

**PROBLEM SET 3**  
**14.02 Introductory Macroeconomics**  
**March 9, 2005**  
**Due March 16, 2005**

**I. Answer each as True, False, or Uncertain, providing some explanation for your choice.**

1. The aggregate demand curve is downward sloping because people demand fewer goods at higher prices.
2. The neutrality of money implies that monetary policy cannot affect the output level.
3. The Phillips curve relation implies that when output is below its natural level, the inflation rate increases.
4. The same Phillips curve relation describes equally well episodes of positive and negative inflation.

**II. AS-AD**

Consider the following economy :

1. Consumption function :  $C = c_0 + c_1(Y - T_0)$  (taxes are some constant lump sum amount)
2. Investment function :  $I = I_0 + bY - ai$
3. Government spending :  $G = \bar{G}$  (a constant)
4. Money demand function :  $M^d/P = hY - ki$
5. Money supply :  $M^s/P = M_0/P$  ( $M_0$  is a constant)
6. Wage setting :  $W/P^e = \alpha - \beta u$
7. Production function :  $Y = AN$
8. Price setting :  $P = (1 + \mu)W/A$

Note :  $c_0, c_1, b, a, h, k, \alpha, \beta, A, \mu, c_0, I_0$  are all positive parameters

(a) Derive the AS and AD curves (assume the labor force is  $L$ ). Verify that they are upward and downward sloping respectively.

(b) If workers never made expectational errors, what would the AS curve look like? Why?

(c) Suppose the economy described by these equations is in medium run equilibrium, and then it is perturbed by the following policy mix : an increase in taxes (say from  $T_0$  to  $T_1$ ) and an increase in money supply (say from  $M_0$  to  $M_1$ ). This policy mix may give rise to more than one outcome in the short run, and associated with each of the possible outcomes would be a unique dynamic adjustment process. Using the equations given above, derive the conditions under which

- (i) the dynamic adjustment would involve rising prices
- (ii) the dynamic adjustment would involve falling prices

In order to solve this question, make the following assumptions about the parameters :  $1 - c_1 - b + ah/k > 0$ ,  $\alpha > \beta$ , and  $(\alpha - \beta)(1 - c_1 - b + \frac{ah}{k}) > (c_0 - c_1T_1 + I_0 + \bar{G})\beta/(AL)$