Economics of Banking

Economics 301: Money and Banking

1

1.1 Goals

Goals and Learning Outcomes

- Goals:
  - Learn some banks functions and activities.
  - Learn about banks balance sheets.
  - Learn about different types of risks banks face and how they manage these risks.
- Learning Outcomes:
  - LO1: Understand and appreciate the importance of financial markets for the overall functioning of the economy.

1.2 Reading

Reading

- Read Hubbard and O'Brien, Chapter 10.

2 Bank Balance Sheets

Bank's Balance Sheets

- **Balance sheet:** A statement that shows an individual's or firm's position of assets and liabilities at a particular time.
- **Asset:** something of value that an individual or firm owns, such as a financial claim.
- **Liability:** a financial claim *on* an individual or firm.
- **Bank capital** or **shareholder's equity** is the value of the bank's assets over and above the value of its liabilities.

2.1 Bank Liabilities

Bank Liabilities: Checkable Deposits

- **Checkable deposits:** Accounts which depositors can write checks. Also called *transaction deposits*.
- It is a liability, because it is money the bank owes to the depositors should they demand their funds back.
- From the perspective of an individual person or firm holding the checking account, checkable deposits are an asset.
- **Demand deposits:** Checking accounts that do not pay interest.
- **NOW (Negotiable Order of Withdrawal) accounts:** checkable deposits that pay interest.

Bank Liabilities: Nontransaction Deposits

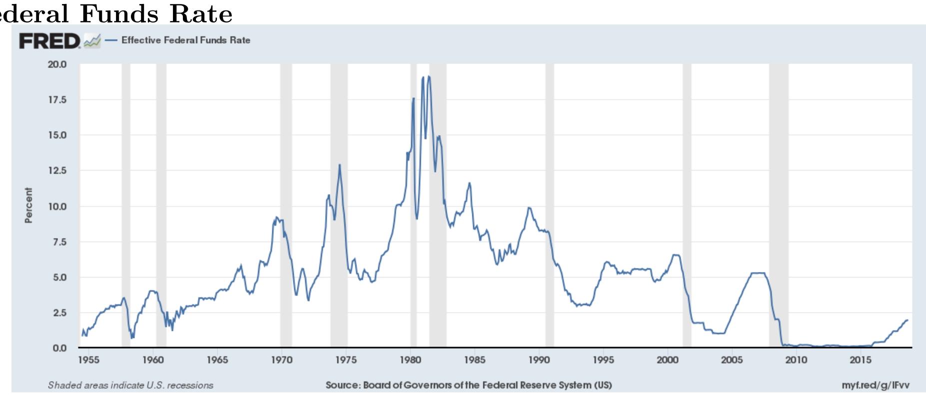
- **Nontransaction deposits:** interest bearing deposit accounts with restricted access to funds for the depositors.
- **Money market deposit accounts:** interest bearing accounts, depositors can write a limited number of checks from this account per month.
- **Saving accounts:** interest bearing accounts, typically have minimum balance or number of withdrawal requirements.
- **Time deposits** or **Certificates of deposit (CDs):** deposit accounts with specified maturity dates ranging from several months to several years.
  - Banks charge penalties for withdrawing funds prior to maturity date.
  - Large denomination CDs (over $100,000) are *negotiable*, which means they can be liquidated in a secondary market prior to maturity.

