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Gwartney - Stroup
Sobel - Macpherson

Supply, Demand, and the Market Process

Full Length Text — Part: 2 Chapter: 3
Micro Only Text — Part: 2 Chapter: 3
Macro Only Text — Part: 2 Chapter: 3

To Accompany "Economics: Private and Public Choice 12th ed."
James Gwartney, Richard Stroup, Russell Sobel, & David Macpherson
Slides authored and animated by:
James Gwartney, David Macpherson, & Charles Skipton


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Consumer Choice and the Law of Demand

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Law of Demand

- **Law of Demand:** the inverse relationship between the price of a good and the quantity consumers are willing to purchase.
 - As the price of a good rises, consumers buy less.
 - The availability of *substitutes* (goods that perform similar functions) explains this negative relationship.

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Market Demand Schedule

- A **market demand schedule** is a table that shows the quantity of a good people will demand at varying prices.
- Consider the market for cellular phone service. A **market demand schedule** lays out the quantity of cell phone service demanded in the market at various prices.
- We can graph these points (*the different prices and respective quantities demanded*) to make a **demand curve** for cell phone service.

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Market Demand Schedule

| Cell phone service price (monthly bill) | Cell phone subscribers (millions) |
|---|-----------------------------------|
| \$ 124 | 3.5 |
| \$ 92 | 7.6 |
| \$ 73 | 16.0 |
| \$ 58 | 33.7 |
| \$ 46 | 55.3 |
| \$ 41 | 69.2 |

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Market Demand Schedule

- Notice how the **law of demand** is reflected by the shape of the demand curve.
- As the price of a good rises ...consumers buy less.

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Consumer Surplus

- Recall that **consumer surplus** is the difference between what the consumer is willing to pay and what they have to pay.
- The first 17 million subscribers are willing to pay more than \$100 for cell phone service.
- Hence, the area above the actual price paid (the market price) and below the demand curve represents **consumer surplus**.
- Consumer surplus** represents the net gains to buyers from market exchange.

Price (monthly bill)

Consumer surplus

Market price = \$100

Demand

5 10 15 20 25 30

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Elastic and Inelastic Demand Curves

- Elastic demand**
 - A change in price leads to a relatively large change in quantity demanded.
 - Demand will be **elastic** when close substitutes for the good are readily available.
- Inelastic demand**
 - A change in price leads to only a small change in quantity demanded.
 - Demand will be **inelastic** when few, if any, close substitutes are available.

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Elastic and Inelastic Demand Curves

- When the market price for gasoline rises from \$1.50 to \$2.50 a gallon, the quantity demanded in the market falls relatively little from 10 to 8 million units per week.
- In contrast, when the market price for tacos rises from \$1.50 to \$2.50, quantity demanded in the market falls sharply from 10 to 4 million units per week.
- Because taco demand is highly sensitive to price changes, taco demand is described as **elastic**; because the demand for gas is largely insensitive to price changes, gasoline demand is described as **inelastic**.

Gasoline market

Taco market

Price

Quantity (gasoline)

Quantity (tacos)

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Questions for Thought:

1. (a) Are prices an accurate reflection of a good's total value? Are prices an accurate reflection of a good's marginal value? What is the difference?
(b) Consider diamonds and water. Which of these goods provides the most total value? Which provides the most marginal value?

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Changes in Demand Versus Changes in the Quantity Demanded

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Changes in Demand and Quantity Demanded

- **Change in Demand**
– a shift in the entire demand curve.
- **Change in Quantity Demanded**
– a movement along the same demand curve in response to a change in its price.

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An Increase in Demand

- If DVDs cost \$30 each, the demand curve for DVDs, D_1 , indicates that Q_1 units will be demanded.
- If the price of DVDs falls to \$10, the **quantity demanded** of DVDs will increase to Q_2 units (where $Q_2 > Q_1$).
- Several factors will change the **demand** for the good (shift the entire demand curve).
- As an example, suppose consumer income increases. The demand for DVDs at all prices will increase.
- After the shift of demand, Q_3 units are demanded at \$10 instead of Q_2 ($Q_3 > Q_2 > Q_1$).

