



29 **The Monetary System**

PRINCIPLES OF
ECONOMICS
FOURTH EDITION

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**PowerPoint® Slides
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In this chapter, look for the answers to these questions:

- What assets are considered “money”? What are the functions of money? The types of money?
- What is the Federal Reserve?
- What role do banks play in the monetary system?
How do banks “create money”?
- How does the Federal Reserve control the money supply?

What Money Is, and Why It's Important



- Without money, trade would require **barter**, the exchange of one good or service for another.
- Every transaction would require a **double coincidence of wants** – the unlikely occurrence that two people each have a good the other wants.
- Most people would have to spend time searching for others to trade with – a huge waste of resources.
- This searching is unnecessary with **money**, the set of assets that people regularly use to buy g&s from other people.

The 3 Functions of Money



- **Medium of exchange:** an item buyers give to sellers when they want to purchase g&s
- **Unit of account:** the yardstick people use to post prices and record debts
- **Store of value:** an item people can use to transfer purchasing power from the present to the future

The 2 Kinds of Money

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Commodity money:

takes the form of a commodity with intrinsic value

Examples: gold coins, cigarettes in POW camps



Fiat money:

money without intrinsic value, used as money because of govt decree

Example: the U.S. dollar

The Money Supply



- The **money supply** (or **money stock**): the quantity of money available in the economy
- What assets should be considered part of the money supply? Here are two candidates:
 - **Currency**: the paper bills and coins in the hands of the (non-bank) public
 - **Demand deposits**: balances in bank accounts that depositors can access on demand by writing a check

Measures of the U.S. Money Supply



- **M1**: currency, demand deposits, traveler's checks, and other checkable deposits.
M1 = \$1.4 trillion (October 2005)
- **M2**: everything in M1 plus savings deposits, small time deposits, money market mutual funds, and a few minor categories.
M2 = \$6.6 trillion (October 2005)

The distinction between M1 and M2 will usually not matter when we talk about “the money supply” in this course.

Central Banks & Monetary Policy



- **Central bank:** an institution that oversees the banking system and regulates the money supply
- **Monetary policy:** the setting of the money supply by policymakers in the central bank
- **Federal Reserve (Fed):** the central bank of the U.S.

Bank Reserves



- In a **fractional reserve banking system**, banks keep a fraction of deposits as **reserves**, and use the rest to make loans.
- The Fed establishes **reserve requirements**, regulations on the minimum amount of reserves that banks must hold against deposits.
- Banks may hold more than this minimum amount if they choose.
- The **reserve ratio**, R
= fraction of deposits that banks hold as reserves
= total reserves as a percentage of total

Bank T-account



- **T-account:** a simplified accounting statement that shows a bank's assets & liabilities.

- Example:

FIRST NATIONAL BANK

Assets		Liabilities	
Reserves	\$ 10	Deposits	\$100
Loans	\$ 90		

- Banks' liabilities include deposits, assets include loans & reserves.
- In this example, notice that $R = \$10/\$100 = 10\%$.

Banks and the Money Supply: An Example⁰

Suppose \$100 of currency is in circulation.

To determine banks' impact on money supply, we calculate the money supply in 3 different cases:

1. No banking system
2. 100% reserve banking system:
banks hold 100% of deposits as reserves,
make no loans
3. Fractional reserve banking system

Banks and the Money Supply: An Example

CASE 1: no banking system

Public holds the \$100 as currency.

Money supply = \$100.

Banks and the Money Supply: An Example⁰

CASE 2: 100% reserve banking system

Public deposits the \$100 at First National Bank (FNB).

FNB holds

100% of

deposit

as reserves:

FIRST NATIONAL BANK

Assets

Liabilities

Reserves	\$100	Deposits	\$100
Loans	\$ 0		

Money supply

$$= \text{currency} + \text{deposits} = \$0 + \$100 = \underline{\$100}$$

***In a 100% reserve banking system,
banks do not affect size of money supply.***

Banks and the Money Supply: An Example⁰

CASE 3: fractional reserve banking system

Suppose $R = 10\%$. FNB loans all but 10% of the deposit:

FIRST NATIONAL BANK			
Assets		Liabilities	
Reserves	\$ 10	Deposits	\$100
Loans	\$ 90		

Money supply = \$190 (!!!)
depositors have \$100 in deposits,
borrowers have \$90 in currency.

Banks and the Money Supply: An Example⁰

CASE 3: fractional reserve banking system

How did the money supply suddenly grow?

When banks make loans, they create money.

The borrower gets

- \$90 in currency (an asset counted in the money supply)
- \$90 in new debt (a liability)

***A fractional reserve banking system
creates money, but not wealth.***

Banks and the Money Supply: An Example⁰

CASE 3: fractional reserve banking system

Suppose borrower deposits the \$90 at Second National Bank (SNB).

Initially, SNB's

T-account

looks like this:

SECOND NATIONAL BANK

Assets

Liabilities

Reserves	\$	9	Deposits	\$ 90
Loans	\$	81		

If $R = 10\%$ for SNB, it will loan all but 10% of the deposit.

Banks and the Money Supply: An Example⁰

CASE 3: fractional reserve banking system

The borrower deposits the \$81 at Third National Bank (TNB).

