

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

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

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

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

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

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