Chapter

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The Money Supply and the Federal Reserve System

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The Money Supply and the Federal Reserve System

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Chapter Outline

AN OVERVIEW OF MONEY

WHAT IS MONEY?

Money is anything that is generally accepted as a medium of exchange.

A Means of Payment, or Medium of Exchange

barter The direct exchange of goods and services for other goods and services.

medium of exchange, or **means of payment** What sellers generally accept and buyers generally use to pay for goods and services.

AN OVERVIEW OF MONEY

A Store of Value

store of value An asset that can be used to transport purchasing power from one time period to another.

liquidity property of money The property of money that makes it a good medium of exchange as well as a store of value: It is portable and readily accepted and thus easily exchanged for goods.

AN OVERVIEW OF MONEY

A Unit of Account

unit of account A standard unit that provides a consistent way of quoting prices.

AN OVERVIEW OF MONEY

COMMODITY AND FIAT MONIES

commodity monies Items used as money that also have intrinsic value in some other use.

fiat, or **token, money** Items designated as money that are intrinsically worthless.

AN OVERVIEW OF MONEY

legal tender Money that a government has required to be accepted in settlement of debts.

currency debasement The decrease in the value of money that occurs when its supply is increased rapidly.

AN OVERVIEW OF MONEY

MEASURING THE SUPPLY OF MONEY IN THE UNITED STATES

M1: Transactions Money

M1, or **transactions money** Money that can be directly used for transactions.

M1 ≡ currency held outside banks + demand deposits + traveler's checks + other checkable deposits

AN OVERVIEW OF MONEY

M2: Broad Money

near monies Close substitutes for transactions money, such as savings accounts and money market accounts.

M2, or broad money M1 plus savings accounts, money market accounts, and other near monies.

M2 ≡ M1 + savings accounts + money market accounts + other near monies

AN OVERVIEW OF MONEY

Beyond M2

There are no rules for deciding what is money and what is not. This poses problems for economists and those in charge of economic policy.

AN OVERVIEW OF MONEY

THE PRIVATE BANKING SYSTEM

financial intermediaries Banks and other institutions that act as a link between those who have money to lend and those who want to borrow money.

HOW BANKS CREATE MONEY

A HISTORICAL PERSPECTIVE: GOLDSMITHS

run on a bank Occurs when many of those who have claims on a bank (deposits) present them at the same time.

HOW BANKS CREATE MONEY

THE MODERN BANKING SYSTEM

A Brief Review of Accounting

Assets − Liabilities ≡ Net Worth,
or
Assets ≡ Liabilities + Net Worth

Federal Reserve Bank (the Fed) The central bank of the United States.

HOW BANKS CREATE MONEY

	Assets	Liabilities	
Reserves	20	100	Deposits
Loans	90	10	Net worth
Total	110	110	Total

FIGURE 10.1 T-Account for a Typical Bank (millions of dollars)

HOW BANKS CREATE MONEY

reserves The deposits that a bank has at the Federal Reserve bank plus its cash on hand.

required reserve ratio The percentage of its total deposits that a bank must keep as reserves at the Federal Reserve.

When some item on a bank's balance sheet changes, there must be at least one other change somewhere else to maintain balance.

HOW BANKS CREATE MONEY

THE CREATION OF MONEY

Banks usually make loans up to the point where they can no longer do so because of the reserve requirement restriction.

excess reserves The difference between a bank's actual reserves and its required reserves.

excess reserves ≡ actual reserves − required reserves

HOW BANKS CREATE MONEY

Panel 1

Assets	Liabilities
Reserves 0	0 Deposits

Panel 2

Assets	Liabilities
Reserves 100	100 Deposits

Panel 3

Assets	Liabilities
Reserves 100 Loans 400	500 Deposits

FIGURE 10.2 Balance Sheets of a Bank in a Single-Bank Economy

HOW BANKS CREATE MONEY

	Panel 1 Assets	Panel 1 ?Liabilities	Panel 2 Assets	Panel 2 ?Liabilities	Panel 3 Assets	Panel 3 ?Liabilities
Bank 1	Reserves 100	100 Deposits	Reserves 100 Loans 80	180 Deposits	Reserves 20 Loans 80	100 Deposits
Bank 2	Reserves 80	80 Deposits	Reserves 80 Loans 64	144 Deposits	Reserves 16 Loans 64	80 Deposits
Bank 3	Reserves 64	64 Deposits	Reserves 64 Loans 51.20	115.20 Deposits	Reserves 12.80 Loans 51.20	64 Deposits

