The Monetary System and the Fed's Policy Rule
ECON 3133
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Answers

1.

a. $M^S = \frac{1+c}{rr+e+c} \times M^B = \frac{1.3}{0.42} \times 40 = 123.8.$

b. $rr = 0.20$; therefore $M^S = [(1+c)/(rr+e+c)] \times M^B = [1.3/0.5] \times 40 = 104$. The money supply will decrease by 123.8 – 104 = \$19.8 billion.

c. The money supply will increase by (1.3/0.42)×1 = \$3.1 billion.

2.

a. Using the equation $M^S = \sqrt{(k \times Y_M)/(2 \times OC_M)}$, we have $M^S = \sqrt{(0.25 \times 400)/(2 \times 0.01)} = \$70.7$. The student's average currency holding should be \$71. The student would make 2.8 withdrawals per month of \$141.40 each.

b. If \$40 is withdrawn, \$20 is the average currency holding. To solve for OC_M, set $\sqrt{(0.25 \times 400)/(2 \times OC_M)} = 20$, which implies that $OC_M = 0.125$. The additional benefits are worth 11.5% per month.

3. A lower discount rate can lead to an increase in total reserves through discount window borrowing (i.e., borrowed reserves rise). That causes the money supply to increase. The Fed can offset the rise in borrowed reserves by decreasing nonborrowed reserves in order to keep total reserves unchanged. Note: nonborrowed reserves + borrowed reserves = total reserves.

4.

a. If V is constant, then $\%\Delta M^S = \%\Delta P + \%\Delta Y$. The money supply must be increased by 7%.

b. $V = \frac{P \times Y}{M^S} = \frac{P \times Y}{P \times (k \times Y - h \times R)} = \frac{1}{k - h \times R/Y}.$

V depends on the parameters k and h and the endogenous variables R and Y.

c. When $h > 0$, any shift in the IS curve will change V (since in general R/Y does not remain constant). In addition, any changes in the parameters h or k (shocks to the money demand function) will change V.

When $h = 0$, $V = 1/k$. Thus, only shocks to k affect velocity.