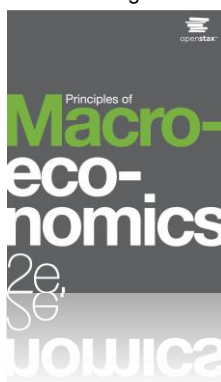


PRINCIPLES OF MACROECONOMICS 2e

Chapter 14 Money and Banking

PowerPoint Image Slideshow



CH.14 OUTLINE



- 14.1: Defining Money by Its Functions
- 14.2: Measuring Money: Currency, M1, and M2
- 14.3: The Role of Banks
- 14.4: How Banks Create Money

Cowrie Shell or Money?



- Is this an image of a cowrie shell or money?
- The answer is: Both.
- For centuries, people used the extremely durable cowrie shell as a medium of exchange in various parts of the world.
(Credit: modification of work by "prilfish"/Flickr Creative Commons)

14.1 Defining Money by Its Functions



- What the world would be like without money?
- **Barter** - trading one good or service for another, without using money.
- **Double coincidence of wants** - a situation in which two people each want some good or service that the other person can provide.

Functions for Money



- **Money** - whatever serves society in four functions:
 - **Medium of exchange** - whatever is widely accepted as a method of payment.
 - **Store of value** - something that serves as a way of preserving economic value that one can spend or consume in the future.
 - **Unit of account** - the common way in which we measure market values in an economy.
 - **Standard of deferred payment** - money must also be acceptable to make purchases today that will be paid in the future.

Commodity versus Fiat Money



- **Commodity money** - an item that is used as money, but which also has value from its use as something other than money.
- **Commodity-backed currencies** - dollar bills or other currencies with values backed up by gold or another commodity.
- During much of its history, gold and silver backed the money supply in the United States.

Commodity versus Fiat Money, Continued



- Now, by government decree, if you owe a debt, then legally speaking, you can pay that debt with the U.S. currency, even though it is not backed by a commodity.
- **Fiat money** - has no intrinsic value, but is declared by a government to be the country's legal tender.
- The only backing of our money is universal faith and trust that the currency has value, and nothing more.

A Silver Certificate and a Modern U.S. Bill



- Until 1958, silver certificates were commodity-backed money - backed by silver, as indicated by the words "Silver Certificate" printed on the bill, pictured at bottom.
- Today, The Federal Reserve backs U.S. bills, but as fiat money (inconvertible paper money made legal tender by a government decree). (Credit: "The.Comedian"/Flickr Creative Commons)

14.2 Measuring Money: Currency, M1, and M2



- The Federal Reserve Bank:
 - The central bank of the United States,
 - Bank regulator and responsible for monetary policy,
 - Defines money according to its liquidity.
- The Federal Reserve Bank has two definitions of money:
 - **M1 money supply** - a narrow definition of the money supply that includes currency and checking accounts in banks, and to a lesser degree, traveler's checks.
 - **M2 money supply** - a definition of the money supply that includes everything in M1, but also adds savings deposits, money market funds, and certificates of deposit.

M1 Money



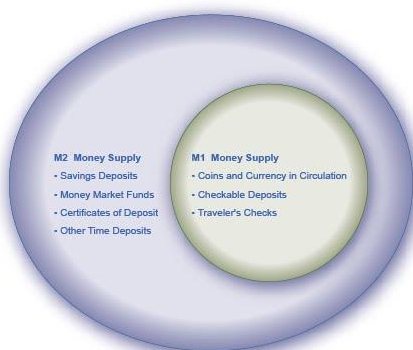
- M1 money supply includes:
 - **Coins and currency in circulation** - the coins and bills that circulate in an economy that are not held by the U.S Treasury, at the Federal Reserve Bank, or in bank vaults.
 - **Checkable (demand) deposits** - checkable deposit in banks that is available by making a cash withdrawal or writing a check.
 - Traveler's checks

M2 Money



- M2 money supply includes:
 - All M1 types
 - **Savings deposits** - bank account where you cannot withdraw money by writing a check, but can withdraw the money at a bank - or can transfer it easily to a checking account.
 - **Money market fund** - the deposits of many investors are pooled together and invested in a safe way like short-term government bonds.
 - **Certificates of Deposit (CD's) and other time deposits** - account that the depositor has committed to leaving in the bank for a certain period of time, in exchange for a higher rate of interest.

