

## Second Challenge: Eco 403, Spring 2009

The Challenge is closed book/notes. Good luck! The following formulas may be useful.

### Money Supply

$$M = Hk(R), \quad \Delta M = \Delta Hk(R), \quad k(R) = \frac{cr + 1}{cr + rrr + e(R)}$$

$$MS = m = \frac{M}{P} = \frac{H}{P}k(R) = hk(R)$$

### Money Demand

$$MD = \sqrt{\frac{\delta Y}{2R}}, \quad MD = \frac{M}{P} = m = a - b\pi_{t+1}^e$$

### Inflation Taxes: short run

$$\text{seignorage} = \frac{H_{t+1} - H_t}{P_t} = h_{t+1}(1 + \pi_t) - h_t$$

$$\text{taxes paid} = \frac{M_t}{P_{t-1}} - \frac{M_t}{P_t} = m_t \pi_t = k(R_t) h_t \pi_t$$

### Inflation Taxes: Long run

$$\text{Long run seignorage} = \pi h, \quad \text{taxes paid} = k(R) \pi h$$

$$G - T = \text{deficit} = \text{borrowing} + \pi h$$

### Phillips Curve and Monetary Misperceptions

$$u = NR - k\Delta Y = NR - k(Y - Y^*), \quad u = NR + k \cdot a(\pi_t^e - \pi_t)$$

$$Y = Y^* + a(P - P^e)$$

## Short answer questions (1-2 sentences)

### Question 1 (10 points)

Explain intuitively what a “liquidity trap” is. Under what circumstances is a liquidity trap most likely to occur?

### Question 2 (10 points)

Suppose Columbia and Brazil have equal sized deficits. Suppose further that Columbia finances it’s deficit with seniorage, whereas Brazil finances it’s deficit with borrowing. Which country will most likely have higher inflation in the long run? Explain.

### Question 3 (8 points)

Consider the FED’s recent purchase of tbills mentioned in the article. Suppose the purchase causes inflationary expectations to rise, but inflation remains constant as the high powered money ends up in excess reserves. Explain intuitively what happens to output and unemployment in the short run according to the monetary misperceptions model.

### Question 4 (15 points)

Based on each of the following criteria, is the inflation tax a good or bad tax? Explain briefly.

- a. Efficiency.
- b. Progressive.
- c. Collection costs.

### Question 5 (10 points)

Graph the money market ONLY, with money supply sensitive to interest rates. Show on the graph an increase in high powered money. Label the trapped liquidity. Where does most of the increase in  $H$  go?

## Longer Questions

### Question 6 (25 points)

Suppose, due to lack of confidence in the banking system, households withdraw money from checking deposits and hold cash, so that the currency-to-deposit ratio rises.

- a. Graphically show the effect of an increase in the currency to deposit ratio on the economy in the Keynesian model in the money market, the IS-LM graph, and the Aggregate Supply-Demand graph.
- b. Overall, what happens to the number of withdrawals, excess reserves, interest rates, investment spending, the equilibrium money supply/demand, total spending, prices, and hours worked?

- c. Give one policy the FED could do to offset the effects of (a). (Just state the policy, no need to graph it).

**Question 7 (22 points)**

The FED has increasingly moved towards more transparency about changes in monetary policy. Let  $k \cdot a = 3/2$  and  $NR = 4$  and let  $\pi_0 = \pi_0^e = 4$ . Suppose further the FED plans to print money and increase the inflation rate to 6% in period one and then keep inflation at 8% for periods 2 and 3.

- a. Suppose the FED is transparent and credibly announces the change in policy. Therefore  $\pi_{t+1}^e = \pi_{t+1}$ , so that no firms misperceive. Calculate inflationary expectations and unemployment for periods 0-3 and graph the results on the Phillips curve graph for the monetary misperceptions model.
- b. Now suppose the FED is not transparent and does not announce the policy, so  $\pi_{t+1}^e = \pi_t$ . Calculate inflationary expectations and unemployment for periods 0-3 and graph the results on the on the Phillips curve graph for the monetary misperceptions model.
- c. Is it best for the FED to be transparent in this example? Explain briefly.
- d. Is it best for the FED to be transparent if the policy is to decrease inflation? Explain briefly (you do not need to use graphs).