

First challenge: Review, Eco 403, spring 2012

The following questions are taken from past challenges. The format is 4-5 short answer and 2-3 longer questions. The formulas provided below will also be provided on the challenge. All questions come from the notes. Also review the first homework, the articles handed out in class, and this review sheet. Textbook chapters 1, 3, 8, 15, and pages 461-88, 110-118, 150-159, and 307-315 are optional, supplementary material.

The following formulas may be useful.

Inflation and Interest Rates

$$\text{GDP Deflator} = \frac{P_{1,t}Q_{1,t} + P_{2,t}Q_{2,t} + \dots + P_{n,t}Q_{n,t}}{P_{1,b}Q_{1,t} + P_{2,b}Q_{2,t} + \dots + P_{n,b}Q_{n,t}} \cdot 100,$$

$$\text{CPI} = \frac{P_{1,t}Q_{1,b} + P_{2,t}Q_{2,b} + \dots + P_{n,t}Q_{n,b}}{P_{1,b}Q_{1,b} + P_{2,b}Q_{2,b} + \dots + P_{n,b}Q_{n,b}} \cdot 100, \quad \pi = \frac{P_{t+1} - P_t}{P_t}, \quad R_t = r_t + \pi_t$$

$$\text{ave. nominal return} = (1 - rrr)R + rrrR_0 - R_c$$

Money Supply

$$M = (cr + 1)D, \quad H = (cr + rd)D, \quad cr = \frac{C}{D}, \quad rd = rrr + e(R - R_0) = \frac{TR}{D},$$

$$M = Hk(R), \quad \Delta M = \Delta Hk(R), \quad k(R) = \frac{cr + 1}{cr + rrr + e(R - R_0)}, \quad rrr = \frac{RR}{D}$$

$$\frac{M}{P} = \frac{H}{P}k(R), \quad TR = ER + RR, \quad \text{Lending} = (1 - rd)D, \quad e(R - R_0) = \frac{ER}{D}$$

$$M2 = C + D + S = (cr + 1 + sr)D, \quad M2 = H \cdot k_{M2}(R), \quad k_{M2}(R) = \frac{cr + 1 + sr}{cr + rd}.$$

$$sr = \frac{S}{D}, \quad \text{Lending with savings} = (1 - rd)D + S$$

Money Demand

$$\frac{M}{P} = \sqrt{\frac{\delta C}{2R}}, \quad n = \sqrt{\frac{RC}{2\delta}}, \quad MV = PC, \quad V = \sqrt{\frac{2RC}{\delta}}, \quad MD = a - b\pi_{t+1}^e$$

Short answer questions (1-2 sentences)

Question 1

Consider a decrease in the interest rate. According to the BT model, explain intuitively what happens to:

- The number of withdraws.
- Money Demand.
- Velocity.

Question 2

From the January FED statement following the January meeting of the FED open market committee: “Inflation has been subdued in recent months, and longer term inflationary expectations have remained stable. ... [The Committee anticipates] a subdued outlook for inflation over the medium-run.”

- If the statement by the FED is credible, what will happen to inflationary expectations and inflation following this statement.
- “Low inflation” for the FED is typically defined as less than 2% and the current inflation rate is 3%. Given these numbers, what will happen to inflationary expectations and inflation if households and firms use adaptive expectations? You can state your answer as relative to part (a).

Question 3

Explain why inflationary expectations are self-fulfilling in the Cagan model.

Longer Questions

Question 4.

Graph the money market using the BT model of money demand. Show on the graph the effect of a decrease in the required reserve ratio. Explain what happens to:

- a. The equilibrium interest rate.
- b. The supply of real money balances.
- c. The number of withdraws per period.
- d. Total excess reserves.
- e. Total checking deposits.
- f. Total bank lending.
- g. Consumption velocity.

Question 5.

Graph the money market using the Cagan model of money demand. Show on the graph an increase in inflationary expectations.

- a. Explain what happens to interest rates, inflation, and money demand.
- b. Are inflationary expectations self-fulfilling?

Question 6

Suppose:

- Currency to deposit ratio is $\frac{1}{3}$.
- The required reserve ratio is $\frac{1}{6}$.
- Banks hold excess reserves $e(R) = \frac{1}{3} - \frac{1}{12}(R - R_0)$, where R is the FED funds rate.
- The reserve rate is 2%.
- The FED Funds rate is 4%.
- The savings to deposit ratio is 4.
- The $M2$ Money supply is \$16 Trillion.

- a. What is the M2 money multiplier?
- b. Calculate the quantity of high powered money in the economy.
- c. How much currency is held by the public, how much currency is held by banks, what are the total checking deposits, and what are total savings deposits?
- d. What are total bank lending, total required reserves, and total excess reserves?
- e. How many dollars worth of mortgage bonds (that is, mortgage backed securities) would the FED have to buy/sell in order to increase the M2 money supply to \$24 Trillion? Would the FED buy or sell mortgage bonds?