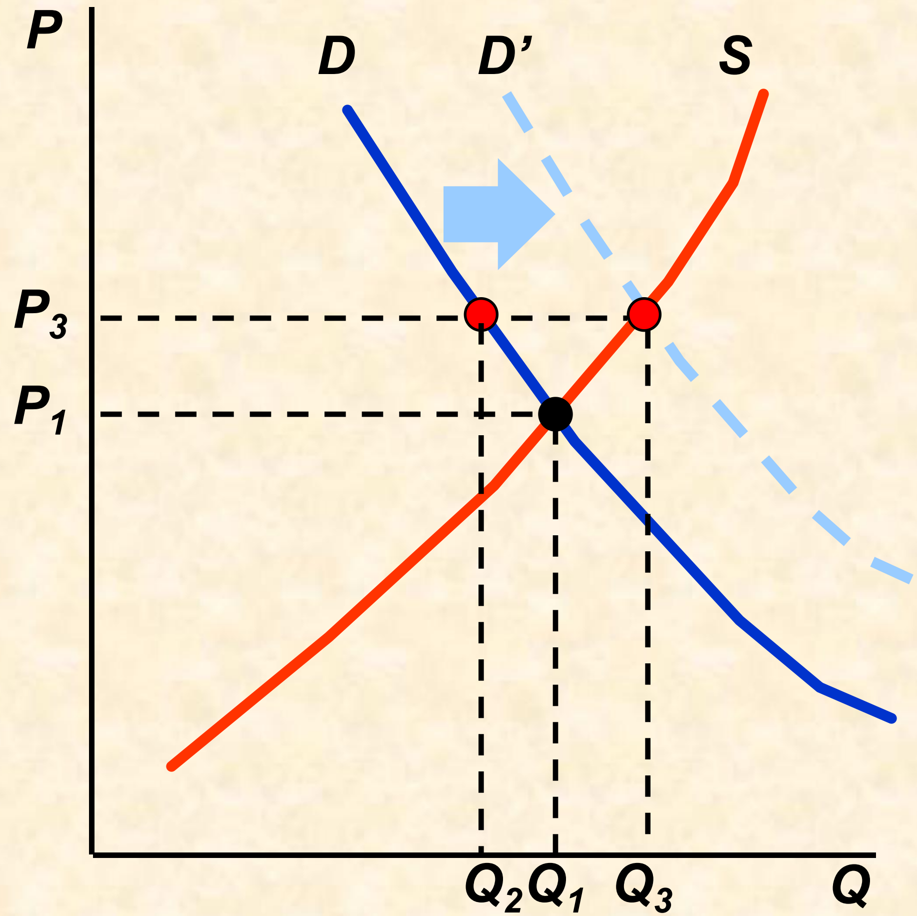
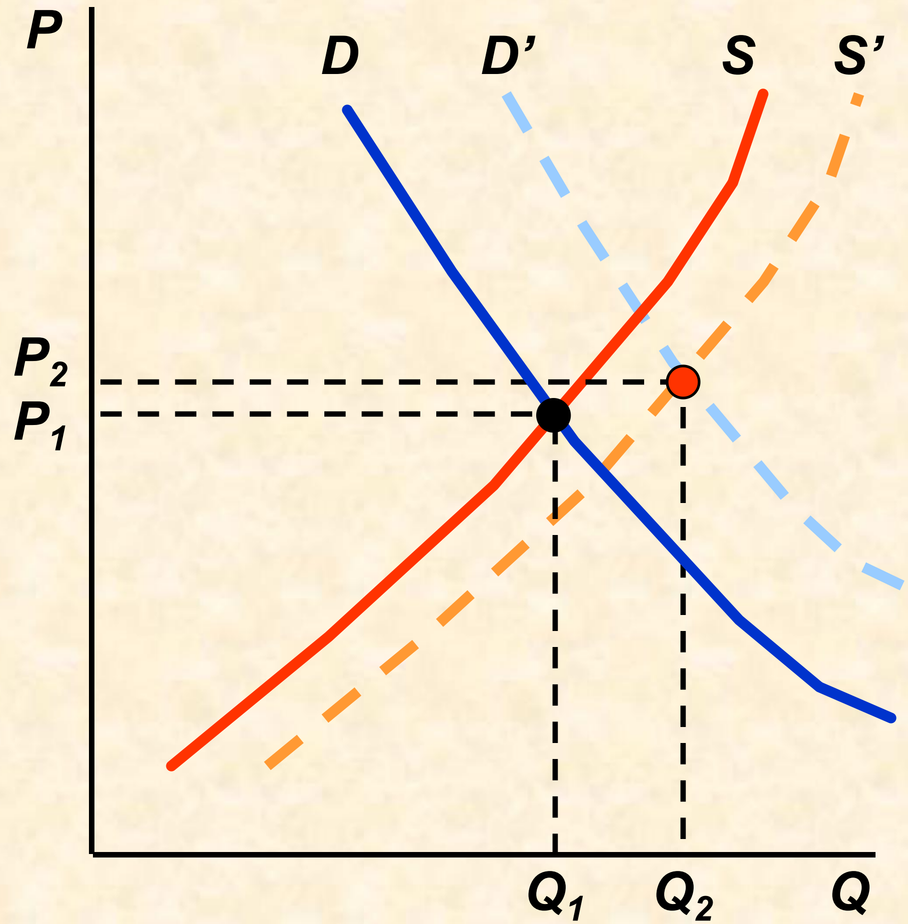
Changes In Market Equilibrium

