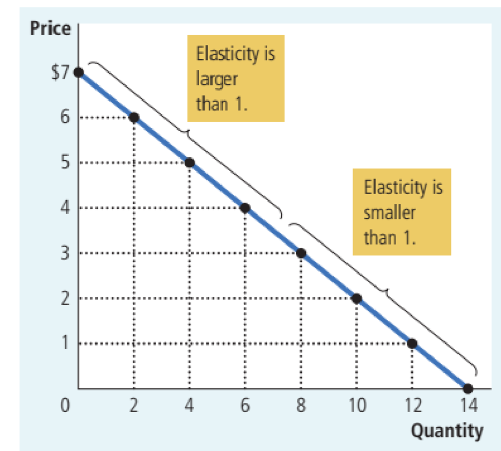
Elasticity and Its Application

- Elasticity is a measure of how much buyers and sellers respond to changes in market conditions.

The Elasticity of Demand

- The Price Elasticity of Demand and Its Determinants
- Computing the Price Elasticity of Demand
- The Midpoint Method: A Better Way to Calculate Percentage Changes and Elasticities
- The Variety of Demand Curves
- Total Revenue and the Price Elasticity of Demand
  - total revenue: the amount paid by buyers and received by sellers of a good, computed as the price of the good times the quantity sold
  - When demand is inelastic, price and total revenue move in the same direction: If the price increases, total revenue also increases.
  - When demand is elastic, price and total revenue move in opposite directons: If the price increases, total revenue decreases.
  - If demand is unit elastic, total revenue remains constant when the price changes.
- Elasticity and Total Revenue along a Linear Demand Curve
  - Even though the slope of a linear demand curve is constant, the elasticity is not. This is true beacause the slope is the ratio of changes in the two variables, whereas the elasticity is the ratio of percentage changes in the two variables.



  - A constant elasticity is possible, but it is not always the case.
- Other Demand Elasticities
  - The income elasticity of demand measures how the quanlity demanded changes as consumer income changes.

$$\text{income elasticity of demand} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in income}}$$

    - normal good: Higher income raises the quantity demanded
    - inferior good: Higher income lowers the quantity demanded
  - The cross-price elasticity measures how the quantity of demanded of one good responds to a change in the price of another good.

$$\text{cross-price elasticity of demand} = \frac{\text{percentage change in quantity demanded of good 1}}{\text{percentage change in the price of good 2}}$$

    - Whether the cross-price elasticity is a positive or negative number depends on whether the two goods are substitutes or complements.

The Elasticity of Supply

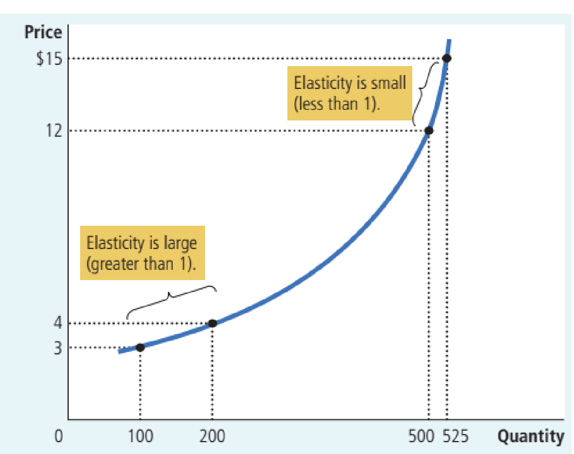
- The Price Elasticity of Supply and Its Determinants
  - The price elasticity of supply measures how much the quantity supplied responds to changes in the price. Supply of a good is said to be elastic if the quantity supplied responds substantially to changes in the price. Supply is said to be inelastic if the quantity supplied responds only slightly to changes in the price.
  - In most markets, a key determinant of the price elasticity of supply is the time period being considered. Supply is usually more elastic in the long run than in the short run.
- Computing the Price Elasticity of Supply

$$\text{price elasticity of supply} = \frac{\text{percentage change in quantity supplied}}{\text{percentage change in price}}$$

