TYBA
Micro Economics III
Sem V

Ms. Samiksha Jadhav
Assistant Professor
Department of Economics
Conditions for Price Discrimination

1. The market must be divided into sub-markets with different price elasticities.
2. There must be effective separation of the sub-markets
3. Non-transferability of goods: No exchange or no resale must not be possible.
4. Geographical distance between the markets must be sufficiently long.
5. Political Barriers: Country’s borders, trade allowed across borders.
6. Tariff Barriers: Home market is protected through tariffs the high price can be charged in home market and competitive price in international market.
7. Ignorance: When consumers are ignorant about the price.
Conditions for Price Discrimination

8. Negligible price difference: Attitude of indifference on the part of consumers.

9. Price-Quality link

10. Location: Rich locality = Higher price
    Poor locality = Lower price

11. Government’s sanction: For social welfare
Conditions for Profitable Price Discrimination

1. Difference in Elasticity
   • Formula of MR and AR with elasticity of demand:
     \[ MR = AR \left( e - 1 \right) / e \]
   If \( e \) is same for various markets then, price discrimination is possible but not profitable.
   
   Eg: Market A, \( e = 2 \) and Market B, \( e = 5 \) and AR for both = 20, then MR?
   • Price in A can be increased as demand elasticity is 2 and sales wont be that affected
   • Price in B can be decreased as demand elasticity is 5, and sales can increase

2. Distribution of Output: Expected demand can increase in elastic market, so more will be sold.

Ms. Samiksha Jadhav, Dept of Economics
Equilibrium of a Price Discriminating Monopolist

Fig. 10: Equilibrium of a Discriminating Monopolist

Ms. Samiksha Jadhav, Dept of Economics
Fig. 1: Fixation of Total Output and different price in the two sub-markets by the discriminating monopolist
COURNOT’S MODEL OF DUOPOLY
ASSUMPTIONS OF COURNOT’S MODEL

• Only 2 firms A and B
• Sells off Mineral water i.e. homogeneous product
• Each firm assumes that the other firm’s output will be same and that the rival firm will not react to his decision to change his output
• Marginal cost = zero
• Both firms reach equilibrium at MR = MC and also maximize profits.
• Each firm faces a demand curve with a constant negative slope. They know the market demand curve.
Fig. 1. Price and Output Determination under Duopoly: Cournot's Model
Explanation

- Firm A enters the market first
- Faces DM as market demand curve
- MC = 0
- Therefore equilibrium at MR = MC = 0
- This is arrived at $\frac{1}{2}$ of OM = OQ
- This is because MR lies exactly halfway between Y axis and AR = Demand curve
- OQ = QM
- Now firm B enters the market, assuming that A will continue producing OQ and assumes that PM is the demand for itself
- Firm B also produces $\frac{1}{2}$ of QM = $\frac{1}{2} (1/2 \text{ OM}) = 1/4 \text{ of OM.}$
Figure 9.8
Prisoner’s Dilemma – Payoff Matrix

<table>
<thead>
<tr>
<th></th>
<th>Co-operate</th>
<th>Defect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Co-operate</strong></td>
<td>(3, 3)</td>
<td>(0, 5)</td>
</tr>
<tr>
<td><strong>Defect</strong></td>
<td>(5, 0)</td>
<td>(1, 1)</td>
</tr>
</tbody>
</table>

Preference to Move Based on Higher Payoff

Nash Equilibrium

Ms. Samiksha Jadhav, Dept of Economics
Example of Prisoner’s Dilemma

• One such example is the *tragedy of the commons*. It may be in everyone’s collective advantage to conserve and reinvest in the propagation of a common pool natural resource in order to be able to continue consuming it.

• But each individual always has an incentive to instead consume as much as possible as quickly as possible, which then depletes the resource.

• Finding some way to co-operate would clearly make everyone better off here.
Example of Prisoner’s Dilemma

- On the other hand, the behavior of cartels can be also be considered a prisoner’s dilemma. All members of a cartel can collectively enrich themselves by restricting output to keep the price that each receives high enough to capture economic rents from consumers.
- But each cartel member individually has an incentive to cheat on the cartel and increase output to also capture rents away from the other cartel members.
- In terms of the welfare of the overall society that the cartel operates in, this is an example of how a prisoner’s dilemma that breaks the cartel down can sometimes actually make society better off as a whole.
## Example of Prisoner’s Dilemma

<table>
<thead>
<tr>
<th>Firm A</th>
<th>Firm B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Production</td>
</tr>
<tr>
<td>High Production</td>
<td>(1600, 1600)</td>
</tr>
<tr>
<td>Low Production</td>
<td>(1500, 2000)</td>
</tr>
</tbody>
</table>
Dominant Strategy

• A **strategy** is dominant if, regardless of what any other players do, the strategy earns a player a larger **payoff** than any other.

• Hence, a strategy is dominant if it is always better than any other strategy, for any profile of other players' actions.

• Depending on whether "better" is defined with weak or strict inequalities, the strategy is termed **strictly dominant** or **weakly dominant**.

• If one strategy is dominant, than all others are **dominated**. For example, in the **prisoner's dilemma**, each player has a dominant strategy.
## Dominant Strategy

<table>
<thead>
<tr>
<th>Firm A</th>
<th>Firm B</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Advertize</td>
<td>To Advertize: (4000, 3000) Not to Advertize: (5000, 1000)</td>
</tr>
<tr>
<td>Not to Advertize</td>
<td>(2000, 5000)</td>
</tr>
</tbody>
</table>
Nash Equilibrium

• Nash equilibrium is named after its inventor, John Nash, an American mathematician. It is considered one of the most important concepts of game theory.

• It attempts to determine mathematically and logically the actions that participants of a game should take to secure the best outcomes for themselves.

• It’s a situation in which each player chooses an optimal strategy, given the strategy chosen by the other player.
Nash Equilibrium

• It’s where the optimal outcome of a game is one where no player has an incentive to deviate from his chosen strategy after considering an opponent's choice.
## Nash Equilibrium: Stoplight Game

<table>
<thead>
<tr>
<th>Car A</th>
<th>Car B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To Go</td>
<td>To Stop</td>
</tr>
<tr>
<td>To Go</td>
<td>(-5, -5)</td>
<td>(1,0)</td>
</tr>
<tr>
<td>To Stop</td>
<td>(0,1)</td>
<td>(-1,-1)</td>
</tr>
</tbody>
</table>