- Income Increases
  - Demand shifts to D_1
  - Shortage @ P_1 of Q_1, Q_2
  - Equilibrium @ P_3, Q_3



Changes In Market Equilibrium

- Income Increases & raw material prices fall
  - The increase in *D* is greater than the increase in *S*
  - Equilibrium price and quantity increase to P_2, Q_2



Shifts in Supply and Demand

- When supply and demand change simultaneously, the impact on the equilibrium price and quantity is determined by:

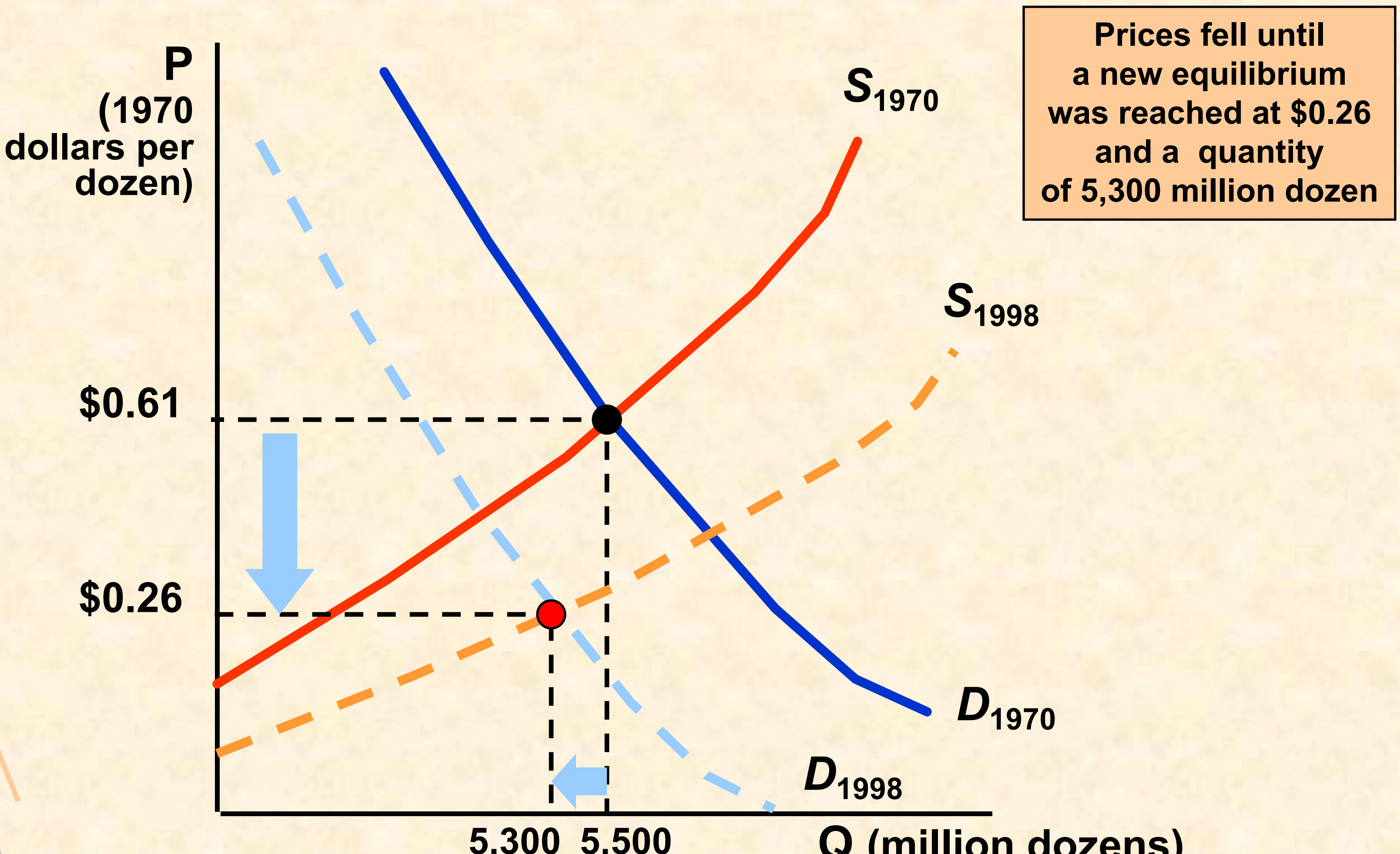
   1) The relative size and direction of the change

