

Economics 470/570

Midterm 1

Winter 2007

## Part 1

- ① FOMC = Federal open market Committee. This Committee sets monetary policy in its meetings approx 8 times per year. The Committee consists of
- |       |  |
|-------|--|
| 7     | Board of Gov.                            |
| 1     | NY Fed Rep.                              |
| 4     | Rotate among other 11 Fed District Banks |
| <hr/> |  |
| 12    |  |

② The monetary Base is comprised of currency plus reserves, i.e.  $MB = CUR.$

③ Excess reserves are reserves held by banks over and above the amount required ( $req. res = (res req)(Deposits)$ ).

(2)

④ Federal Funds Rate: The ff rate is the rate Banks charge each other for overnight reserve loans. This is the rate the Fed targets when doing monetary policy.

⑤ A double coincidence of wants occurs under a barter economy. It refers to the fact that in order to trade, you must meet someone who (1) has what you want, and (2) wants what you have, i.e. a double coincidence

⑥ Unit of Account refers to one of the functions of money. The unit of account function is the units we use to keep track of prices (e.g. trade cigarettes in prison, but keep prices in dollars, then \$, not cigarettes, is unit of account).

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## Part II

- ① The money supply is measured in two ways, through an empirical approach and through a theoretical approach

Theoretical Approach: Ask whether an asset is a med. of exchange (is defined theoretically as satisfying med. of exch. function). If so, it's money, if it's not a med. of exchange, it's not money. This results in a narrow definition of  $M1 = \text{curr} + \text{Dem. Deposits}$ .

Empirical: Ask which collection of assets is most highly correlated with output, inflation, i-rates, or other macro variables of interest. This generally gives a broader def of money, e.g.  $M2$ .

There is more than one definition

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because we are not exactly sure where to draw the line between assets liquid enough to count as money (should saving count? Probably, what about a stamp collection? Probably not, not liquid enough to spend at will).

Since we aren't sure, we develop an array of definitions ( $R, M_0, M_1, M_2$ , etc.), and let the researchers choose which they think is best.

(2) The multiplier is the result of the following process. First, the Fed injects new Reserves into the banking system. Banks then lend the money to consumers, the money comes back

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to banks, it's relent again, comes back to banks, relent, etc. In this process, every time money is redeposited into banks, new money is created.

Now, in this process, there is only one "leakage" in the movement of money from banks to consumers and back again, the leakage into required reserves, and it is this leakage that limits how much the money supply can expand.

Thus, the more leakages, the less the money supply will expand and the smaller the multiplier. Since currency and excess reserves

