gets 5 years</td>
<td></td>
</tr>
</tbody>
</table>

**Example – A game between Super Powers**

- US vs. its old nemesis USSR (CCCP)
- Cuban missile crisis circa 1962
- Background
- Each country has two options
  - 1) Launch
  - 2) Do not launch (immediately)– if they choose not to launch this just means they decide to wait a little while (a few extra minutes or hours) before deciding whether to press the button
Example – A game between Super Powers

- What is the US best response if USSR launches?
- What is the US best response if USSR does not launch?
- What is the USSR best response if US launches?
- What is the USSR best response if the US does not launch?

Example – A game between Super Powers - modification

- What if both countries think that their plan of attack is so good that if they launch first that only one nucl from the other country will hit killing only 1 million people?
  - It turns out this does not change the outcome(s) from this game

Example – A game between Super Powers

- In this example neither country has a dominant strategy – that is, neither country will take only one action no matter what the other country does
  - Their actions will depend critically on the other country

There are two possible outcomes to this game
  - 1) both launch
  - 2) both do not launch – This was the actual outcome - * This is also the most efficient outcome since no one actually dies
Table 1  A Summary of Market Structures

<table>
<thead>
<tr>
<th></th>
<th>Perfect Competition</th>
<th>Monopolistic Competition</th>
<th>Oligopoly</th>
<th>Monopoly</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSUMPTIONS ABOUT:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Firms</td>
<td>Very many</td>
<td>Many</td>
<td>Few</td>
<td>One</td>
</tr>
<tr>
<td>Output of Different Firms</td>
<td>Identical</td>
<td>Differentiated</td>
<td>Identical or differentiated</td>
<td>–</td>
</tr>
<tr>
<td>View of Pricing</td>
<td>Price taker</td>
<td>Price setter</td>
<td>Price setter</td>
<td>Price setter</td>
</tr>
<tr>
<td>Barriers to Entry or Exit?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Strategic Interdependence?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>–</td>
</tr>
<tr>
<td><strong>PREDICTIONS:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price and Output Decisions</td>
<td>MC = MR</td>
<td>MC = MR</td>
<td>MC = MR</td>
<td>MC = MR</td>
</tr>
<tr>
<td>Short-Run Profit</td>
<td>Positive, zero or negative</td>
<td>Positive, zero or negative</td>
<td>Positive, zero or negative</td>
<td>Positive, zero or negative</td>
</tr>
<tr>
<td>Long-Run Profit</td>
<td>Zero</td>
<td>Zero</td>
<td>Positive or zero</td>
<td>Positive or zero</td>
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<tr>
<td>Advertising?</td>
<td>Never</td>
<td>Almost always</td>
<td>Yes, if differentiated product</td>
<td>Brand names</td>
</tr>
</tbody>
</table>