

Professor Christiano  
C-11, Fall 1997

### First Midterm

IMPORTANT: read the following notes

- You may not use calculators, notes, or aids of any kind.
- Please feel free to ask the proctor questions if the wording of a question is unclear.
- A total of 100 points is possible, with the distribution by question indicated in parentheses.
- Indicate on your blue book which TA section you are in.
- Explain your answers carefully in clear English. Supplement what you say with liberal use of diagrams.
- Write neatly and label all diagrams. We cannot give you credit if we cannot read your answer.

1. (20) Consider the following model:

$$\begin{aligned}C &= c_0 + c_1(Y - T) \\I &= \bar{I} - bi \\M^d &= PYL(i) \\L(i) &= \bar{L} - ci \\G &= \bar{G} \\T &= \bar{T} \\M^s &= \bar{M}\end{aligned}$$

where  $\bar{T}$ ,  $\bar{G}$ ,  $\bar{L}$ ,  $\bar{M}$ ,  $c$ ,  $\bar{I}$ ,  $b$ ,  $c_0$ ,  $c_1$  are all non-negative variables, whose values are determined exogenously, outside of the model.

Compare the impact on  $Y$ ,  $C$ ,  $i$  and  $I$  of a decrease in  $\bar{G}$  by  $\Delta\bar{G} < 0$  under two scenarios:  $b = 0$  and  $b > 0$ . Use graphs. Explain as carefully as you can the reason for the different impacts.

2. (20) Suppose you observe an episode in which there is a sudden, sharp drop in the interest rate, followed by a slow rise in both the interest rate and level of output. What could explain these observations? Use graphs, and explain carefully.
3. (20) Suppose that for a particular country, you observe the pattern of data recorded in Figure 1. The pattern shows that sometimes investment is high and interest rates low, sometimes investment is low and interest rates are high. How can you explain this pattern with the sort of model described in the first question (i.e., the standard IS-LM model)? (Hint: remember, we interpret movements in the data as reflecting the economy's response to variations in the exogenous variables.)
4. (20) Show in the Keynesian Cross model (i.e., the model in the first question with  $b = 0$ ) that a desire to increase saving represented as a fall in  $c_0$  just produces a recession and no change in saving in the new equilibrium. This is referred to as the paradox of thrift. Why does this happen? In the IS-LM model (i.e., the model above with  $b > 0$ ), saving in the new equilibrium is higher. Why is this so? Explain carefully.

5. (20) Suppose  $T = \bar{T} + tY$ , where  $t > 0$ . Consider the Keynesian Cross model, i.e., the one in the first question with  $b = 0$ . Does making  $t$  bigger increase or decrease the multiplier associated with a change in  $c_0$ ? Explain carefully.