Learning Objectives

1. Define and explain the differences between accounting profit, economic profit, and normal profit
2. Explain the Invisible Hand Theory and show how economic profit and economic loss affect the allocation of resources across industries
3. Explain why economic profit, unlike economic rent, tends toward zero in the long run
4. Identify whether the market equilibrium is socially efficient, and explain why no opportunities for gain remain open for individuals when a market is in equilibrium
5. Calculate total economic surplus and explain how it is affected by policies that prevent the market from reaching equilibrium
Markets Are Dynamic

• Every time you see one of these signs, you see the market dynamics at work:
  – Store for Lease
  – Going Out of Business Sale
    • Everything Must Go
  – Now Open
  – Close-Out Model
  – Under New Management
The Invisible Hand

• Individuals act in their own interests
  – Aggregate outcome is collective well-being

• Profit motive
  – Produces highly valued goods and services
  – Allocates resources to their highest value use
    • Jon Stewart does not wait tables
Accounting Profit

- Most common profit idea
  
  **Accounting profit** = total revenue – explicit costs
  
  - **Explicit costs** are payments firms make to purchase
    
    - Resources (labor, land, etc.) and
    - Products from other firms

- Easy to compute
- Easy to compare across firms
Economic Profit

- **Economic profit** is the difference between a firm's total revenue and the sum of its explicit and implicit costs
  - Also called excess profits
- **Implicit costs** are the opportunity costs of the resources supplied by the firm's owners
- **Normal profit** is the difference between accounting profit and economic profit
  - Normal profits keep the resources in their current use
Three Kinds of Profit

Total Revenue = Explicit Costs + Accounting Profit

Economic Profit = Accounting Profit – Normal Profit
Example: Economic Profit Guides Decisions

- Pudge Buffet's decision: continue farming or quit?
  - Quit farming and earn $11,000 per year working retail
  - Explicit farm costs are $10,000
  - Total revenue is $22,000

<table>
<thead>
<tr>
<th>Accounting Profit</th>
<th>Economic Profit</th>
<th>Normal Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$12,000</td>
<td>$1,000</td>
<td>$11,000</td>
</tr>
</tbody>
</table>

- Pudge should stick with farming
  - His economic profit is positive
Example: Economic Profit Guides Decisions, A Change in Revenue

- Pudge Buffet's decision: continue farming or quit?
  - Quit farming and earn $11,000 per year working retail
  - Explicit farm costs are $10,000
  - Total revenue is $20,000

<table>
<thead>
<tr>
<th>Accounting Profit</th>
<th>Economic Profit</th>
<th>Normal Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10,000</td>
<td>-$1,000</td>
<td>$11,000</td>
</tr>
</tbody>
</table>

- Pudge should quit
  - His economic profit is negative
Example: Owned Inputs

- Rent for the farm land is $6,000 of the $10,000 in explicit costs
  - What changes if Pudge inherits the land?
    - His rent payments become an implicit cost

<table>
<thead>
<tr>
<th></th>
<th>Total Revenue</th>
<th>Explicit Costs</th>
<th>Implicit Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>$20,000</td>
<td>$4,000</td>
<td>$17,000</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Accounting Profit</th>
<th>Economic Profit</th>
<th>Normal Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$16,000</td>
<td>-$1,000</td>
<td>$17,000</td>
<td></td>
</tr>
</tbody>
</table>

- Pudge should quit farming
Two Functions of Price

- **Rationing function** of price distributes scarce goods to the consumers who value them most highly.

- **Allocative function** of price directs resources away from overcrowded markets to markets that are underserved.

- **Invisible Hand Theory** states that the actions of independent, self-interested buyers and sellers will often result in the most efficient allocation of resources.
  - Articulated by Adam Smith in eighteenth century.
Responses to Profits and Losses

• Will the firm remain in business in the long run?
  – If it covers ALL of its costs

• Firms that earn normal profit recover only their opportunity cost

• Firms that earn positive economic profit recover more than their opportunity cost

• Markets in which firms are earning economic profit will attract resources

• Markets in which firms are suffering economic losses will lose resources
Response to Economic Profits

- Markets with excess profits attract resources

![Graph showing supply (S) and demand (D) curves for the corn industry, and a typical corn farm's cost curves (MC, ATC) with economic profit highlighted.]
Shrinking Economic Profits