The Relationship between M1 and M2 Money



- M1 and M2 money have several definitions, ranging from narrow to broad.
- $M1 = \text{coins and currency in circulation} + \text{checkable (demand) deposits} + \text{traveler's checks}$.
- $M2 = M1 + \text{savings deposits} + \text{money market funds} + \text{certificates of deposit} + \text{other time deposits}$.

Where Does “Plastic Money” Fit In?



- **Debit card** - like a check, is an instruction to the user's bank to transfer money directly and immediately from your bank account to the seller.
- **Credit card** - immediately transfers money from the credit card company's checking account to the seller, and at the end of the month the user owes the money to the credit card company.
 - A credit card is a short-term loan.
 - Not considered money.
- **Smart card** - stores a certain value of money on a card and then one can use the card to make purchases.
 - Examples: long-distance phone calls or making purchases at a campus bookstore and cafeteria
- Credit cards, debit cards, and smart cards are different ways to move money when you make a purchase.

14.3 The Role of Banks



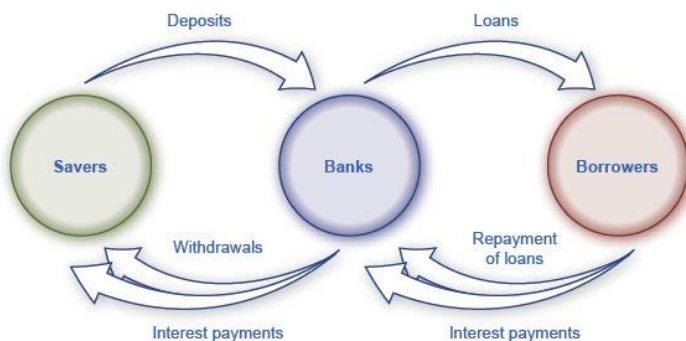
- Most money is in the form of bank accounts, which exist only as electronic records on computers.
- **Payment system** - helps an economy exchange goods and services for money or other financial assets.
- **Transaction costs** - the costs associated with finding a lender or a borrower for this money.
- Banks bring savers and borrowers together.
- Banks lower transactions costs and act as financial intermediaries.

Banks as Financial Intermediaries



- **Financial intermediary** - an institution that operates between a saver with financial assets to invest and an entity who will borrow those assets and pay a rate of return.
- Discussion Question: What are institutions in the financial market, other than banks, that are financial intermediaries?
- **Depository institution** - institution that accepts money deposits and then uses these to make loans.

Banks as Financial Intermediaries, Illustrated



- Banks act as financial intermediaries because they stand between savers and borrowers.
- Savers place deposits with banks, and then receive interest payments and withdraw money.
- Borrowers receive loans from banks and repay the loans with interest.
- In turn, banks return money to savers in the form of withdrawals, which also include interest payments from banks to savers.

A Bank's Balance Sheet



- **Balance sheet** - an accounting tool that lists assets and liabilities.
- **Asset** - item of value that a firm or an individual owns.
- **Liability** - any amount or debt that a firm or an individual owes.
- **Net worth** - the excess of the asset value over and above the amount of the liability; total assets minus total liabilities.
- **Bank capital** - a bank's net worth.

A Bank's Balance Sheet



| Assets | | Liabilities + Net Worth | |
|-----------------------------------|-------------|-------------------------|--------------|
| Loans | \$5 million | Deposits | \$10 million |
| U.S. Government Securities (USGS) | \$4 million | | |
| Reserves | \$2 million | Net Worth | \$1 million |

- This figure shows a hypothetical and simplified balance sheet for the Safe and Secure Bank.
- **T-account** - a balance sheet with a two-column format, with the T-shape formed by the vertical line down the middle and the horizontal line under the column headings for "Assets" and "Liabilities".
- The "T" in a T-account has:
 - the assets of a firm, on the left
 - its liabilities, on the right.

Reserves and Bankruptcy



- **Reserves** - funds that a bank keeps on hand and that it does not loan out or invest in bonds.
- The Federal Reserve requires that banks keep a certain percentage of depositors' money on "reserve".
- We define net worth of a bank as its total assets minus its total liabilities.
 - For a financially healthy bank, the net worth will be positive.
 - If a bank has negative net worth and depositors tried to withdraw their money, the bank would not be able to give all depositors their money.