Summary:	Loans	Deposits
Bank 1	80	100
Bank 2	64	80
Bank 3	51.20	64
Bank 4	40.96	51.20
⋮	⋮	⋮
Total	400.00	500.00

FIGURE 10.3 The Creation of Money When There Are Many Banks

HOW BANKS CREATE MONEY

THE MONEY MULTIPLIER

An increase in bank reserves leads to a greater than one-for-one increase in the money supply. Economists call the relationship between the final change in deposits and the change in reserves that caused this change the *money multiplier*. Stated somewhat differently, the money multiplier is the multiple by which deposits can increase for every dollar increase in reserves.

money multiplier The multiple by which deposits can increase for every dollar increase in reserves; equal to 1 divided by the required reserve ratio.

$$\text{money multiplier} \equiv \frac{1}{\text{required reserve ratio}}$$

THE FEDERAL RESERVE SYSTEM

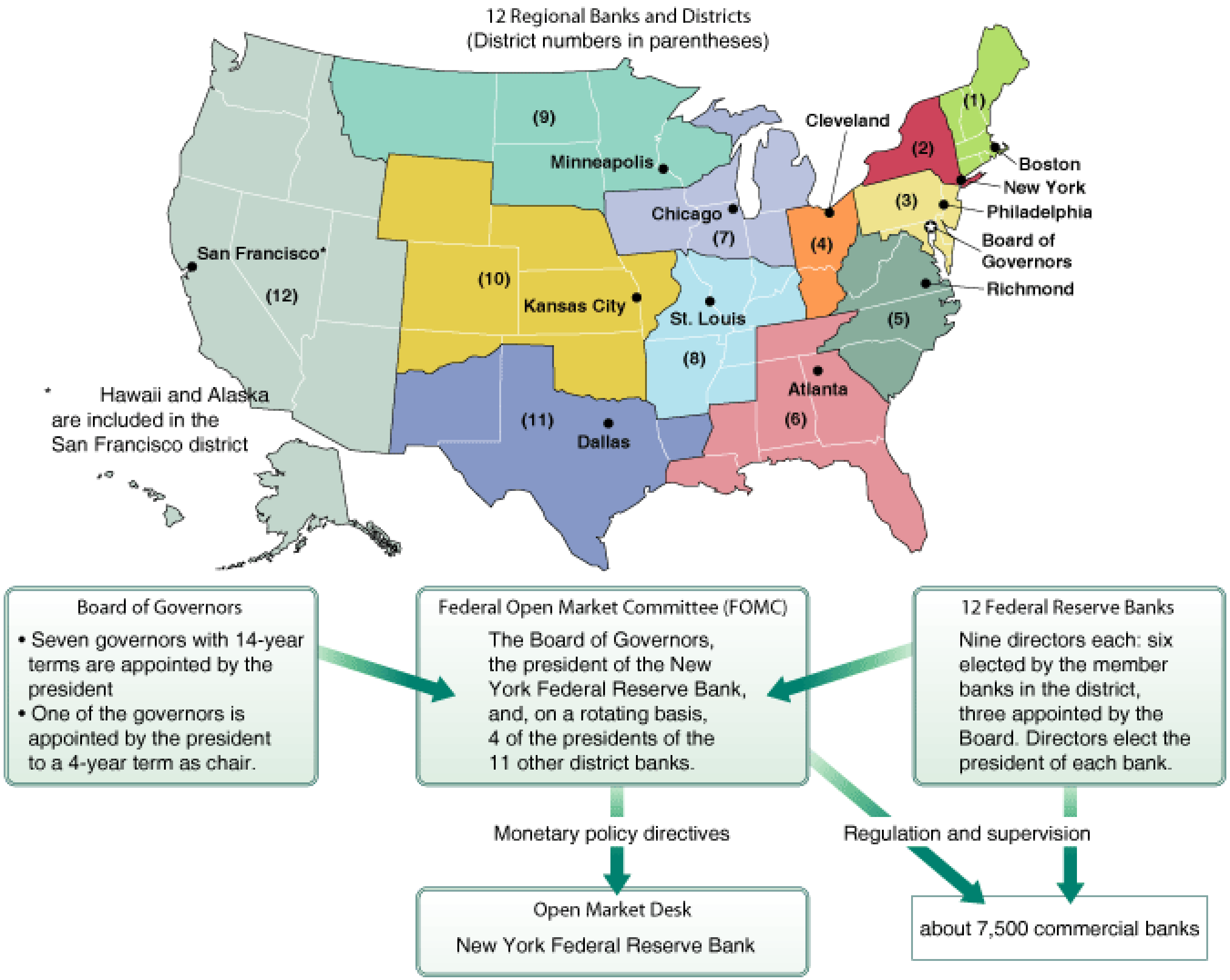

FIGURE 10.4 **The Structure of the Federal Reserve System**

THE FEDERAL RESERVE SYSTEM

Federal Open Market Committee (FOMC) A group composed of the seven members of the Fed’s Board of Governors, the president of the New York Federal Reserve Bank, and four of the other eleven district bank presidents on a rotating basis; it sets goals concerning the money supply and interest rates and directs the operation of the Open Market Desk in New York.

Open Market Desk The office in the New York Federal Reserve Bank from which government securities are bought and sold by the Fed.

THE FEDERAL RESERVE SYSTEM

FUNCTIONS OF THE FEDERAL RESERVE

Clearing Interbank Payments

The Fed does it.

The funds move at the speed of electricity from one computer account to another.

THE FEDERAL RESERVE SYSTEM

Other Duties of the Fed

lender of last resort One of the functions of the Fed: It provides funds to troubled banks that cannot find any other sources of funds.

THE FEDERAL RESERVE SYSTEM

THE FEDERAL RESERVE BALANCE SHEET

TABLE 10.1 **Assets and Liabilities of the Federal Reserve System, August 3, 2005 (Millions of Dollars)**

ASSETS		LIABILITIES	
Gold	$ 4,037	$729,601	Federal Reserve notes (outstanding)
Loans to banks	3,330		Deposits:
U.S. Treasury securities	724,700	26,130	Bank reserves (from depository institutions)
