

Homework #10

problems #7, 8 and 9 from Ch. 15, p. 337 of Mankiw *Principles...* (2nd ed.)
problem #13 from Ch. 16, p. 337 of Mankiw *Principles...* (2nd ed.)
and one of my own

7. You take \$100 you had kept under your pillow and deposit it in your bank account. If this \$100 stays in the banking system as reserves and if banks hold reserves equal to 10 percent of deposits, by how much does the total amount of deposits in the banking system increase?
8. The Federal Reserve conducts a \$10 million open-market purchase of government bonds. If the required reserve ratio is 10 percent, what is the largest possible increase in the money supply that could result? Explain. What is the smallest possible increase? Explain.
9. Suppose that the T-account for First National Bank is as follows:

Assets		Liabilities	
Reserves	100,000	500,000	Deposits
Loans	400,000	0	Net Worth
Total	500,000	500,000	Total

- a. If the Fed requires banks to hold 5 percent of deposits as reserves, how much in excess reserves does First National Bank now hold?
- b. Assume that all other banks hold only the required amount of reserves. If First National decides to reduce its reserves to only the required amount, by how much would the economy's money supply increase?
13. Explain whether the following statements are true, false or uncertain.
- a. "Inflation hurts borrowers and helps lenders, because borrowers must pay a higher rate of interest."
- b. "If prices change in a way that leaves the overall price level unchanged, then no one is made better or worse off."
- c. "Inflation does not reduce the purchasing power of most workers."

(continued on the next page)

Do this too!

Suppose that the demand for real money balances is given by:

$$\frac{M}{P} = 100 - 100 \cdot (r + \pi^e) + Y \quad \text{where: } \begin{cases} M = \text{quantity of money available} \\ P = \text{price level} & \pi^e = \text{expected inflation rate} \\ r = \text{real interest rate} & Y = \text{income} \end{cases}$$

- a. Assume that $Y = 50$. Graph the demand for real money balances by placing real money balances on the horizontal axis and placing the nominal interest on the vertical axis.
- b. Suppose that $M = 12,000$ and $P = 100$. On the same graph, draw the supply of real money balances. What is the equilibrium nominal interest rate? If $\pi^e = 0$, what is the real interest rate?

For the remainder of the problem, assume that this value of the real interest rate corresponds to the normal rate of return on capital.

- c. Now suppose that income increases to $Y = 75$, while the supply of real money balances remains unchanged. What is the new equilibrium nominal interest rate?
- d. Now suppose that the Fed is unhappy with the increase in the nominal interest rate that it has just observed. If it increases the money supply to $M = 15,000$ and if the price level remains unchanged, what will the new nominal interest rate be?

Now suppose that people believe that the increase in the money supply will cause prices to rise. Specifically, the money supply has increased 25 percent, so people believe the price level will increase 25 percent (i.e. $\pi^e = 0.25$).

- e. Using the value of the real interest rate that you found in part a. of this problem, calculate the value to which the nominal interest rate will converge.
- f. If the money supply and income remain unchanged, then how will the money market converge to this value of the nominal interest rate? Do you see any interesting relationships among the values you calculated?