ASSIGNMENT #3  
Due Wednesday February 4, 2004  
(at the beginning of the class)

Show all your calculations for credit.

Consider the following model of the goods market (circle the correct answer when relevant)

\[
C = 100 + .70 \, Y_D \quad (1) \quad \text{C is consumption} \\
Y_D = Y - T \quad (2) \quad \text{Y}_D \text{ is disposable income} \\
T = 50 + .1Y \quad (3) \quad \text{T is taxes and Y is income} \\
I = 350 - 1000i \quad (4) \quad \text{I is investment} \\
G = 400 \quad (5) \quad \text{G is government spending} \\
Z = C + I + G \quad (6) \quad \text{Z is aggregate demand} \\
i = .05 \,(5\%) \quad (7) \quad \text{i is equilibrium interest}
\]

a. Calculate equilibrium income \( Y = \quad \) 

b. The money demand is characterized by the following equation:

\[
M^d = .4Y - 1,000i \quad (8)
\]

Calculate the money supply necessary to keep this economy in equilibrium

\( M^* = \quad \)
c. Show the IS-LM equilibrium of the economy on the graph below. Name all the axes and curves and enter the value of Y and i in equilibrium.

\[
\begin{array}{c}
\text{Graph showing IS-LM equilibrium.}
\end{array}
\]

d. The IS-LM model

i. Derive the equation for IS (Y as a function of i):

\[
Y = f(i)
\]

ii. Derive the equation for LM assuming the same money supply as calculated in b. (i as a function of Y):

\[
i = g(Y)
\]
iii. Calculate the equilibrium value of $Y$ and $i$ for the economy using the IS-LM equations (a system with 2 equations and 2 unknowns):

iv. Does this correspond to the equilibrium values entered on the graph above? _____

e. Now assume that this economy registers an increase in consumer confidence: i.e. the intercept of the consumption function is now 150: \[ C = 150 + .70 Y_D. \]

Show the impact on the economy using the IS-LM framework below:

Name all the axes and curves and show the relevant shift(s) of the curve(s) – show the old equilibrium $i_0$ and $Y_0$ and the new equilibrium $i_1$ and $Y_1$
f. Calculate the new equilibrium $Y$ and $i$ for the economy. Use all the same equations as above except for the new consumption function.

i. Derive the new equation for IS ($Y$ as a function of $i$):

ii. Derive the equation for LM assuming the same money supply as calculated in b. ($i$ as a function of $Y$):

iii. Calculate the new equilibrium value of $Y$ and $i$ for the economy:
g. i. What happens to the total amount of taxes paid by the public?

- increases
- decreases
- or
- stays the same

Calculate the change in tax (if relevant):

ii. What happens to the budget surplus?

- increases
- decreases
- or
- stays the same

Calculate the change (if relevant):

iii. Will this form of taxation (as illustrated in equation (3))

- amplify
- dampen
- or
- have no impact on

the ups and downs of the economy (i.e. the business cycle)

h. Now assume that the Chairman of the Fed is worried that too much exuberance in the economy might create bottlenecks and be potentially inflationary. He wishes to put a brake on the expansion.

   i. Explain how he can do that:
ii. Assume that he changes the money supply by 35

1. What is the IS and the LM equations corresponding to these new conditions?

   IS:

   LM:

2. Use these 2 equations to calculate the new i and Y equilibrium.

3. Show the impact of Greenspan’s policy on the graph above in e