

1. Suppose that the demand for money (holding income and prices constant since we are not going to be concerned with them) is $M = 200 - 10i$, where i is measure in percentage points (i.e. 2, not 0.02). Households desire a currency/deposit ratio of $1/9$ and banks want to hold $1/9$ of their deposits in the form of reserves.

- a. What is the money-supply multiplier?
- b. If the equilibrium interest rate is 5%, what must the money supply and the monetary base be?
- c. Assuming that the currency/deposit ratio and reserve/deposit ratio do not depend on the interest rate, what is the “derived demand” equation for the monetary base? [Hint: this is tricky. You might start by determining separate demand equations for deposits and currency, given the public’s desired distribution of total money held. Then determine a demand for reserves based on the demand for deposits and banks’ desired reserve ratio.]
- d. Graph this demand equation with the base on the horizontal axis and the interest rate on the vertical axis. Show the initial point of equilibrium.
- e. Show in equations and on your graph what would happen to the demand for the monetary base if banks’ reserve ratio were to double.
- f. What would happen to the interest rate and the money supply if the central bank held the base constant when the reserve ratio increased?
- g. What would happen to the base and the money supply if the central bank held the interest rate constant when the reserve ratio increased?
- h. Which of the above policies would more effectively preserve macroeconomic stability in the face of a shock to bank reserve-holding behavior?

2. Suppose that we change the Keynesian multiplier model of Section 10.2 by recognizing that the amount of taxes collected depends on aggregate income. Let $T = tY$, where t is the tax rate and is set exogenously by the government. Derive a new formula for the multiplier using the methods in Box 10.1 and Box 10.2. Is the multiplier larger or smaller than when taxes are fixed? Why?

3. Describe the difference in the assumptions about central-bank behavior that are embodied in the LM curve and the TR curve. Which one seems more realistic? Which one seems more desirable and why?

4. How (if at all) would each of the following shift the IS , LM , and/or TR curves? Explain your answers and show the effect that the change would have on equilibrium output and the interest rate.

- a. An increase in income taxes (assuming that Ricardian equivalence does not hold perfectly).
- b. An increase in income taxes (assuming that Ricardian equivalence does hold perfectly).
- c. An increase in the monetary base (not TR).
- d. An increase in inflation (not LM).

- e. An increase in banks' reserve/deposit ratio as in the previous problem.
- f. A fall in the expected profitability of future capital.
- g. An increase in the popularity of U.S. goods abroad due to a fall in the exchange rate.
- h. A decline in expected future income due to forecasts of a recession.
- i. A decrease in the demand for money due to the spread of ATMs.

5. Based on the model of Chapter 10, how would a recession in Europe affect the U.S. economy? Use graphs to demonstrate your answer. (Note that we will refine this answer in subsequent chapters.)

6. The Solow model and the *IS/LM* (or *IS/TR*) model both discuss the determination of real GDP. They are very different. Does it make sense to have two completely different theories explaining the same variable? Discuss.

7. Describe how the preferences of central banks affect the slope of the *TR* curve. What would the *TR* curve look like for an "inflation hawk" central bank that worried most about inflation? What would the *TR* curve look like for a central bank that was more focused on stabilizing business cycles? Explain.