Ec 370

Money and Banking

Chapter 9: Banking and the Management of Financial Institutions - PART I

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Today's Contents

Chapter 9: Banking and the Management of Financial Institutions - PART I

- Bank Balance Sheet
- Basic Banking and T-account

Bank Balance Sheet

Bank Balance Sheet

Recall Chapter 2: banks take deposits and make loans

- Sources of bank funds: **liabilities**
    - deposits
    - borrowings
    - bank **capital**
- Uses of bank funds: **assets**
    - reserves
    - securities
    - loans

Liabilities

(1) Deposits

Checkable Deposits

- Checkable deposits are bank accounts that allow the owner of the account to write checks to third parties

- depositor can withdraw funds and the bank is obligated to pay
  - checkable deposits are assets for the depositor
  - checkable deposits are liabilities for the bank

Liabilities

(1) Deposits

Checkable Deposits

- ineterst rates on checkable deposits are low: https://www.usbank.com/bank-accounts/checking-accounts/platinum-interest-checking-account/interest-rates.html
    - depositors are willing to forgo some interest in exchange for access to a liquid asset that they can use to make purchases immediately

Liabilities

(1) Deposits

Nontransaction Deposits

In addition to checking account, other types of bank accounts include savings accounts and Certificate of Deposits (time deposits, CDs): https://www.usbank.com/bank-accounts.html

- Savings accounts and Certificate of Deposits (time deposits, CDs) are also called nontransaction deposits
- Owners cannot write checks on nontransaction deposits
- Interest rates on nontransaction deposits are higher than those on checkable deposits

Liabilities

(1) Deposits

Nontransaction Deposits

Savings accounts

- funds can be added to or withdrawn at any time

- no penalty for early withdrawal

- today's US Bank savings account rates: [savings rates] https://www.usbank.com/bank-accounts/savings-accounts/platinum-select-money-market-savings.html)

Liabilities

(1) Deposits

Nontransaction Deposits

Certificate of Deposits (Time Deposits, CDs)

- fixed maturity: there are penalties for early withdrawal
- less liquid than savings accounts, therefore yield higher interest rates than those on savings accounts (https://www.usbank.com/bank-accounts/savings-accounts/certificate-of-deposit.html?productCode=CDA)
- large denomination CDs (> $100,000) can be resold in a secondary market before they mature, just like bonds
    - bought mainly by corporations, banks, money market mutual funds

Liabilities

	Checkable Deposits	**Non-transaction Deposits**
Writing Checks(payable at demand)	YES	NO
Interest Rate	LOW	HIGH
Liquidity	HIGH	LOW

- Checkable deposits are payable at demand
  - if a depositor shows up at the bank and requests payment by making a withdrawal, the bank must pay the depositor
  - if a person with a check written on an account from a bank presents that check at the bank, the bank must pay the funds out

Liabilities

(2) Borrowings

Banks can borrow:

- from the Fed: called **discount loans**
- overnight from other banks to meet the daily deposits amount required by the Fed: called **federal funds**
  - recall Chapter 2: **fed funds rate** are interest rates on the fed funds
  - fed funds rate $\uparrow \Rightarrow$ market interest rates $\uparrow \Rightarrow$ economic growth $\downarrow$

Bank Capital

Bank capital (also called **net worth**): difference between assets and liabilities

- Bank capital serves as a cushion against drops in the value of bank assets, which could force the bank into insolvency
    - **insolvency**: occurs when a bank has liabilities in excess of assets, meaning that the bank can be forced into liquidation
- 2 ways of raising bank capital:
    - sell new equities (stocks): banks can issue stocks but not allowed to buy stocks (https://money.usnews.com/investing/stocks/major-banks)
    - from retained earnings

Assets

(1) Reserves

Reserves consists of **vault cash** and **banks' deposits in their accounts at the Fed**

- vault cash: currency physically stored in banks vaults

Assets

(1) Reserves

Banks' deposits in their accounts at the Fed consists of:

- **required reserves**
    - for every dollar of **checkable deposits** at a bank, a certain fraction (**required reserve ratio**) must be kept as reserves
    - e.g. 10% required reserve ratio: every dollar of checkable deposits banks receive from depositors, 10 cents must be deposited in banks' accounts at the Fed
- **excess reserves**
    - additional reserves banks deposit in their accounts at the Fed

Assets

(2) Securities

Securities are made up **entirely of debt** instruments

- recall Ch2: U.S. banks are not allowed to hold stock

Catogeries of bonds banks can hold:

- U.S. government securities: T-bills/T-notes/T-bonds
  - more liquid and no default risk
- state and local government securities: municipal bonds
  - less liquid and more default risk

Assets

(3) Loans

- loans are less liquid
    - because loans cannot be turned into cash until maturity (think about simple loans in chapter 2)
- loans have high default risk
    - because high risk is compensated with high interest rates (think about subprime mortage that caused the 2007-2009 Great Recession)

