A First Look At the Monetary System

Chapter 5

Econ 313 – Intermediate Macroeconomics

University of Tennessee, Knoxville

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In This Chapter, You Will Learn:

- The definition, functions, and types of money
- How banks "create" money
- What a central bank is and how it controls the money supply

Money: **Definition**

Money is the stock of assets that can be readily used to make transactions.



Bernard Schoenbaum/The New Yorker/Conde Nast/The Cartoon Bank

Money: **Functions**

- *Medium of exchange*
  we use it to buy stuff
- *Store of value*
  transfers purchasing power from the present to the future
- *Unit of account*
  the common unit by which everyone measures prices and values

Money and Barter (1 of 4)

1. To better understand the role and functions of money, assume two types of economies:
   - A barter economy—goods are exchanged for goods.
   - A monetary economy—money is used to buy goods and services

Money and Barter (2 of 4)

1. For barter to operate, the **double coincidence of wants** must be satisfied:
   - If I have a pen and I want an eraser, I **need** to find someone who has an eraser but also **wants** a pen in exchange.
   - Likelihood of an exchange or trade is low in a barter economy.

Money and Barter (3 of 4)

1. In a monetary economy, money is used as a medium of exchange and medium of account to buy goods and services:
   - If I want an eraser, I **need** to find someone who has an eraser and I know the person **wants** my money in exchange.
   - Likelihood of an exchange or trade is very high in a monetary economy.

Money and Barter (4 of 4)

1. In a barter economy, only simple transactions are possible and searching for a trade partner can be time consuming and costly.
2. In a monetary economy, more complex transactions are possible and the cost of transacting is likely to be low.

Money: **Types**

1. **Fiat money**
   - has no intrinsic value
   - example: the paper currency we use
2. **Commodity money**
   - has intrinsic value
   - examples: gold coins, cigarettes in POW camps

What has served as commodity money? A tour



Rai stones, Yap (Micronesia)
limestone discs, some over 3m across

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Chinese knife money , Warring States (c. 500 BCE)

Wikimedia, CC BY-SA 2.0



Cowrie shells *Monetaria moneta*, used across Asia & Africa; the Chinese character for money comes from this shell.

Wikimedia, PD (1742 print)



Roman aureus of Septimius Severus, AD 193 — classic commodity money (gold).

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Fiat Money (1 of 2)

1. Even if fiat money has no intrinsic value, everyone values fiat money because they expect everyone else to value it.

Fiat Money (2 of 2)

Imagine if there are 10 periods, $t = 1, 2, 3, \ldots, 10$. Would money be valued if individuals in the tenth period decide not to value money anymore?

NOW YOU TRY: Discussion question

Which of these are money?

(a) currency

(b) checks

(c) deposits in checking accounts (“demand deposits”)

(d) credit cards

(e) certificates of deposit (“time deposits”)

(f) Bitcoin

Money: Examples, part 1

- **Deposits in checking accounts ("demand deposits")**
  - Yes, the funds in a checking account serve the three purposes.
- **Checks**
  - The check itself is not money, but the funds in the checking account are money.
- **Currency**
  - Yes; U.S. dollar bills, Mexican pesos, and other currencies are all money.

Money: Examples, part 2

- **Certificates of deposit ("time deposits"), or CDs**
  - Depends on the length of time; they are a store of value and are measured in money units (dollars, for example) but are not easily spent (medium of exchange).
  - As you'll see in a few slides, there are multiple measures of the money supply.
- **Credit cards**
  - No, they are a means of deferred payment.
  - For credit card purchases, you agree to pay back your credit card company in the future.

Money: Examples, part 3

- Bitcoin and other cryptocurrencies
- Bitcoin was introduced in 2009.
- The value of Bitcoin is very volatile:
  - Bitcoin is neither fiat or commodity money.
  - Prices are quoted in U.S. dollars, Yen, Euros.

Two definitions

- The **money supply** is the quantity of money available in the economy.
- **Monetary policy** is control over the money supply.

Measuring money (1 of 3)

- The **money supply** is the quantity of money available in the economy.
- In simple economies, it is easy to measure the quantity of money (for example, number of cigarettes in POW).
- In modern economies, measuring money is not easy.

Measuring money (2 of 3)

- Individuals can transact using various assets.
  - Cash
  - Demand deposits (checking accounts using debit cards, savings accounts)

Money used for transactions is liquid and does not include assets that are illiquid.