   2) The shape of the supply and demand models

The Price of Eggs and the Price of a College Education Revisited

- The real price of eggs fell 59% from 1970 to 1998.
- Supply increased due to the increased mechanization of poultry farming and the reduced cost of production.
- Demand decreased due to the increasing consumer concern over the health and cholesterol consequences of eating eggs.

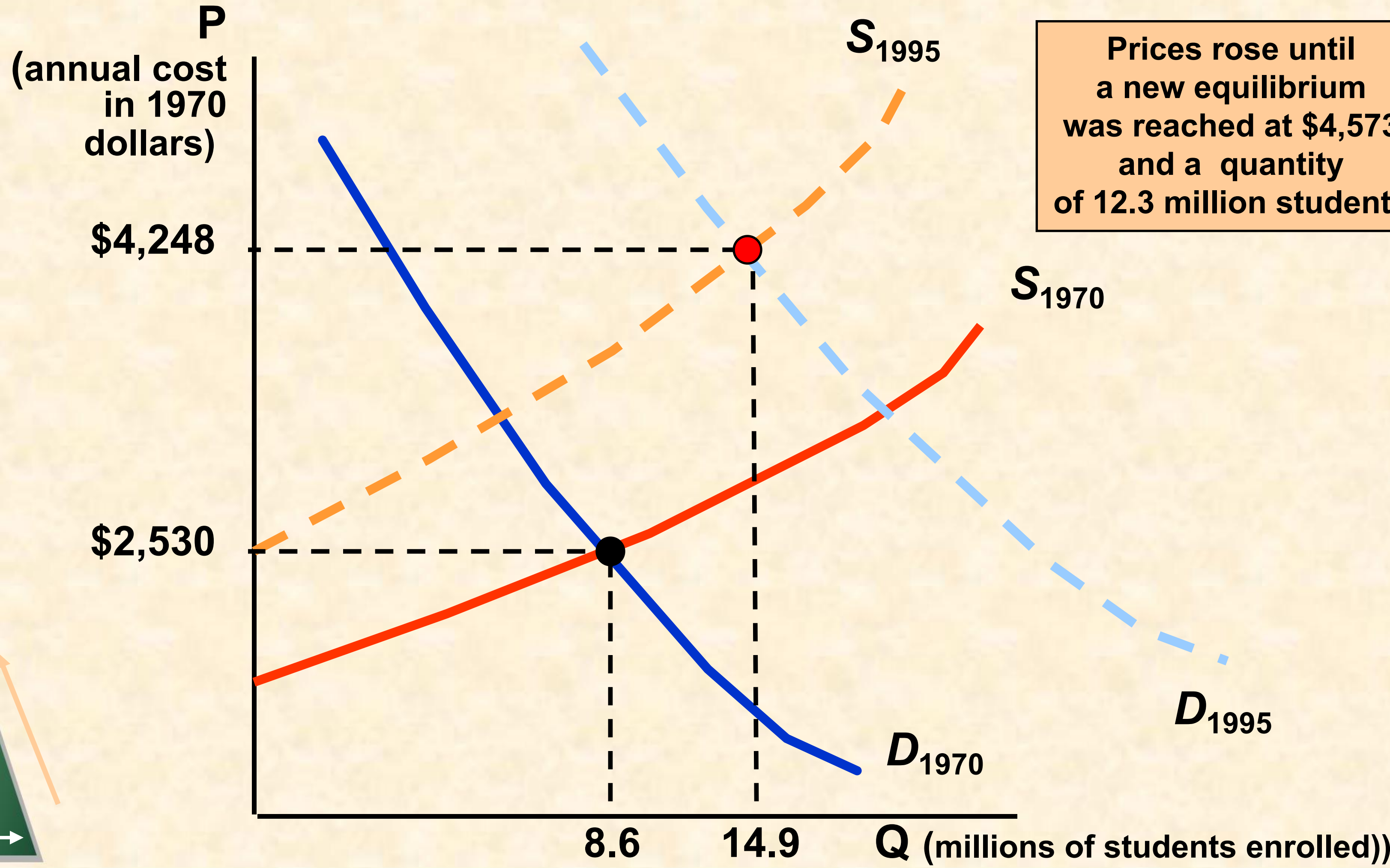
Market for Eggs



The Price of a College Education

- The real price of a college education rose 68 percent from 1970 to 1995.
- Supply decreased due to higher costs of equipping and maintaining modern classrooms, laboratories and libraries, and higher faculty salaries.
- Demand increased due a larger percentage of a larger number of high school graduates attending college.