- Supply increases

Diagram:
- **Corn Industry**
  - Price: $2/bu
  - Quantity: 65-95 M of bushels/year
  - Supply: S, S'
  - Demand: D

- **Typical Corn Farm**
  - Price: $2/bu
  - Quantity: 120-130 000s of bushels/year
  - Marginal Cost (MC)
  - Average Total Cost (ATC)
  - Economic Profit

Note: The diagram illustrates the shift in supply with an increase, leading to a decrease in economic profit for corn farmers.
Market Equilibrium

- Zero economic profits

**Corn Industry**

- Price: $2/Bu
- Quantity: 115 M of bushels/year
- Supply: S
- Demand: D

**Typical Corn Farm**

- Marginal Cost (MC)
- Average Total Cost (ATC)
- Price: $2/Bu
- Quantity: 130,000s of bushels/year
Economic Losses

• Resources leave

[Graph showing supply and demand for corn industry and a typical corn farm, with price and quantity axes.]
Market Equilibrium

- No economic losses
Constant-Cost Industry

• In the long run, corn costs $1/bu regardless of the size of the industry.
Features of the Invisible Hand

Benefits of Invisible Hand

Cost – Benefit Principle applies
- Marginal benefit of last buyer equals marginal cost of last unit produced

P = MC
- Price paid by buyers is no greater than cost to the seller
Example: Movement Toward Equilibrium

• All markets are in equilibrium when
  – Demand for haircuts decreases
  – Demand for exercise increases

• Price of haircuts goes down; hair stylists have losses

• Price of aerobics classes go up; instructors have excess profits

• Eventually the long-run prices of haircuts and aerobics class return to long-run equilibrium
Short-Run Adjustments

Haircut Market

- Price ($/haircut)
- Haircuts/day

Aerobics Market

- Price ($/class)
- Classes/day

S
D
D'
S
D'

Price ($/haircut)

D
D'

350 500

15
12

200 300

15
10

500 15

300 12
Short-Run Adjustments

Typical Hair Salon

Price ($/haircut)

Economic loss

Typical Aerobics Studio

Price ($/class)

Economic profit
Free Entry and Exit

- **Barrier to entry**: any force that prevents firms from entering a new industry
  - Legal constraints
  - Practical factors
- Free entry and exit is required for the Invisible Hand to work
Economic Rent

• Economic profits tend toward zero, yet people get rich

• **Economic rent** is the portion of a payment to a factor of production that exceeds the owner's reservation price
  – People who love their work
  – Non-reproducible input

• The case of the talented chef
  – Unique talent for cooking
  – In equilibrium, pay the chef the increase in revenue from his talent
Invisible Hand in the Supermarket

• No Cash on the Table Principle says short check-out lines get longer – quickly
  – Information is freely available

• Start in the shortest line
  – Observe the pace of all lines
    • Missing price in your line
    • Complaining customer next to you
  – Decide whether to switch
Invisible Hand and Cost-Saving Innovations

• Competitive firms are price takers
  – Cost management required
• Innovation lowers cost for one firm
  – Profits increase by amount of cost savings
  – Information is freely available
• Industry costs decrease
• Equilibrium price decreases by amount of cost savings
  – No excess profit
Example: Shipping Innovation

- 40 companies compete in trans-Atlantic shipping
  - Cost per trip is $500,000
- One firm innovates to save $20,000 in fuel per trip
  - Short-run economic profit
- Over time, competitors copy the innovation
  - Industry costs decrease by $20,000
  - Equilibrium price decreases by $20,000
- In the long run, no firm earns economic profit
Market Equilibrium and Big Payoffs

• Equilibrium leaves no opportunities for individuals to gain
  – Non-equilibrium opportunities benefit individuals
    • Exploiting opportunities moves the market toward equilibrium

• Three ways to earn a big payoff:
  1. Work exceptionally hard
  2. Have some unique skill or talent
  3. Be lucky
Invisible Hand and Socially Optimal Outcome

• Markets work best when
  – Buyers' marginal benefits = sellers' marginal costs
  AND
  – Society's marginal benefits = society's marginal costs

