

Short-Run Fluctuations
Additional Homework Problems
ECON 3133
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1. Consider a closed-economy model given by the following equations:

$$\begin{aligned} Y &= C + I + G \\ C &= 160 + 0.8 \times Y_d \\ Y_d &= (1 - t) \times Y - Z \end{aligned}$$

Investment and government spending are exogenous and each is equal to 200. The tax system has two components: a lump-sum tax denoted by Z and an income tax of rate t .

- a. Assume Z is equal to 200 and t is 0.25. Find the level of income that satisfies spending balance. How much does the government collect in taxes at that level of income? What is the level of government saving?
 - b. Suppose the lump-sum tax is reduced to 100. Find the new level of income that is consistent with spending balance. What is the lump-sum tax multiplier? What are the new levels of tax collections and government saving?
 - c. Comparing your answers in Parts a and b, does the tax cut increase or decrease tax receipts? By how much? Explain why tax receipts do not simply fall by 100 with the cut in lump-sum taxes.
 - d. One of the arguments of “supply-side” economists in the early 1980s was that a tax cut could actually reduce the budget deficit. Can that happen with a lump-sum tax cut in the model used in this problem? Does the spending balance model ignore factors that the “supply-siders” think are important for this problem? If so, name them.
2. Suppose the economy is described by the following simple model:

$$\begin{aligned} Y &= C + G \\ C &= a + b \times Y_d \\ Y_d &= (1 - t) \times Y \end{aligned}$$

- a. Give an expression that relates private saving S_p to disposable income. This is called the saving function.
- b. What is the relationship between private saving and the government budget deficit? (Hint: refer back to the discussion in Chapter 2 concerning the relationship between saving and investment.)
- c. Solve for the values of S_p and the budget deficit; that is, derive an expression for each that is a function only of the exogenous variable G and the constants in the model. Are your expressions consistent with your answer to Part b?

3. For the model given in Problem 1, which of the following statements are true?
 - a. An exogenous increase in net exports (i.e., an increase in g) lowers the trade deficit and the government budget deficit.
 - b. An increase in investment lowers the government budget deficit but raises the trade deficit.
 - c. An increase in government spending and taxes of the same amount leaves both the government budget deficit and the trade deficit unchanged.

4. Imagine an economy in which the government spent all its tax revenues, but was prevented (by a balanced budget amendment) from spending any more; thus $G = t \times Y$, where t is the tax rate.
 - a. Explain why government spending is endogenous in the model.
 - b. Is the multiplier larger or smaller than the case in which government spending is exogenous?
 - c. When t increases, does Y increase, decrease, or stay the same?

5. This question focuses on the differences in the structure of the long-run growth model and the short-run spending balance model introduced here.
 - a. In the long-run model, what exogenous factors determine the level of output?
 - b. In the spending balance model, what exogenous factors determine the level of output?
 - c. In the spending balance model, is employment an exogenous or an endogenous variable? How is the level of employment determined in this model?
 - d. Which of the two models is best described by the statement “Demand creates its own supply”? Which model is best described by “Supply creates its own demand”?