1. The spreadsheet sent to the class list-serve on Nov. 13 shows the relationship between income and aggregate expenditures, holding all other things (including prices) fixed.
   a. According to the values in the chart, what is the current level of equilibrium spending/income? Why?

   2000, since only at this level does aggregate desired spending equal aggregate income. For any other level, spending and income diverge, which leaves incentives for production and income to change.

   b. Suppose something occurs to cause investment spending to rise to 700 at all levels of income (change the value for investment in row 2 from 300 to 700). What is the new level of equilibrium income?

   \[ Y = 3000. \]

   c. What is the relationship between the change in equilibrium income and the initial change in investment?

   The initial change in investment is 400; the change in income is 1000. Thus, there is a multiplier effect – for every $1 change in spending, income changes by $2.5.

2. The Fed’s current target for the federal funds rate is 1.25%.
   a. Assume that the actual federal funds rate currently equals the Fed’s target. Now assume that the demand by banks to hold reserves increases. How will the Fed respond in the open market (i.e. will it buy t-bills or sell t-bills) to keep the actual interest rate equal to the target rate? Illustrate your answer using a graph of the market for bank reserves.

   If the demand for reserves increases, the demand shifts right, putting upward pressure on the fed funds rate. To maintain the current rate of 1.25%, the Fed will buy t-bills, leading to an increase in the supply of bank reserves.

   b. Suppose the Fed observes the inflation starting to rise. According to the policy rule discussed in class, how will the Fed alter its target fed funds rate? Will the Fed buy or sell t-bills on the open market to implement this change? Illustrate.
The Fed will act to raise its fed funds rate target, because in general it takes inflation as a signal of too much spending. Note that it will raise its target more than the rise in inflation. To implement this policy change, the Fed will sell t-bills on the open market, reducing reserves.

3. According to the aggregate fluctuations model discussed in class, changes in the rate of inflation affect aggregate demand because of how the Fed responds to inflation. Complete the following description of the AD curve: “Suppose the rate of inflation decreases. The Fed responds by lowering its target federal funds rate by more than the change in inflation. The real interest rate thus falls. This causes the aggregate expenditure schedule (E) to shift up, and therefore the level of income demanded (Y) to rise. Note that the change in demand is greater than the shift in E. In sum, all this describes a negative relationship between inflation and aggregate demand, and a movement along the aggregate demand curve.” Repeat the above for an increase in inflation.

4. Describe how each of the following affects the aggregate demand curve.
   a. A decrease in government purchases
      Shifts to the left.
   b. A decrease in tax revenues according to the i) conventional view of tax policy; ii) Ricardian view of tax policy.
      i) shifts to the right; ii) does not shift.
   c. An upward shift in the Fed’s monetary policy rule.
      An upward shift means that the nominal interest rate target will rise for any given rate of inflation; thus the real interest rate will also rise and spending will fall. The AD curve will shift to the left.

5. Assume the economy is initially at its full-employment level of real output (GDP) at some given rate of inflation.
   a. Use the aggregate fluctuations model to describe the effects on GDP and inflation of a permanent increase in government expenditures in the short-run and the long-run, assuming the Fed allows its target rate of inflation to adjust to the new level (that is, the Fed doesn’t shift its policy rule).

      A permanent increase in G will shift the AD curve to the right, causing gdp to immediately increase. Eventually, the rate of inflation will rise. As inflation rises, the Fed raises its target interest rate more than one-for-one, so that real rates fall. This causes spending, and hence output, to fall at the higher rate of inflation. Inflation will continue to rise, and output to fall, as long as output exceeds its potential (full employment) level.
b. At the new long-run equilibrium, will the real interest rate be greater than or less than its initial level? What about consumption and investment? Is your answer consistent with the predictions of the spending shares model discussed earlier?

The real interest rate will be greater than when it started. Consumption and investment will be lower than before the shift, because of the higher real interest. This is exactly the same prediction from the spending shares model of the loanable funds market.

6. Suppose the Fed’s target federal funds rate is 1.75%. At its current meeting, the FOMC observes that the rate of inflation has held steady over the past few months, but that it is likely that real GDP is below its potential level.
   a. How could the Fed alter its monetary policy rule to bring output back to its full-employment level? Explain using the aggregate fluctuations model.

The Fed could lower its policy rule (shift it downwards). This would reduce real rates at the current inflation rate and shift the aggregate demand curve to the right. This would lead to an immediate increase in production.

b. What if the economists providing information to the FOMC are wrong – output is actually equal to its potential level, not below it. What would happen to output and inflation if the Fed acts as in part (a)?

The AD curve would still shift to the right, but now output would grow, exceeding its full employment level. Inflation would rise, and output would fall back to its potential level, ultimately.

7. When is deflation a “good” thing, and when is it a “bad” thing?

Inflation is good when it is due to increases in potential output, due perhaps to technological advances. Inflation is bad when it is due to decreases in aggregate demand.