Measuring money (3 of 3)

- Economists use different measures of money, and these measures are often denoted as $M0$, $M1$, and $M2$.
- $M0$ (monetary base) = currency in circulation plus reserve balances
- $M1$ = $M0$ + demand deposits + traveler's checks + other checkable deposits
- $M2$ = $M1$ + money market mutual fund balances + saving deposits (small time deposits)

▸ A household example

Money supply measures, January 2021

Symbol	Assets Included	Amount in Oct. 23 (billions of $)
C	Currency	$2,324.9
$M1$	Currency plus demand deposits, traveler's checks, and other checkable deposits	18,034.3
$M2$	$M1$ plus retail money market mutual fund balances, saving deposits (including money market deposit accounts), and small time deposits	20,671.1

The central bank (1 of 4)

- Monetary policy is conducted by a country's **central bank**.
- The U.S. central bank is called the **Federal Reserve** ("the Fed").
- The Fed was created by an act of congress in 1913.
- The Fed and other central banks are often known as "lenders of the last resort."



Marriner S. Eccles Federal Reserve Board Building, Washington DC — Fed headquarters, dedicated 1937.

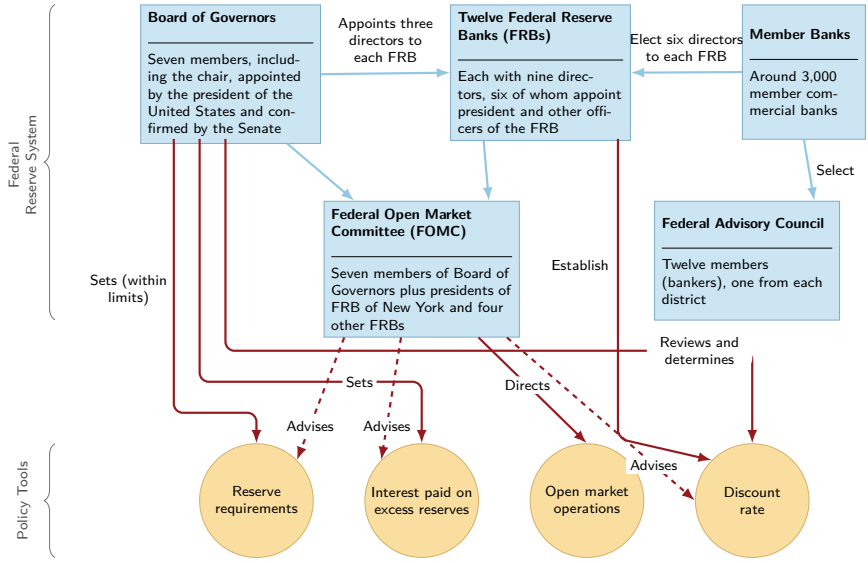
Wikimedia, PD

The structure of the Federal Reserve System

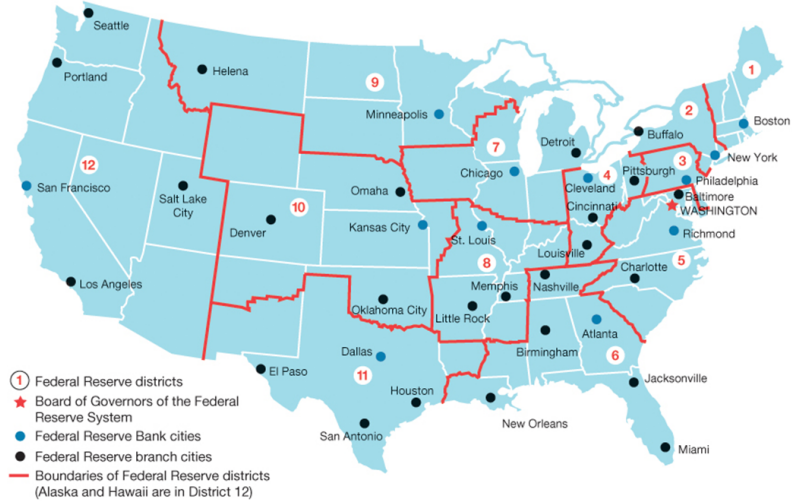
A **decentralized** central bank, blending public & private and national & regional—five institutions:

- **Board of Governors** — 7 members (including the Chair), appointed by the President and confirmed by the Senate; 14-year terms; based in Washington, DC.
- **Twelve Federal Reserve Banks** — regional, *quasi-public* banks owned by their member banks; each has 9 directors and a president.
- **Federal Open Market Committee (FOMC)** — the 7 Governors + 5 voting Reserve-Bank presidents; sets monetary policy (the federal funds rate, open-market operations).
- **Member banks** — ∼3,000 commercial banks; national banks must join, state banks may; they hold stock in their Reserve Bank.
- **Federal Advisory Council** — 12 bankers, one per district; advises the Board, with no policy vote.

