

## PARTIAL & GENERAL EQUILIBRIUM ANALYSIS

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### THE MEANING OF EQUILIBRIUM

*Equilibrium* is a situation characterized by a lack of tendency to change. Thus, equilibrium means a state of balance. There are two approaches to equilibrium: Partial and general.

### PARTIAL MARKET EQUILIBRIUM

Partial equilibrium (or Marshallian partial equilibrium) analyzes the market for a single commodity. The supply and demand model originated by Alfred Marshall is the typical example of a partial equilibrium model. For example, in the money market, the interest rate is determined when the demand for savings equals its supply. In the labor market, the wage rate is determined when the demand for labor equals its supply.

Equilibrium analysis in a market involves finding the point where the demand for a particular good matches its supply, resulting in an equilibrium price and quantity. This can be done using two methods: algebraic or graphical.

#### ☑ EXAMPLE 15.1      A LINEAR MODEL

If the demand and supply curve for computers are

$$q_d = 50 - 3p \qquad q_s = 14 + \frac{3}{2}p$$

- Determine the equilibrium price and quantity.
- Suppose the demand function changed to  $q_d = 29 - \frac{1}{6}p$ . Has demand increased or decreased? How can you tell?

## SOLUTION tips

*Algebraic Depiction:*

a) At equilibrium E,  $q_d = q_s$

$$50 - 3p = 14 + \frac{3}{2}p \quad \rightarrow \quad -\frac{9}{2}p = -36 \quad \rightarrow \quad p = 8$$

Then the equilibrium price is

$$\bar{p} = 8$$

The equilibrium quantity is obtained by substituting  $\bar{p}$  into either  $q_d$  or  $q_s$ :

$$\bar{q} = 50 - 3p = 50 - 3(8) = 26 \quad \text{or} \quad \bar{q} = 14 + \frac{3}{2}p = 14 + \frac{3}{2}(8) = 26$$

b) If the demand function changed to  $q_d = 29 - \frac{1}{6}p$ , then at a new equilibrium  $E_2$ ,

$$29 - \frac{1}{6}p = 14 + \frac{3}{2}p \quad \rightarrow \quad -\frac{1}{6}p - \frac{3}{2}p = -15 \quad \rightarrow \quad p = 9$$

Then the new equilibrium price is

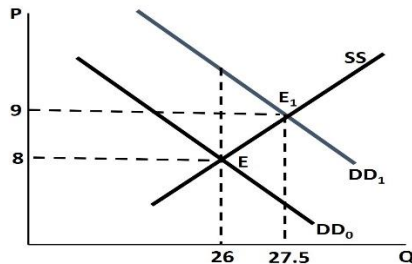
$$\bar{p} = 9$$

The new equilibrium quantity is obtained by substituting  $\bar{p}$  into either  $q_d$  or  $q_s$ :

$$\bar{q} = 29 - \frac{1}{6}p = 29 - \frac{1}{6}(9) = 27.5 \quad \text{or} \quad \bar{q} = 14 + \frac{3}{2}p = 14 + \frac{3}{2}(9) = 27.5$$

It represents an increase in demand. At the same prices, more quantities are demanded.

*Graphical Depiction:*



☑ **EXAMPLE 15.2** NONLINEAR MODEL

Given the following data for widgets:

$$q_d = 4 - 3p$$

$$q_s = 2p^2 - 1$$

Determine the equilibrium price and quantity.

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