1. Suppose banks act to keep 15% of their checking account deposits in liquid reserves. In an economy in which M1 consists only of checking accounts (there is no currency that circulates), what effect does an open market purchase by the Fed of $10,000 worth of government securities have on the money supply? An open market sale of the same amount? Does it matter if the purchase or sale is from or to an individual (like you or me) or a bank? (We didn’t discuss this in class, but think about it.)

The open market purchase increases reserves in the banking system by $10,000. Given the desired reserve ratio of 15%, this additional amount of reserves can support additional checking account deposits in banks of $66,667. (Total bank loans in the system will rise by $56,667.) Since checking accounts are the only source of money in this hypothetical economy, the money supply will rise by $66,667. An open market sale of securities would reduce the money supply by $66,667. The effects of the open market operation on the money supply do not depend on who the other party to the transaction is: if the Fed purchases a t-bill from a person, the person will typically deposit the payment received into a bank, thereby increasing bank reserves.

2. Using simplified balance sheets for the public sector, the banking system, and the Fed, show that gold plays no role in supporting the US money supply.

A simple balance sheet will show that government securities ultimately support the medium of exchange (checking accounts and currency), not gold.

3. Predict the effect of the following external events on real wages, employment, full-employment output, the real interest rate, private saving and investment, in the long run. In making your prediction, assume all other external factors remain the same.

a. An increase in taxes, under the conventional view of government finance.

Under the conventional view, an increase in taxes will reduce the demand for loanable funds. Interest rates fall, investment rises, and private saving falls. There will be no effect on wages, employment and full employment output. (There will be no effect on the price level.)

b. An increase in taxes, under the Ricardian view of government finance.

Private saving will decrease by the amount of increase in taxes. There will be no change on any of the other variables.
c. An increase in capital goods.

An increase in the stock of capital will increase the marginal product of labor and will shift the production function up. The demand for labor will increase, causing real wages and employment to rise. The higher level of employment causes output to rise (as we move along the higher production function). The higher level of output generates income for households, who increase saving, thereby shifting the supply of loanable funds to the right. Interest rates fall, inducing firms to increase investment. Private (and national) saving will rise. (Because output rises in the long-run, if money and velocity are constant, the price level will fall.)

d. An increase in stock prices.

An increase in stock prices will likely make households feel wealthier, so that they will likely increase consumption and decrease saving given their income. Thus, the supply of loanable funds falls, raising interest rates and lowering investment. There will be no effect on the labor market, output or the price level.

e. An increase in government spending.

The demand for loanable funds will shift to the right, increasing the interest rate and reducing investment (and consumption). Private saving will rise because of the higher rate, but national saving will fall because the increase in government spending will be greater than the increase in private saving.

f. A decrease in the labor force participation rate.

Labor supply will shift to the left, raising wages and reducing employment. Output will fall as employment falls. The supply of loanable funds falls as saving falls with the decline in output/income, raising interest rates. Investment falls. (The price level will rise as output falls, given money and velocity.)

4. Carefully describe how Federal Reserve monetary policy, and its concern for controlling the rate of inflation, can lead to a downward sloping aggregate demand curve; i.e., a negative relationship between the rate of inflation and desired aggregate spending.

Typically, if the Fed observes that inflation is increasing, it interprets this as a sign that there is excess aggregate spending (which is driving prices up). It responds to the higher inflation by “raising interest rates”; i.e. it acts to reduce bank reserves (by selling government securities on the open market), leading to an excess demand for money and an increase in nominal interest rates (in the short-run). The Fed will cause nominal rates to rise by more than the increase in the rate of inflation, so that real rates rise. As real interest rates rise, aggregate demand (the desired spending of households and firms) will fall. Thus, the Fed’s response to higher inflation causes
aggregate demand to fall; hence, a downward sloping aggregate demand curve. (If inflation decreases, everything would move in the opposite direction.)

5. Suppose the US economy is in long-run equilibrium, where the inflation rate is 2%. The Fed, however, fears that inflationary pressures are building, so it immediately tightens its policy, even before inflation changes. Use graphs if they help.

a. Explain the effect this policy change will have on the macro economy in the short-run and the transition to the long-run.

The immediate effect of the Fed’s action to tighten monetary policy (i.e. raise its target interest rate by shifting its reaction function upward/leftward) is to reduce aggregate spending at the current rate of inflation; i.e. the aggregate demand curve shifts to the left. If the economy indeed begins in full-employment, the shift to the left in AD causes output to fall below its full-employment level while inflation remains at 2% (remember that in the short-run with ‘sticky’ inflation, firms respond to a reduction in aggregate demand by reducing output). But gradually, since the economy now experiences a recession (a recessionary gap) and cyclical unemployment, inflation begins to fall. As inflation falls, then the quantity of aggregate spending will rise as the Fed begins to loosen its policy (reduce rates). If the Fed continues to move down along its new reaction function, rates will decline and demand will rise until output returns to full-employment at an inflation rate lower than 2%. Thus, over the short-run, the Fed sends the economy into a recession, but only inflation falls in the long-run.

b. Suppose the Fed wants to maintain an inflation rate of 2% in the long-run. How will that affect your answer to part (a)?

When the Fed observes that the economy has settled into a new full-employment equilibrium at a lower inflation rate, but wants the inflation rate to rise back to 2%, it must stimulate aggregate demand by reducing real interest rates. This will initially lead to an expansion in which output exceeds its full-employment level. Inflation will rise. If the Fed increases aggregate demand by the correct amount, inflation will gradually get back to 2%.