

Chapters 10 and 11

Warnings: The Keynesian Cross/IS/LM model is a model that is perfect for creating extensions and then asking students to incorporate their extensions in the model. A perfect example is to ask what happens when we assume taxes are income based rather than lump-sum based (see problem #5). A second type of question involves determining the difference between a shift of the IS (or LM) curve and a movement along the IS or LM curve. My advice is that you change every possible exogenous variable, and then show what happens in the Keynesian cross, IS/LM, and Money Supply/Demand curves (see problem #4).

B Level Questions

1. Imagine an economy that can be described with the following equations:

$$C = 500 + .8(Y-T)$$

$$I = 200 - 5r$$

$$G = 100$$

$$T = 100$$

- Assuming $r = 10$, what is this economy's equilibrium level of income?
- The spending multiplier describes how much more GDP (income) is created when spending increases by one unit. In the example above, what is the spending multiplier? What does the spending multiplier depend upon?
- Choose different levels of r and plot the IS curve. What is the equation for the IS curve (Hint: You should come up with a mathematical function that r is a function of Y).
- Now imagine that government spending rises from 100 to 200. What has happened to the IS curve?
- How does the IS curve depend upon the spending multiplier?

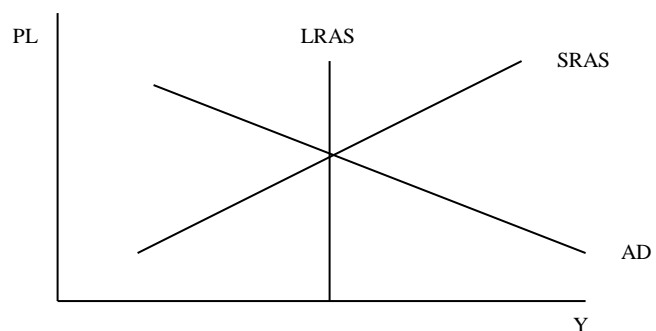
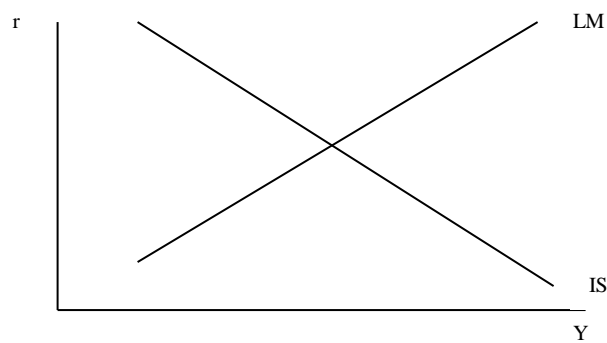
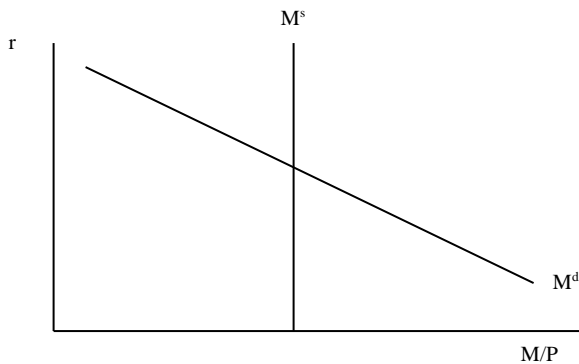
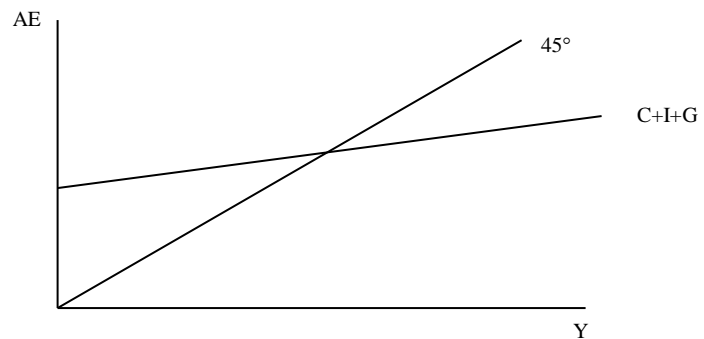
2. Suppose an economy can be described by the following functions:

$$\text{Money Demand} = M^D = 1000 - 100r + .5Y$$

$$\text{Money Supply} = M^S = \frac{1000}{P}$$

- Graph the money supply/money demand diagram. Assume that $Y = 100$ and $P = 1$. What is the equilibrium interest rate?
- Now choose different levels of Y . Graph the LM curve in this economy. What is the equation for the LM curve (Hint: It should be a function of r and Y similar to part b of #1).
- Assume that the Federal Reserve raises the money supply to 1250. How does the LM curve change? How much does it shift? What determines the size of this shift?

3. Combine the LM and IS curves of part c of problem #1 and part b of problem #2.
- What is the economy's equilibrium level of interest rate and income?
 - What is the equation for the aggregate demand curve implied by these equations? (Hint: this is not a linear equation)
 - What happens to the aggregated demand curve if government spending rises from 100 to 200? Find the new equation and verify that the equation matches what you believe happens to the AD curve.
 - Using the original equations, what happens to the aggregate demand curve if the Federal Reserve decreases the money supply from 1000 to 750? Again, find the new equation and verify that the equation matches what you believe happens to the AD curve.
4. Currently the American economy is operating with slow RGDP growth and little inflation. As a matter of fact, a number of professional forecasters have feared the possibility of deflation in the future. Imagine that after a number of interviews given through the New York Times, these forecasters spread the impression that deflation will happen. On the plots below, diagram the impact on the economy of the expectations of future deflation. Label the order of the changes by placing the number 1 next to the first change, the number 2 by the second, etc.



A Level Questions

5. Suppose an economy's consumers, investors, and government can be described by:

$$C = 100 + .9(Y - T) \quad I = 220 - 10r \quad G = 300 \quad T = 300$$

- a. What is the equation for this economy's IS curve?
- b. If $r = 6$, what is the equilibrium level of output demanded?
- c. What happens to the IS curve if government spending increases by 100 from 300 to 400? What happens to the aggregate demand curve given the same change (assume the LM curve is upward sloping)?
- d. In the formulation above, taxes are allocated on a "lump-sum" basis. That is, regardless of an economy's income, taxes are always a given number (like 300). Yet in many countries, taxes are income based rather than lump-sum based (for instance, in the U.S. we pay a fraction of our income rather than a lump sum in taxes). Let's imagine that for every dollar earned, consumers pay a fraction of their income τ in taxes where $0 < \tau < 1$. In other words, the consumption function is now $C = 100 + .9(1 - \tau)Y$ rather than $C = 100 + .9(Y - T)$. If $\tau = .1931$, what is this economy's equilibrium level of output demanded (assume $G = 300$, $r = 6$, and investment demand remains as before).
- e. How does the IS curve's slope differ under a lump sum tax versus an income tax? What implications does this have if the Federal Reserve wants to stimulate the economy through monetary policy?
- f. How does the aggregate demand curve differ under a lump sum tax versus an income tax?

Do problems and applications #1-#5 on pp. 279-280.

Do problems and applications #1-#8 on pp. 305-306.

Do problems and applications #1 on p. 311.