Market for a College Education



Prices rose until
a new equilibrium
was reached at $4,573
and a quantity
of 12.3 million students

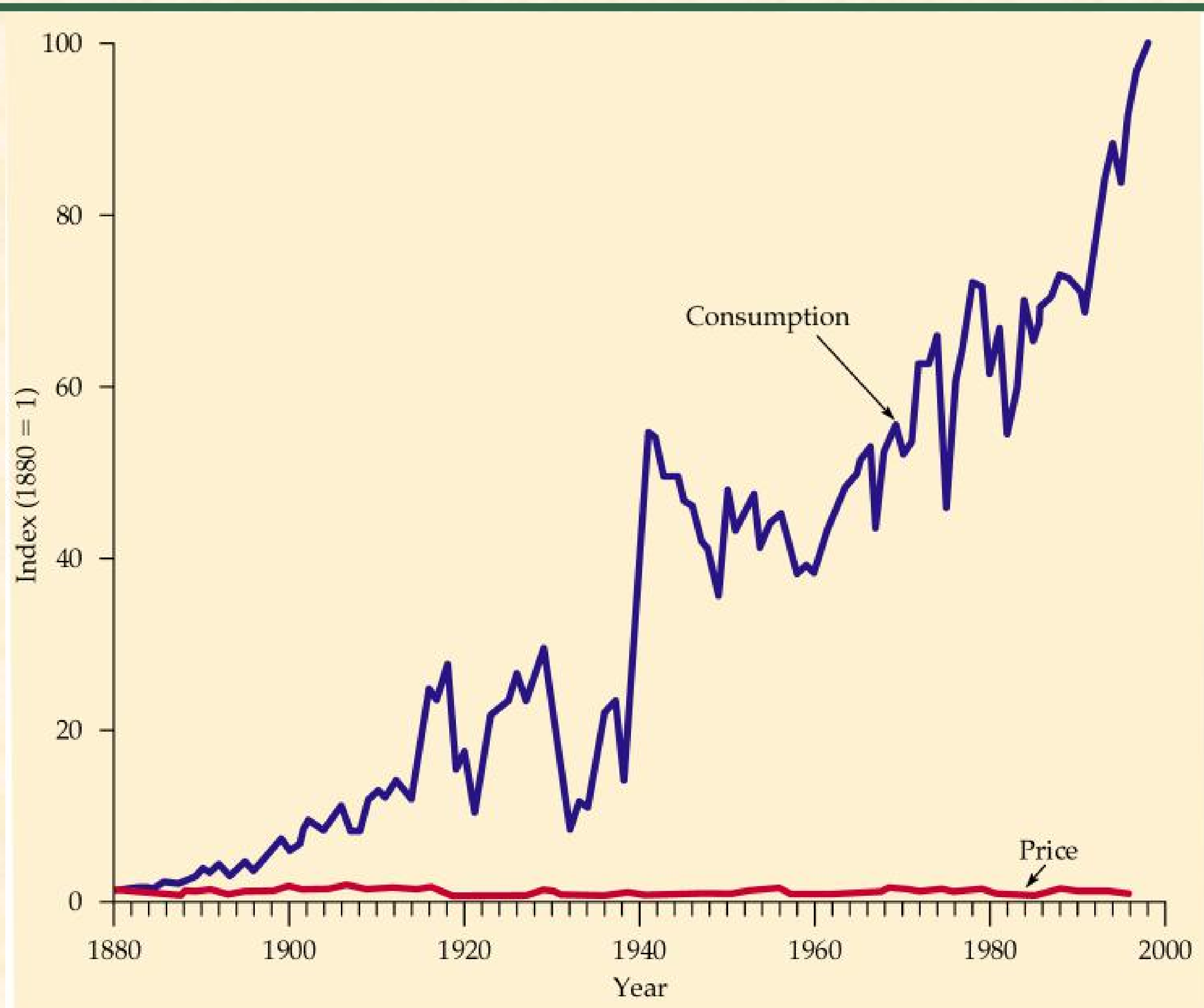
Changes In Market Equilibrium

- Wage Inequality in the United States
  - Real after-tax income from 1977 to 1999:
    - Rose 40+% for the top 20% of the income distribution
    - Fell 10+% for the bottom 20%

Changes In Market Equilibrium

- Question
  - Why did the income distribution become more unequal for 1977 to 1999?