		4,813	U.S. Treasury
All other assets	81,843	60,366	All other liabilities and net worth
Total	$ 820,910	$820,910	Total

Source: Board of Governors of the Federal Reserve System.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

If the Fed wants to increase the supply of money, it creates more reserves, thereby freeing banks to create additional deposits by making more loans. If it wants to decrease the money supply, it reduces reserves.

Three tools are available to the Fed for changing the money supply:

(1) changing the required reserve ratio;

(2) changing the discount rate; and

(3) engaging in open market operations.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

THE REQUIRED RESERVE RATIO

TABLE 10.2 A Decrease in the Required Reserve Ratio from 20 Percent to 12.5 Percent Increases the Supply of Money (All Figures in Billions of Dollars)

PANEL 1: REQUIRED RESERVE RATIO = 20%

Federal Reserve				Commercial Banks			
Assets		Liabilities		Assets		Liabilities	
Government securities	$200	$100	Reserves	Reserves	$100	$500	Deposits
		$100	Currency	Loans	$400		

Note: Money supply (*M*1) = Currency + Deposits = $600.

PANEL 2: REQUIRED RESERVE RATIO = 12.5%

Federal Reserve				Commercial Banks			
Assets		Liabilities		Assets		Liabilities	
Government securities	$200	$100	Reserves	Reserves	$100	$800	Deposits (+ $300)
		$100	Currency	Loans (+ $300)	$700		

Note: Money supply (*M*1) = Currency + Deposits = $900.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

Decreases in the required reserve ratio allow banks to have more deposits with the existing volume of reserves. As banks create more deposits by making loans, the supply of money (currency + deposits) increases. The reverse is also true: If the Fed wants to restrict the supply of money, it can raise the required reserve ratio, in which case banks will find that they have insufficient reserves and must therefore reduce their deposits by "calling in" some of their loans. The result is a decrease in the money supply.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

THE DISCOUNT RATE

discount rate Interest rate that banks pay to the Fed to borrow from it.

