

Homework 2: Eco 403, Spring 2012  
Due Wednesday, March 21, 2012

**Question 1**

Calculate the seniorage revenues (if any) for each FED action below. If no seniorage revenues result, will the policy give the FED any other revenues or costs? (No need to calculate the other revenues/costs, just explain what they are)

- a. “QE2”: In the second quarter of 2011, The FED bought \$600 billion worth of tbills. The CPI in the second quarter of 2011 was 224.9.
- b. Term Asset Lending Facility (TALF): The FED bought \$600 billion worth of mortgage backed securities (home mortgages) with printed money in 2008. The CPI in 2008 was 216.6.
- c. The FED sells \$100 billion worth of tbills, and the CPI is 226.7.
- d. “Operation Twist”: In 2012, The FED bought \$400 billion worth of long term treasury bonds and sold \$400 billion worth of short term tbills. The CPI is 226.7.
- e. Banks borrow \$100 million worth of printed money in 2008 using the Term Auction Facility (TAF). The CPI in 2008 was 216.6.

**Question 2**

Continuing with question (1a), the CPI was 224.9 time of QE2 and is now about 226.7. Further, the money multiplier at the time of QE2 was 0.82 (down from 1.62 on July 30, 2008) and the high powered money stock prior to the tbill purchases was about \$700 billion.

- a. Calculate the real inflation taxes paid.
- b. Is the inflation tax a good tax here? Discuss all three criteria within the context of this example.

**Question 3**

Suppose the following version of the Cagan model:

$$m_t = MD = 20 - 2\pi_{t+1}^e \tag{1}$$

$$\pi_{t+1}^e = \frac{1}{4}\pi_t \text{ (inflation expectations)} \tag{2}$$

$$\pi_{t+1} = 24 - MD \text{ (inflation response)} \quad (3)$$

Note:  $\pi$  is in percentage terms in the above equations, so use  $\pi = 16$  not 0.16. Suppose in addition the money multiplier is two. Fill in the table below.

period	inflation	expectations	MD	h	seiorage revenue
0	16	16			
1					
2					
3					na

#### Question 4

Assume the US has a deficit of \$2 trillion per year and let the interest rate be 10%. Assume the money multiplier is 2 and the initial money supply is \$1 trillion. Finally, assume the inflation rate is equal to the rate of change in the money supply:

$$\pi_t = \frac{M_{t+1} - M_t}{M_t}. \quad (4)$$

a. Suppose the US finances the deficit with seiorage. Fill in the following table:

year	debt	H	M	$\pi$
0	0	0.5	1	
1				
2				
3				
4				na

b. Suppose now instead the government finances the deficit by issuing one-year tbills (debt which comes due after one year) and no seiorage. Redo part (a).

c. Will the unpleasant monatarist arithmitic idea hold here?

#### Question 5

Graph the market for money, the IS-LM graph, and the AD-AS graph, with the Keynesian aggregate supply. Be sure to label the original equilibrium. Show on the graphs the effect of an increase in the reserve rate. Explain what happens to the interest rate, equilibrium real money supply/demand, the number of withdraws, checking deposits, lending, excess reserves, investment spending, output, and prices.

#### Question 6

Repeat question 5 except use the classical aggregate supply.

### Question 7

Consider the equation on page 853 of the Fischer article, which refers to Table 9, column 2.

- a. Calculate the inflation rate which maximizes seigniorage revenues as a function of  $\beta$  and  $\gamma$ .
- b. Assume  $\alpha = 0$ . Calculate the rate of inflation which results in a barter economy as a function of  $\beta$  and  $\gamma$ .
- c. Calculate the seigniorage-maximizing inflation rate for all countries (use 9.563 and -4.691 from column 2).
- d. Consider the country with the highest inflation rate (equal to about 1.1, the rightmost dot in figure 4). Explain how that country could increase welfare.