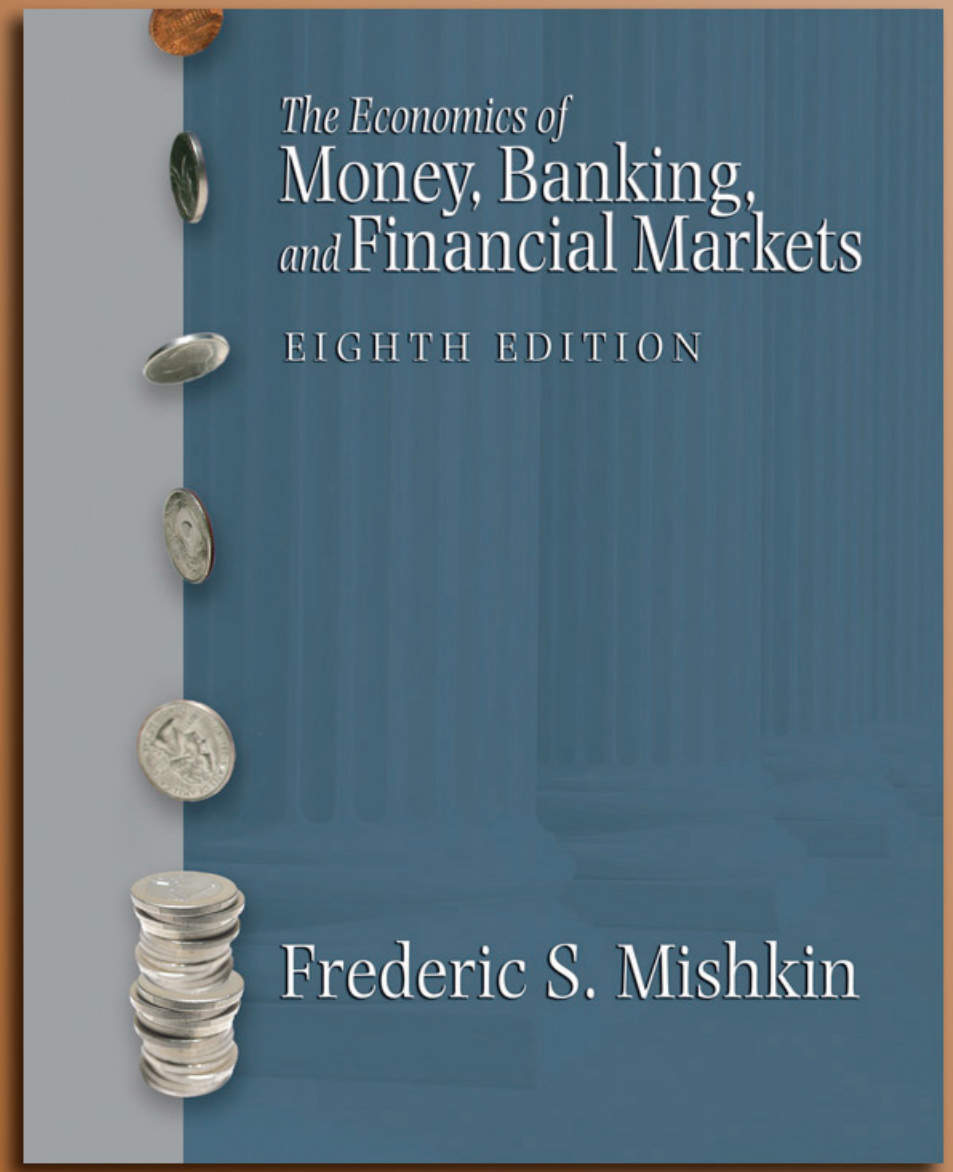

Chapter 13

Multiple Deposit Creation and the Money Supply Process

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Players in the Money Supply Process

- Central bank (Federal Reserve System)
- Banks (depository institutions; financial intermediaries)
- Depositors (individuals and institutions)
- Borrowers (individuals and institutions)

Fed's Balance Sheet

Federal Reserve System	
Assets	Liabilities
Government securities	Currency in circulation
Discount loans	Reserves

- Monetary Liabilities
  - Currency in circulation—in the hands of the public
  - Reserves—bank deposits at the Fed and vault cash
- Assets
  - Government securities—holdings by the Fed that affect money supply and earn interest
  - Discount loans—provide reserves to banks and earn the discount rate

Monetary Base

High-powered money

$$MB = C + R$$

C = currency in circulation

R = total reserves in the banking system

Open Market Purchase from a Bank

Banking System	
Assets	Liabilities
Securities -$100	
Reserves +$100	

Federal Reserve System	
Assets	Liabilities
Securities +$100	Reserves +$100

- Net result is that reserves have increased by $100
- No change in currency
- Monetary base has risen by $100

