

# National Income Determination

# Example 1

Given that

$$G=20$$

$$I=35$$

$$C=0.9Y_d + 70$$

$$T=0.2Y + 25$$

Calculate the equilibrium level of national income

- $Y=C+I+G$

- $Y_d=Y-T$

# Solution

$$Y=C+I+G$$

$$G=20 \quad I=35 \quad C=0.9Y_d + 70 \quad T=0.2Y + 25$$

$$Y=C+35+20=C+55$$

$$Y_d=Y-T = Y - 0.2Y - 25=0.8Y-25 \quad C = 0.9 * (0.8Y - 25) + 70$$

So,

$$Y=C+55=0.9*(0.8Y-25)+70+55$$

$$0.9*(0.8Y-25)+70+55=Y \quad 0.72Y-22.5+125=Y$$

$$Y=102.5/0.28=366$$

## Example 2

- Consider an economy described by the following equations:  $Y = C + I + G$ ;  $Y = 5,000$ ;  $G = 1,000$ ;  $T = 1,000$ ;  $C = 250 + 0.75(Y - T)$ ;  $I = 1,000 - 50r$ .
- In this economy, compute private saving, public saving, and national saving.
- Find the equilibrium interest rate.
- Now suppose that  $G$  rises to 1,250. Compute private saving, public saving, and national saving.
- Find the new equilibrium interest rate.

**private saving** =  $(Y - T) - C$

**public saving** =  $T - G$

**national saving,  $S$**

= private saving + public saving

=  $(Y - T) - C + T - G$

=  $Y - C - G$

## Example 3

- Assume that a technology of production is shown by the production function  $Q = \sqrt{KL}$ . The firm's cost is 36 cur.units in wage rate  $w = 4$  cur.units and rent rate  $r = 6$  cur.units. Find optimum production volume.

# Solution

- $C = w * L + r * K$

$$36 = 4L + 6K \quad K = 6 - \frac{2}{3} * L$$

$$Q^2 = 6L - \frac{2}{3} * L^2$$

$$6 - \frac{4}{3} * L = 0 \quad L = 4.5 \quad K = 3$$

$$Q = \sqrt{(KL)} = 3.65$$