14.02 Principles of Macroeconomics Problem Set 2 Fall 2004

Posted: Wednesday, September 22, 2004 Due in class: Wednesday, September 29, 2004

Part I. True/False/Uncertain

Justify your answer with a short argument.

- 1. Paradox of saving occurs when the attempts by people to save more lead to a decline in output and an increase in saving.
- 2. When mpc increases and investment decreases, goods market equilibrium output increases.
- 3. If investment is really sensitive to changes in the interest rate (b_1 large), then IS is flatter and fiscal policy is more effective. (assume: $I = b_0 b_1 i$)
- 4. The price of bonds increases when the interest rate rises.
- 5. Monetary contraction and fiscal expansion together lead to an increase equilibrium output and interest rate.
- 6. The money multiplier is always less than 1.

Part II. THE MONEY MARKET

(all units are trillions of US \$)

Money Demand: $M^d = Y(0.2 - i)$

Nominal Income: \$Y = 2000Money Supply: $M^s = 300$

- 1. Find M^d for i = 10% and i = 5%.
- 2. What is the relationship between i and M^d .
- 3. Graph M^s and M^d and calculate the equilibrium i.
- 4. Alan Greenspan decreases M^s by 50. What happens to money market equilibrium? (solve & graph)
- 5. Describe how the Fed changes i in the US.

Part III. Money Multiplier

Checkable deposits: $D^d = 900 billion Total money supply: $M^s = 1800 billion

Reserve ratio: $\theta = 0.2$ Ratio of (CU^d / M^d): c = 0.5

- 1. Find CU^d, R^d and D^d in equilibrium.
- 2. Find the money multiplier.
- 3. Describe 2 different ways the Fed can decrease money supply.
- 4. If the Fed wants to decrease the money supply by \$500 million (in order to raise i), what amount of bonds would it have to sell/buy?

Part IV. IS - LM

(All units are millions of US dollars)

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C = 200 + (0.25)Y_D
I = 150 + 0.25Y - 1000 i
T = 200
G = 250
(M/P)^s = 1600
(M/P)^d = 2Y - 8000 i
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- 1. Find the equation for aggregate demand (Z).
- 2. Derive the IS equation.
- 3. Derive the LM equation.
- 4. Solve for equilibrium real output, interest rate, C and I.
- 5. Graph the IS-LM diagram of the above with correct labels.
- 6. Monetary expansion:
 - Let M^s (nominal money supply) increase to 1840. Find equilibrium Y, i, C and I. What happens to Y, i, C and I when the Fed increases money supply through open market operations?
- 7. Graph part 6 (a new graph starting from part 5).
- 8. Fiscal expansion: (Continue from part 5)
 Let G increase to 400. Find equilibrium Y, i, C and I. What happens to equilibrium Y, i, C and I when government spending increases?
- 9. Graph part 8 (a new graph starting from part 5).

10. There is a sudden drop in consumer confidence and c ₀ drops from 200 t the government counterbalance the drop in GDP using government sper instrument?	to 100. How can adding as a policy