Price (dollars)

Quantity (DVDs per year)

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A Decrease in Demand

- If a pizza costs \$20, then the demand curve for pizzas, D_1 , indicates that 200 units will be demanded per week.
- If the price falls to \$10, the **quantity demanded** of pizzas will increase to 300 units.
- If the number of pizza consumers changes, then the **demand** for it will generally **change**.
- For example, in a college town during the summer students go home and the demand for pizzas at all prices decreases.
- After the shift of demand, 200 units are demanded at \$10.

Price (dollars)

Quantity (Pizzas per week)

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Demand Curve Shifters

- The following will lead to a change in demand (*a shift in the entire curve*):
 - Changes in consumer income
 - Change in the number of consumers
 - Change in the price of a related good
 - Changes in expectations
 - Demographic changes
 - Changes in consumer tastes and preferences

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Questions for Thought:

1. Which of the following do you think would lead to an increase in the demand for beef:
 - (a) higher pork prices,
 - (b) higher incomes,
 - (c) higher grain prices used to feed cows,
 - (d) widespread outbreak of mad-cow or hoof-and-mouth disease,
 - (e) an increase in the price of beef?
2. What is being held constant when a demand curve for a product (like shoes or apples, for example) is constructed? Explain why the demand curve for a product slopes downward and to the right.

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Producer Choice and the Law of Supply

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Cost and the Output of Producers

- Producers purchase resources and use them to produce output.
- Producers will incur costs as they bid resources away from their alternative uses.
 - *Opportunity cost of production:* the sum of the producer's costs of employing each resource required to produce the good.
- Firms will not stay in business for long unless they are able to cover the cost of all resources employed, including the *opportunity cost* of the resources owned by the firm.

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Economic and Accounting Costs

- **Economic Cost**
– the cost of all resources used to produce the good.
- **Accounting Cost**
– often ignores the opportunity costs of resources owned by the firm (for example, the firm’s equity capital).

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Role of Profits and Losses

- **Profit** occurs when a firm’s revenues are greater than its costs.
- Firms supplying goods for which consumers are willing to pay more than the opportunity cost of the resources required to produce the good will make a profit.
- Firms making profits will expand, while those making **losses** will contract.
- In essence:
 - **profits** are a reward earned by firms that increase the value of resources in the marketplace, and,
 - **losses** are a penalty imposed on firms that use resources in ways that reduce their market value.

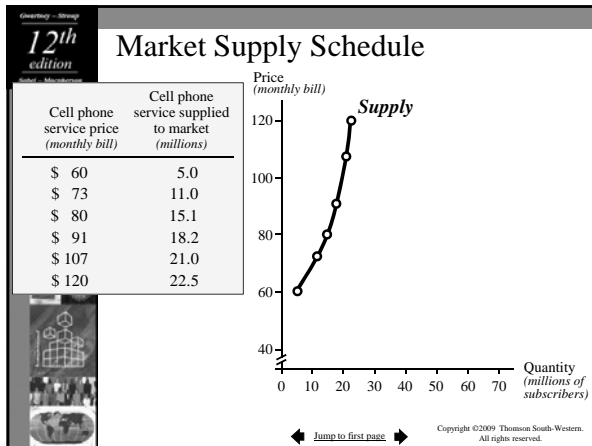
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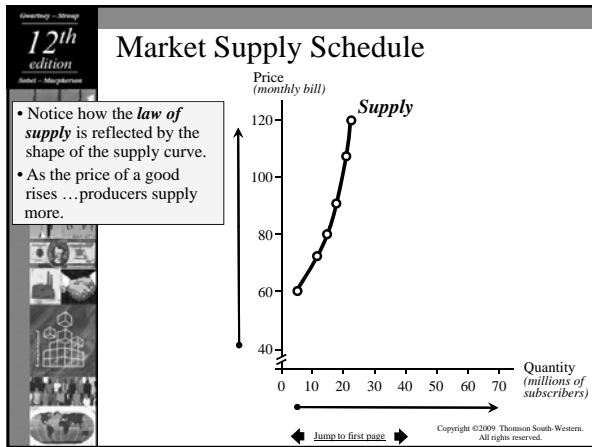
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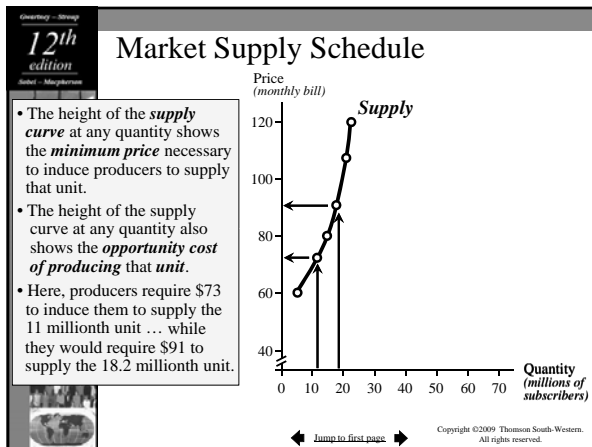
The Law of Supply