Assets

- Categories of loans banks can hold:
  - **interbank loans**: overnight loans lent in the fed funds market (assest for banks that lend, but liabilities for banks that borrow)
  - commercial and industrial/real estate/consumer loans
- If we rank the liquidity of assets banks hold:
  - Reserves: the most liquid
  - U.S. government securities: the second liquid (U.S. government securities is also called **secondary reserves**)
  - Loans: the least liquid

Assets

Other assets banks hold include:

- Cash items in process of collection: a claim on another bank for funds that will be paid within a few days
- Deposits at other Banks: many small banks hold deposits in larger banks in exchange for a variety of services, including check collection, foreign exchange transactions, and help with securities purchases
- physical capital such as bank buildings, computers, and other equipment

Bank Balance Sheet

Ignoring cash items and physical assets:

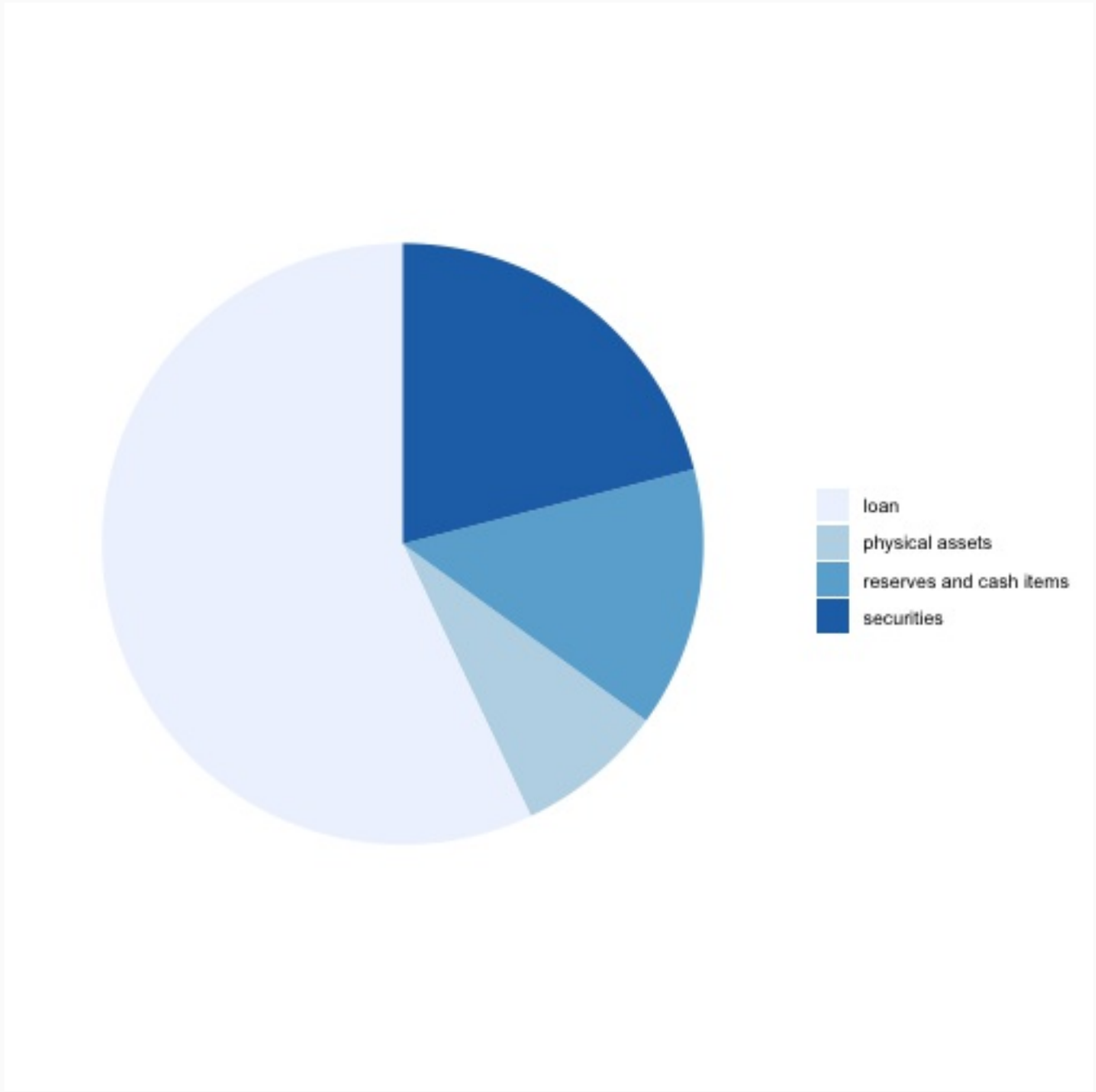
Assets (uses of funds)	**Liabilities + Capital (sources of funds)**
Reserves	Deposits
Securities	Borrowings
Loans	Capital

