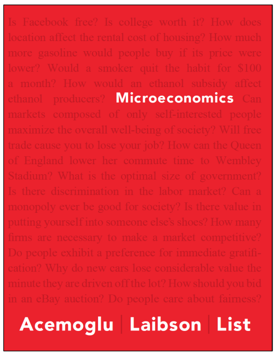


Chapter 12

Monopoly

Modified by Joseph Tao-yi Wang

Chapter Outline

Key Ideas

1. Monopoly represents an extreme market structure with a single seller.
2. Monopolies arise both naturally and through government protection.
3. Monopolists are price-makers and produce at the point where marginal revenue equals marginal cost.

Key Ideas

4. The monopolist maximizes profits by producing a lower quantity and charging a higher price than perfectly competitive sellers. By doing so, deadweight loss results.
5. Efficiency can be established in a monopoly through first-degree price discrimination or government intervention.

Evidence-Based Economics Example

Can a monopoly ever be good for society?

Introducing a New Market Structure

- Monopoly
  - One seller of a good or service with no close substitutes
- Market power
  - The ability to set the price
- Price makers
  - Sellers that can set the price of a good

Introducing a New Market Structure

	Perfect Competition	Monopoly
Number of Firms/Sellers/ Producers	Many	One
Type of Product/Service Sold	Identical (homogeneous)	Good or service with no close substitutes
Example of Product	Corn grown by various farmers	Patented drugs; tap water
Barriers to Entry	None: free entry and exit	Yes: high
Price-Taker or Price-Maker?	Price-taker; price given by the market	Price-maker—no competitors; no close substitutes
Price	$P = MR = MC$	Set $P > MR = MC$
Demand Curve Facing the Firm	Horizontally sloped; perfectly elastic demand curve	Downward-sloping
Social Surplus	Maximized	Not maximized, but sometimes society benefits from research and development
Equilibrium Long Run Profits	Zero	Potentially greater than zero

Exhibit 12.1 Two Market Structures

Sources of Market Power

- Barriers to entry
  - Circumstances that prevent potential competitors from entering the market

Sources of Market Power

Types of barriers to entry

1. Legal market power
2. Natural market power
   - Control of key resources
   - Economies of scale

Sources of Market Power
Legal Market Power

1. Legal market power

- Patent ®
  - Government-granted permission to be the sole producer and seller of a good
- Copyright ©
  - Government-granted rights to the creator of literary or artistic work

Sources of Market Power
Natural Market Power

2. Natural market power
   - When a single firm obtains market power through barriers to entry created by firm itself

- Usually due to control of key resources
- Key resources are essential for the production of a good or service, such as:
  - Alcoa controlling bauxite to produce aluminum
  - Professional sports teams controlling talent
  - De Beers' control of diamond production

Sources of Market Power
Natural Market Power

- Network Externalities
  - When a product's value increases as more consumers use it
- Examples:
  - eBay, Taobao, 出清台大
  - Facebook
  - Angie's List, Mobile01, ptt
  - Microsoft Office, Windows, etc.

Sources of Market Power
Natural Market Power

- Economies of Scale
- Natural monopoly
  - Emerges because it enjoys economies of scale over a very large range of output

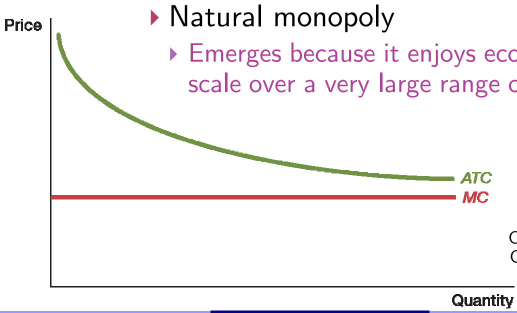


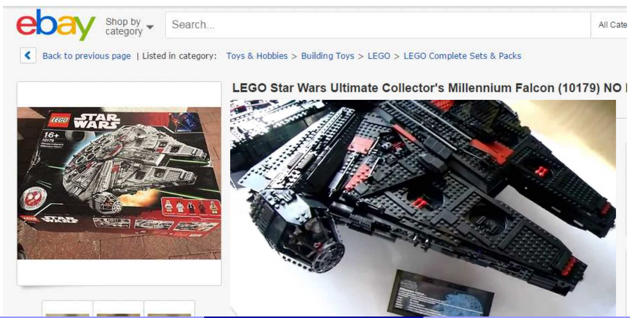
Exhibit 12.2 Average Total Cost and Marginal Cost for a Natural Monopoly

