Simple Keynesian model

Exercise: Simple Keynesian Model

Suppose that the consumption function and investment are:

$$C = 1000 + 0.8\,Y, \qquad I = 500$$

1. Calculate the equilibrium income Y.
2. Calculate the effect of an increase in investment of 500.
3. What is the increase in consumption?

Solution

a) Equilibrium income

At equilibrium, $Y = C + I$, thus

$$Y = (1000 + 0.8\,Y) + 500 \quad \Longrightarrow \quad Y = 1500 + 0.8\,Y \quad \Longrightarrow \quad 0.2\,Y = 1500 \quad \Longrightarrow \quad Y = 7500$$

b) Effect of $\Delta I = 500$

If investment increases to $I' = 500 + 500 = 1000$, the new equilibrium satisfies

$$Y' = (1000 + 0.8\,Y') + 1000 \quad \Longrightarrow \quad Y' = 2000 + 0.8\,Y' \quad \Longrightarrow \quad 0.2\,Y' = 2000 \quad \Longrightarrow \quad Y' = 10000$$

Thus,

$$\Delta Y = Y' - Y = 10000 - 7500 = 2500$$

c) Increase in consumption

Since $C = 1000 + 0.8\,Y$, consumption changes from

$$C = 1000 + 0.8 \cdot 7500 = 7000$$

to

$$C' = 1000 + 0.8 \cdot 10000 = 9000$$

Thus,

$$\Delta C = C' - C = 9000 - 7000 = 2000$$