

Chapter 19

Bank Reserves and the Money Supply

Payment System

Process

Payments are made by:

- Coin & currency
- Checks
- Electronic transfer

Coins

- Dependent on the value of the underlying metal
- Govt tried to standardize the value by accepting coins with specified metallic content at face value in pymts of taxes & fees

Currency

- Acceptance of bank notes dependent on credit worthiness of institution
- wildcat banking
- directories of banks, their financial strength and value of currency
- Standardize value of notes of different banks
 - A. Notes collected issued by target bank and presented in large batch
 - B. Cooperating banks agreed to maintain deposits with each other - Suffolk System
 - C. Fees on cooperating bank
- National Bank Act of 1863
- Natl charters
- Authorization of national currency issued by natl banks
- Tax notes other than Treasury notes

Checks

- Problem-had to be physically presented for payment
- Discounted (non-par banking)
- Correspondent banks
- Local Clearing House
- CIPC = Bank float
- T-Account
- Check Kiting
- Intercity Clearing
- Federal Reserve System
 - Max. 2 day delay
 - DACI
 - CIPC
- Fed Float=CIPC-DACI

DEPOSIT EXPANSION/ MONEY MULTIPLIER

The quantity of money (M1 or M) that exists in the economy is related to the reserves in financial institutions and currency in circulation. It is necessary to understand this relationship, which is summarized by the Money multiplier, in order to understand how the money stock can be changed.

1. Money definition: $M = C + DD + OCD$
2. Reserve definitions: $TR = VC + FD = RR + ER$
 $RR = r_D DD + r_t NPTD + r_o OCD$
 $MB = TR + C$

$$c = \frac{C}{DD} \quad o = \frac{OCD}{DD} \quad t = \frac{NPTD}{DD} \quad e = \frac{ER}{DD}$$

3. Behavioral relationships:

4. Let k represent the money multiplier. Then;

$$M = k (MB)$$

or, the existing money stock is some multiple of the monetary base.

5. Solve for k, using definitions:

$$M = k [MB]$$

$$C + DD + OCD = k [RR + ER + C]$$

$$C + DD + OCD = k [r_d DD + r_t NPTD + r_o OCD + ER + C]$$

$$k = \frac{c DD + DD + o DD}{r_d DD + r_t t DD + r_o o DD + e DD + c DD}$$

$$cDD + DD + oDD = k [r_d DD + r_t t DD + r_o o DD + e DD + c DD]$$

$$k = \frac{1 + c + o}{r_d + r_t t + r_o o + e + c}$$

Cancel DD on the right side:

$$M = \left[\frac{1 + c + o}{r_d + r_t t + r_o o + e + c} \right] MB$$

6. The Money - Monetary Base relationship is

7. If we assume that the behavioral relationships (c, o, t and e) are constant, and that reserve requirements (k) are not changed, then a change in the monetary base will translate directly into a proportional change in money.

$$\Delta M = k \Delta MB$$

DEPOSIT EXPANSION PROBLEM SET

1. DF and M National Bank, one of many banks in the banking system, has the following balance sheet: (Both Savings and time deposit are nonpersonal)

Vault Cash	\$ 100,000	\$1,000,000	Demand Deposits (DD)
Deposits @ Fed	600,000	1,500,000	Savings Deposits
Treasury Securities	1,300,000	1,500,000	Time Deposits
Loans	<u>2,400,000</u>	<u>400,000</u>	Net Worth
	\$4,400,000	\$4,400,000	

If $r_d = .10$ and $r_t = .05$, compute the following values for DF & M under two policies. Policy A -- maintain zero excess reserves (all excess reserves are loaned out); Policy B -- maintain excess reserves equal to \$50,000.

	<u>Policy A</u>	<u>Policy B</u>
a. Total Reserves	_____	_____
b. Required reserves on DD	_____	_____
c. Required reserves on time and savings	_____	_____
d. Total required reserves	_____	_____
e. Excess reserves	_____	_____
f. Total new loans that could be extended	_____	_____

2. Beginning with the original balance sheet (from #1) what would the new balance sheet look like after DF & M extends \$100,000 in loans and the loaned funds are deposited into DF & M demand accounts?

Vault Cash	_____	_____	Demand Deposits
Deposits @ Fed	_____	_____	Savings Deposits
Treasury Securities	_____	_____	Time Deposits
Loans	_____	_____	Net Worth
Total	_____	_____	Total

3. Beginning with the original balance sheet (from #1) what would the new balance sheet look like after DF&M buys \$100,000 in Treasury securities (**paying for them by transferring funds from their account at the Fed**)?

Vault Cash	_____	_____	Demand Deposits
Deposits @ Fed	_____	_____	Savings Deposits
Treasury Securities	_____	_____	Time Deposits
Loans	_____	_____	Net Worth
Total	_____	_____	Total

4. Using the simple money multiplier ($K = 1/r_d$): where $r_d = .10$

a. How much has the money supply ultimately changed due to the loan in #2?

b. How much has the money supply changed due to the security purchase in #3?

5. Mike White, who has a **checking account** at DF&M National Bank, deposits a check for **\$2000**. How have each of the following items **changed** for DF&M as a result of this transaction, beginning with the original balance sheet (in #1)?

- a. Total Reserve _____
- b. Required Reserves (total) _____
- c. Excess Reserves _____

6. Lou Henson, also a DF&M customer, switches **\$2,000 from his savings account to his checking (DD) account**. How have each of the following items **changed** as a result of this transaction, again beginning with the original balance sheet (in #1)?

- a. Total Reserve _____
- b. Required Reserves (total) _____
- c. Excess Reserves _____

7. Using the reserve requirements given in #1 and $c=.2$, $t=2$, $e=.05$ $o=0$, give the value of the following for the banking system for a **decrease in the monetary base of \$5,000**.
- a. Money Multiplier _____
 - b. Change in the money supply _____
 - c. Change in demand deposits _____
 - d. Change in currency _____
 - e. Change in time & savings deposits _____
 - f. Change in excess reserves _____
 - g. Change in required reserves _____
 - h. Change in total reserves _____

