

Macroeconomics for Students of Economics (BA) - Problem Set 3

1. [10p] Indicate whether the following statements are true (T) or false (F) or uncertain (U). Explain briefly.

- (a) In a closed economy, GDP can be decomposed in consumption, investment and government spending.
- (b) The largest component of GDP is investment.
- (c) Government spending, including transfers, was equal, on average, to 20.9% of GDP in EU25 in 2008.
- (d) The propensity to consume must be positive but otherwise it can take any positive value.
- (e) Fiscal policy describes the choice of government spending and taxes and is treated as endogenous in our goods market model.
- (f) A government is running a balanced budget if taxes exceed government spending.
- (g) The demand for goods that does not depend on output is called autonomous spending.
- (h) The equilibrium condition for the goods market states that consumption is equal to output.
- (i) An increase of one unit in government spending leads to an increase of more than one unit in equilibrium output.
- (j) An increase in the propensity to consume leads to an increase in output.

2. [10p] Suppose that the economy is characterized by the following behavioral equations.

$$C = 80 + 0.4Y_D, \quad I = 80, \quad G = 80, \quad T = 60$$

Solve for the following variables:

- (a) Equilibrium GDP Y , (b) Disposable Income Y_D , (c) Consumption C .

3. [10p] Use the economy described above.

- (a) Solve for total demand in equilibrium. Does this equal production in equilibrium? Explain.
- (b) Assume that G is now equal to 60. Solve for equilibrium output. How can the government spending multiplier be used in these calculations?
- (c) Assume that G is equal to 60, so output is given by your answer to (b). Compute private plus public savings. Is the sum of private and public savings equal to investment? Explain.

4. [10p] Assume the following behavioral relationship:

$$Y = \frac{1}{1 - c_1} [c_0 + \bar{I} + G - c_1 T]$$

- (a) By how much does Y increase when G increases by one unit?
- (b) By how much does Y decrease when T increases by one unit?
- (c) Why are your answers to (a) and (b) different?
- (d) Suppose that the government starts with a balanced budget and increases both G and T by one unit so that the budget remains balanced. Using your answers to (a) and (b), what is the change in equilibrium GDP? Are balanced budget changes macroeconomically neutral?
- (e) How does the specific value of the propensity to consume affect your answer to (a)? Why?

5. [10p] Suppose now that taxes depend on the level of income such that the economy is characterized by the following behavioral equations:

$$\begin{aligned} C &= c_0 + c_1 Y_D \\ T &= t_0 + t_1 Y \\ Y_D &= Y - T \end{aligned}$$

where G and I are constant. Assume that t_1 is between 0 and 1.

- (a) Solve for equilibrium output.
- (b) What is the multiplier? Does the economy respond more to changes in autonomous spending when t_1 is zero or when t_1 is positive? Explain.
- (c) Why is fiscal policy in this case called an automatic stabiliser?

6. [10p] Assume an economy as described in Problem 4 with fixed investment, i.e. $I = \bar{I}$.
- (a) Suppose now that consumers decide to consume less (and therefore save more) for any amount of disposable income. Specifically, assume that consumer confidence and therefore the marginal propensity to consume falls. What will happen to output?
 - (b) What will happen to investment? What will happen to private saving? What is the effect on consumption?