Eco 242 Eshragh Motahar

MACROECONOMIC THEORY AND POLICY

The Money Supply Process

1. *EXTREME CASE 1:* Everyone uses checks

The Central Bank

Changes in Assets	*Changes in Liabilities*

Schenectady National Bank (SNB)

Changes in Assets	*Changes in Liabilities*

Alice I. Wonderland

Changes in Assets	*Changes in Liabilities*

2. *EXTREME CASE 2:* The non-bank public uses only currency

The Central Bank

Changes in Assets	*Changes in Liabilities*

Schenectady National Bank (SNB)

Changes in Assets	*Changes in Liabilities*

Alice I. Wonderland

Changes in Assets	*Changes in Liabilities*

3. *The General Case*

Let

H	supply of central bank money (also called monetary base, or high-powered money) ($)
CU	currency held by the non-bank public ($)
R	reserves held by commercial banks
D	checkable accounts (also called demand deposits) ($)
M	stock of money ($)
θ	reserve-deposit ratio: the fraction of deposits that banks hold in reserve (R/D)
c	currency-money demand ratio: shows the preferences of the public about how much money to hold in the form of currency, and how much to hold in the form of checkable accounts.

Superscripts *d* and *s* denote demand ans supply, respectively

The two demands for currency and checkable deposits can be written as:

$$CU^d = cM^d \quad (1)$$

$$D^d = (1-c)M^d. \quad (2)$$

The demand for reserves (by commercial banks) can be written as:

$$R^d = \theta D^d. \quad (3)$$

Substituting from (2) into (3) for D^d we get:

$$R^d = \theta(1-c)M^d \quad (4)$$

Total demand for central bank money can be written as:

$$H^d = CU^d + R^d. \quad (5)$$

Substituting from (1) and (4) into (5), we get:

$$H^d = cM^d + \theta(1-c)M^d = [c+\theta(1-c)]M^d. \quad (6)$$

In equilibrium, supply of central bank money, H, is equal to demand, H^d. That is:

$$H = [c+\theta(1-c)]M^d.$$

Dividing both sides by the expression in the brackets, we get:

$$\frac{1}{[c+\theta(1-c)]}H = M^d. \quad (7)$$

So the formula for the money supply is:

$$M^s = \frac{1}{[c+\theta(1-c)]}H. \qquad (8)$$

The expression $\frac{1}{[c+\theta(1-c)]}$ is called the ***money multiplier***.

Note that in *EXTREME CASE 1*, $c = 0$, therefore the money multiplier is $\frac{1}{\theta}$. In *EXTREME CASE 2*, however, $c = 1$, so the money multiplier in this case is = 1.

Rough estimates for θ and c, for the U.S., before the financial crisis which led to the Great Recession were, respectively: 0.10 and 0.40. Plugging these values into the money multiplier formula we get:

$$\frac{1}{[0.40+0.10(1-0.40)]} = 2.17.$$