The Monopolist's Problem

- Both monopolist and perfect competitor
  - Produce an output using a production process and inputs
  - Incur production costs

The Monopolist's Problem

Can a monopolist charge any price it wants to?



The Monopolist's Problem

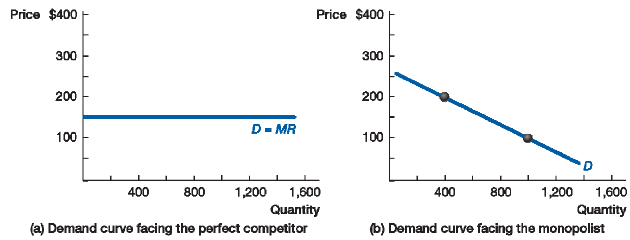


Exhibit 12.3 Perfectly Competitive Firms and Monopolies Face Different Demand Curves

The Monopolist's Problem
Revenue Curves

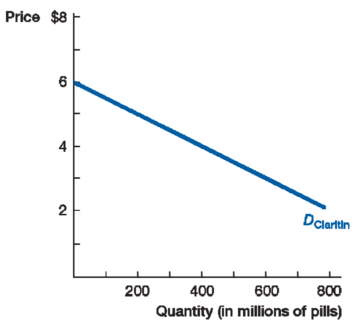


Exhibit 12.4 The Market Demand Curve for Claritin Demand Curves

The Monopolist's Problem
Revenue Curves

Quantity (in millions)	Price	Total Revenue (in millions)	Marginal Revenue	Total Cost (in millions)	Fixed Cost (in millions)	Marginal Cost	*ATC*
100	$5.50	$ 550	$ 5	$ 110	$10	$1.00	$1.10
200	$5.00	$1,000	$ 4	$ 210	$10	$1.00	$1.05
300	$4.50	$1,350	$ 3	$ 310	$10	$1.00	$1.033
400	$4.00	$1,600	$ 2	$ 410	$10	$1.00	$1.025
500	$3.50	$1,750	$ 1	$ 510	$10	$1.00	$1.02
600	$3.00	$1,800	$ 0	$ 610	$10	$1.00	$1.017
700	$2.50	$1,750	$−1	$ 710	$10	$1.00	$1.014
800	$2.00	$1,600	$−2	$ 810	$10	$1.00	$1.013
900	$1.50	$1,350	$−3	$ 910	$10	$1.00	$1.011
1000	$1.00	$1,000	$−4	$1,010	$10	$1.00	$1.01
1100	$0.50	$ 550	$−5	$1,110	$10	$1.00	$1.009

Exhibit 12.5 Revenues and Costs for Claritin at Different Levels of Output

The Monopolist's Problem
Revenue Curves

- Example: Assume this monopolist is selling 200 units at a price of $5 each, and
  - Wants to increase the quantity it sells to 400.
  - Has to lower price to $4 to do so!