- The Variety of Supply Curves

FIGURE 6

How the Price Elasticity of Supply Can Vary Because firms often have a maximum capacity for production, the elasticity of supply may be very high at low levels of quantity supplied and very low at high levels of quantity supplied. Here an increase in price from $3 to $4 increases the quantity supplied from 100 to 200. Because the 67 percent increase in quantity supplied (computed using the midpoint method) is larger than the 29 percent increase in price, the supply curve is elastic in this range. By contrast, when the price rises from $12 to $15, the quantity supplied rises only from 500 to 525. Because the 5 percent increase in quantity supplied is smaller than the 22 percent increase in price, the supply curve is inelastic in this range.



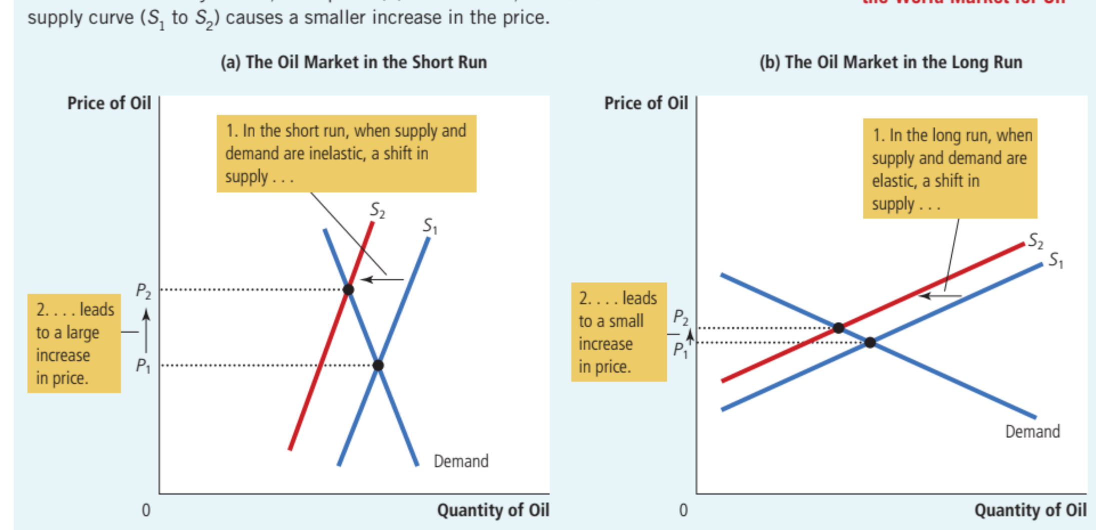
Three Application of Supply, Demand, Elasticity

- Can Good News for Farming Be Bad News for Farmers?
  - When analyzing the effects of farm technology or farm policy, it is important to keep in mind that what is good for farmers is not necessarily good for society as a whole. Improvement in farm technology can be bad for farmers because it makes farmers increasingly unnecessary, but it is surely good for consumers who pay less for food. Similarly, a policy aimed at reducing the supply of farm products may raise the incomes of farmers, but it does so at the expense of consumers.
- Why Did OPEC Fail to Keep the Price of Oil High?

FIGURE 8

A Reduction in Supply in the World Market for Oil

When the supply of oil falls, the response depends on the time horizon. In the short run, supply and demand are relatively inelastic, as in panel (a). Thus, when the supply curve shifts from S_1 to S_2, the price rises substantially. In the long run, however, supply and demand are relatively elastic, as in panel (b). In this case, the same size shift in the supply curve (S_1 to S_2) causes a smaller increase in the price.



- Does Drug Interdiction Increase or Decrease Drug-Related Crime?
  - The demand for drugs is probably inelastic over short periods because higher prices do not substantially affect drug use by established addicts. But demand may be more elastic over longer periods because higher prices would discourage experimentation with drugs among the young and, over time, lead to fewer drug addicts.
  - Rather than trying to reduce the supply of drugs, policymakers might try to reduce the demand by pursuing a policy of drug education.