1 Review Questions

1. What is the significance of the zero lower bound on nominal interest rates?

2. The U.S. M1 money multiplier nearly fell in half between mid-2008 and mid-2009. Why do you think this was the case? Given that the Fed has expanded its balance sheet considerably since mid-2008, what is the significance of this collapse in the money multiplier?

2 The Reserve-Deposit Ratio and IS-LM
Based on ABE Ch. 14 NP #3

When the real interest rate increases, banks have an incentive to lend a greater portion of their deposits, which reduces the reserve-deposit ratio. Suppose that $\rho = 0.4 - 2r$, where $\rho$ is the reserve deposit ratio and $r$ is the real interest rate. The currency-deposit ratio, $c$, is 0.4, the price level is fixed at 1.0, and the monetary base in 60. Real money demand is given by $L(Y, i) = 0.5Y - 10i$, where $Y$ is real output and $i$ is the nominal interest rate. Assume $\pi^e = 0$.

a) If $i = 0.1$, what are the reserve-deposit ratio, the money multiplier, and the money supply? For what real output, $Y$, does a real interest rate of 0.1 clear the asset market?

b) What should we expect to happen to our monetary economy if the interest rate drops? Repeat Part (a) for $i = 0.05$.

c) Suppose that the reserve-deposit ratio is fixed at the value you found in Part (a) and isn’t affected by interest rates. If $i = 0.05$, for what output, $Y$, does the asset market clear in this case?

d) Is the LM curve flatter or steeper when the reserve-deposit ratio depends on the real interest rate than when the reserve-deposit ratio is fixed? Explain your answer in economic terms and illustrate with a graph.
3 The Taylor Rule  
Based on ABE Ch. 14 NP #4

Suppose the current price level is 149.2 and one year ago the price level was 147.3. Output is currently $12,892.5 and potential output is $13,534.2 (both billions of $2005 dollars). The Federal Reserve has been adhering to the following Taylor-style policy rule for the Federal funds rate:  
\[ i = \pi + 0.02 + 0.5y + 0.5(\pi - 0.02), \]

where

- \( i \) is the nominal Federal funds rate
- \( \pi \) is the rate of inflation over the previous four quarters
- \( y = (Y - \bar{Y}) / \bar{Y} \) is the percentage deviation of output from potential.

a) What value of the Federal funds rate would the Fed choose if it continues following the Taylor rule above?

b) Suppose that one year later, the price level has declined by 0.4%, output has declined by 1.3%, and potential output has increased by 3%. In this new situation, what value of the Federal funds rate would the Fed choose if it adheres to the Taylor rule above? What is the problem with setting the Federal funds rate to follow the Taylor rule in this case?

c) What could the Fed do to surmount the obstacle faced in Part (b)?