• Individual spending to improve a stock price forecast may benefit the individual
  – Some other individual loses
  – Return to society of the investment is less than the benefit
Market Equilibrium and Efficiency

- **Economic efficiency** exists when no change could be made to benefit one party without harming the other
  - Sometimes called Pareto efficiency
  - Different from engineering efficiency
  - Equilibrium price and quantity are efficient
  - Prices above or below equilibrium are not
Price Below Equilibrium

- Suppose milk is $1 per gallon
Price Below Equilibrium

- A buyer offers $1.25
Price above Equilibrium

Only equilibrium price is efficient
Efficiency Conditions

- Perfectly Competitive Markets
- No Costs or Benefits Shifted

Market Efficiency
Trade-Offs

Efficiency

Equity

Basic Needs

Maximum Total Surplus

Fairness
The Cost of Preventing Price Adjustments

• Price ceilings
  – A maximum allowable price, specified by law

• Price subsidies
  – Meant to assist low-income consumers, governmental funding of “essential” goods and services
Example: Heating Oil Market

<table>
<thead>
<tr>
<th>Quantity (1,000s of gallons/day)</th>
<th>Price ($/gallon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1.60</td>
</tr>
<tr>
<td>1</td>
<td>1.20</td>
</tr>
<tr>
<td>1</td>
<td>1.00</td>
</tr>
<tr>
<td>1</td>
<td>.80</td>
</tr>
<tr>
<td>1</td>
<td>1.80</td>
</tr>
<tr>
<td>1</td>
<td>1.40</td>
</tr>
</tbody>
</table>

Producer surplus = $900/day

Consumer surplus = $900/day
Price Ceiling on Heating Oil

<table>
<thead>
<tr>
<th>Price ($/gallon)</th>
<th>Quantity (1,000s of gallons/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.60</td>
<td>1</td>
</tr>
<tr>
<td>1.20</td>
<td>2</td>
</tr>
<tr>
<td>1.00</td>
<td>3</td>
</tr>
<tr>
<td>0.80</td>
<td>4</td>
</tr>
<tr>
<td>1.80</td>
<td>5</td>
</tr>
<tr>
<td>1.40</td>
<td>8</td>
</tr>
</tbody>
</table>

- Consumer surplus = $900/day
- Lost surplus = $800/day
- Producer surplus = $100/day
Surplus Lost to a Price Ceiling

- $800 underestimates surplus loss
  - Consumers place different values on heating oil
    - If a person with a lower reservation price gets the oil, there is additional surplus lost
    - Shortages increase non-market costs
      - Waiting in line
      - Side payments
Alternative Heating Oil Policy

Surplus with Price Controls

R = high income
P = low income

Surplus with Income Transfers Only

R

R = high income
P = low income
Example: Price Subsidy for Bread

• Imported bread costs $2
  – Perfectly elastic supply
• Government program to subsidize bread
  – Government imports bread for $2
  – Government sells bread for $1
  – Results
    • More bread
    • Less efficiency
Price Subsidies for Bread

**Graph:**
- **Price ($/loaf):** $4.00, $3.00, $2.00, $1.00
- **Quantity (millions of loaves/month):** 2, 4, 6, 8

- **S with subsidy**
- **Consumer Surplus = $4 M/month**
- **Consumer Surplus = $9 M/month**

**Text:**
- **$3.00**
- **$1.00**

**BUT…**
The Cost of the Subsidy

• The bread subsidy appears to increase consumer surplus from $4 million to $9 million

• BUT …
  – The government loses $1 on every loaf
    • Imports 6 million loaves for $2 per loaf
  – Government losses are $6 million

• The net benefit of the subsidy program
  – Consumer surplus – government losses
  – Net benefit = $3 million
Price Subsidies for Bread

<table>
<thead>
<tr>
<th>Price ($/loaf)</th>
<th>Consumer Surplus</th>
<th>Total Surplus Lost = $1 M/month</th>
<th>Government Losses</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$3.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$2.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Quantity (millions of loaves/month):
  - 2
  - 4
  - 6
  - 8

Diagram:
- S with subsidy
- S
Invisible Hand in Action

Economic Efficiency

Market Equilibrium

Price Ceilings

Subsidies

Invisible Hand

Profits

Examples

Resource Allocation

Economic Rents