Financial Crisis and Financial Regulation

Economics 301: Money and Banking

Goals and Learning Outcomes

- Goals:
  - Describe attributes and types of assets and liabilities held by the banking sector
  - Describe different types of risks banks face and how they manage these risks.
  - Explain the difference between liquidity crises and solvency crises.
  - Identify how a crisis can spread to other banks.
  - Describe government interventions to mitigate and prevent banking crises.
  - Describe the macroeconomic implications for banking crises.
- Learning Outcomes:
  - LO1: Understand and appreciate the importance of financial markets for the overall functioning of the economy.

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Reading and Exercises

- Bank liabilities: Chapter 10, pp. 311-317
- Bank assets: Chapter 10, pp. 317-321
- Managing bank risks: Chapter 10, pp. 325-333
- Origins of financial crisis: Chapter 12, pp. 406-411
- Financial crisis and regulation: Chapter 12, pp. 411-425
- **Canvas quiz due Wed 11:59 PM**.
- **Homework/Exercise due Fri 11:59 PM**. We will work together in class on Thursday

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.

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Bank Liabilities: Checkable Deposits

- **Checkable deposits:** Accounts which depositors can use for payments, make immediate withdrawals. Also called *transaction deposits*.
- 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.
- **Saving accounts:** interest bearing accounts, available for immediate withdrawal
- **Demand deposits:** Checking accounts that do not pay interest.
- **NOW (Negotiable Order of Withdrawal) accounts:** checkable deposits that pay interest.

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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.
- **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.

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Bank Liabilities: Borrowing

- **Federal funds borrowing:** banks make literally overnight loans to each other.
- **Discount loans:** banks can borrow funds from the Federal Reserve, at the *discount window*.
- **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.

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Bank Assets: Reserves

- **Reserves:** vault cash plus reserve deposits with the Federal Reserve.
- **Interest rate on reserve balances:** interest rate paid by the Fed to banks for reserves held at the Federal Reserve. Currently 4.4% (April 13, 2025).
- **Vault cash:** cash on hand, including cash held in banks' vaults, cash held in ATMs, and deposits held with other banks.

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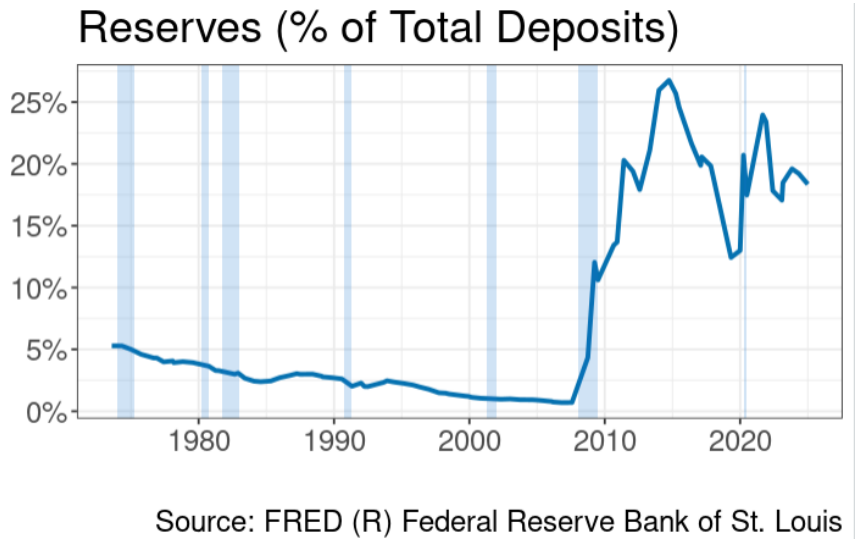
Reserves


```
library(tidyverse)
library(ecodata)

urls <- c("https://fred.stlouisfed.org/series/DPSACBW027SBOG",
          "https://fred.stlouisfed.org/series/TOTRESNS")

varnames <- c("Deposits", "Reserves")

df <- get_ecodata(urls, varnames)

df <- df |>
  mutate(`Reserves Ratio` = Reserves / Deposits * 100,
         units = "Percent")

ggplot_ecodata_ts(df,
                  variables = "Reserves Ratio",
                  title = "Reserves (% of Total Deposits)",
                  plot.recessions = TRUE)

ecodata_description_table(df)
```



Total reserves are approximately $3.2 trillion, which is approximately 18.3% of deposits.