How Banks Go Bankrupt



- Potential problems for a bank:
 - High rate of loan defaults
 - **Asset-liability time mismatch** - the ability for customers to withdraw bank's liabilities in the short term while customers repay its assets in the long term.
- Strategies to reduce risk:
 - **Diversify** - making loans or investments with a variety of firms, to reduce the risk of being adversely affected by events at one or a few firms.
 - Sell some of the loans they make in the secondary loan market.
 - Hold a greater share of assets (government bonds or reserves).

14.4 How Banks Create Money, Part 1



- The banking system can create money through the process of making loans.

Singleton Bank Balance Sheet

| Assets | | Liabilities + Net Worth | |
|----------|--------------|-------------------------|--------------|
| Reserves | \$10 million | Deposits | \$10 million |

- In the T-account balance sheet above, Singleton Bank is simply storing money for depositors, and not making loans.
 - It cannot earn any interest income and cannot pay its depositors an interest rate.

Singleton Bank Balance Sheet

| Assets | | Liabilities + Net Worth | |
|----------------------------|-------------|-------------------------|--------------|
| Reserves | \$1 million | Deposits | \$10 million |
| Loan to Hank's Auto Supply | \$9 million | | |

- Now, by loaning out \$9 million and charging interest, it will be able to make interest payments to depositors.
- This alters Singleton Bank's balance sheet:
 - It now has \$1 million in (required 10%) reserves and a loan to Hank's Auto Supply of \$9 million.

How Banks Create Money, Part 2



First National Balance Sheet

| Assets | | Liabilities + Net Worth | |
|----------|---------------|-------------------------|---------------|
| Reserves | + \$9 million | Deposits | + \$9 million |

- Singleton Bank issues Hank's Auto Supply a cashier's check for the \$9 million.
- Hank deposits the loan in his regular checking account with First National Bank.
- The deposits at First National Bank rise by \$9 million and its reserves also rise by \$9 million.
- Bank lending has expanded the money supply by *\$9 million*.

First National Balance Sheet

| Assets | | Liabilities + Net Worth | |
|----------|---------------|-------------------------|---------------|
| Reserves | \$90,000 | Deposits | + \$9 million |
| Loans | \$8.1 million | | |

- Now, First National Bank must hold some required reserves (\$900,000) but can lend out the other amount (\$8.1 million) in a loan to Jack's Chevy Dealership.

How Banks Create Money, Part 3



Second National Balance Sheet

| Assets | | Liabilities + Net Worth | |
|----------|-----------------|-------------------------|-----------------|
| Reserves | + \$8.1 million | Deposits | + \$8.1 million |

- If Jack's Chevy Dealership deposits the loan in its checking account at Second National, the money supply just increased by an *additional \$8.1 million*.
- Making loans that are then deposited into a demand deposit account increases the M1 money supply.
- This money creation is possible because there are multiple banks in the financial system.
 - They are required to hold only a fraction of their deposits,
 - loans end up deposited in other banks,
 - which increases deposits and the money supply.

The Money Multiplier and a Multi-Bank System



- If all banks loan out their excess reserves, the money supply will expand.
- In a multi-bank system, institutions determine the amount of money that the system can create by using the money multiplier.
- The **money multiplier formula** = $1 / \text{Reserve Requirement}$
- By multiplying the *money multiplier* by the *excess reserves*, we can determine the total amount of M1 money supply created in the banking system.
- Discussion Question: If the reserve requirement is 10%, and a bank's excess reserves are \$9 million, what is the change in the M1 money supply?

Cautions about the Money Multiplier



- The quantity of money in an economy is closely linked to the quantity of lending or credit in the economy.
- All the money in the economy, except for the original reserves, is a result of bank loans that institutions repeatedly re-deposit and loan.
- A bank can also choose to hold extra reserves, *above* the required amount.
- Banks may decide to vary how much they hold in reserves for two reasons:
 - macroeconomic conditions
 - government rules

Cautions about the Money Multiplier, Continued



- In a recession, banks are likely to hold a higher proportion of reserves due to fear that customers are less likely to repay loans.
- The Federal Reserve may also raise or lower the required reserves held by banks as a policy move to affect the quantity of money in an economy.
- Additionally, if people do not deposit cash, banks cannot recirculate the money in the form of loans.



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