Bank Liabilities: Borrowing

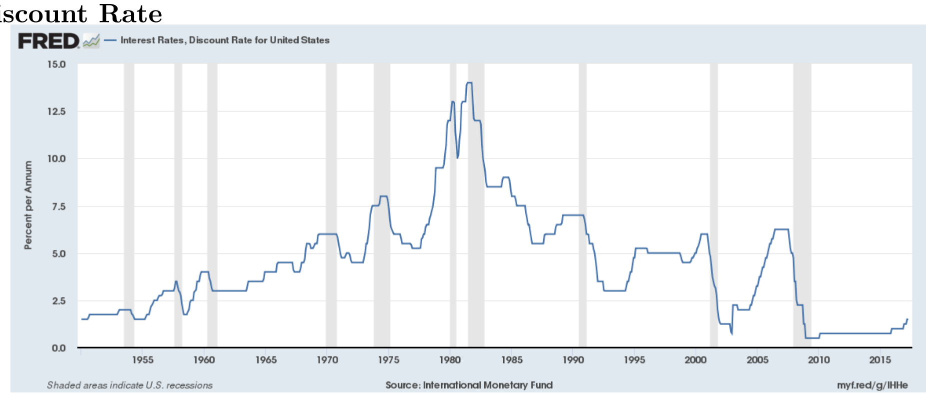
- **Federal funds borrowing:** banks make literally overnight loans to each other.
  - Interest rate they charge is the **federal funds rate.** Currently 2.25% (annual rate).
  - Has nothing to do with federal government funds.
- **Discount loans:** banks can borrow funds from the Federal Reserve, at the *discount window*.
  - Strangely enough, not usually at a discount. Current discount rate is 2.75%. Usually set very close to the federal funds rate.

- **Repurchase agreements:** banks sell something (usually treasuries) to another party, with an agreement to purchase it back for a slightly higher price, usually the next day.
  - Kinda like a pawn shop loan.
  - Banks usually borrow from large corporations through this channel.

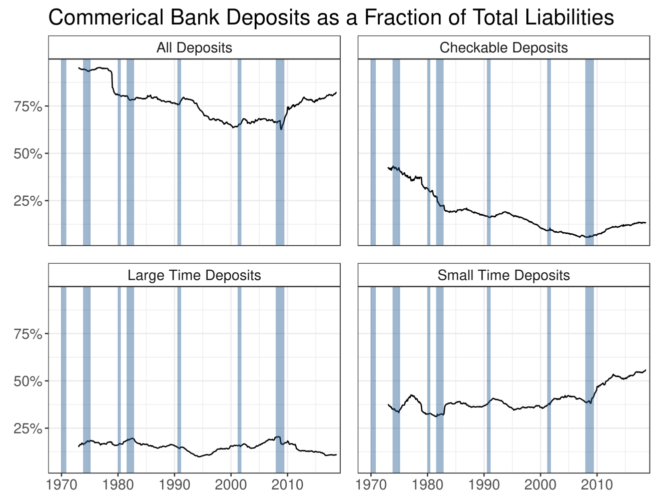
Federal Funds Rate



Discount Rate



Commercial Deposit Trends



2.2 Bank Assets

Bank Assets: Reserves

- **Reserves:** vault cash plus deposits with the Federal Reserve.
- **Vault cash:** cash on hand, including cash held in banks' vaults, cash held in ATMs, and deposits held with other banks.
- **Required reserves:** The Federal Reserve requires banks to hold a certain fraction of demand deposits and NOW deposits in reserves.

Required Reserves

- **Required reserve ratio (RRR):** percentage of demand and NOW deposits the bank is required to keep on reserve.
- For deposits between \$0 and \$16.3 million, RRR = 0%.
- For deposits in excess of \$16.3 million, and up to \$124.2 million, RRR = 3%.
- For deposits in excess of \$124.2 million, RRR = 10%.
- These numbers change all the time. See https://www.federalreserve.gov/monetarypolicy/reservereq.htm

Excess Reserves

- **Excess reserves:** reserves banks hold in excess of the requirements of the Federal Reserve.

- The Federal Reserve pays interest on required and excess reserves held at the Federal Reserve (current rate = 2.2%)

