Econ 522: Intermediate Macroeconomics, Fall 2017
Business Cycle Problem Set 2: IS-LM Model

1. Suppose that the money demand function is:

$$\left(\frac{M}{P}\right)^d = 1,000 - 100r$$

where r is the interest rate in percent. The money supply M is 1,000 and the price level P is 2.

(a) Graph the supply and demand for real money balances.

(b) What is the equilibrium interest rate?

(c) Assume that the price level is fixed. What happens to the equilibrium interest rate if the supply of money is raised from 1,000 to 1,200?

(d) If the Fed wishes to raise the interest rate to 7 percent, what money supply should it set?

2. The following equations describe an economy:

$$\begin{cases} Y = C + I + G & (M/P)^d = Y - 20r \\ C = 120 + 0.5(Y - T) & M = 600 \\ I = 100 - 10r & P = 2 \\ G = 50 & T = 40 \end{cases}$$

(a) Identify each of the variables and briefly explain their meaning.

(b) Use the relevant equations to derive the IS curve. Graph the IS curve on an appropriately labeled graph.

(c) Use the relevant equations to derive the LM curve. Graph the LM curve on the same graph used in part (b).

(d) What are the equilibrium level of income and the equilibrium interest rate?

3. Consider the following economy:

(a) Consumption is described by: $C = 200 + 0.75(Y - T)$. Investment is described by: $I = 200 - 25r$. Government purchases and taxes are both 100. Graph the IS curve for this economy for r ranging from 0 to 8.

(b) The money demand function is: $\left(\frac{M}{P}\right)^d = Y - 100r$. The money supply M is 1,000 and the price level P is 2. Graph the LM curve for r ranging from 0 to 8.

(c) Find the equilibrium interest rate r and the equilibrium level of income Y.

(d) If the government increased purchases from 100 to 150, what would happen to the IS curve? Find the new equilibrium interest rate and level of income.

(e) If instead the money supply increased from 1,000 to 1,200, what would happen to the LM curve? Find the new equilibrium interest rate and level of income.

(f) With the initial values for monetary and fiscal policy variables, what would happen if price level increased from 2 to 4? Find the new equilibrium interest rate and level of income.