

Problem Set 4

Due: Wednesday, October 13.

Please put your section/recitation number on the problem set.

1. Answer **TRUE**, **FALSE** or **UNCERTAIN**. Give a brief explanation for your answer.
 - (a) The emergence of ATMs (with monetary base unchanged) leads to an outward shift of the LM curve.
 - (b) An increase in the budget deficit must lead to an investment boom.
 - (c) The goods market has so much more inertia than the money market, therefore, whatever shock occurs, the economy stays on its LM curve, but may deviate from its IS curve.
 - (d) Bonds that pay very high interests are in great demand, and therefore sell at higher price than the same-denomination bonds paying low interests.
 - (e) As a result of fiscal contraction, the interest rate sharply falls, then slowly rises; but in the new equilibrium, it is still lower than originally.
 - (f) The necessary condition for a fiscal expansion to have no impact on the interest rate is the balanced budget, i.e. taxes should rise in sync with spending.
2. Imagine an economy described by these behavioral equations and parameters:

$$\begin{aligned}C_t &= 120 + 0.4(Y_t - T) \\I &= 40 - 54i_t \\G &= 20 \\T &= 45 \\Y_{t+1} &= C_t + I_t + G \\(M/P)^d &= \frac{Y}{i + 6.1} \\ \theta &= 1/8, P = 1, H = 5\end{aligned}\tag{1}$$

- (a) Consider the long run equilibrium. Write down the expression for the LM curve by analyzing the equilibrium in the money market.

- (b) Write down the expression for the IS curve by analyzing the equilibrium in the market for goods.
- (c) Solve for the equilibrium output by combining the IS and the LM relationships.
- (d) Find the equilibrium interest rate, consumption and investment.
- (e) Suppose the government decides to help expansion by introducing investment tax credit, that is, not taxing investment. This results in a change in the investment equation: $I = 40 - 24i_t$. This reduces tax revenue by 24. Furthermore, government increases spending by 18. Find the new long run equilibrium output and interest rate. Was the policy successful in helping output growth? Investment expansion? Can you tell which particular policy component was responsible for the direction of the equilibrium change in investment?
- (f) Consider the dynamics of the adjustment in e). Compute the output, consumption, investment, and interest rate for the first 4 period after the tax cut.
- (g) The central bank is worried that the economy is overheating. It decides to cut the real money supply. How much should $(M/P)^s$ be reduced to return output to the initial level as in part c)?

3. Suppose that we have the following model for the goods market:

$$C = 10 + 0.5(Y - T) \quad (2)$$

$$I = 20 + 0.1Y \quad (3)$$

$$G = 10 \quad (4)$$

$$T = 10 \quad (5)$$

$$Y = C + I + G \quad (6)$$

$$(M/P)^d = 50 - 10i \quad (7)$$

$$(M/P)^s = 10 \quad (8)$$

Draw the IS curve and the LM curve. What accounts for their shape and slope?