

**Monopoly and Other
Forms of Imperfect
Competition**

CHAPTER
9

Imperfect Competition

- Perfectly Competitive Markets
 - Maximize economic surplus
 - Do not always exist
- Imperfectly Competitive Markets
 - Reduce economic surplus to varying degrees
 - Are very common

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Imperfect Competition

- Imperfectly Competitive Firms
 - Have some control over price
 - Price may be greater than the cost of production
 - Long-run economic profits are possible

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Imperfect Competition

- Various Forms of Imperfect Competition
 - Pure Monopoly (most inefficient)
 - ◆ The only supplier of a unique product with no close substitutes
 - Oligopoly (more efficient than a monopoly)
 - ◆ A firm that produces a product for which only a few rival firms produce close substitutes

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Imperfect Competition

- Different Forms of Imperfect Competition
 - Monopolistic Competition (closest to perfect competition)
 - ◆ A large number of firms that produce slightly differentiated products that are reasonably close substitutes for one another

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Imperfect Competition

- The Essential Difference Between Perfectly and Imperfectly Competitive Firms
 - The perfectly competitive firm faces a perfectly elastic demand for its product (horizontal line at the market price).
 - The imperfectly competitive firm faces a downward-sloping demand curve.

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Imperfect Competition

- In perfect competition
 - Supply and demand determine equilibrium price. *The firm has no market power.*
 - At the equilibrium price, the firm sells all it wishes.

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Imperfect Competition

- With imperfect competition
 - The firm has some control over price or some *market power*.
 - The firm faces a downward sloping demand curve.

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The Demand Curves Facing Perfectly and Imperfectly Competitive Firms

Perfectly competitive firm

Imperfectly competitive firm

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Five Sources of Market Power

- Exclusive control over inputs
- Patents and copyrights
- Government licenses or franchises
- Economies of scale (natural monopolies)
- Network economies

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Economies of Scale and the Importance of Fixed Costs

- Firms with large fixed costs and low variable costs
 - Have low marginal costs
 - Average total cost declines sharply as output increases
 - Economies of scale will exist

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Total and Average Total Costs for a Production Process with Economies of Scale

Total cost rises at a constant rate as output rises

Average costs decline and is always higher than marginal cost

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Costs for Two Computer Game Producers (1)

	Nintendo	Playstation
Annual production	1,000,000	1,200,000
Fixed cost	\$200,000	\$200,000
Variable cost	\$800,000	\$960,000
Total cost	\$1,000,000	\$1,160,000
Average total cost per game	\$1.00	\$0.97

Observations

- Fixed costs are a relatively small share of total cost
- Cost/game is nearly the same

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Costs for Two Computer Game Producers (2)

	Nintendo	Playstation
Annual production	1,000,000	1,200,000
Fixed cost	\$10,000,000	\$10,000,000
Variable cost	\$200,000	\$240,000
Total cost	\$10,200,000	\$10,240,000
Average total cost per game	\$10.20	\$8.53

Observations

- Fixed costs are a relatively large share of total cost
- Playstation has a \$1.67 average cost advantage
- Playstation can lower prices, cover cost, and attract customers

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Costs for Two Computer Game Producers (3)

	Nintendo	Playstation
Annual production	500,000	1,700,000
Fixed cost	\$10,000,000	\$10,000,000
Variable cost	\$100,000	\$340,000
Total cost	\$10,100,000	\$10,340,000
Average total cost per game	\$20.20	\$6.08

Observations

- Shift of 500,000 units to Playstation
- Nintendo's average cost increases to \$20.20/unit
- Playstation average cost falls to \$6.08
- A large number of firms cannot survive when the cost differential is high

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Economies of Scale and the Importance of Fixed Costs

■ Fixed investment in research and development has been increasing as a share of production costs.

	Cost of producing a computer	
	Fixed Cost Software	Variable Cost Hardware
1984	20%	80%
1990	80%	20%

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Economies of Scale and the Importance of Fixed Costs

 Economic Naturalist

- Why does Intel sell the overwhelming majority of all microprocessors used in personal computers?

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Profit Maximization for the Monopolist

- A price taker (perfect competition) and a price setter (imperfect competition) share two economic goals. They want
 - To maximize profits
 - To select the output level that maximizes the difference between TR and TC , where $MB = MC$.