Initially, TNB's
T-account
looks like this:

THIRD NATIONAL BANK			
Assets		Liabilities	
Reserves	\$ 8.10	Deposits	\$ 81
Loans	\$72.90		

If $R = 10\%$ for TNB, it will loan all but 10% of the deposit.

Banks and the Money Supply: An Example

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CASE 3: fractional reserve banking system

The process continues, and money is created with each new loan.

	\$	
	100.00	
Original deposit =	\$	
FNB lending =	90.00	
SNB lending =	\$	
TNB lending =	81.00	
:	\$	
	72.90	
	:	
	c	

In this example, \$100 of reserves generate \$1000 of money.

The Money Multiplier



- **Money multiplier:** the amount of money the banking system generates with each dollar of reserves
- The money multiplier equals $1/R$.
- In our example,
 $R = 10\%$
 money multiplier = $1/R = 10$
 \$100 of reserves creates \$1000 of money

ACTIVE LEARNING 1:

Exercise



While cleaning your apartment, you look under the sofa cushion find a \$50 bill (and a half-eaten taco). You deposit the bill in your checking account. The Fed's reserve requirement is 20% of deposits.

- A. What is the maximum amount that the money supply could increase?
- B. What is the minimum amount that the money supply could increase?

ACTIVE LEARNING 1:

Answers



You deposit \$50 in your checking account.

A. What is the maximum amount that the money supply could increase?

If banks hold no excess reserves, then
money multiplier = $1/R = 1/0.2 = 5$

The maximum possible increase in deposits is
 $5 \times \$50 = \250

But money supply also includes currency,
which falls by \$50.

Hence, max increase in money supply = **\$200**.

ACTIVE LEARNING 1:

Answers



You deposit \$50 in your checking account.

A. What is the maximum amount that the money supply could increase?

Answer: \$200

B. What is the minimum amount that the money supply could increase?

Answer: \$0

If your bank makes no loans from your deposit, currency falls by \$50, deposits increase by \$50, money supply remains unchanged.

The Fed's 3 Tools of Monetary Control



1. **Open-Market Operations (OMOs):** the purchase and sale of U.S. government bonds by the Fed.
 - To increase money supply, Fed buys govt bonds, paying with new dollars.
...which are deposited in banks, increasing reserves
...which banks use to make loans, causing the money supply to expand.
 - To reduce money supply, Fed sells govt bonds, taking dollars out of circulation, and the process works in reverse.

The Fed's 3 Tools of Monetary Control



1. **Open-Market Operations (OMOs):** the purchase and sale of U.S. government bonds by the Fed.
- OMOs are easy to conduct, and are the Fed's monetary policy tool of choice.

The Fed's 3 Tools of Monetary Control



2. Reserve Requirements (RR).

Affect how much money banks can create by making loans.

- To increase money supply, Fed reduces RR.
Banks make more loans from each dollar of reserves, which increases money multiplier and money supply.
- To reduce money supply, Fed raises RR, and the process works in reverse.
- Fed rarely uses reserve requirements to control money supply: Frequent changes would disrupt banking.

The Fed's 3 Tools of Monetary Control



3. **The Discount Rate:**

the interest rate on loans the Fed makes to banks

- When banks are running low on reserves, they may borrow reserves from the Fed.
- To increase money supply, Fed can lower discount rate, which encourages banks to borrow more reserves from Fed.
- Banks can then make more loans, which increases the money supply.
- To reduce money supply, Fed can raise discount rate.

The Fed's 3 Tools of Monetary Control



3. **The Discount Rate:**

the interest rate on loans the Fed makes to banks

- The Fed often uses discount lending to provide extra liquidity when financial institutions are in trouble, such as after the stock market crash of Oct. 1987.

Problems Controlling the Money Supply



- If households hold more of their money as currency, banks have fewer reserves, make fewer loans, & money supply falls.
- If banks hold more reserves than required, they make fewer loans, & money supply falls.
- Yet, Fed can compensate for household & bank behavior to retain fairly precise control over the money supply.

Bank Runs and the Money Supply



- A **run on banks**:
When people suspect their banks are in trouble, they may “run” to the bank to withdraw their funds, holding more currency and less deposits.
- Under fractional-reserve banking, banks don’t have enough reserves to pay off ALL depositors, hence banks may have to close.
- Also, banks may make fewer loans & hold more reserves to satisfy depositors.
- These events increase **R** , reverse the process of money creation, cause money supply to fall.

Bank Runs and the Money Supply



- During 1929-1933, a wave of bank runs and bank closings caused money supply to fall 28%.
- Many economists believe this contributed to the severity of the Great Depression.
- Bank runs not a problem today due to federal deposit insurance.

CHAPTER SUMMARY

- Money includes currency and various types of bank deposits.
- The Federal Reserve is the central bank of the U.S., is responsible for regulating the monetary system.
- The Fed controls the money supply mainly through open-market operations. Purchasing govt bonds increases the money supply, selling govt bonds decreases it.
- In a fractional reserve banking system, banks create money when they make loans. Bank reserves have a multiplier effect on the money supply.