

# Tuesday, Nov 16, Lecture 19

## Imperfect Competition

No lectures, office hours or discussion sections during Thanksgiving week, Nov 22 - 26



## 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 is removed.
- 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)

◆ De Beers diamonds (1980's)

● Duopoly (two dominant firms)

◆ Soft drinks: Coke and Pepsi

◆ Credit Cards: Mastercard and Visa

● Oligopoly (a few firms)

◆ Automobile market – a few firms:

GM, Ford, Honda, Toyota, Fiat-Chrysler, etc..

- Monopolistic Competition  
(many firms with differentiated products)

- ◆ restaurants

- ◆ hair stylists

- ◆ hardware stores

***These firms can raise prices above the competitive equilibrium.***

## ***Clicker Question***

Which of the following does NOT describe a market with a small number of firms?

- a. monopoly
- b. duopoly
- c. monopolistic competition
- d. oligopoly

# Imperfect Competition from Limited Information

- **Adverse Selection**: caused by **bad sellers or products** that cannot be identified by the buyer, or by **bad buyers** that cannot be identified by the seller. (hidden type)
- **Moral Hazard**: customers able to buy too much or to behave badly when other people are paying. (hidden action)
- **Example**: Used cars
  - Used cars often have **hidden** problems [*adverse selection*].
  - So worried buyers have low WTP.
  - Equilibrium market prices are low.
  - Owners won't sell good cars.
  - WTP falls further—vicious circle—market failure.

## ■ **Example**: Health Insurance

- Buyers of health insurance tend to be less healthy than average. [*adverse selection*].
- Insured people may see the doctor too often and get too many medical tests [*moral hazard*].
- Insurance companies respond with high prices.
- Healthy people don't want to buy insurance.
- Vicious circle—private 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**.
  - Perdue Chicken
- Firms with market power can raise prices and increase profits.

# Clicker Question

Which of the following firms is *least likely* to have market power.

- a. a toothpaste company
- b. a paper manufacturer
- c. a firm that designs computer games
- d. a designer-clothing company

## Monopoly

- A firm is a **monopoly** when it is the only firm producing its product.
  - i.e. when no other firm produces a good substitute for its product.
- Monopolies have market power. *Why?*
- The monopoly is the only firm in the market producing its product, so the monopoly faces the entire market demand curve.
- The monopoly can create an **artificial scarcity** and obtain **economic rents** by restricting production.
- Then, the monopoly can move up the market demand curve and charge a higher price (*as we shall see*).

# What factors allow monopolies to exist?

## ■ Patents, copyrights, trademarks: create excludability (Intellectual Property Rights)

- Product Patents: New products, e.g., Post-it notes, medicines
- Process Patents: Production processes that lower costs, e.g., Kevlar
- Copyrights: The expression of an idea, e.g., books, articles, works of art
- Trademarks: The name of a product, e.g., Kleenex

## ■ Control over important inputs

- De Beers (1980's)

## ■ Switching costs

- Bank Accounts

## ■ Decreasing Costs (Natural Monopolies)

- Cost per unit keeps dropping as more output is produced **up to the quantity demanded**. *Though it would rise for large enough quantities.*

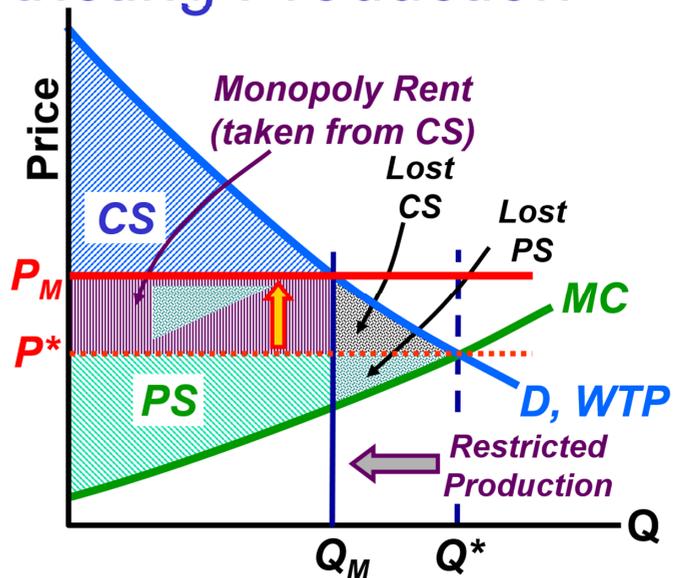
◆ Electricity, Amtrak

## ■ Network economies (The more consumers who use a product, the more it's worth to each consumer.)

- Microsoft Windows
- Android cell-phone operating system

# Monopoly: Restricting Production

- The monopoly faces the market demand curve,
- and its MC curve is the market MC curve.
- Social surplus would be maximized by producing  $Q^*$  and setting price  $P^*$ .
- But by restricting production,
- the monopoly can sell at a higher price,
- and obtain *monopoly rents*, taken from *consumer surplus*.