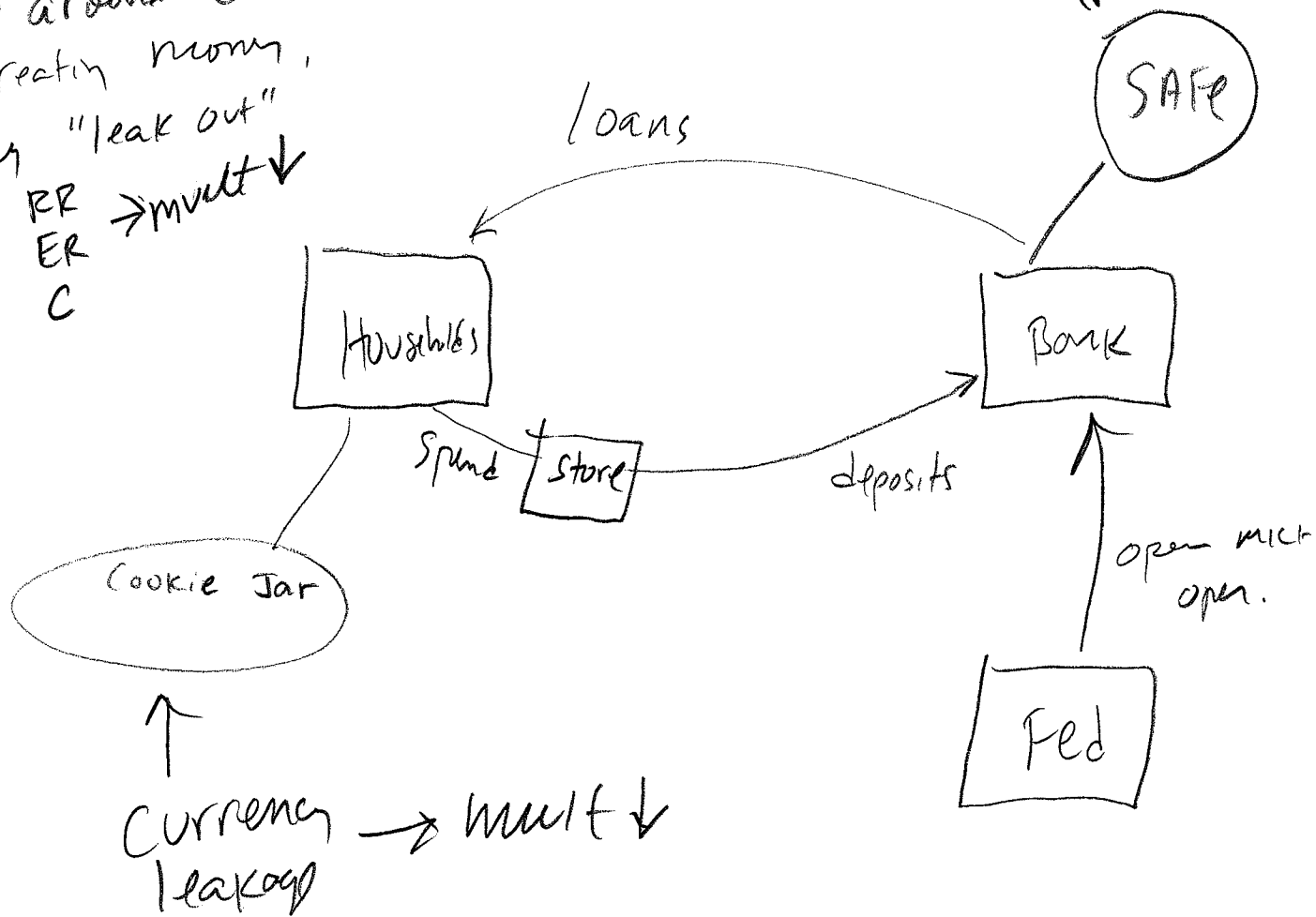
(6)

both represent new leakages, the overall expansion in deposits and hence the  $M^S$  will be smaller giving a smaller multiplier.

In pictures

As new reserves go around circle creating money, they "leak out" to RR ER C  $\rightarrow$  mult  $\downarrow$

RR + ER leakage  $\rightarrow$  mult  $\downarrow$



⑦

③ The constraint is

$$G + \text{int payments} - T = \Delta \text{ money supply} + \Delta \text{ Bond supply}$$

↓  
[OK to omit  
this term → book  
does]

$$\left. \begin{array}{l} G = \text{gov. spending} \\ T = \text{taxes} \end{array} \right\} G + \text{int} - T = \text{deficit} \quad (\text{surplus if positive})$$

Deficit must be financed in

one of two ways,

① by ↑ the money supply [print money].  
This is the  $\Delta$  money supply term

② Issuing debt [borrowing from the public]

This is the  $\Delta$  bond supply term.  
(gov. debt)

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(9) Federal Reserve governors are appointed to 14 year terms, and one term expires every other January. Thus, in a four year term, a president ought to pick, by design anyway, no more than two governors, no more than four of the seven in an 8 year presidential term.

However, due to resignations (governors often retire early), the current administration has been able to pick all seven of the current Federal Reserve Board Governors.



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## Part III

① money serves as a

Medium of exchange: Money used to purchase goods/services, etc., overcomes double coincidence of wants problem under barter.