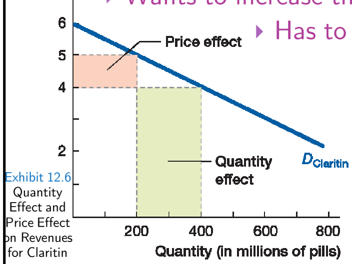


Exhibit 12.6 Quantity Effect and Price Effect on Revenues for Claritin

Good News: (QE) Selling 200 more units at $4 each = $800

Bad News: (PE) Charging $1 less on 200 units it sold = -$200

The Monopolist's Problem
Revenue Curves

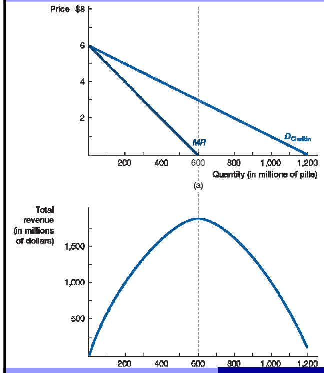


Exhibit 12.7 Relationship among Price, Marginal Revenue, and Total Revenue

Choosing the Optimal Quantity & Price
Producing the Optimal Quantity

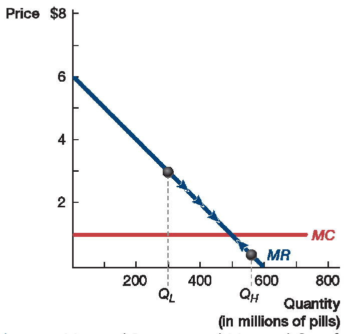


Exhibit 12.8 Marginal Revenue and Marginal Cost for Claritin

Choosing the Optimal Quantity & Price
Setting the Optimal Price

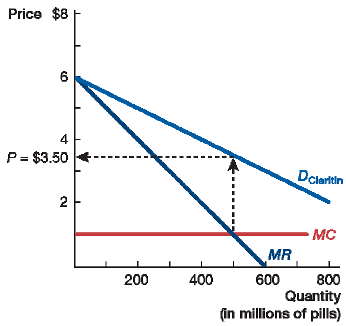


Exhibit 12.9 Choosing the Profit-Maximizing Price for Claritin

Choosing the Optimal Quantity & Price
How a Monopolist Calculates Profits

- Profit = TR – TC
  - Total revenue = P x Q
  - Total cost = ATC x Q
- Profit
  = (P x Q) – (ATC x Q)
  = Q x (P – ATC)
  = 500M x ($3.50 - $1.02)
  = $1,240,000,000

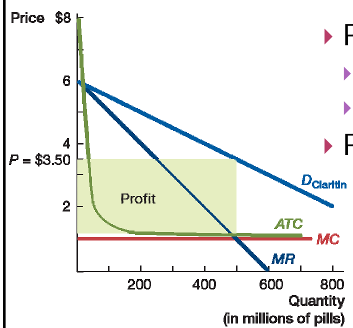


Exhibit 12.10 Computing Profits for a Monopolist

Choosing the Optimal Quantity & Price
Does a Monopoly Have a Supply Curve?

- A supply curve answers the question:
  - If the price is $x, how many units does the firm want to produce?
- A monopolist is not a price taker,
  - but a price maker; therefore,
- the supply relationship does not exist.

The "Broken" Invisible Hand: The Cost of Monopoly

The "Broken" Invisible Hand

The "Broken" Invisible Hand: The Cost of Monopoly

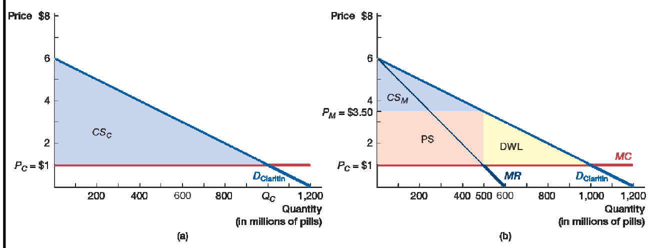


Exhibit 12.11 Surplus Allocations: Perfect Competition Versus Monopoly

Restoring Efficiency

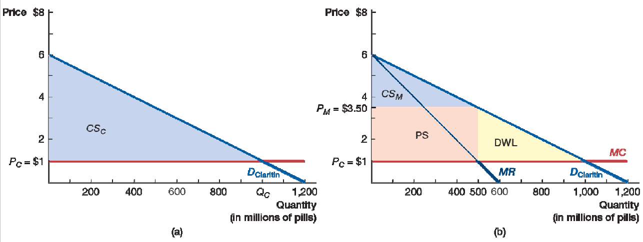
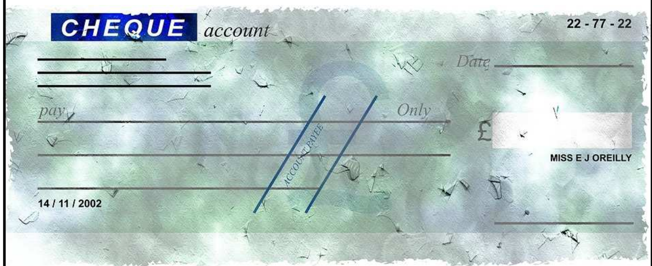


Exhibit 12.11 Surplus Allocations: Perfect Competition Versus Monopoly

Restoring Efficiency
Three Degrees of Price Discrimination

Why do firms offer mail-in (or online) rebates instead of just discounting the price up front?



