Lecture 19:
Imperfect Competition
and Monopoly

Clicker Question
Perfect and Imperfect Competition

Perfect Competition

a) One homogeneous product
b) Many buyers and sellers
c) Voluntary exchange
d) Perfect information
e) Rational self-interested agents

Competition is imperfect when one or more of these features doesn’t apply.

Various forms/degrees of imperfect competition can be defined as a) to e) are modified in different ways.

Imperfect competition from a small number of sellers or from product differences.

- Monopoly (one dominant firm)
- Duopoly (two dominant firms)
  - Soft drinks: Coke and Pepsi
Oligopoly (a few firms)
- Automobile market

Monopolistic Competition
- (many firms with differentiated products)
  - restaurants
  - etc…

These firms can raise prices above the competitive equilibrium.
Imperfect Competition from Limited Information

- **Adverse Selection**: bad products or bad customers that cannot be identified.

- **Moral Hazard**: customers with unknown WTP buy too much when others are paying the bill.

**Example**: Used cars *adverse selection*

- Used cars often have *hidden* problems.
- So buyers have low WTP.
- Equilibrium prices are low.
- Owners won’t sell good cars.
- Vicious circle—market works poorly.
Example: Health Insurance

- Buyers of health insurance tend to be less healthy than average. [*adverse selection*].
- Insured people may see the doctor too often [*moral hazard*].
- Insurance companies respond with high prices.
- Healthy people don’t want to buy insurance.
- Vicious circle—market works poorly.

Imperfect competition in markets with less-than-voluntary exchange:

- college textbooks
- healthcare
Imperfect competition in markets with irrational consumers:
- wishful thinking
- stupidity
- temptation

These imperfections can lead to high prices or inefficiency or both.

Market Power
- A firm has *market power* if it can raise its prices without losing all of its customers.
- This happens when no other firm is producing the same (or very similar) product.
Differences in products (real or apparent) that create market power often come from:

- minor product characteristics
- location
- customer service
- marketing

Most real-world firms obtain some degree of market power through a deliberate strategy of *product differentiation*.

Firms with market power can raise prices and increase profits.
Monopoly

A firm is a **monopoly** when it is the only firm producing a given product.
- i.e. when no other firm produces a good substitute for its product.

Because the monopoly is the only firm in the market,…
…the monopoly faces the entire market demand curve.

The monopoly can create an **artificial scarcity** by restricting production.

Then, the monopoly can move up the demand curve and charge a higher price *(as we shall see)*.

What factors allow monopolies to exist?

- **Patents and Copyrights** (Intellectual Property Rights)
  - Product Patents: New products
  - Process Patents: Production processes that lower costs
  - Copyrights: Protects the expression of an idea
- Control over important inputs
- Government Licenses and Franchises
- Decreasing Costs (Natural Monopolies)
- Network economies

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### Monopoly: Restricting Production

- The monopoly faces the market demand curve.
- To sell quantity $Q$, the monopoly sets price $P$ on the demand curve.
- Social surplus would be maximized producing $Q^*$ and setting price $P^*$.
- But by restricting production,
  - the monopoly can sell at a higher price,
  - and obtain **monopoly rents** (taken from $CS$).
- The monopoly loses some $PS$ because of reduced production,
- but at $Q_M$, monopoly rents are larger than the lost $PS$. 
Monopoly and Social Surplus

- When monopolies raise price and restrict production,…
  - consumer surplus is transferred to the monopoly in the form of monopoly rents,…
  - but the output reduction decreases total social surplus.

- Monopoly behavior also affects surplus in other more important ways.

- These behaviors will be analyzed in the next lecture.
Marginal Revenue and Market Power

- **Total Revenue (TR)** is the money a firm obtains by selling its output.

- **Marginal revenue (MR)** is the additional revenue obtained from selling another unit of output.

In a perfectly competitive market,
- a firm’s output does not affect the price,…
- so a competitive firm obtains the same added revenue (the price) for each additional unit sold.

Therefore, **MR = P**.

But any firm with market power (including a monopoly), faces a downward-sloping demand curve.

Suppose the firm cannot price-discriminate *[charge different prices to different consumers]*.
- Then, if it lowers the price of an additional unit in order to sell it,
- it must lower its price for ALL units that it sells.
- To find the marginal revenue, you start with the **price** it receives for the additional unit…
- and then subtract the **revenue loss** on its other units caused by the price drop.

Therefore, **MR < P**.
Marginal Revenue

- Suppose a firm facing demand $D$ produces $q - 1$ units.
- If the firm produces one more unit...
- it cannot sell it for more than price $p$,...
- so revenue increases by $p \times 1 = p$.
- But the price on the other $q - 1$ units drops by $\Delta p$.
- so revenue drops back by $(q - 1) \Delta p$.
- Therefore, $\text{MR} = p - (q - 1) \Delta p$.

[For those who like calculus:]
If goods are perfectly divisible, we can use calculus and write,

$$\text{MR} = p - (q - 1) \Delta p$$

Example: Diamonds
**Example:** Monopoly Profit Maximization  
(with no price discrimination)

<table>
<thead>
<tr>
<th>De Beers Diamonds</th>
<th>Total Revenue (TR=PxQ)</th>
<th>Marginal Revenue (MR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price (P)</td>
<td>Quantity (Q)</td>
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<td>1</td>
<td>1000</td>
</tr>
<tr>
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<td>2</td>
<td>1800</td>
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<tr>
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<td>3</td>
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<td>4</td>
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<td>3000</td>
</tr>
<tr>
<td>400</td>
<td>7</td>
<td>2800</td>
</tr>
</tbody>
</table>

\[ Q_M^*: MR > MC \]

**How many diamonds should DeBeers sell if the cost (MC) of each additional diamond is $150?**

**At what price?**

\[ MR = 1800 - 1000, \text{or} \]
\[ MR = 900 - 1 \times 100 \]
\[ MR = 2400 - 1800, \text{or} \]
\[ MR = 800 - 2 \times 100 \]

\[ MR < MC \]

Monopoly earns profits \( (MR - MC) \) on every unit up to and including 5,…

But society would have benefited from units 6 to 9,…

because \( WTP > MC \).

Social surplus would have been positive on those units.

Monopoly earns profits \( (MR - MC) \) on every unit up to and including 5,…

but he would lose profits on units 6, 7, 8, etc.

So he will sell 5 units.
In our example,
- the monopolist sells 5 units for $600 each.
- Cost of each unit (MC = ATC) is $150.

Hence monopoly profits are \( 5(600 - 150) = 2250 \).

In this example, we have so far assumed that the monopolist cannot price-discriminate [sell to different consumers at different prices].

What if he could?

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