  https://fred.stlouisfed.org/series/EXCSRESNS

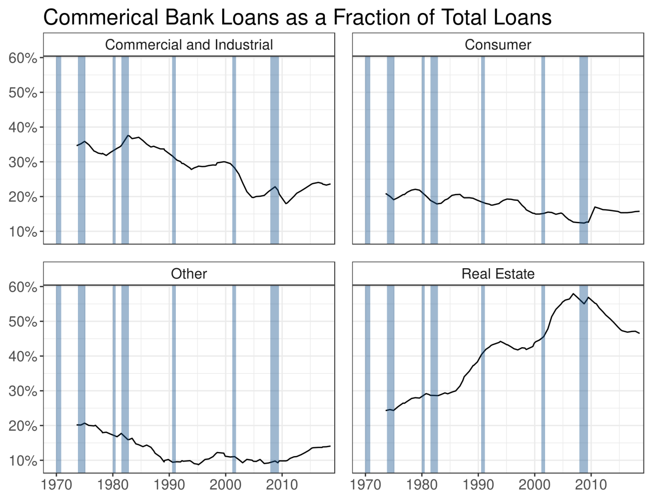
Bank Assets: Marketable Securities

- **Marketable securities:** liquid assets that banks can trade in financial markets.
- U.S. Treasury Bonds (often referred to as "secondary reserves")
- Other government and corporate bonds that received investment-grade ratings when first issued.
- Limited amounts of municipal bonds.
- Mortgage-backed securities. In 2010, made up 56% of bank securities held.

Bank Assets: Loans

- Loans:
  - Largest category of banks' assets.
  - Illiquid.
  - Banks earn higher interest than with marketable securities.
- Types of loans:
  - Loans to businesses (or Commercial and Industrial (C&I) loans).
  - Consumer loans - loans to consumers to buy cars, furniture, other crap.
  - Real estate loans - residential mortgages.
  - Real estate loans - commercial mortgages.

Bank Assets: Loans



Other Assets

- Repossessed collateral, including real estate from borrowers who defaulted on their loans.
- Bank's physical assets, such as its own buildings, office furniture, and computer equipment.

2.3 Working with Defaults

Working with Defaults

- **Write-downs** or **write-offs:** when a bank expects a loan will not be repaid, or only partially repaid, the bank reduces the value of the loan (asset) on its balance sheets or removes the value entirely.
- **Loan loss reserve:** banks set aside part of their financial capital to offset anticipated future write-offs.
  - When a bank sets aside money in its loan loss reserves, it decreases current profits.
  - When a borrower defaults, and the bank uses its loan loss reserves, it adds these funds back to its assets, and profits do not change.
  - It is a way of smoothing out the pain of defaults.

3 Managing Risk

3.1 Liquidity Risk

Liquidity Risk

- **Liquidity risk:** the possibility the bank may not have reserves on hand to meet its depositors needs.
- Ways to manage liquidity risk involves:
  - Keep excess reserves
  - Make federal funds loans with excess funds.
  - Make reverse repurchase agreements with other banks or corporations (agreements to buy with the promise to resell).
  - What is the opportunity cost?

3.2 Credit Risk

Credit Risk

- **Credit risk:** risk that borrowers may default on their loans.
- Exacerbated by problems of *adverse selection* and *moral hazard*.
- **Diversification:** diversify across borrowers, regions, and industries.
- **Credit-risk analysis:** use of information about borrowers' employment, income, net worth, and credit scores to mindlessly determine loan eligibility and interest rate.
- **Relationship banking:** established long-term relationship between a bank and a borrower. Reduces asymmetric information.
- Collateral, credit rationing, restrictive covenants.

3.3 Interest Rate Risk

Interest Rate Risk

- Interest rate risk: the effect a change in market interest rates has on bank's profits or bank capital.
- A change in interest rates affects the present value of banks' assets and liabilities.
- The impact depends on whether assets and liabilities are fixed rate or variable rate.
- Suppose a bank's assets are primarily fixed rate mortgages, and its liabilities are variable rate deposit accounts. What is the effect of an increase in interest rates on a bank's capital?

Managing Interest Rate Risk

- **Gap analysis:** gap = value of a bank's variable-rate assets - value of its variable-rate liabilities. Typically negative.
- **Duration gap** average duration of a bank's assets - average duration of bank's liabilities. Typically positive.
- An increase in interest rates will have a larger (negative) effect on the present value bank's assets than on present value of bank's liabilities.
- **Adjustable-rate loans:** loans whose interest rates, and therefore payments, change before maturity.
- **Interest-rate swaps:** exchanges with other financial firms or corporations - payments of a fixed-rate loans received by the bank exchanged for payments of flexible-rate loans received by the other firm.