Restoring Efficiency
Three Degrees of Price Discrimination

- Price discrimination
  - Charging different customers different prices for the same good or service when there are no cost differences
- Three degrees of price discrimination
  1. First-degree (perfect PD)
  2. Second-degree (imperfect PD)
  3. Third-degree (imperfect PD)

Restoring Efficiency
Three Degrees of Price Discrimination

- First-degree price discrimination
  - (Perfect PD!)
  - When each consumer is charged the maximum he/she is willing to pay
- Examples: buying a car, bargaining

Restoring Efficiency
Three Degrees of Price Discrimination

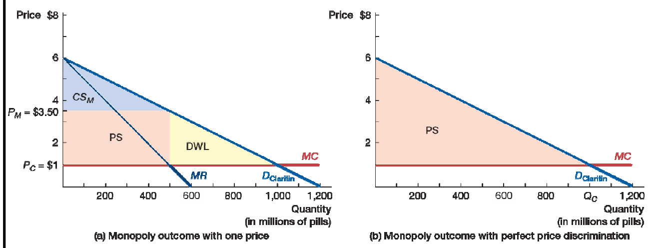


Exhibit 12.13 Surplus Allocations For a Monopoly: With and Without Perfect Price Discrimination

Restoring Efficiency
Three Degrees of Price Discrimination

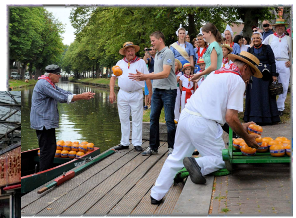
- Second-degree price discrimination
  - (Imperfect PD!)
  - Consumers are charged different prices based on the characteristics of the purchase
- Examples: when firms sell blocks of product at a lower price than advertised—
  - last-minute hotel rooms;
  - electricity for commercial vs. residential usage

Restoring Efficiency
Three Degrees of Price Discrimination

- Third-degree price discrimination
  - (Imperfect PD!)
  - Consumers are charged different prices based on the characteristics of the customer or location
- Examples:
  - senior citizen discounts,
  - student discounts

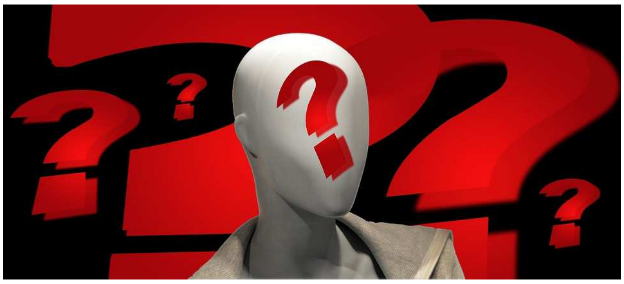
Restoring Efficiency
Three Degrees of Price Discrimination

Why create different markets?



Restoring Efficiency
Three Degrees of Price Discrimination

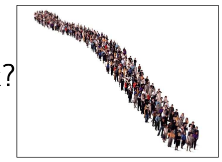
What if firms don't know what someone's willingness to pay (elasticity) is?

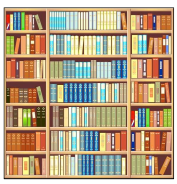


Restoring Efficiency
Three Degrees of Price Discrimination

Have you ever…?

bought a hardcover book?



