

Econ 522: Intermediate Macroeconomics, Fall 2017
Business Cycle Problem Set 1: Expenditure & the Keynesian Cross

1. Assume that the consumption function C is given by $C = 300 + 0.75(Y - T)$, and that $I = 100$, $G = 100$, and $T = 100$.
 - (a) Graph expenditure as a function of income.
 - (b) Based on the consumption function given above and the definition of marginal propensity to consume, what does the marginal propensity to consume equal here?
 - (c) What is the equilibrium level of income (Y_{e1})? (*Hint*: write out the expenditure function, plugging in the information given above, then set it equal to Y , and solve for Y).
 - (d) For the equilibrium level of income found in part (b), find disposable income ($Y_{e1} - T$), consumption (C_{e1}), and savings (S_{e1}). To find savings, assume all disposable income not used for consumption becomes private savings, and that the difference between tax revenue (T) and government spending (G) becomes public savings. Is savings equal to investment?
 - (e) Calculate the government spending multiplier and the tax multiplier.
 - (f) If G increases to 125, what is the new equilibrium income?
 - (g) What level of G would be needed to get equilibrium income up to 2,000?
2. Again assume that $I = 100$, $G = 100$, and $T = 100$, but that the constant in the consumption function decreases from 300 to 200, so that the consumption function becomes $C = 200 + 0.75(Y - T)$. The constant is sometimes referred to as *autonomous consumption*. It represents a baseline level of consumption that will be observed no matter what level of income is attained. In that sense, it can be thought of as a minimum survival type level of consumption.
 - (a) Draw a graph showing what happens to the expenditure function when autonomous consumption decreases.
 - (b) Find the new equilibrium level of income Y_{e2} . Then, for that level of income, find disposable income ($Y_{e2} - T$), consumption (C_{e2}), and savings (S_{e2}).
 - (c) Did the decrease in autonomous consumption lead to increased savings? Is savings still equal to investment? Did investment change?
 - (d) What assumptions do you think are leading the results in your answers to part (c)? (*Hint*: it might help to consider how the results here differ from those you would get with a decrease in consumption in the Chapter 3 model, and how that model differs from the one applied here.)
3. Use the Keynesian cross to predict the impact of the following on equilibrium GDP. In each case, state the direction of the change, show it on a graph, give a formula for the size of the impact, and explain why that formula gives the size of the impact.
 - (a) An increase in government purchases.
 - (b) An increase in taxes.
 - (c) Equal-sized increases in both government purchases and taxes.
4. Assume that $C = 500 + .8(Y - T)$, that $I = 200 - 5r$, that $G = 100$, and that $T = 100$.
 - (a) Find the equation for expenditure as a function of income Y and interest rate r .
 - (b) If $r = 10$, what is the equilibrium level of income? Choose two additional values of r , and find the level of equilibrium income for each.
 - (c) Use your answers from part (b) to plot three points on the IS curve.