- **Law of Supply:**
there is a positive relationship between the price of a product and the amount of it that will be supplied.
 - As the price of a product rises, producers will be willing to supply a larger quantity.

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Price and Quantity Supplied

- Consider the market for cellular phone service again. This time we will assume that the supply for cell phones is more *linear* and that the market price is \$100.
- The 30 millionth unit will **not be produced** as the cost of supplying it (\$140) exceeds the market price.
- The 5 millionth unit will **be produced** because the cost of supplying it (\$60) is less than the market price of \$100.
- The 17 millionth unit and all those that precede it will **be produced** as the cost of supplying them is equal to or less than the market price.

Price (monthly bill)

Quantity (millions of subscribers)

Market price = \$100

Supply

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Producer Surplus

- Producer surplus** is the difference between the lowest price a supplier will accept to produce the good (*the opportunity cost of the resources*) and the price they actually get (*the market price*).
- Producers are willing to supply the first 17 million units for less than \$100.
- Hence, the area above the supply curve but below the actual market price represents **producer surplus**.
- Producer surplus** represents the net gains to producers from market exchange.

Price (monthly bill)

Quantity (millions of subscribers)

Market price = \$100

Supply

Producer surplus

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Elastic and Inelastic Supply Curves

- Elastic supply**
 - the quantity supplied is sensitive to changes in price. Thus a change in price leads to a relatively large change in quantity supplied.
- Inelastic supply**
 - the quantity supplied is not very sensitive to changes in price. Thus, a change in price leads to only a relatively small change in quantity supplied.

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Elastic and Inelastic Supply Curves

- When the market price for soft drinks increases from \$1.00 to \$1.50 a six-pack, the quantity supplied to the market rises from 100 to 200 million units per week.
- When the market price for physician services rises from \$100 to \$150 an office visit, the quantity supplied rises from 10 to 12 million visits per week.
- Because soft drink supply is quite sensitive to price changes, its supply is *elastic*; because the supply of physician services is relatively insensitive to changes in price, its supply is *inelastic*.

Price
\$2.00
\$1.50
\$1.00
Quantity (million 6-packs)
50 100 150 200
Soft drink market
S

Price
\$200
\$150
\$100
Quantity (million visits)
2 4 6 8 10 12 14 16 18 20
Physician Services market
S

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Questions for Thought:

1. (a) What is being held constant when the supply curve for a specific good like pizza or automobiles is constructed?
(b) Why does the supply curve for a good slope upward and to the right?
2. What is producer surplus? Is producer surplus basically the same thing as profit?
3. What must an entrepreneur do in order to earn a profit? How do the actions of firms earning a profit influence the value of resources? What happens to the value of resources when losses are present?

