

Professor Christiano
Economics 311, Winter 2005

Second Midterm

IMPORTANT: read the following notes

- You may not use calculators, notes, or aids of any kind.
- A total of 100 points is possible, with the distribution by question indicated in parentheses.
- Explain your answers carefully in clear English.
- Write neatly and label all diagrams. We cannot give you credit if we cannot read your answer.
- Write your name here:

CIRCLE your TA

- Helge - 9:00 Fri (101 Annenberg)
- Helge - 3:00 Fri (32 Annenberg)
- Jon - 9:00 Fri (32G Annenberg)
- Jon - 3:00 Fri (203 Harris)
- Nenad - 9:00 Fri (203 Harris)
- Nenad - 3:00 Fri (308 Harris)

Scores:

Q1:	
Q2:	
Q3:	
Q4:	
Total:	

The equations of our basic model are:

$C^d = c_0 + c_1 (Y - T)$	consumption function
$G^d = \bar{G}$	desired government spending
$T = \bar{T}$	taxes
$I^d = \bar{I} - b \times i + q \times Y$	desired investment ($0 < c_1 + q < 1$)
$M^d = P \times Y \times (\bar{L} - L_1 \times i), L_1, \bar{L} > 0$	money demand
$W = P^e \times F(\underline{u}, z),$	bargaining equation
$u = 1 - \frac{N}{L},$	labor market identity
$P = (1 + \mu)W,$	price equation
$Y = aN,$	production function

where N denotes employment and L is the labor force. In a ‘short run’ equilibrium, goods and financial markets are in equilibrium, and the equations characterizing price and wage determination are satisfied. In the short run, P^e is one of the exogenous variables. A ‘medium run’ equilibrium is a short run equilibrium where, in addition, $P^e = P$. Thus, P^e is an endogenous variable in the medium run. The ‘natural rate of unemployment’ is the level of unemployment in a medium run equilibrium. The ‘natural level of output’ is the level of output in a medium run equilibrium. An ‘exogenous shock’ is a change in the value of one or more of the exogenous variables. When you analyze the effects of a shock, you may assume the economy begins in a medium run equilibrium.

1. (40) Shorter questions.

(a) (4) Describe carefully the distinction between an exogenous variable and an endogenous variable.

(b) (5) Explain the impact on the natural rate of unemployment of an increase in competition among firms. Make your argument using graphs, and supply intuition as well.

(c) (5) Suppose there is a shock to \bar{I} . What is the impact, in the medium run, on the composition of demand between consumption, investment, and government spending? Explain.

(d) (4) Describe 3 different exogenous shocks that could cause P and Y to move in opposite directions. Briefly explain, using $AD - AS$ diagram.

(e) (4) Describe 3 different exogenous shocks that could cause P and Y to move in the same direction. Briefly explain, using $AD - AS$ diagram.

(f) (5) Suppose there is a change in the labor force, say due to sudden immigration. What does this do to the natural rate of unemployment and to the natural rate of output? Explain.

(g) (4) Provide an intuitive explanation of why the expected price level and the actual price level coincide in the medium run.

(h) (4) Explain why it is that if labor productivity, a , rises but output does not increase right away, then the unemployment rate rises.

(i) (5) Suppose a country's output drops for a decade. Where should you look for the cause, on the demand side (i.e., inside the AD curve) or on the supply side (i.e., inside the AS curve)? Explain.

2. (20) Suppose P^e jumps from P_1^e to P_2^e , $P_2^e > P_1^e$, and remains at P_2^e in the short run (say that P_2^e is 10% above P_1^e). The medium run dynamics are as before: as the short run turns into the medium run, P^e adjusts down if in the short run equilibrium it is above the actual price level; P^e adjusts up if in the short run it is below the actual price level; and P^e does not change if in the short run it is equal to the actual price level.

(a) (5) Suppose \bar{P} is the price level in the short run equilibrium after the jump in P^e . Is \bar{P} bigger than, smaller than or equal to P_2^e ? Explain your answer carefully.

(b) (15) Suppose that when P^e jumps, the Fed simultaneously increases the money supply. Explain, using diagram(s), by how much the Fed has to increase the money supply so that unemployment and output remain precisely at their natural rates in the short run equilibrium. In this case:

i. how do the new short run and new medium run equilibria compare? Explain.

- ii. how do the old and new medium run equilibria compare in terms of W , u , Y , i , M/P , C , I ? Explain.

3. (20) Suppose there is a shift up in money demand (i.e., a jump in \bar{L}).
- (a) (2) What curve does this shift, AS or AD ? Explain the reasons for your answer.
- (b) (2) Draw a graph with P on the vertical axis and Y on the horizontal. Where is the short run equilibrium? Where is the medium run equilibrium? Indicate the initial equilibrium by the number '1' in your diagram. Indicate the short and medium run equilibria after the shock by the numbers '2' and '3', respectively.
- (c) (8) What happens to unemployment, output, employment, the interest rate, consumption, investment, the wage rate and the price level between equilibria 1, 2, 3? Explain the reason for your answer.

- (d) (8) Provide a brief narrative, describing in journalistic terms what happens to the economy in the wake of the jump in money demand.

4. (20) Suppose there is a cut in taxes, T .
- (a) (2) What is the impact of this shock on the AD curve? Explain the reasons for your answer.
- (b) (8) Repeat questions 3 (b) (c), but do not discuss the impact on investment.

(c) (5) What version of our model has the property that, in the short run, the cut in T generates a rise in investment. More specifically, discuss a parameter(s) and under what conditions on this parameter(s) might generate a rise in investment.

(d) (5) What is the impact, in the medium run, of the shock on the composition of output between consumption, investment and government consumption? Explain.