Class Outlines
October 16 and October 18, 2001

October 16, 2001

I. Review (AS relationship is determined from equilibrium in the labor market.)

II. How does an economy adjust to full employment output?

a. We have defined full employment output as the output level at which expected prices coincide with actual prices. When expected prices are higher than actual prices (where the AS and AD curve meet), then an economy is operating below its long run potential. We will associate this with a recession. Adjustment occurs over time:
   i. We *assume* that the expected value of the price level tomorrow is simply today's price level. We write $P_t^e=P_{t-1}$ meaning that our expectation of the price level at time t is simply the price level observed at time t-1.
   ii. If $P_t^e>P_t$ (again the expected price level is above the actual price level, both at time t) then agents have overestimated inflation. Next period, we will make a new estimate. Our new estimate will be lower. Specifically, our estimate of tomorrow's price level will simply be today's price level.
   iii. A decrease in the expected price level implies that producers can pay workers less (recall wages and the expected price level are directly related). This leads to an increase in the aggregate supply curve. The new aggregate supply curve pass through the current price level. At a lower price level, the real stock of money has increased. This causes an increase in the LM curve, which corresponds to a point of higher equilibrium output.
   iv. We still overestimate inflation (This is easier to see graphically. Refer to page 132 which illustrates the opposite effect, e.g. the economy is initially operating above full employment). Next period we readjust our expectations downward. This causes a further shift in aggregate supply. Again, the new equilibrium price level falls causing the LM curve to shift out to the right.
   v. Eventually, the aggregate supply curve shifts to the point at which aggregate supply and aggregate demand meet at a point in which the expected price level and actual price level coincide. We are back at full employment. Notice these affects take time.

b. The use of monetary policy. *Note the following analysis is much clearer with the aid of graphs. Refer to pages 134-136.*
    i. Consider an economy operating at full employment. Expansionary monetary policy increases the money supply. We know this causes a shift in the LM curve. As the LM curve shifts, the point of equilibrium output at every price level increases. Of course, this indicates a shift in AD.
    ii. Initially, the increase in AD causes equilibrium output and prices to increase. As prices increase, the real stock of money declines, causing the LM curve to contract slightly.
    iii. We are now producing at a point above full employment output. This implies that the expected price level is now below the actual price level. In a manner similar to what we described above, agents will readjust their expectations. Since agents perceived a price level that was low, they will now guess a higher price level. This causes a decrease in AS. Eventually aggregate supply shifts to the point where it meets AD at full employment output. As the AS curve declines, price rise. As prices increase, the LM curve shifts back to its initial position.
    iv. From above, the only affect of monetary policy is a higher price level. Monetary policy does not impact output or interest rates in the medium run. This phenomenon is referred to as *the neutrality of money.*

c. Expansionary fiscal policy. *As above, this analysis is much clearer with the use of graphs. Refer to pages 137-140.*
    i. Suppose an economy is operating at full employment. Suppose that we desire to cut the budget deficit. As we saw before, we can accomplish this by either increasing taxes or decreasing government spending. As we have already seen, an increase in taxes or a decrease in government spending causes the IS curve to shift to the left. Since output decreases at every price level (notice that output has initially increased in spite of the fact that we have said nothing about prices) we get an decrease in AD.
    ii. After AD has decreased, the actual price level is less than the expected price level. For all of the reasons described above, the price level decrease causing both the LM curve and AS curve to shift to the right. Eventually, aggregate demand and aggregate supply meet at a point where the equilibrium output level corresponds to full employment output. The net effect is a lower interest rate and lower price level in the medium run. Notice output has returned to full employment output, so there is no effect on equilibrium output *in the medium run.*

1. Where we have used contractionary fiscal policy. Notice that expansionary fiscal policy will have the opposite net effect, causing interest rates to rise. This could potentially lead to a phenomenon known as *crowding out,* where the increase in interest rates leads to less private investment.

October 18, 2001

I. Review

II. Monetary policy when an economy is operating below full employment.

a. Last time we saw that if we started at a point of full employment, then the use of monetary policy would only impact output and interest rates temporarily. Eventually, output and interest rates return to their pre-intervention points. In this context, money is said to be neutral.

b. If we are operating below full employment, we saw above that the economy will self-direct itself back to full employment. However, we saw this takes time. What if we implement monetary policy immediately?
    i. Rather than waiting for AS to shift, an increase in the money supply causes the LM curve to shift to the right. As the LM curve shifts, the AD curve shifts to the right. If planned appropriately, monetary policy causes AD to shift to the point where it crosses AS at full employment output. The immediate affect is an increase in prices and an increase in output. Relative to where the economy would have been without intervention, the net effect is higher prices. *Output and interest rates are at the same level IN THE MEDIUM RUN whether we use monetary policy or allow the economy to direct itself.*
        1. Since output and interest rates are unaffected by monetary policy in the medium run, why would we use monetary policy?
            a. With expansionary monetary policy, an economy quickly gets back to full employment (theoretically). Without expansionary monetary policy, the economy returns to full employment, but only over time. If we are willing to accept higher prices, then expansionary monetary policy will return us to full employment quicker.
                i. A special note: Our models make several assumptions that may not hold.

For example, our model assumes that prices are flexible downward. Even more importantly, our models assume that employees accept lower nominal wages when expected prices exceed actual prices. This may not actually occur. As such, monetary policy may be a tool that could direct the economy to full employment much quicker (relative to no interference) than our models suggest.

III. Fiscal Policy when an economy is operating below full employment.

a. Using the same analysis as above, expansionary fiscal policy will again have impact no impact on output relative to where the economy would return in the medium run. However, prices and interest rates are higher. In theory, expansionary fiscal policy could be less desirable since it increases the national debt and leads to higher interest rates.

IV. Supply shocks.

a. An example of a supply shock is the dramatic increase in the price of oil during the 1970's. It is unclear how our model would accommodate oil prices, since natural resources do not appear in our model. We can say something about how we expect an increase in the price of oil to impact the firm's costs. An increase in the price of oil (a major factor of production) is likely to increase the firm's costs. In other words, the markup over wages is expected to increase.

b. As the markup over wages increases (implying that firms increase their price by an even larger margin over wages to accommodate the higher cost of doing business) the natural rate of unemployment increases.
    i. The natural rate of unemployment increases since the price setting equation falls (an increase in ϕ causes $1/1+\phi$ to fall). As real wages fall, the natural rate of unemployment increases.

c. Following the increase in oil prices the natural rate of unemployment has increased. This implies that full employment output has declined. Following the decrease in AS, it is still likely that the economy is operating above its full employment output level (which has dramatically decreased). According to our model above, with no interference, output will continue to fall as prices increase.

i. If oil prices should return to their original level, then the above reactions reverse themselves, and we find ourselves at our initial point.

Quiz #2 administered.