

Professor Christiano  
C-11, Winter 1999

### 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. (10) Explain why money demand is an increasing function of the level of income, and a decreasing function of the rate of interest.
2. (10) When the demand for money equals the supply, then the demand for bonds equals the supply of bonds. Explain. (Hint: recall the wealth constraint that households face in deciding how much money to hold.)
3. (45) Consider the following Keynesian Cross model:

$$\begin{aligned}
 C^d &= c_0 + c_1(Y - T) \\
 I^d &= \bar{I} \\
 G^d &= \bar{G} \\
 T &= \bar{T}
 \end{aligned}$$

Starting from a position of equilibrium, there is an improvement in consumer confidence, and  $c_0$  rises.

- (a) (15) Explain carefully, the impact of the change on equilibrium output.
  - (b) (15) Explain carefully, the nature of the dynamic path taken by the economy from the old equilibrium to the new equilibrium. Describe one set of assumptions about the nature of dynamics which implies that the adjustment is quick, with only brief drop in actual inventory investment. Describe another set of assumptions which implies that the adjustment takes a long time, during which inventory investment is persistently low. (Hint: among the assumptions is a specification of the timing of a given period's production decision, and a specification of how producers react to unintended inventory investment.)
  - (c) (15) What happens to the saving function, with the rise in  $c_0$ ? What happens to the quantity saved by households in the new equilibrium with the rise in  $c_0$ ? Explain, carefully.
4. (35) Consider the following IS-LM model:

$$C^d = c_0 + c_1(Y - T) - gi$$

$$\begin{aligned}
I^d &= \bar{I} - bi \\
M^d &= PYL(i) \\
L(i) &= \bar{L} - c_2i \\
G^d &= \bar{G} \\
T &= \bar{T} \\
M^s &= \bar{M}
\end{aligned}$$

where  $\bar{T}$ ,  $\bar{G}$ ,  $\bar{L}$ ,  $\bar{M}$ ,  $P$ ,  $c_2$ ,  $\bar{I}$ ,  $b$ ,  $c_0$ ,  $c_1$ ,  $g$  are all non-negative variables, whose values are determined exogenously, outside of the model. This model differs from the one considered in class by allowing the possibility  $g > 0$ .

- (a) (20) You are told the following facts about a particular country, whose economy is described by the above IS-LM model, with  $g = 0$ . Output rose, as did the rate of interest, investment and consumption. You are told that these effects reflect the impact of a shift in one of: (i) business confidence, (ii) consumer confidence, (iii) the money supply, (iv) government spending, or, (v) taxes. For each of (i)-(v), explain how the shift can be captured as a move in one of the model's exogenous variables. Which do you think is the most likely cause of the events described? *Carefully* explain your answer. In particular, explain - based on an analysis of the IS-LM model - why the shift you picked seems capable of rationalizing the facts presented, and why the shocks you didn't pick are incapable of rationalizing those facts.
- (b) (15) Suppose  $g$  is positive. Does  $g > 0$  make sense? How does the larger value of  $g$  affect the magnitude of the equilibrium rise in output associated with a given increase in  $M^s$ ? Explain carefully. (Hint: explain, using graphs, what happens to the slope of the IS curve. Then, think about the experiment of increasing  $M^s$ .)