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Questions for Thought:

4. What does the cost of a good or service reflect? Will producers continue to supply a good or service if consumers are unwilling to pay a price sufficient to cover the cost?

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Changes in Supply Versus Changes in Quantity Supplied

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Changes in Supply and Quantity Supplied

- **Change in Supply**
– a shift in the entire supply curve.
- **Change in Quantity Supplied**
– movement along the same supply curve in response to a change in its price.

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A Change in Supply

- If the market price for gasoline is \$3.00 a gallon, the supply curve for gasoline S_1 indicates Q_1 units would be supplied.
- If the price fell to \$2.00, the **quantity supplied** would fall to Q_2 units (where $Q_2 < Q_1$).
- If, somehow, the **opportunity costs** for gasoline producers changed then the **supply** of gas would **change**.
- Consider the case where the cost of crude oil (an input in gasoline production) increases.
- The supply of gasoline at all potential market prices would fall. Now at \$2.00, Q_3 units are supplied (where $Q_3 < Q_2 < Q_1$).

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Supply Curve Shifters

- The following will cause a change in supply (a shift in the entire curve):
 - Changes in resource prices
 - Changes in technology
 - Elements of nature and political disruptions
 - Changes in taxes

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How Market Prices are Determined

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Market Equilibrium

- This table & graph indicate demand and supply conditions of the market for *calculators*.
- Equilibrium will occur where the quantity demanded equals the quantity supplied. If the price in the market differs from the equilibrium level, market forces will guide it to equilibrium.
- A price of \$12 in this market will result in a quantity demanded of 450 ... and a quantity supplied of 600 ... resulting in an **excess supply**.
- With an **excess supply** present, there will be **downward pressure** on price to clear the market.

| Price (dollars) | Quantity supplied (per day) | Quantity demanded (per day) | Condition in the market | Direction of pressure on price |
|-----------------|-----------------------------|-----------------------------|-------------------------|--------------------------------|
| 12 | 600 | 450 | Excess supply | Downward |
| 10 | 550 | 550 | | |
| 8 | 500 | 650 | | |

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Equilibrium and Efficiency

- At the **equilibrium output level** (the 17 millionth unit), the consumer's valuation of the marginal unit and the producer's opportunity cost of the resources necessary to bring that unit to market are equal.
- In equilibrium all units valued more than their costs are produced and the potential gains from production and exchange are maximized. **This outcome is economically efficient.**

The graph plots Price (monthly bill) on the vertical axis (ranging from 60 to 140) and Quantity (millions of subscribers) on the horizontal axis (ranging from 5 to 30). A downward-sloping Demand curve and an upward-sloping Supply curve intersect at an equilibrium point. Dotted lines from this intersection point lead to a price of 100 on the vertical axis and a quantity of 17 on the horizontal axis.

Price (monthly bill)

Quantity (millions of subscribers)

Supply

Demand

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Questions for Thought:

- How is the market price of a good determined? When the market for a good is in equilibrium, how will the consumers' evaluation of the marginal unit compare with the opportunity cost of producing the unit? Is the equilibrium price consistent with economic efficiency?

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How Markets Respond to Changes in Supply and Demand

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Effects of a Change in Demand

- **When demand decreases**
– the equilibrium price and quantity will fall.
- **When demand increases**
– the equilibrium price and quantity will rise.

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Market Adjustment to an Increase in Demand

- Consider the market for *eggs*.
- Prior to the Easter season, the market for eggs produces an equilibrium where *supply* equals *demand*, at a price of \$.80 a dozen and output of Q_1 .
- Every year during the Easter holiday the demand for eggs increases (shifts from D_1 to D_2).
- What happens to the equilibrium price and output level?
- Now at \$.80, quantity demanded exceeds quantity supplied. An upward pressure on price induces existing suppliers to increase their quantity supplied. Equilibrium occurs at output level Q_2 and price \$1.00.
- What happens to price and output after the Easter holiday?

