Problem Set #2

1. Assume we have a constant returns to scale production function \( Y = L^{\alpha}K^{\beta} \) where \( \alpha + \beta = 1 \). Show that \( Y = WL + RK \) where \( W = MP_L = \frac{\partial Y}{\partial L} \) and \( R = MP_K = \frac{\partial Y}{\partial K} \).

2. To increase tax revenue in 1932, the U.S. government imposed a 2-cent tax on checks written on bank account deposits. (This is about 35 cents in current dollars).
   a. How do you think the check tax affected the currency-deposit ratio? Explain.
   b. Use the model of the money supply under fractional-reserve banking to discuss how this tax affected the money supply.
   c. Many economists believe that the falling money supply was in part responsible for the severity of the Great Depression. From this perspective, was the check tax a good policy to implement in 1932?

3. Explain how each of the following events affects the monetary base, the money multiplier, and the money supply.
   a. The Federal Reserve buys government bonds in an open market operation.
   b. The Fed increases the interest rate it pays banks for holding reserves.
   c. The Fed reduces its lending to banks through its Term Auction Facility.
   d. Rumors about a computer virus attack on ATM machines increase the amount of money people hold as currency rather than demand deposits.
   e. The Fed flies a helicopter over Dodger Stadium and drops newly printed $100 bills.

4. Suppose a country has a money demand function \((M/P)^d = kY\), where \( k \) is a constant parameter. The money supply grows by 12 percent per year, and real income grows at 4 percent per year.
   a. What is the average inflation rate?
   b. How would inflation be different if real income growth were higher? Explain.
   c. How do you interpret the parameter \( k \)? What is its relationship to the velocity of money?
   d. Suppose, instead of a constant money demand function, the velocity of money in this economy was growing steadily because of financial innovation. How would that affect the inflation rate? Explain.

5. Use the model of the small open economy to predict what would happen to the trade balance in response to each of the following for the country of Lilliput. Explain.
   a. A fall in consumer confidence about the future induces consumers to spend less and save more.
   b. A tax reform increases the incentive for businesses to build new factories.
   c. The central bank doubles the money supply.
   d. The government of Lilliput decreases government spending.

6. Oceania is a small open economy. Suppose that a large number of foreign countries begin to subsidize investment by instituting an investment tax credit (while adjusting
other taxes to hold their tax revenue constant), but Oceania does not institute such an investment subsidy.

a. What happens to world investment demand as a function of the world interest rate?
b. What happens to the world interest rate?
c. What happens to investment in Oceania?
d. What happens to Oceania’s trade balance?

*Due Thursday 14 February*