Entry deterrence and limit pricing

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(Dr. Sumon Bhaumik)
Looking back .... and ahead

- Structure
- Conduct
- Performance

- Quantity
- Price

- Strategy on a single margin
- Perfect competition
- Oligopoly
- Monopoly

- Strategy on multiple margins
- Price, Location, Product, Trust

- ?

- Price, Location, Product, Trust
Strategies to limit competition

• Limit pricing

• Pre-commitment to quantity, cost etc.

• Predatory pricing

• Learning by doing

• Product proliferation
Limit pricing – incumbent has cost advantage – I

Inverse demand curve:
\[ P = 100 - q_{M} \]

\[ \text{MC}_{PE} = \text{AC}_{PE} \]
\[ \text{MC}_{M} = \text{AC}_{M} \]

Residual demand curve:
\[ P = 70 - q_{PE} \]

\[ \text{MC}_{PE} = \text{AC}_{PE} \]
Limit pricing – incumbent has cost advantage – II

• Profit maximisation of incumbent monopolist:
  Demand: \( P = 100 - q \)
  MR = MC: \( 100 - 2q = 40 \)
  Equilibrium: \( q_M = 30, \ P = 70, \ \pi_M = (70 - 40) \times 30 = 900 \)

• Profit maximisation for potential entrant:
  Residual demand: \( P = 70 - q \)
  MR = MC: \( 70 - 2q = 50 \)
  Equilibrium: \( q_{PE} = 10, \ P = 60, \ \pi_{PE} = (60 - 50) \times 10 = 100 \)

• Monopolist matches the potential entrant’s price:
  New profit: \( \pi_M = (60 - 40) \times 30 = 600 \ \Rightarrow 33\% \text{ decline in profit} \)
Limit pricing – incumbent has cost advantage – III

- Incumbent monopolist sets price just below 50

- $q_M = 50,$
  $\pi_M = (50 - 40) \times 50 = 500$

- At $P = 50$ (or just short of it) $q_{PE} = 0,$ i.e., entry does not occur
Limit pricing – incumbent has no advantage

- If $MC (= AC)$ does not change with output, incumbent will not make any profit with limit pricing.

- If there are economies of scale, i.e., average cost decreases with output, limit pricing might still be feasible.
Limit pricing – is it credible?

- Profit maximisation is always the best choice for the incumbent
- Limit pricing is not a credible threat

Potential entrant

Do not enter

Incumbent monopolist

(0, 900)

Enter

Limit price

Incumbent monopolist

(loss, 500)

Profit maximize

(100, 600)
The incumbent monopolist pre-commits to £200 expenses that the potential entrant has to match.

Limit pricing is now a credible threat.
Inflexible “technology” and raising costs

- Production capacity
- Research and development
- Advertising expenses
- Government regulations (“grandfathering”)
- Wages and salaries
- Tie-ins with other products
- Raise switching costs
Pharmaceutical industry – I

R&D expenditure

Data source:

Market share (2005)

Data source:
http://www.duke.edu/web/soc142/team2/firms.html
Pharmaceutical industry – II

Merger history of the top ten pharmaceutical companies in 2004 by global sales

<table>
<thead>
<tr>
<th>Firm</th>
<th>Large entities that have merged since 1989 to create firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pfizer</td>
<td>Pfizer, Warner-Lambert, Pharmacia, Upjohn, Monsanto</td>
</tr>
<tr>
<td>GlaxoSmithKline</td>
<td>Glaxo, Wellcome, SmithKline Beckman, Beecham</td>
</tr>
<tr>
<td>Sanofi-Aventis</td>
<td>Rhone-Poulne, Rorer, Hoechst, Marion Merrell Dow, Sanofi</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td></td>
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<tr>
<td>Merck</td>
<td></td>
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<tr>
<td>Novartis</td>
<td>Ciba-Geigy, Sandoz</td>
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<td>Astrazenca</td>
<td>Astra, Zenca</td>
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<tr>
<td>Roche</td>
<td>Roche, Syntex, Genetech</td>
</tr>
<tr>
<td>Bristol-Myers Squibb</td>
<td>Bristol-Myers, Squibb, DuPont Pharmaceuticals</td>
</tr>
<tr>
<td>Wyeth</td>
<td>American Cyanamid, American Home Products, Genetics Inst.</td>
</tr>
</tbody>
</table>

Predatory pricing

• Key issue
  – Credibility of the threat of sustained predatory pricing

• Entrant’s strategy
  – Merger or takeover
  – Price contract with buyers
  – Reduce output to minimise impact of predatory pricing

• Legal view
  – There is predatory pricing if the price is below the short run marginal cost or (to ease computation) average cost
Predatory pricing – allegations

• Wal-Mart, 1987, Faulkner County, Arizona
  – Advertised that its prices for certain merchandise were at least as low as those of its rivals
  – Ordered to pay $396,469 in damages, ruling overturned in appeal

• Microsoft, 2002, antitrust suit filed by Netscape Corporation
  – Tied its Internet Explorer browser for free with Windows
  – Long legal battle in the United States, AOL Time Warner settled for $750 million
  – In 2010 Microsoft has started to offer other browser options
Learning by doing

\[ AC = 10 + \left\{ \frac{100}{2^{\lambda Q}} \right\} \]

where
\[ \lambda = \text{rate of learning} \]
\[ Q = \text{quantity} \]

<table>
<thead>
<tr>
<th>Q</th>
<th>AC (( \lambda = 1 ))</th>
<th>AC (( \lambda = 2 ))</th>
<th>AC (( \lambda = 3 ))</th>
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<tbody>
<tr>
<td>1</td>
<td>60.00</td>
<td>35.00</td>
<td>22.50</td>
</tr>
<tr>
<td>2</td>
<td>35.00</td>
<td>16.25</td>
<td>11.56</td>
</tr>
<tr>
<td>3</td>
<td>22.50</td>
<td>11.56</td>
<td>10.20</td>
</tr>
<tr>
<td>4</td>
<td>16.25</td>
<td>10.39</td>
<td>10.02</td>
</tr>
<tr>
<td>5</td>
<td>13.13</td>
<td>10.10</td>
<td>10.00</td>
</tr>
</tbody>
</table>
Exercise 1 (Fig. 11.3)

- Who is making the strategic decision?
- What options does he have?
- Which outcomes will he compare?
- What is the equilibrium?

**Incumbent monopolist**

- Inflexible “technology”
- Flexible “technology”

**Entrant**

- Enter: (1000, -100)
- Do not enter: (2000, 0)
- Enter: (500, 500)
- Do not enter: (3000, 0)
Exercise 2 (Fig. 11.4)

Incumbent monopolist

- **R&D investment**
  - Enter
    - (11.10, 0.63)
- **No R&D investment**
  - Enter
    - (11, 3)
  - Do not enter
    - (16, 0)

Entrant

- Enter
  - (11.10, 0.63)
- Do not enter
  - (15.99, 0)

- **Who is making the strategic decision?**
- **What options does he have?**
- **Which outcomes will he compare?**
- **What is the equilibrium?**
Exercise 3 (Fig. 11.6)

• Who is making the strategic decision?

• What options does he have?

• Which outcomes will he compare?

• What is the equilibrium?

Incumbent monopolist

Raise costs by 50

Entrant

Enter → (-10, -10)

Do not enter → (50, 0)

Do not enter → (100, 0)

Entrant

Enter → (40, 40)

Do not enter → (40, 40)

Do not enter → (100, 0)