Problem Set 4

This Problem Set is due Monday March 28

Part I: How Boom Times End Draw a fairly large graph with the economy at full employment in the AS-AD Model at time $t = 0$

a) If at $t = 0$, the economy is at Y_n, what must be the relationship between P_0 and P^e_0?

b) If at $t = 0$, the nominal money supply $= M_0$ and $Z = Z_0$, you can use your answer in a) and the reduced form equation for P in the AS-AD Handout (eq. 4) to find the value of P_0 and P^e_0. What are they?

c) Assume in period 1 that the money supply doubles to $2M_0$. If price expectations are adaptive (ie. $P^e_t = P_{t-1}$), what happens to P^e in period 1 [Be careful].

d) Given your answers in b) and c) and the reduced form equation for Y in the Handout (eq. 3), what is the value of Y in period 1? Is it greater than, equal to, or less than Y_n [Hint: you need to substitute out the value for P^e_1 and simplify to get a clean answer]? What does your graph now look like?

e) What is the GDP multiplier for an increase in the money supply from eq. 3? If the money supply increases by M_0 (ie. doubles), what does the multiplier say will happen to GDP? How does this number relate to the change in GDP in d) above?

f) If P^e stays equal to its value at time 1 (your answer in c) forever, will Y change in any future period? Will the boom ever end?

g) According to your graph, what is the value of P_1 in comparison to P_0? What is the value of P_1 in comparison to P^e_1 ? Given adaptive expectations, Qualitatively (don't do all of the algebra) what will the value of P^e_2 be in comparison to P^e_1 ? In period 2, what will your graph look like?

h) On the graph, plot the path of the economy after period 1. How do you know how far to shift the AS curve in each period?

i) Using IS-LM, depict the path the economy took as a result of the increase in nominal money supply (you should not try to find or label each separate time period).

j) Thinking about National Investment, what is the relationship between the level of national investment before the increase in the money supply and after the economy has returned to full employment?

Your analysis in the next two parts should be completely graphical and verbal (no algebra) :)

Part II: How Bad Times End (in theory):

a) Assume in period 1 that Z_0 falls because c_0 falls. Draw the effect of this change in a **new** AS-AD-graph.

b) Plot the path of the economy after period 1 on your new graph.

c) Using IS-LM, depict the path the economy took as a result of the decrease in c_0 (you should not try to find or label each separate time period).

d) When the economy returns to full employment, what is the relationship between the original real money supply and the final real money supply? What is the relationship between the original real interest rate and the final real interest rate? What is the relationship between the original level of national investment and the final level of national investment?

e) What would the relationship have been between the original level of national investment and the final level of national investment if the initial shock had been a fall in i_0 as opposed to a fall in c_0? Do the AS-AD and IS-LM graphs look different for a fall in i_0 vs. a fall in c_0 of equal magnitude?

Part III: Supply (Price) Shocks: In a Focus Box on p. 153, Blanchard discusses why oil price increases in the 1970's and 80's had a more severe impact on the economy than they do now. Blanchard gives two reasons for this: decreasing worker power and changes in the Federal Reserve's behavior such that people no longer expect the price level to rise after a price shock.

a) Depict in the Labor Market Model an increase in oil prices (or any raw material prices). How does this increase affect the PS and/or WS curves and u_n?

b) Using AS-AD graphs plot and compare the effect of an oil price increase in the two following Cases:

Case A: The oil shock occurs while the degree of worker power remains unchanged.

Case B: The oil shock occurs while the degree of worker power declines such that $\Delta z < 0$ is equal in absolute value to $\Delta m_0 > 0$ (Hint: look at equation (9) in the Labor Market Handout)

c) Now, keeping worker power constant, use AS-AD graphs to plot and compare the effect of an oil shock in the two following Cases:

Case C: The oil shock occurs while the Federal Reserve keeps the nominal money supply unchanged.

Case D: The oil shock occurs while the Federal Reserve alters the nominal money to keep the price level constant.

d) What is the relationship between the changes in Y_n in Cases A, B, C, and D?