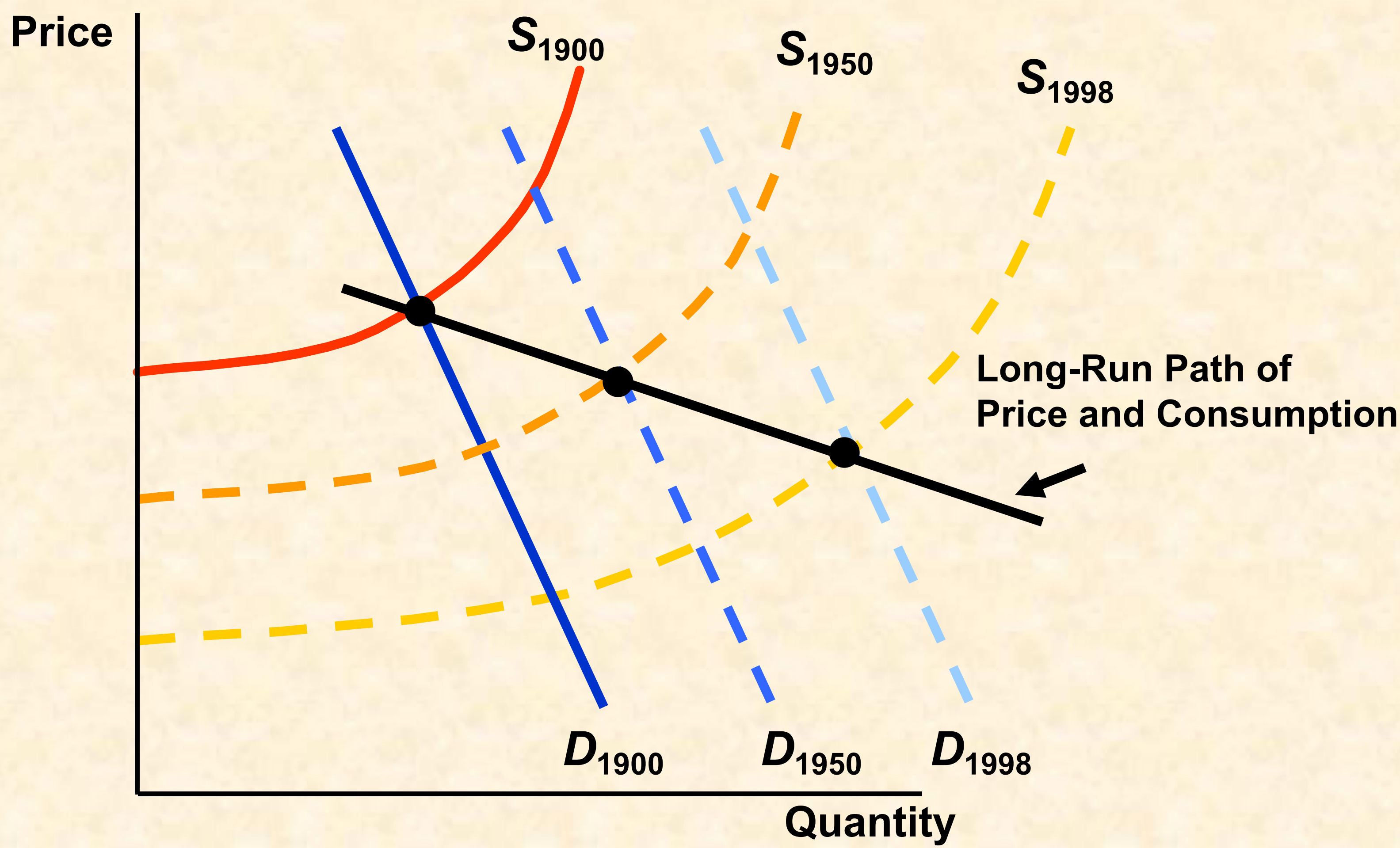
Consumption & Price of Copper 1880-1998



The Long-Run Behavior of Natural Resource Prices

- Observations
  - Consumption of copper has increased about a hundred fold from 1880 through 1998 indicating a large increase in demand.
  - The real price for copper has remained relatively constant.

Changes In Market Equilibrium



Changes In Market Equilibrium

- Conclusion
  - Decreases in the costs of production have increased the supply by more than enough to offset the increase in demand.

