Economics 222

Assignment 3

March 2, 2000

Due Date: In class, Thursday, March 16th, 2000.

1 [20]

Instead of classifying assets as either non-monetary or monetary, consider a richer description. Suppose we divide non-monetary assets into two groups: stocks (denoted by S) and bonds (denoted by B). The third type of assets will be monetary assets (denoted by M). Suppose we have the following information on the nominal demand for stocks and bonds:

$$
\begin{aligned}
S^d &= 300 + 1200 i_S - 200 i_B - 500 i_M, \\
B^d &= 150 + 300 i_B - 400 i_S - 100 i_M.
\end{aligned}
$$

where i_S is the nominal return on stocks, i_B is the nominal return on bonds, and i_M is the nominal return on monetary assets.

a) If the nominal supply of bonds is $B = 124$, nominal supply of stocks is $S = 405$, and nominal wealth is $W = 1200$, determine the nominal money supply M. Derive the nominal demand for money as a function of the three interest rates using the information above.

b) Suppose $i_M = 0.01$. Determine the values for i_S and i_B such that we have an asset market equilibrium.

Hint: You only have to solve for the two unknowns using market clearing conditions in two of the three markets. This is because the third market will clear automatically if the other two are in equilbrium.

c) Suppose the nominal return on bonds increases $i_B = 0.07$. Before markets clear, determine the demand for stocks, bonds and monetary assets, given $i_B = 0.07$, $i_M = 0.01$ and i_S (determined in b). Now determine new interest rates on monetary assets and stocks that allow for an asset market equilibrium to be restored, given $i_B = 0.07$.

I n the context of this question, explain the following commonly heard quote: " The Dow Jones Industrial Average dropped as a result of higher returns in the bonds market".

2. [50] Consider the following closed economy.

$$
\begin{align}
Y &= A\left(100N - \frac{1}{4}N^2\right), & (1)\\
N^s &= 20 + 2\omega, & (2)\\
C^d &= 3000 + 0.6(Y - T) - 500r, & (3)\\
I^d &= 6000 - 1200r, & (4)\\
\frac{M^d}{P} &= 0.7Y - 1300r. & (5)
\end{align}
$$

Nominal money supply is given by $M = 5000$, government expenditures are given by $G = 1000$ and the productivity parameter is given by $A = 1$. Assume the government balances its budget.

a) Determine the labour market equilibrium real wage and level of employment. Using this information, derive the FE line, by determining the full employment level of employment $\overline{Y}$.

b) Now using the goods market information, derive the IS curve algebraically. Determine the long run interest rate $\overline{r}$.

c) Using our asset market information determine the long run price level that clears the assets market. Given this price level derive the LM curve.

d) Derive the aggregate demand curve.

e) Now suppose that the nominal money supply grows by five percent. With aid of a diagram explain why the LM curve shifts and similarly explain why the aggregate demand curve would shift. Derive the new LM curve.

f) Determine the the short run levels of output and interest rates. Explain in your diagram, how we return to long run equilibrium. Determine the long run levels of output, interest rates and prices.

3. [15] Starting from a position of long run equilibrium, use the IS/LM/FE model to determine the short run and long run effects of the following scenarios. You should determine the following: Which curve shifts, and when? What are the effects on Y and r in the short run? What are the long run effects on Y, r and P?

a) A recent tax cut, by the federal government. Assume Ricardian Equivalence does not hold.

b) The Bank of Canada decides to conduct policies that cause the nominal money supply to decline.

c) A mild winter increases productivity of workers here in Canada.

4. [15]

Repeat question 3, except, conduct the analysis using the aggregate demand aggregate supply model. Ignore issues of interest rate determination, just explain how output and prices are affected in the short and long run.