

14.02 Principles of Macroeconomics, Spring 2000  
2 pages

Problem Set 3  
Due: Wednesday, March 8

**Question 1.** (5 points each) True, False, Uncertain. Provide a brief explanation.

- a) The difference between Gross National Product and Net National Product is imports which are not included in the NNP.
- b) US GNP is the sum of labor income and capital income of US residents.
- c) An increase in consumer confidence shifts the IS curve to the right.
- d) Higher output is always associated with higher interest rates in equilibrium.
- e) An increase in the world demand for American goods can increase the US interest rate.
- f) A monetary expansion shifts the IS curve to the right.

**Question 2.** (50 points) **IS-LM**  
Consider the following economy:

$$C = c_0 + c_1(Y - T)$$

$$I = b_0 - b_1i$$

$$Q = qY$$

$$(M/P)^d = m_0Y - m_1i$$

$$(M/P)^s = \bar{M}$$

where  $Q$  =imports,  $M$  =nominal money,  $P$  =price level,  $(M/P)^d$  = demand for real money,  $(M/P)^s$  = real money supply. Government purchases, taxes, and exports are given at level  $G, T, X$  respectively.

- a) (5 points) Write down the equation for the IS curve.
- b) (5 points) Write down the equation for the LM curve.
- c) (10 points) Find the equilibrium values of  $Y, i$ .

Let:  $c_0 = 190, c_1 = 0.5, T = 40, G = 60, b_0 = 100, b_1 = 21, X = 300, q = 0.2, m_0 = 0.5, m_1 = 10, \bar{M} = 200, P = 1$ .

**d)** (10 points) Write down the IS and LM curves and find the equilibrium values of  $Y, i$

Now suppose the Fed increases money supply to 250 (assume that prices always remain at  $P = 1$ ).

**e)** (5 points) Which curve shifts? In what direction? Give the new equation for that curve?

**f)** (5 points) Find the new equilibrium  $Y, i$ .

Suppose instead that  $(M/P)^s$  remains at 200 but  $G$  goes up to  $G = 130$ .

**g)** (5 points) Which curve shifts? In what direction? Give the new equation for that curve?

**h)** (5 points) Find the new equilibrium  $Y, i$ .

**Question 3** (20 points) **From IS-LM to AD**

Demand for money is given by:

$$(M/P)^d = 0.5Y - 10i$$

Suppose nominal money supply is 200 and  $P$  is allowed to vary.

**a)** (10 points) Find the financial market equilibrium  $i$  as a function of  $Y, P$ . Use this equation to describe (in words) what happens to  $i$  when prices go up, while  $Y$  and  $M$  are held constant.

**b)** (10 points) Use the equation from part (a) and the IS equation you found in Question 2 part (d) to find  $Y$  as a function of  $P$ . This is an AD curve. Holding  $M$  constant, what happens to aggregate demand when  $P$  goes up?