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Profit Maximization for the Monopolist

- For a producer
 - $MB =$ Marginal Revenue (MR) or a change in a firm's total revenue that results from a one-unit change in output

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Profit Maximization for the Monopolist

- Marginal Revenue for the Monopolist
 - Perfect competition and monopolies
 - Both increase output when $MR > MC$.
 - Calculate MC the same way.
 - Do not have the same MR at a given price.
 - In perfect competition: $MR = P$
 - In monopoly: $MR < P$

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The Monopolist's Benefit from Selling an Additional Unit

- If $P = \$6$, then $TR = \$6 \times 2 = \12
- If $P = \$5$, then $TR = \$5 \times 3 = \15
- The MR of selling the 3rd unit = \$3 ($15 - 12$)
- For the 3rd unit, $MR = \$3 < P = \5

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Marginal Revenue in Graphical Form

P	Q	TR	MR
6	2	12	3
5	3	15	
4	4	16	1
3	5	15	-1

- Observations
 - $MR < P$
 - MR declines as quantity increases
 - $MR < P$ because price must be lowered to sell an additional unit

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Marginal Revenue in Graphical Form

P	Q	TR	MR
6	2	12	3
5	3	15	
4	4	16	1
3	5	15	-1

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The Marginal Revenue Curve for a Monopolist with a Straight-Line Demand Curve

- Observations
 - The vertical intercept, a , is the same for MR and D
 - The horizontal intercept for MR , $Q_0/2$, is one half the demand intercept, Q_0 .

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Profit Maximization for the Monopolist

- Profit Maximizing Decision Rule
 - When $MR > MC$, output should be increased.
 - When $MR < MC$, output should be reduced.
 - Profits are maximized at the level of output for which $MR = MC$.

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The Monopolist's Profit-Maximizing Output Level

Observations

- If $P = \$3$ & $Q = 12$, $MR < MC$ and output should be reduced
- Profits are maximized at $Q = 8$ units where $MR = MC$
- $P = \$4$ where quantity demanded = 8

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Even a Monopolist May Suffer an Economic Loss

Being a monopolist doesn't guarantee an economic profit

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The Demand and Marginal Cost Curves for a Monopolist

Why the Invisible Hand Breaks Down Under Monopoly

The socially optimal Amount occurs where $MC = MB$ @ 12 units

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The Demand and Marginal Cost Curves for a Monopolist

Why the Invisible Hand Breaks Down Under Monopoly

- The profit maximizing level of output of 8 units, where $MR = MC$, is less than the socially optimal output of 12
- Between 8 and 12, MB to society $>$ MC to society
- Cannot increase output because MR to the firms is less than MC

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The Demand and Marginal Cost Curves for a Monopolist

Why the Invisible Hand Breaks Down Under Monopoly

- Because $MR < P$, the monopoly produces less than the socially optimal amount
- The deadweight loss of the monopoly to society = $(1/2)(\$2/unit)(4units/wk) = \$4/wk$.

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Why the Invisible Hand Breaks Down Under Monopoly

<ul style="list-style-type: none"> ■ Monopoly <ul style="list-style-type: none"> • Profits are maximized where $MR = MC$. • $P > MR$ • $P > MC$ • Deadweight loss 	<ul style="list-style-type: none"> ■ Perfect Competition <ul style="list-style-type: none"> • Profits are maximized where $MR = MC$. • $P = MR$ • $P = MC$ • No deadweight loss
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Why the Invisible Hand Breaks Down Under Monopoly

- Difficulties in Reducing the Deadweight Loss of Monopolies
 - Enforcing antitrust laws
 - Patents, copyrights, and innovation
 - Natural monopolies

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Why the Invisible Hand Breaks Down Under Monopoly

- Price Discrimination
 - The practice of charging different buyers different prices for essentially the same good or service

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Why the Invisible Hand Breaks Down Under Monopoly

- Examples of Price Discrimination
 - Senior citizens and student discounts on movie tickets
 - Supersaver discounts on air travel
 - Rebate coupons

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Why the Invisible Hand Breaks Down Under Monopoly

Economic Naturalist

- Why do many movie theaters offer discount tickets to students?