Changes In Market Equilibrium

- Observation
  - To accurately predict the future price of a product or service, it is necessary to consider the potential change in supply and demand.
  - 1970 predictions for oil and other minerals proved incorrect because they only considered the demand side of the market.

Elasticities of Supply and Demand

- Generally, elasticity is a measure of the sensitivity of one variable to another.
- It tells us the percentage change in one variable in response to a one percent change in another variable.

Elasticities of Supply and Demand

Price Elasticity of Demand

- Measures the sensitivity of quantity demanded to price changes.
  - It measures the percentage change in the quantity demanded for a good or service that results from a one percent change in the price.

Elasticities of Supply and Demand

- The price elasticity of demand is:

$$E_P = (\%\Delta Q)/(\%\Delta P)$$

Elasticities of Supply and Demand

Price Elasticity of Demand

- The percentage change in a variable is the absolute change in the variable divided by the original level of the variable.

Elasticities of Supply and Demand

Price Elasticity of Demand

- So the price elasticity of demand is also:

$$E_P = \frac{\Delta Q/Q}{\Delta P/P} = \frac{P}{Q}\,\frac{\Delta Q}{\Delta P}$$

Elasticities of Supply and Demand

- Interpreting Price Elasticity of Demand Values

1) Because of the inverse relationship between *P* and *Q*; E_P is negative.

2) If $E_P > 1$, the percent change in quantity is greater than the percent change in price. We say the *demand is price elastic*.

Elasticities of Supply and Demand

- Interpreting Price Elasticity of Demand Values

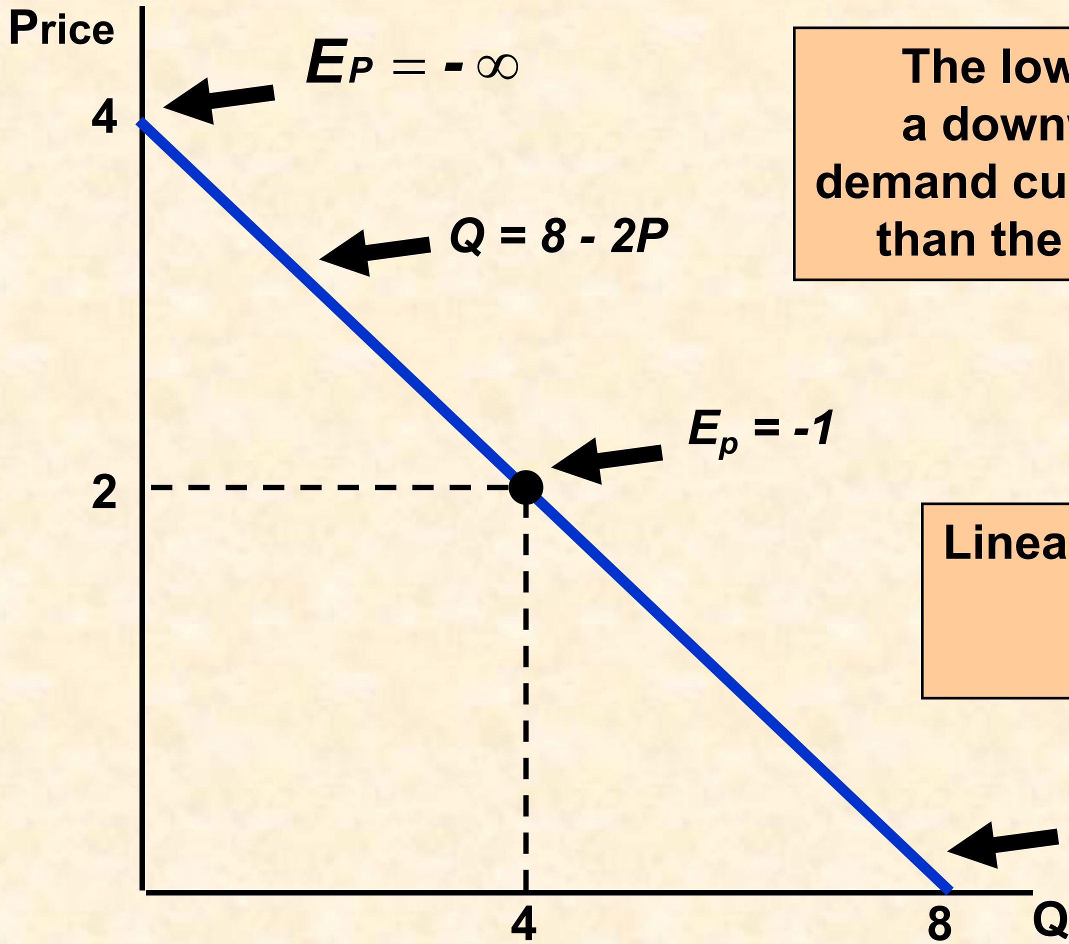
3) If $E_P < 1$, the percent change in quantity is less than the percent change inprice. We say the *demand is price inelastic*.

