# Eco 352 Seminar: Contemporary Problems in Macroeconomics

## **The Basic Money Supply Process**

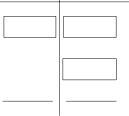
### 1. EXTREME CASE 1: Everyone uses checks

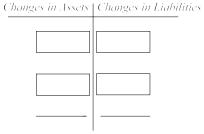
The Central Bank

Schenectady National Bank (SNB)

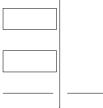
Alice I. Wonderland

Changes in Assets | Changes in Liabilities





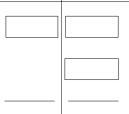
Changes in Assets Changes in Liabilities



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

#### The Central Bank

Changes in Assets | Changes in Liabilities



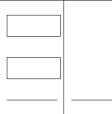
Schenectady National Bank (SNB)

Changes in Assets Changes in Liabilities

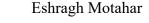


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Changes in Assets Changes in Liabilities



**3.** The General Case



Н	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 (\$)
$\theta$	reserve-deposit ratio: the fraction of deposits that banks hold in reserve $(R/D)$
С	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:

$$CU^{d} = cM^{d}$$

$$D^{d} = (1-c)M^{d}.$$
(1)
(2)

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

$$R^d = \theta D^d.$$

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

$$R^d = \theta(1-c)M^d \tag{4}$$

Total demand for central bank money can be written as:

$$H^d = CU^d + R^d. ag{5}$$

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

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

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

So the formula for the money supply is:

Let

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

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