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.
- Collateralized loan obligations (CLOs), Commercial mortgage-backed securities (CMBS)

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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.

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Other Assets

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- Bank's physical assets, such as its own buildings, office furniture, and computer equipment.

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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.

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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).
  - Hold treasury bills (short-term or long-term)?
  - What is the opportunity cost?

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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.

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Interest Rate Risk

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- 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?

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Interest Rate Risk

- Interest rate risk: the effect a change in market interest rates has on bank's profits or bank capital.
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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. Eg: home equity lines of credit, aka adjustable-rate second mortgages.
- **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.

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Liquidity Crisis

- **Liquidity risk:** banks assets are illiquid, banks liabilities are liquid.
- **Liquidity crisis:**
  - A liquidity crisis implies banks start with a *positive net worth*.
  - Banks may called on to pay their liabilities, without enough liquid assets on hand, and credit constrained markets prevent borrowing at affordable interest rates.
  - To pay liabilities, borrow at high interest rates or sell illiquid assets at low prices.
  - These transactions cause *net worth to fall below zero*.
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Bank Crises

- **Bank run:** widespread loss in confidence in bank(s), depositors suddenly and simultaneously withdraw large amounts of funds.
- **Contagion:** when panic spreads from one financial institution to another
  - A problem may begin with an insolvent bank or institution, depositors rightly withdraw funds and lenders to these institutions rightly restrict lending.
  - If depositors or lenders cannot distinguish between healthy financial institutions and insolvent ones, panic may spread to other banks, causing a liquidity crisis.
- **Bank panic:** when many banks simultaneously experience bank runs.

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Government Intervention

- **Lender-of-last-resort:** The Federal Reserve Bank (as most central banks) acts as a last-resort lender to banks and financial institutions.
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  - The simple presence of a lender-of-last-resort (even if not used) reduces chances of bank runs and contagion.
  - Lending to solvent, but illiquid banks is not a "bail out." It does not lead to moral hazard.
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- Congressional order signed by George W. Bush on October 3, 2008
- Intended to provide *liquidity* to financial institutions
- Gave U.S. Treasury authority to purchase $700 billion in "troubled assets"
- Eventually changed to $475 billion, $431 billion in actual purchases
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- Late 2008 - 2014, Fed made large purchases of long-term securities
- Included government bonds and securities guaranteed by Freddie Mac and Fannie Mae
- Brought down return on safe long-term bonds
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Too Big To Fail: Systemic Risk

- **Systemic risk:** risk that an economic or financial market event will trigger a loss of economic value or a loss in confidence to a substantial part of the entire financial system.
- A given financial institution is deemed **too-big-to-fail** if its liabilities are connected to a large number of financial institutions. A failure of the one firm will result in a loss of the value of assets held by many financial institutions.
- There may be cause to bail out insolvent, too-big-to-fail institutions. Tax payers will still be at a loss, but systemic problems are mitigated.
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Banking Crises and the Macroeconomy

- When the financial system fails to function, it fails to get funds from individual savers to businesses to use for investment in capital.
- A decrease in investment decreases total output / total spending in the short-run.
  - GDP = C + I + G + X - M
  - When sales of final goods and services are lower than expected, production decreases and workers are laid off.
  - Lower income for workers leads to lower consumption (standard expenditure multiplier effect).
- A sustained decrease in investment leads to lower long-run economic growth:
  - A decrease in investment leads to a lower level of aggregate capital stock in the future.
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Reading and Exercises

- Bank liabilities: Chapter 10, pp. 311-317
- Bank assets: Chapter 10, pp. 317-321
- Managing bank risks: Chapter 10, pp. 325-333
- Origins of financial crisis: Chapter 12, pp. 406-411
- Financial crisis and regulation: Chapter 12, pp. 411-425
- **Canvas quiz due Wed 11:59 PM**.
- **Homework/Exercise due Fri 11:59 PM**. We will work together in class on Thursday