PROBLEM SET 2

DUE AT THE BEGINNING OF LECTURE, MARCH 5

You may work together on the problems, but you should try each question yourself first, and the answers must be written up in your own words. For all questions be sure to explain your answers carefully and to use graphs whenever appropriate.

1. Describe how, if at all, each of the following developments affects real output, the exchange rate, and net exports in the short run. Assume the central bank is following an interest rate rule.
   a. The discovery of new investment opportunities causes investment demand to be higher at a given interest rate than before.
   b. The central bank changes its monetary policy rule so that it sets a lower real interest rate at a given level of output than before.
   c. The demand for money increases (that is, consumers’ preferences change so that at a given level of i and Y they want to hold more real balances than before).

2. Suppose that many foreign central banks tighten their monetary policies, so that real interest rates abroad rise.
   a. How would you expect this change to affect the $CF(r)$ function in the United States? Why?
   b. How would the change affect output and the real interest rate in the short run? Explain.
   c. How would the change affect net exports, and the real exchange rate in the short run? Explain.

3. Consider our usual IS-MP-IA model, starting in long-run equilibrium. Suppose that potential output falls because of reduced productivity.
   a. How, if at all, would this change show up in the IS-MP diagram in the short run?
   b. What will be the impact of the fall in $\bar{Y}$ on output and inflation in the long run?

4. Explain in a few sentences, without using any math, what is wrong with the following argument: “I obtained annual data on money growth and output growth, and then estimated the OLS regression $\Delta \ln Y_t = a + b\Delta \ln M_t + u_t$. After running the regression, I computed the correlation between money growth ($\Delta \ln M_t$) and the regression residual ($\hat{u}_t$, defined as $\Delta \ln Y_t - [\hat{a} + \hat{b} \Delta \ln M_t]$), where $\hat{a}$ and $\hat{b}$ are the coefficient estimates from the regression). It was exactly zero. Thus, since there is no correlation between the right-hand side variable and the residual, I know that my regression does not suffer from omitted-variable bias.”

5. Label the following statement as True, False, or Uncertain, and explain your answer briefly: “The gold standard played little role in the Great Depression.”

6. The Bureau of Economic Analysis measures GDP in two different ways: as total expenditure on the economy’s output of goods and services and as the total income of everyone in the economy. Since – as you learned in earlier courses – these two things are
the same, the two approaches should give the same answer. But in practice they do not.

For the period 2006:Q4–2012:Q4, get quarterly data on real GDP measured on the expenditure side (referred to in the National Income and Product Accounts as “Real Gross Domestic Product, chained dollars” – these are the headline GDP numbers you will see discussed in the news) and real GDP measured on the income side (referred to as “Real Gross Domestic Income, chained dollars”).

a. Describe where you found the data.
b. Compute the growth rate at an annual rate of each of the two series by quarter for 2007:Q1–2012:Q4.
c. Describe any two things you see when you compare the two series that you find interesting, and explain why you find them interesting.

(Notes: (1) The BEA will update the most recent GDP data on Thursday, Feb. 28. Thus, wait until then before doing this problem. (2) See Problem Set 1 for how to compute a growth rate at an annual rate.)

Pick the best answer to each of questions 7-9. No explanations of your answers are needed.

7. Suppose that initially $Y > \bar{Y}$. As the economy moves to long-run equilibrium:
   a. Inflation rises.
   b. Output falls.
   c. The real interest rate rises.
   d. (a) and (b).
   e. All of the above.

8. In the extension of the IS–MP–IA model to include the zero lower bound, the “kink” in the AD curve occurs at:
   a. The inflation rate given by the IA curve.
   b. The inflation rate that causes the IS and MP curves to intersect at the “kink” of the MP curve.
   c. $Y = \bar{Y}$.
   d. $\pi = 0$.
   e. (c) and (d).

9. The fact that inflation has not fallen very much since 2007 despite the fact that unemployment has been very high over that period could be the result of any of the following except:
   a. Inflation expectations are “anchored.”
   b. The normal or natural rate of unemployment has risen substantially.
   c. The Federal Reserve is constrained by the zero lower bound.
   d. There have been inflation shocks acting to increase the inflation rate.