Problem Set #4

1. Some economists blame the onset of the Great Depression on an autonomous decline in spending, principally on construction spending. Others attribute it to a sharp decline in the money supply. Illustrate these explanations diagramatically and explain what simple fact you would look at to distinguish between them (ie. how could you decide which theory was correct?).

2. Suppose the Fed reduces the money supply by 5%. Assume the velocity of money is constant.
   a. What happens to the aggregate demand curve?
   b. What happens to the level of output and the price level in the short run and in the long run? Give precise numerical answers.
   c. In light of your answer to part b, what happens to unemployment in the short run and in the long run according to Okun’s law? Again, give a precise numerical answer.
   d. What happens to the real interest rate in the short run and in the long run? Consider the model of the real interest rate in Chapter 3 to see what happens when output changes.

3. While we often assume that taxes are a fixed amount, most countries levy some taxes that rise automatically with national income. In the United States we have an income tax and a payroll tax. Let’s represent the tax system by writing tax revenue as
   \[ T = \bar{T} + tY \]
   where \( \bar{T} \) and \( t \) are parameters of the tax code. The parameter \( t \) is the marginal tax rate: if income rises by $1, taxes rise by \( t \times $1 \).
   a. How does this tax system change the way consumption responds to changes in GDP?
   b. In the Keynesian cross, how does this tax system alter the government purchases multiplier?
   c. In the IS-LM model, how does this tax system alter the slope of the IS curve?

4. According to the IS-LM model, what happens in the short run to the interest rate, income, consumption, and investment under the following circumstances? Be sure your answer includes an appropriate graph.
   a. The central bank increases the money supply.
   b. The government increases government purchases.
   c. The government increases taxes.
   d. The government increases government purchases and taxes by equal amounts.

5. Use the IS-LM model to predict the short-run effects of each of the following shocks on income, the interest rate, consumption, and investment. In each case, explain what the Fed should do to keep income at an initial level. Be sure to use a graph in each of your answers.
   a. After the invention of a new high-speed computer chip, many firms decide to upgrade their computer systems.
   b. A wage of credit card fraud increases the frequency with which people make transactions in cash.
   c. A best-seller titled Retire Rich convinces the public to increase the percentage of their income devoted to saving.
   d. The appointment of a new “dovish” Federal Reserve chair increases expected inflation.
6. Use the Mundell-Fleming model to predict what would happen to aggregate income, the exchange rate, and the trade balance under both floating and fixed exchange rates in response to each of the following shocks. Include an appropriate graph in your answer.
   a. A fall in consumer confidence about the future induces consumers to spend less and save more.
   b. The introduction of a stylish line of Toyotas makes some consumers prefer foreign cars over domestic cars.
   c. The expansion of automatic teller machines reduces the demand for money.

7. Use the Mundell-Fleming model to answer the following questions about the state of California (a small open economy).
   a. What kind of exchange rate system does California have with its major trading partners (Nevada, Oregon, Washington, Colorado, etc)?
   b. If California suffers from a recession, should the state government use monetary or fiscal policy to stimulate employment? Explain. (Assume that Sacramento can print dollar bills).
   c. If California prohibited the import of wines from the state of Washington, what would happen to income, the exchange rate, and the trade balance? Consider both the short run and the long run impact.
   d. Can you think of any important features of the California economy that are different from, say, the Canadian economy, making the Mundell-Fleming model less useful when applied to California than to Canada?

_Due Thursday 4 April_