Bank borrowing from the Fed leads to an increase in the money supply.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

TABLE 10.3 **The Effect on the Money Supply of Commercial Bank Borrowing from the Fed (All Figures in Billions of Dollars)**

PANEL 1: NO COMMERCIAL BANK BORROWING FROM THE FED

Federal Reserve				Commercial Banks			
Assets		Liabilities		Assets		Liabilities	
Securities	$160	$80	Reserves	Reserves	$80	$400	Deposits
		$80	Currency	Loans	$320		

Note: Money supply ($M1$) = Currency + Deposits = $480.

PANEL 2: COMMERCIAL BANK BORROWING $20 FROM THE FED

Federal Reserve				Commercial Banks			
Assets		Liabilities		Assets		Liabilities	
Securities	$160	$100	Reserves (+ $20)	Reserves (+ $20)	$100	$500	Deposits (+ $300)
Loans	$20	$80	Currency	Loans (+ $100)	$420	$20	Amount owed to Fed (+ $20)

Note: Money supply ($M1$) = Currency + Deposits = $580.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

The Fed can influence bank borrowing, and thus the money supply, through the discount rate:

The higher the discount rate, the higher the cost of borrowing, and the less borrowing banks will want to do.

moral suasion The pressure that in the past the Fed exerted on member banks to discourage them from borrowing heavily from the Fed.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

OPEN MARKET OPERATIONS

open market operations The purchase and sale by the Fed of government securities in the open market; a tool used to expand or contract the amount of reserves in the system and thus the money supply.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

Two Branches of Government Deal in Government Securities

The Treasury Department is responsible for collecting taxes and paying the federal government's bills.

The Treasury *cannot* print money to finance the deficit.

The Fed is not the Treasury. Instead, it is a quasi-independent agency authorized by Congress to buy and sell *outstanding* (preexisting) U.S. government securities on the open market.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

The Mechanics of Open Market Operations

TABLE 10.4 Open Market Operations (The Numbers in Parentheses in Panels 2 and 3 Show the Differences Between Those Panels and Panel 1. All Figures in Billions of Dollars)

PANEL 1

Federal Reserve				Commercial Banks				Jane Q. Public			
Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
Securities	$100	$20	Reserves	Reserves	$20	$100	Deposits	Deposits	$5	$0	Debts
		$80	Currency	Loans	$80					$5	Net Worth

Note: Money supply (*M*1) = Currency + Deposits = $180.

PANEL 2

Federal Reserve				Commercial Banks				Jane Q. Public			
Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
Securities	$95	$15	Reserves	Reserves	$15	$95	Deposits	Deposits	$0	$0	Debts
(– $5)			(– $5)	(– $5)			(– $5)	(– $5)			
		$80	Currency	Loans	$80			Securities	$5	$5	Net Worth
								(+ $5)			

Note: Money supply (*M*1) = Currency + Deposits = $175.

PANEL 3

Federal Reserve				Commercial Banks				Jane Q. Public			
Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
Securities	$95	$15	Reserves	Reserves	$15	$75	Deposits	Deposits	$0	$0	Debts
(– $5)			(– $5)	(– $5)			(– $25)	(– $5)			
		$80	Currency	Loans	$60			Securities	$5	$5	Net Worth
				(– $20)				(+ $5)			

Note: Money supply (*M*1) = Currency + Deposits = $155.

