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The Monetary System

PRINCIPLES OF
MACROECONOMICS
FOURTH CANADIAN 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?

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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.

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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

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The 2 Kinds of Money

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 government decree
Example: the Canadian dollar

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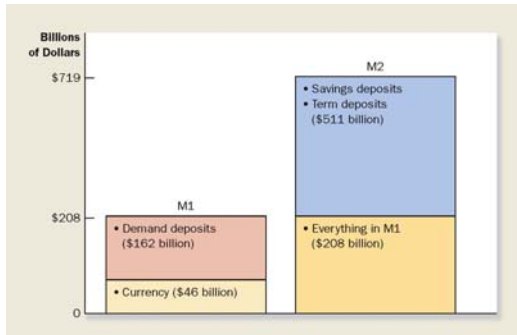
Money in the Canadian Economy

- 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 or using a credit card.

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FIGURE 10.1: Two Measures of the Money Stock for the Canadian Economy



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THE BANK OF CANADA

- **Central bank:** an institution designed to regulate the money supply in the economy.
- **The Bank of Canada:** the central bank of Canada.

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The Bank of Canada

- The Bank of Canada was established in 1935 and nationalized in 1938, so it is now owned by the Canadian government.
- The Structure of the Bank of Canada:
 - Managed by a board of directors, composed of the governor, the senior deputy governor, and 12 directors, including the minister of Finance.

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The Bank of Canada

- Current governor, David Dodge, was appointed in 2001
- All members of the board of directors are appointed by the minister of Finance, with 7-year terms for the governor and senior deputy governor, and 3-year terms for the other directors

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The Bank of Canada

- Four Primary Functions of the Bank of Canada
 - Issue currency
 - Act as banker to the commercial banks
 - Act as banker to the Canadian government
 - Control the money supply

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The Bank of Canada

- Controlling the money supply
 - The *money supply* is the quantity of money available in the economy.
 - Decisions by policymakers concerning the money supply constitute *monetary policy*

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COMMERCIAL BANKS AND THE MONEY SUPPLY

- Commercial banks include credit unions, caisses populaires, and trust companies
- Commercial banks can influence the quantity of demand deposits in the economy and the money supply.

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Bank Reserves

- In a **fractional reserve banking system**, banks keep a fraction of deposits as **reserves**, and use the rest to make loans.
- 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 deposits

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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 $R = \$10/\$100 = 10\%$.

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Banks and the Money Supply: An Example

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

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Banks and the Money Supply: An Example

CASE 1: no banking system

Public holds the \$100 as currency.

Money supply = \$100.

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Banks and the Money Supply: An Example

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
= currency + deposits = \$0 + \$100 = \$100

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

Banks and the Money Supply: An Example

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.

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Banks and the Money Supply: An Example

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.

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Banks and the Money Supply: An Example

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.

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Banks and the Money Supply: An Example

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.

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Banks and the Money Supply: An Example

CASE 3: fractional reserve banking system

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

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

Total money supply = \$1000.00

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

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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

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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 reserve ratio 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?

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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**.

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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.

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The Bank of Canada's Tools of Monetary Control

- The BOC has two tools in its monetary toolbox:
 - Open-market operations
 - Changing the overnight rate

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The Bank of Canada's Tools of Monetary Control

- Open-Market Operations
 - The Bank of Canada conducts *open-market operations* when it buys government bonds from or sells government bonds to the public:
 - Buying bonds causes the money supply to increase.
 - Selling bonds causes the money supply to decrease.

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The Bank of Canada's Tools of Monetary Control

- Foreign Exchange Market Operations
 - The Bank of Canada conducts *foreign exchange market operations* when it buys or sells foreign currencies
 - The money supply increases when the Bank of Canada buys foreign currency with Canadian currency.
 - The money supply decreases when the Bank of Canada sells foreign currency.

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The Bank of Canada's Tools of Monetary Control

- Foreign Exchange Market Operations
 - If the Bank of Canada wants to sell foreign currency to support the Canadian exchange rate, but does not want the money supply to fall, it uses the Canadian currency obtained in the exchange to buy government bonds.
 - This process of offsetting a foreign exchange market operation with an open-market operation is called *sterilization*.

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The Bank of Canada's Tools of Monetary Control

- Changing the Overnight Rate
 - The *bank rate* is the rate of interest central banks charge commercial banks for loans
 - The *overnight rate* is the rate of interest on very short-term loans between commercial banks
 - The Bank of Canada can alter the money supply by changing the bank rate, which in turn causes an equal change in the overnight rate.
 - An increase in the overnight rate reduces the quantity of reserves in the banking system, and therefore reduces the money supply
 - A decrease in the overnight rate increases the money supply

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Problems in Controlling the Money Supply

- The Bank of Canada's control of the money supply is not precise.
- The Bank of Canada must wrestle with two problems that arise due to fractional-reserve banking.
- The Bank of Canada does not control the amount of money that
 - households choose to hold as deposits in banks.
 - commercial bankers choose to lend.

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CHAPTER SUMMARY

- The term money refers to assets that people regularly use to buy goods and services.
- Money serves three functions in an economy: as a medium of exchange, a unit of account, and a store of value.
- Commodity money is money that has intrinsic value.
- Fiat money is money without intrinsic value.

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CHAPTER SUMMARY

- The Bank of Canada, the central bank of Canada, controls the Canadian money supply.
- It controls the money supply through open-market operations or by changing the bank rate.

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End: Chapter 10

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