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Why the Invisible Hand Breaks Down Under Monopoly

- How many manuscripts will Carla edit?
 - Opportunity cost = \$29
 - Must charge the same price
 - $TR = P \times Q$
 - MR is the difference in TR from adding another student

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Total and Marginal Revenue from Editing

Student	Reservation Price (\$ per paper)	Total Revenue (\$ per week)	Marginal revenue (\$ per paper)
			40
A	40	40	36
B	38	76	32
C	36	108	28
D	34	136	24
E	32	160	20
F	30	180	16
G	28	196	12
H	26	208	

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- ### Why the Invisible Hand Breaks Down Under Monopoly
- How many manuscripts will Carla edit?
 - Carla edits 3 papers, charges $P = 36$
 - ◆ $TC = 3 \times \$29 = \87
 - ◆ $TR = 3 \times \$36 = \108
 - ◆ Economic profit = $\$108 - \$87 = \$21/\text{wk}$
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- ### Why the Invisible Hand Breaks Down Under Monopoly
- How many manuscripts should Carla edit?
 - Reservation price > opportunity cost for student A to F
 - Socially efficient number is 6
 - ◆ $TR = 6 \times \$30 = \180
 - ◆ $TC = 6 \times \$29 = \174
 - ◆ Economic profit = $\$180 - \$174 = \$6$
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- ### Why the Invisible Hand Breaks Down Under Monopoly
- If Carla can price discriminate, how many papers will she edit?
 - Assume Carla can charge each student the reservation price.
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Example

Student	Reservation price	
A	40	• Carla would edit A to F • $TR = \$40 + \$38 \dots = \$210$ • $TC = 6 \times \$29 = \174 • Economic Profit = $\$210 - \$174 = \$36/\text{wk}$ • Economic Profit is \$30 more
B	38	
C	36	
D	34	
E	32	
F	30	
G	28	
H	26	

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- ### Using Discounts to Expand the Market
- Perfectly Discriminating Monopolist
 - Charging each buyer exactly their reservation price
 - ◆ Economic surplus is maximized
 - ◆ Consumer surplus is zero
 - ◆ Economic surplus = producer surplus
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Using Discounts to Expand the Market

- Profit-maximizing seller's goal is to charge each buyer his/her reservation price.
- Limitations to price discrimination
 - Seller will not know each buyer's reservation price.
 - Low price buyers could resell to other buyers at a higher price.

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Using Discounts to Expand the Market

- The Hurdle Method of Price Discrimination
 - The practice of offering a discount to all buyers who overcome some obstacle.

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Using Discounts to Expand the Market

- Examples of Price Discrimination
 - Mail-in rebates
 - Temporary Sales
 - Book publishers and paperback books
 - Automobile producers offer various models
 - Commercial air carriers
 - Movie producers


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Using Discounts to Expand the Market

- Is price discrimination bad?

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Using Discounts to Expand the Market

 Economic Naturalist

- Why might an appliance retailer instruct its clerks to hammer dents into the sides of its stoves and refrigerators?

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Using Discounts to Expand the Market

- Summary
 - Single price monopolies are inefficient because $P > MR$.
 - Price discrimination reduces the inefficiency.
 - The more finely the seller can discriminate, the smaller the efficiency loss.
 - Some inefficiency likely to remain.

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Public Policy Toward Natural Monopoly

- Should we regulate natural monopolies? How?
- Methods of Controlling Natural Monopolies
 - State ownership and management
 - ◆ Marginal cost pricing
 - ◆ Less incentive for innovation

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Public Policy Toward Natural Monopoly

- Methods of Controlling Natural Monopolies
 - State regulation of private monopolies
 - ◆ Cost-plus regulation
 - High administrative cost
 - Less incentive for innovation
 - P does not equate to MC

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Public Policy Toward Natural Monopoly

- Methods of Controlling Natural Monopolies
 - Exclusive contracting for natural monopoly
 - ◆ Competition for the contract sets $P = MC$
 - ◆ Difficulty when fixed costs are high such as electric utilities

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Public Policy Toward Natural Monopoly

- Methods of Controlling Natural Monopolies
 - Vigorous enforcement of anti-trust laws
 - ◆ Helps prevent cartels
 - ◆ May prevent economies of scale

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