- The monopoly loses some *PS* because of reduced production,
- but at  $P_M$  and  $Q_M$ , monopoly rents are larger than the lost *PS*.
- Consumers lose even more.

## 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.
  - (If the monopoly restricts production and raises price too much, the loss of business can decrease profits.)
- Monopoly behavior also affects surplus in other more important ways.
- These behaviors will be analyzed in the next lecture.

# Clicker Question

A monopoly price increase leads to an increase in monopoly profits whenever

- a. price exceeds marginal cost.
- b. marginal willingness to pay is greater than the price.
- c. the gain from those who buy at a higher price is greater than the loss from those who stop buying.
- d. consumer demand is perfectly elastic.

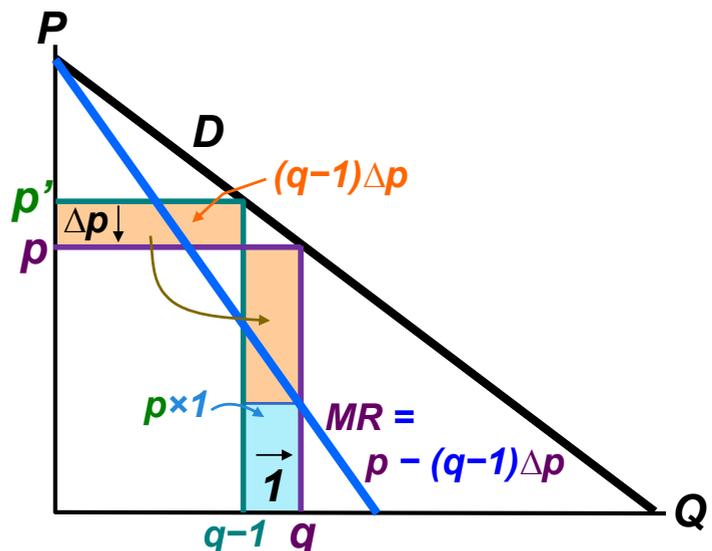
## Marginal Revenue

- **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.
  - Marginal revenue is an important tool for analyzing market power (the ability of a firm to raise its price without losing its customers).
- In a perfectly competitive market, firms are price takers that have no market power.
  - Each firm faces a perfectly elastic (flat) demand curve.
  - 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:  **$MR = P$** .

- But any firm with market power faces a downward-sloping demand curve (quantity demanded remains positive if the firm raises its price).
- 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  $D$  sells  $q-1$  units at price  $p'$ .
- If the firm wants to sell one more unit...
- it must lower its price by  $\Delta p$  to price  $p$ .
- Revenue increases by  $p \times 1 = p$ .
- But the price of the other  $q-1$  units drops by  $\Delta p$ ,
- so revenue drops back by  $(q-1)\Delta p$ .
- Therefore,  
 **$MR = p - (q-1)\Delta p$** .



- [For those who like calculus:]  
If goods are perfectly divisible, increase production by  $\Delta q$  and take the limit as  $\Delta q$  goes to 0.

$$MR = p - q \left| \frac{dp}{dq} \right|$$

# Example: Monopoly Profit Maximization

(The monopoly must produce whole units and charge everyone the same price.)

Chairs		Total	Marginal	
Price (P, WTP)	Quantity (Q)	Revenue (TR=P×Q)	Revenue (MR)	
100	1	100	100	
90	2	180	80	$MR = 90 - 1 \times 10$
80	3	240	60	$MR = 80 - 2 \times 10$
70	4	280	40	
60	5	300	20	$\leftarrow Q_M^*: MR > MC$
50	6	300	0	$\leftarrow MR < MC$
40	7	280	-20	

*Quantity produced determined by MR and MC, but price is determined by the demand curve.*

- How many chairs would the firm want to sell if the cost (MC) of each additional unit is \$15?
- At what price?
- Would chair #6 increase social surplus? #7?

## Clicker Question

Which of the following is NOT likely to create monopoly rents?

- increasing production beyond the competitive equilibrium
- contributions to campaigns of US Congressmen, Senators, and the President
- Advertising on Facebook
- patents and copyrights

# End of Lecture 19