

## Supervision 4 Goods Market Equilibrium in the Short Run

### Short question (250 words max)

1. An increase in the desire to save could result in a decrease in actual saving. True or false? Explain. [cf Tripos 2000]

### Problems

2. Consider the following macroeconomic model of income determination in a closed economy with a fixed price level:

$$\begin{aligned} Y &= C + I + G \\ C &= C_0 + c(Y - T) \\ I &= I_0 + aY - br \\ T &= \bar{T} \\ G &= \bar{G} \end{aligned}$$

where  $Y$  is national income,  $C$  is planned consumption demand,  $I$  is planned investment demand,  $T$  is taxes,  $G$  is government purchases,  $r$  is the (real) interest rate. In addition,  $C_0 > 0$ ,  $0 < c < 1$ ,  $a > 0$ ,  $b > 0$ , and  $\bar{G} > 0$ . Consider the case in which there is a unique stable equilibrium.

- (a) Give a brief economic interpretation of the equations.
- (b) Show graphically how equilibrium income is determined using the Keynesian cross. What are the conditions for existence of a unique stable equilibrium?
- (c) Derive the multiplier for government purchases. Explain intuitively what determines its size.
- (d) Show graphically and derive algebraically the effect on national income of
  - i. an autonomous improvement of investor sentiment.
  - ii. an autonomous increase in consumer thriftiness.

3. Consider the following macroeconomic model of income determination in a closed economy with a fixed price level:

$$\begin{aligned}Y &= C + I + G \\C &= C_0 + c(Y - T) \\I &= \bar{I} \\T &= \bar{T} \\G &= \bar{G}\end{aligned}$$

where  $Y$  is national income,  $C$  is planned consumption demand,  $I$  is planned investment demand,  $T$  is taxes,  $G$  is government purchases. In addition,  $C_0$ ,  $\bar{I}$ ,  $\bar{T}$  and  $\bar{G}$  are positive constants and  $0 < c < 1$ .

- (a) Derive the government-purchases multiplier and the tax multiplier. Explain intuitively how their magnitudes compare and what determines their size.
- (b) Derive the balanced-budget multiplier, i.e. the effect of an equal increase in both government purchases and taxes ( $\Delta G = \Delta T$ ) on national income. Explain how it compares to the government-purchases multiplier.

Now assume that instead of lump-sum taxes ( $T = \bar{T}$ ), there is an income tax such that  $T = T_0 + tY$ , where  $0 < t < 1$ .

- (c) Derive the government-purchases multiplier. Explain how the income tax acts as an ‘automatic stabilizer’.
- (d) Analyze the effects of an increase in government purchases  $\bar{G}$  if the government maintains a balanced budget.

### Essay (1000 words max)

4. “Keynes changed our view of the world from one in which a saving dog wags an investment tail to one in which an investment dog wags a saving tail.” Discuss.

### Main reading

- Mankiw and Taylor (2014), *Macroeconomics - European Edition*, chapters 11.1, 18.1, 19.3.

### Supplementary references

- Blanchard and Johnson (2012), *Macroeconomics*, chapter 3.
- Harrod (1937), “Mr Keynes and Traditional Theory”, *Econometrica* 5(1), January, pp. 74-86.