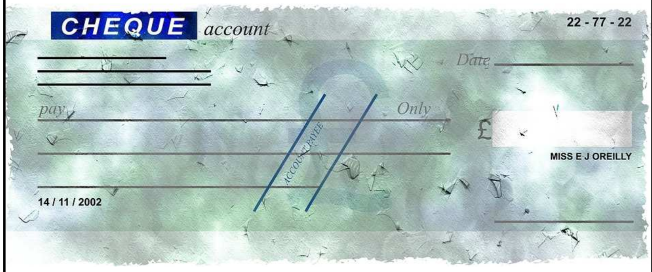


gone to a Black Friday sale?

stood in line for new technology?

Restoring Efficiency
Three Degrees of Price Discrimination

Why do firms offer mail-in (or online) rebates instead of just discounting the price up front?



Government Policy toward Monopoly

- Antitrust policy
  - Government policies that try to prevent
  - anti-competitive pricing, low quantities, and DWL from emerging and dominating markets
- Sherman Act (1890)
  - Prohibited restraint of trade—monopoly markets
- Recent application: Microsoft

Government Policy toward Monopoly

- Microsoft accused of restraint of trade
  - Monopolizing market
  - Bundling Windows operating system with Internet Explorer browser
  - Keeping competitors from obtaining large market share

Government Policy toward Monopoly

- Ruling: Microsoft was not
  - broken up into two separate firms (one for operating system and one for applications)
- But it had to
  - change marketing practices and
  - make it easier for other browsers to work with Windows

Government Policy toward Monopoly
Price Regulation

- Efficient (socially optimal) price
  - Price is equal to marginal cost
- Fair-returns price
  - Price is equal to average total cost

Government Policy toward Monopoly
Price Regulation

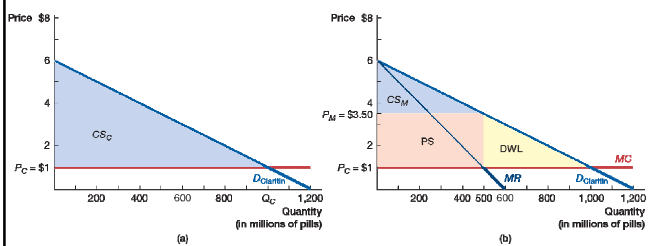


Exhibit 12.11 Surplus Allocations: Perfect Competition Versus Monopoly

Evidence-Based Economics Example

Can a monopoly ever be good for society?

Homework

- ALL Chap.12, Problem 2, 4, 8, 11, 12
- Bonus Question (See next slide)
- Challenge Questions (from Past Finals)
  - 2008 - Multi-Choice Q4
  - 2009 - Multi-Choice Q3-Q5
  - 2010 - True/False Q3
  - 2015 - True/False A1, A6-A8

Bonus Question 1 (ALL 12-6)

Consider a monopolist who faces a linear demand curve $P = 24 - Q$, where

- P is the price the monopoly charges, and
- Q is the quantity consumers purchase.

Monopolist's marginal revenue $MR = 24 - 2Q$

- If demand is linear then demand and MR have the same intercept but MR has twice the slope

- The monopolist produces this good at a constant average and marginal cost of $6.

Bonus Question 1 (ALL 12-6)

a. Show that the monopolist's profit-maximizing price is $\$15$.
b. Suppose the government imposes a tax of T dollars per unit on the monopolist, so the monopolist's marginal cost is now $(6 + T)$. Show that the monopolist will pass along half of the tax to its customers, that is, show that the profit-maximizing price is now $\$(15 + T/2)$.

Bonus Question 2 (ALL 12-10)

- You are a monopolist with many identical customers. Each will buy either 0, 1, or 2 units of the good you produce.

A consumer is willing to pay $50 for the first unit of this good, and $20 for the second.

- You produce this good at a constant average and marginal cost of $5.

- For simplicity, assume that if a consumer is indifferent between buying and not buying, he will buy.

Bonus Question 2 (ALL 12-10)

- A firm engaging in second-degree price discrimination charges the same consumer different prices for different units of a good.

a. If you could not engage in second-degree price discrimination, what price would you charge? How much profit per consumer would you earn?
b. Suppose you offer your customers what seems to be a very generous deal: "Buy one at the regular price of $50, and get 60% off on a 2^{nd}." How many units of this good will each customer buy? How much profit will you earn?