Elasticities of Supply and Demand

Price Elasticity of Demand

- The primary determinant of price elasticity of demand is the *availability of substitutes.*
  - Many substitutes demand is price elastic
  - Few substitutes demand is price inelastic

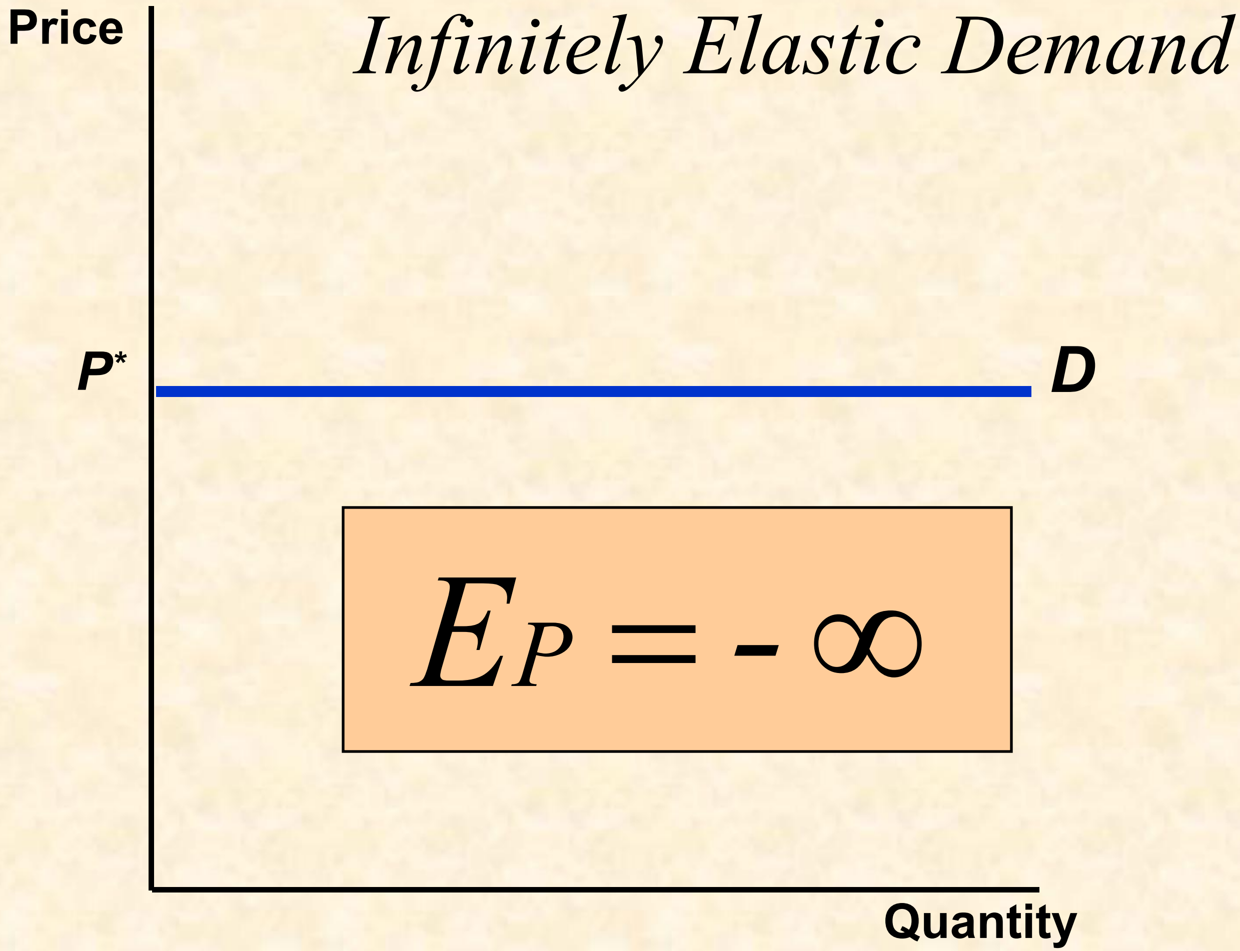
Price Elasticities of Demand



The lower portion of a downward sloping demand curve is less elastic than the upper portion.