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Effects of a Change in Supply

- **When supply decreases**
– the equilibrium price will rise and the equilibrium quantity will fall.
- **When supply increases**
– the equilibrium price will fall and the equilibrium quantity will rise.

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Market Adjustment to a Decrease in Supply

- Consider the market for *lemons*.
- Initially equilibrium is present where *supply* equals *demand* at a market price of \$0.20 and output of Q_1 .
- Suppose adverse weather, such as occurred in California in January 2007, reduces the supply of lemons (shift from S_1 to S_2).
- What happens to both the price and output level in the market?
- Now at \$0.20, quantity demanded exceeds quantity supplied. An upward pressure on price reduces quantity demanded by consumers. Equilibrium occurs at a price of \$0.30 and output level of Q_2 .
- What happens to price and output when weather returns to normal?

Price (\$ per lemon)

Quantity (millions of lemons per week)

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Questions for Thought:

1. How has the availability and growing popularity of online music stores (like Apple's iTunes) affected the market for music CDs purchased from brick-and-mortar stores like Target or Wal-Mart? Use the tools of supply and demand to illustrate.
2. How have technological advances in miniature batteries and lower mobile chip prices affected the market for cellular phones? Use the tools of supply and demand to illustrate.
3. How was the supply and demand in the market for air travel affected by the events of September 11th, 2001?

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The Invisible Hand Principle

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The Invisible Hand

- **Invisible hand:** the tendency of market prices to direct individuals pursuing their own self interests into productive activities that also promote the economic well-being of society.
- This direction, provided by markets, is a key to economic progress.

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The Invisible Hand

“Every individual is continually exerting himself to find out the most advantageous employment for whatever capital [income] he can command. It is his own advantage, indeed, and not that of the society which he has in view. But the study of his own advantage naturally, or rather necessarily, leads him to prefer that employment which is most advantageous to society. . . . He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was not part of his intention.”

– Adam Smith, *The Wealth of Nations* (1776)

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Communicating Information

- Product prices **communicate** up-to-date information about the consumers’ valuation of additional units of each commodity.
- Without the information provided by market prices it would be impossible for decision-makers to determine how intensely a good was desired relative to its opportunity cost.

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Coordinating Actions of Market Participants

- Price changes *coordinate* the choices of buyers and sellers and bring them into harmony.
- Price changes create profits and losses which change production levels for products.

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Motivating Economic Participants

- Suppliers have an incentive to produce efficiently (at a low cost).
- Entrepreneurs have an incentive to both innovate and produce goods that are highly valued relative to cost.
- Resource owners have an incentive both to develop and supply resources that producers value highly.

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Market Order

- **Competitive markets** – the forces of supply and demand – lead to **market order**, low-cost production, and economic progress.
 - The pricing system coordinates the choices of literally millions of consumers, producers, and resource owners and thereby provides **market order**.
 - Central planning is neither necessary nor helpful.
 - The market process works so automatically that the coordination and order it generates is often taken for granted. Thus the expression “invisible hand” is quite descriptive of the process.

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Qualifications

- The efficiency of market organization is dependent upon:
 - The presence of competitive markets.
 - Well-defined and enforced private property rights.

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Questions for Thought:

1. Consider a large business firm like Wal-Mart. Does it need to be regulated in order to assure that it produces efficiently? Is regulation needed to assure that it will supply the goods and services that consumers want?
2. How can you explain that the quantities of milk, bananas, candy bars, television sets, notebook paper and thousands of other items available in your hometown are approximately equal to the quantities of these items that local consumers desire to purchase?

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Questions for Thought:

3. What is the *invisible hand principle*? Does it indicate that “good intentions” are necessary if one’s actions are going to be beneficial to others? What are the necessary conditions for the invisible hand to work well? Why are these conditions important?
4. “The output generated by our economy should not be left to chance. We need to have someone in charge who will make sure that resources are used wisely.”
 - (a) When resources and goods are allocated by markets, is the output “left to chance?”
 - (b) In a market economy, what determines whether or not a good will be produced?

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