Unit of Account: Money gives us a convenient way to express prices. Without money, each good has  $N-1$  prices, with money, only one.  $\rightarrow$  # of goods in economy

Store of value: Gives people a perfect liquid means of storing their wealth.

money should be:

- easily standardized, easy to verify value
- widely accepted, e.g. no offensive pictures
- divisible so as to make change
- easy to carry
- storable/durable so savings won't deteriorate
- supply can be controlled

(2)

(10)

A	L
Ex. Res 100,000	

Bank A

Loans  
money →

A	L
-100,000 ER	+100,000 L

→ Loan Spent,  
deposited at  
Bank B

A	L
100,000 R	100,000 DP

Bank B

Bank B Loans  
Out Excess Res

10,000 R	100,000 D
90,000 L	

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→ Loan goes to Bank C, lends out excess R

A	L
9,000 RR	90,000 D
81,000 L	

→ Loan spent, deposited, loan out excess

A	L
8,100 R	81,000
72,900 L	

Add up  $\Delta D = 100,000 + 90,000 + 81,000 + \dots$

$$\Delta D = (1 + .9 + .9^2 + \dots)(100,000) = \left(\frac{1}{1 - .9}\right)(100,000)$$

$$= \left(\frac{1}{.1}\right)(100,000) = 1,000,000$$

$\downarrow$  mult=10       $\downarrow$   $\Delta MB$

So, mult is  $\frac{1}{r_D}$ ,  $r_D =$  req res. ratio.

(12)

③ The Board of Governors consists of seven members appointed by president with the advice and consent of the senate

It is:

- Head of System
- Serve 14 year terms, cannot be reappointed
- One gov. term expires every other Jan
- must come from diff. Fed Districts
- Chair is one of seven Board members, Appointed by Pres for four year term, can be reappointed.
- Chair testifies before Congress, advises pres.
- Board is a majority of FOMC (7 of 12), so, if unified can dominate mon. policy
- effectively sets res. req., discount rate, sets margin requirements.

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1. Center of Power has shifted over time
2. intended to be a highly decentralized system of 12 cooperating banks
3. No role for stabilizing economy - that comes later
4. Only one tool to control  $M^s$  initially, discount loans. Open market operations not well understood, not used.
5. discount rate determined jointly by banks and board of Gov., share equally in mon. policy decisions
6. Changed during Great Depression. Power centralized in Board of Gov., given control of Res. Req. ( $r_D$ ), open mkt. oper. (Banking Acts of 1933, 1935).
7. Over time, Power of Board of Gov. has increased, member banks have little power.
8. Today, functions as a system with main bank in D.C., 12 branches. Power is not shared. Control, effectively,  $r_D$ , open mkt. oper., disc. rate, Appointments of bank directors + presidents (usually suggested by Board of Gov.).

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(4) The  $MB = C + R$

mon. Base

↓  
Currency

↓  
Reserves

Let Fed do an open-market operation with an individual: Buy \$1,000 T-Bill, Pay for with \$1,000 Bill.

A	L
-1,000 T-Bill	
+1,000 C	

(1) Individual keeps currency  
 CT by 1,000  
 RT by 0  


---

 MB ↑ by 1,000

(2) Indiv. puts money in Bank

A	L
-1,000 T-Bill	
+1,000 C	
<hr/>	
-1,000 C	
+1,000 D	

Indiv

R 1,000	D 1,000
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Bank

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In this case:

C ↑ by zero (it's in  
the bank safe)

R ↑ by 1,000

---

MB ↑ by 1,000

(3) Split: keep, say, \$ 250 cash,  
put \$ 750 in Bank

C ↑ 250

R ↑ 750

---

MB ↑ 1,000

So, while C and R can vary  
depending upon how much C the  
Indiv. wants to carry, MB  
always ↑ by 1,000

⇒ MB controls more precisely  
the R.

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But, control is not perfect. Some OF reserves come from Discount Loans, and those are bank's choice, not Fed [i.e.  $MB = MB_N + DL$ ]

↓                      ↓  
open                      disc.  
mkt.                      loans  
open

C can be controlled, but they do not attempt to do so → provide as much C as demanded.

$$\text{mult} = \frac{1 + c/d}{r_d + c/d + e/d}, \text{ Turns}$$

MB into M (multiplies it) :

$$M = (\text{mult})(MB)$$



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As just noted, Disc. Loans make  
the MB subject to imprecise control.  
What about mult?

$r_D \rightarrow$  Fed's choice

$c/D \rightarrow$  household choice

$ER/D \rightarrow$  Bank's choice

So, mult not perfectly controlled  
since they do not pick all the  
elements. But, it's still fairly  
stable over long-time periods.