Linear Demand Curve
$Q = a - bP$
$Q = 8 - 2P$

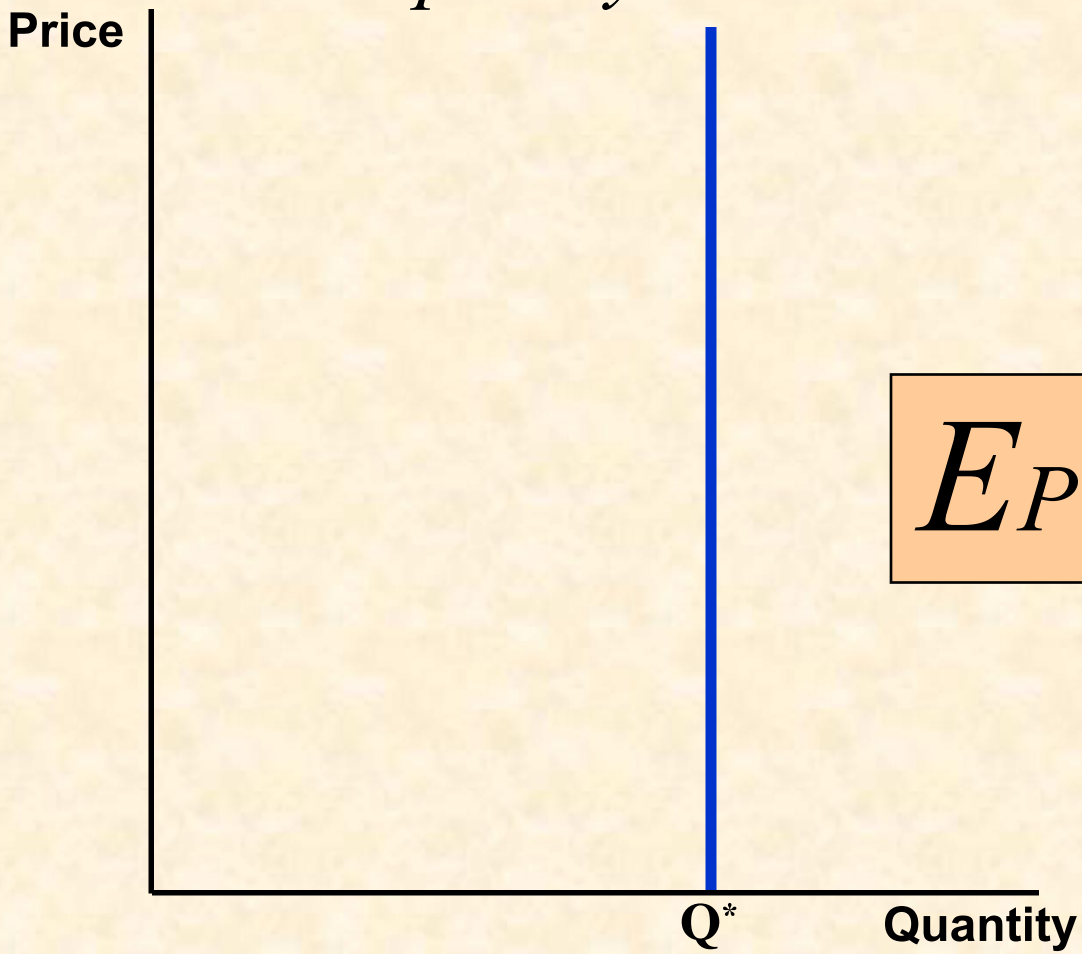
Price Elasticities of Demand



$$E_P = -\infty$$

Price Elasticities of Demand

Completely Inelastic Demand



$$E_P = 0$$

Elasticities of Supply and Demand

Other Demand Elasticities

- Income elasticity of demand measures the percentage change in quantity demanded resulting from a one percent change in income.

Elasticities of Supply and Demand

Other Demand Elasticities

- The income elasticity of demand is:

$$E_I = \frac{\Delta Q/Q}{\Delta I/I} = \frac{I}{Q}\frac{\Delta Q}{\Delta I}$$

Elasticities of Supply and Demand

Other Demand Elasticities

- Cross elasticity of demand measures the percentage change in the quantity demanded of one good that results from a one percent change in the price of another good.

- For example consider the substitute goods, butter and margarine.

Elasticities of Supply and Demand

- The cross elasticity of demand is:

$$E_{Q_bP_m} = \frac{\Delta Q_b/Q_b}{\Delta P_m/P_m} = \frac{P_m}{Q_b}\frac{\Delta Q_b}{\Delta P_m}$$

- The cross elasticity for substitutes is positive, while that for complements is negative.

Elasticities of Supply and Demand

Elasticities of Supply

- **Price elasticity of supply** measures the percentage change in quantity supplied resulting from a 1 percent change in price.
- The elasticity is usually positive because price and quantity supplied are directly related.