

Monetary Policy: Problems

1. False. The FOMC sets a target for the Federal Funds rate, a short term interest rate. Since 1982, it has not targeted the money supply.

2.

$$P_b = \$950 = \frac{\text{facevalue}}{(1 + i_t)^{\text{years}}} = \frac{\$1000}{1 + i_t} \quad (1)$$

$$i_t = 1000/950 - 1 = 5.3\% \quad (2)$$

3.

$$P_b = \$950 = \frac{\text{facevalue}}{(1 + i_t)^3} = \frac{\$1000}{1 + i_t} \quad (3)$$

$$i_t = (1000/950)^{1/3} - 1 = 1.7\% \quad (4)$$

4. Consider supply and demand in the bond market. When demand increases as part of an open market purchase, prices rise. From #2-3, we see that higher bond prices lower interest rates. The Fed uses new electronic reserves to purchase the bonds which, as long as the money multiplier is positive, increases the money supply.

5. If I borrow 2 in two consecutive years, I will owe:

$$\$1.05 * (1.07) = \$1.1235 \quad (5)$$

or I can borrow at the 2 year rate:

$$\$1.1235 = (1 + i_t)^2 \quad (6)$$

$$i_t = (\$1.1235)^{1/2} - 1 = 5.9954\% \quad (7)$$

If I borrow 3 in two consecutive years, I will owe:

$$\$1.05 * 1.07 * 1.07 = \$1.2021 \quad (8)$$

or I can borrow at the 2 year rate:

$$\$(1 + i_t)^3 = \$1.2021 \tag{9}$$

$$\$i_t = \$(1.2021)^{1/3} - 1 = 6.32\% \tag{10}$$

6. False. Raising the short term rate will increase both the two and three year rate. Lets suppose that the Fed raises short term rates to 7% as well. Repeating the exercise for the two year rate:

If I borrow 2 in two consecutive years, I will owe:

$$\$(1.07) * (1.07) = \$1.1449 \tag{11}$$

or I can borrow at the 2 year rate:

$$\$(1 + i_t)^2 = \$1.1449 \tag{12}$$

$$\$i_t = \$(1.1499)^{1/2} - 1 = 7\% \tag{13}$$

So the two year rate rises along with the short term rate.

7. If the Fed announces that future interest rates will equal 10%, and the public believes it, then long term rates will rise. Repeating the exercise for the two year rate:

$$\$(1.05) * (1.1) = \$1.155 \tag{14}$$

or I can borrow at the 2 year rate:

$$\$(1 + i_t)^2 = \$1.155 \tag{15}$$

$$\$i_t = \$(1.155)^{1/2} - 1 = 7.47\% \tag{16}$$

8. False, it currently includes over a trillion dollars of mortgage backed securities as well.

9. The Fed typically raises rates in order to prevent inflation. Were the money multiplier and velocity to increase toward their pre-crisis levels, the large increase in the monetary base would result in considerable inflation. The Fed is trying to preempt this process and feels that the improvement in economic conditions suggests that inflationary pressures could start to rise.

10. A liquidity trap refers to a situation where interest rates are near zero. Monetary policy thus loses the ability to further use its favored tool to stimulate the economy, lowering short term interest rates. It must thus resort to other measures.