The structure of the Fed: how the pieces fit together



The twelve Federal Reserve districts



Twelve districts: Reserve Bank cities (blue), branch cities (black), Board of Governors (star, Washington). Alaska and Hawaii are in District 12 (San Francisco).

Source: Federal Reserve.

The central bank (2 of 4)

- Decisions about monetary policy in the United States resides with the Fed's **Federal Open Market Committee** (FOMC).
- The FOMC
  - meets about every six weeks to discuss and set monetary policy.
  - consists of seven members of the Federal Reserve Board of Governors and 12 presidents of the regional Federal Reserve banks.

The central bank (3 of 4)

- The Chair of the Federal Reserve Bank is appointed by the President for a period of four years.
- The Chair of the Federal Reserve bank has a lot of influence on the economy and financial markets.

The central bank (4 of 4)

- Congress gave the Federal Reserve Bank a dual mandate:
  1. Stable prices
  2. Maximum sustainable employment
- The Federal Reserve Bank has a large degree of independence in the conduct of monetary policy.

The central bank and monetary control

- The Fed pursues its dual mandate by
  1. regulating banks and ensuring that the banking system is healthy.
  2. controlling the money supply using **open-market operations**, the purchase and sale of government bonds.

Monetary control (1 of 2)

- **Open-market operations** is the purchase and sale of government bonds to control the money supply.
- If the Fed wants to increase the money supply, it can buy government bonds from members of the public.
- If the Fed wants to decrease the money supply, it can sell government bonds to the members of the public.

Monetary control (2 of 2)

- Open-market operations is one of the tools that the Fed can use to influence the money supply.
- The Fed can also lend directly to banks to increase the money supply.
- By changing the discount rate, the Fed can influence the monetary base and the money supply.
- The Fed can also influence the money supply in some other ways that we will discuss in a later chapter.

Chapter Summary, Part 1

Money

- Definition: the stock of assets used for transactions
- Functions: medium of exchange, store of value, unit of account
- Types: commodity money (has intrinsic value), fiat money (no intrinsic value)

Chapter Summary, Part 2

Measuring the quantity of money can be complex.

The Fed can control the money supply with:

- Open-market operations and many other tools

Appendix: A household's assets and the money measures

Consider a household with:

Asset	Value
Cash in wallet	$500
Checking-account balance	$2,500
Savings-account balance	$8,000
6-month CD ($100K limit)	$15,000
Money-market mutual fund (retail)	$12,000
Apple stock	$50,000
Bitcoin	$2,000
Credit-card credit limit	$5,000

Which of these are money? Depends on *which measure*.

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Appendix — computing $M0$, $M1$, $M2$ for the household

Monetary base ($M0$) = currency in circulation held by the public:

$$M0 = \$500 \quad \text{(just the cash)}.$$

$M1$ (since 2020) = currency + checkable deposits + *savings deposits*:

$$M1 = 500 + 2{,}500 + 8{,}000 = \$11{,}000.$$

$M2$ = $M1$ + small time deposits (CD < \$100K) + retail MMMF:

$$M2 = 11{,}000 + 15{,}000 + 12{,}000 = \$38{,}000.$$

Not money in any measure: Apple stock (illiquid asset), Bitcoin (not currency), credit-card credit (a loan promise, not an asset).

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Appendix — why the boundaries matter

Bitcoin: not part of $M1$ or $M2$ because it fails all three functions well: too volatile as a store of value, rarely a unit of account, and only sometimes a medium of exchange.
Savings accounts: before May 2020 they were in $M2$ only. The Fed dropped the Reg-D limit on transfers, so savings deposits became effectively as liquid as checking — and $M1$ tripled overnight (not real money growth!).
Credit cards: a means of *deferred payment*. When you swipe, you're borrowing — creating a debt, not spending money you own.

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