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

We can sum up the effect of these open market operations this way:

- **An open market *purchase* of securities by the Fed results in an *increase* in reserves and an *increase* in the supply of money by an amount equal to the money multiplier times the change in reserves.**
- **An open market *sale* of securities by the Fed results in a *decrease* in reserves and a *decrease* in the supply of money by an amount equal to the money multiplier times the change in reserves.**

HOW THE FEDERAL RESERVE CONTROLS THE MONEY SUPPLY

THE SUPPLY CURVE FOR MONEY

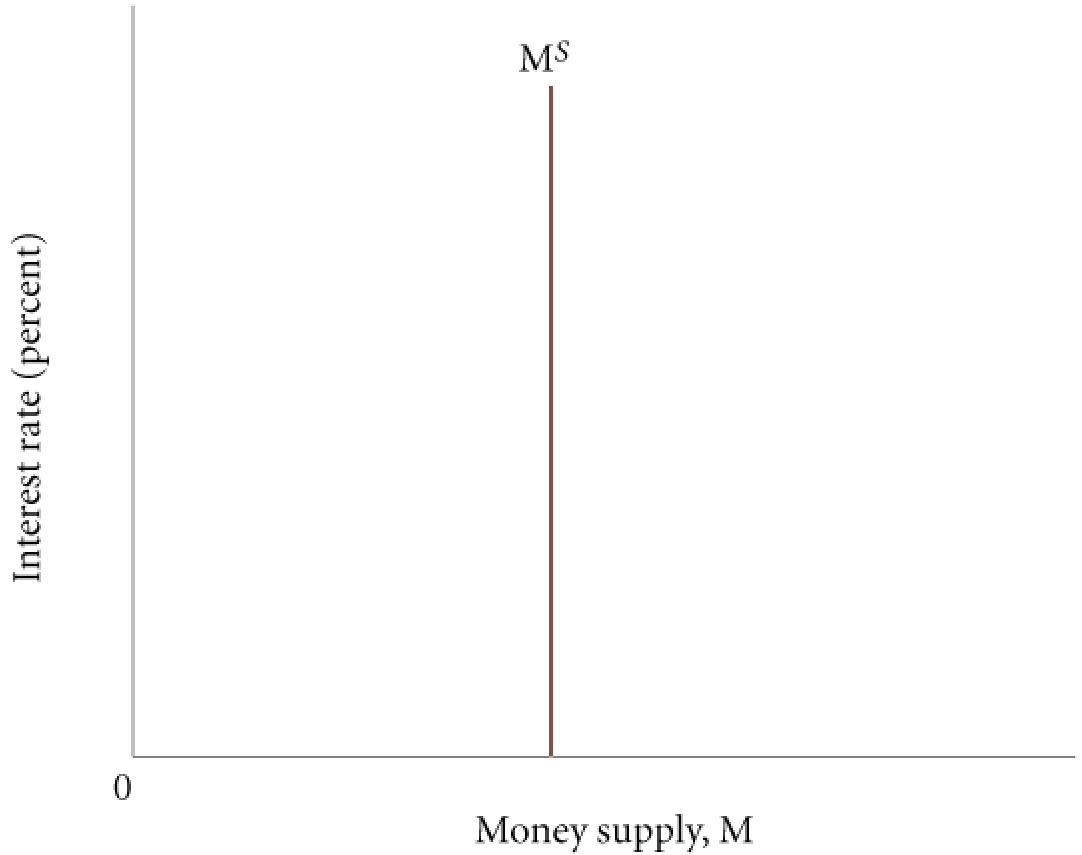

FIGURE 10.5 The Supply of Money

REVIEW TERMS AND CONCEPTS

barter
commodity monies
currency debasement
discount rate
excess reserves
Federal Open Market Committee (FOMC)
Federal Reserve Bank (the Fed)
fiat, or token, money
financial intermediaries
legal tender
lender of last resort
liquidity property of money
M1, or transactions money
M2, or broad money
medium of exchange, or means of payment
money multiplier
moral suasion
near monies
Open Market Desk
open market operations
required reserve ratio
reserves
run on a bank
store of value
unit of account

1. M1 ≡ currency held outside banks + demand deposits + traveler's checks + other checkable deposits
2. M2 ≡ M1 + savings accounts + money market accounts + other near monies
3. Assets ≡ liabilities + capital (or net worth)
4. Excess reserves ≡ actual reserves − required reserves
5. Money multiplier $\equiv \dfrac{1}{\text{required reserve ratio}}$