Open Market Purchase from Nonbank Public I

Banking System	
Assets	Liabilities
Reserves +$100	Checkable deposits +$100

Federal Reserve System	
Assets	Liabilities
Securities +$100	Reserves +$100

- Person selling bonds to the Fed deposits the Fed's check in the bank
- Identical result as the purchase from a bank

Open Market Purchase from Nonbank Public II

Nonbank Public	
Assets	Liabilities
Securities -$100	
Currency +$100	

Federal Reserve System	
Assets	Liabilities
Securities +$100	Currency in circulation +$100

- The person selling the bonds cashes the Fed's check
- Reserves are unchanged
- Currency in circulation increases by the amount of the open market purchase
- Monetary base increases by the amount of the open market purchase

Open Market Purchase: Summary

- The effect of an open market purchase on reserves depends on whether the seller of the bonds keeps the proceeds from the sale in currency or in deposits
- The effect of an open market purchase on the monetary base always increases the base by the amount of the purchase

Open Market Sale

Nonbank Public	
Assets	Liabilities
Securities +$100	
Currency -$100	

Federal Reserve System	
Assets	Liabilities
Securities -$100	Currency in circulation -$100

- Reduces the monetary base by the amount of the sale
- Reserves remain unchanged
- The effect of open market operations on the monetary base is much more certain than the effect on reserves

Shifts from Deposits into Currency

Nonbank Public	
Assets	Liabilities
Checkable deposits +$100	
Currency -$100	

Banking System	
Assets	Liabilities
Reserves +$100	Checkable deposits -$100

Federal Reserve System	
Assets	Liabilities
	Currency in circulation +$100
	Reserves -$100

Net effect
on monetary liabilities
is zero
Reserves are changed
by random fluctuations
Monetary base
is a more stable variable

Making a Discount Loan to a Bank

Banking System	
Assets	Liabilities
Reserves +$100	Discount loans +$100
	(borrowing from Fed)

Federal Reserve System	
Assets	Liabilities
Discount loan +$100	Reserves +$100
(borrowing from Fed)	

- Monetary liabilities of the Fed have increased by $100
- Monetary base also increases by this amount

Paying Off a Discount Loan from the Fed

Banking System	
Assets	Liabilities
Reserves -$100	Discount loans -$100
	(borrowing from Fed)

Federal Reserve System	
Assets	Liabilities
Discount loans -$100	Reserves -$100
(borrowing from Fed)	

- Net effect on monetary base is a reduction
- Monetary base changes one-for-one with a change in the borrowings from the Federal Reserve System

Other Factors Affecting the Monetary Base

- Float
- Treasury deposits at the Federal Reserve
- Interventions in the foreign exchange market

Deposit Creation: Single Bank

First National Bank	
Assets	Liabilities
Securities -$100	
Reserves +$100	

First National Bank	
Assets	Liabilities
Securities -$100	Checkable deposits +$100
Reserves +$100	
Loans +$100	

First National Bank	
Assets	Liabilities
Securities -$100	
Loans +$100	

Excess reserves increase

Bank loans out the excess reserves

Creates a checking account

Borrower makes purchases

The money supply has increased

Deposit Creation: The Banking System

Bank A		Bank A	
Assets	Liabilities	Assets	Liabilities
Reserves +$100	Checkable deposits +$100	Reserves +$10	Checkable deposits +$100
		Loans +$90	

Bank B		Bank B	
Assets	Liabilities	Assets	Liabilities
Reserves +$90	Checkable deposits +$90	Reserves +$9	Checkable deposits +$90
		Loans +$81	

TABLE 1 Creation of Deposits (assuming 10% reserve requirement and a $100 increase in reserves)

Bank	Increase in Deposits ($)	Increase in Loans ($)	Increase in Reserves ($)
First National	0.00	100.00	0.00
A	100.00	90.00	10.00
B	90.00	81.00	9.00
C	81.00	72.90	8.10
D	72.90	65.61	7.29
E	65.61	59.05	6.56
F	59.05	53.14	5.91
.	.	.	.
.	.	.	.
.	.	.	.
Total for all banks	1,000.00	1,000.00	100.00

The Formula for Multiple Deposit Creation

Assuming banks do not hold excess reserves

Required Reserves (RR) = Total Reserves (R)

RR = Required Reserve Ratio (r) times the total amount of checkable deposits (D)

Substituting

$$r \times D = R$$

Dividing both sides by r

$$D = \frac{1}{r} \times R$$

Taking the change in both sides yields

$$\Delta D = \frac{1}{r} \times \Delta R$$

Critique of the Simple Model

- Holding cash stops the process
- Banks may not use all of their excess reserves to buy securities or make loans