Balance sheet: a list of the bank's liabilities and assets

- **assests = liabilities + capital**
- interest on assets > interests on liabilities: bank profits

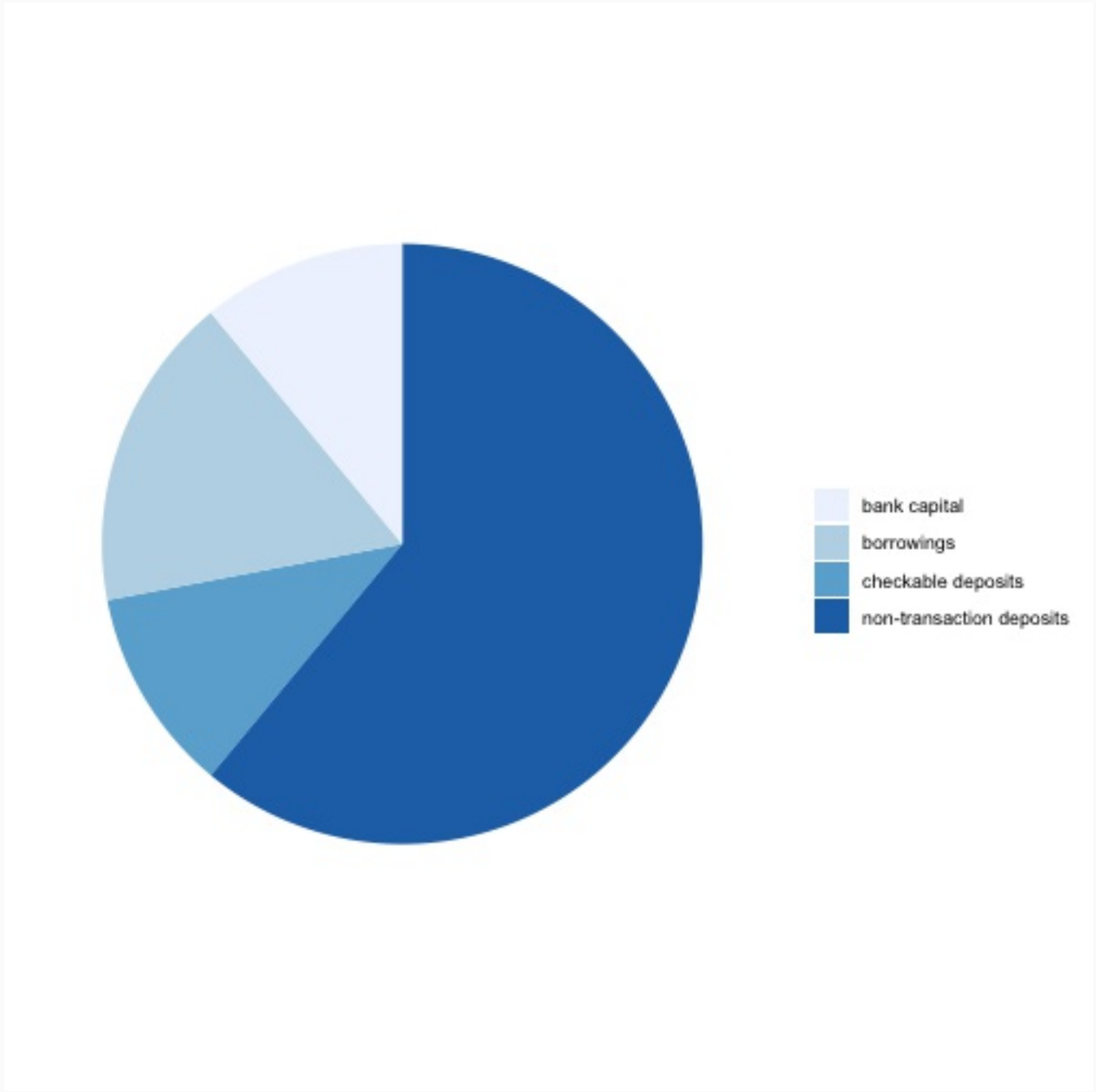
Bank Balance Sheet

Primary use of bank funds: loans



Bank Balance Sheet

Primary source of bank funds: nontransaction deposits



Basic Banking and T-account

Basic Banking and T-account

- Liabilities and assests differ in characteristics: liquidity, risk, size, return
- Banks sell liabilities with one set of characteristics and use the proceeds to buy assets with a different set of characteristics
    - called **asset transformation** or **risk sharing**
    - Example: borrow short and lends long

Basic Banking and T-account

- **borrow short and lends long**
  - banks require funds by issuing short-term deposits, and then use the funds to make long-term loans
  - banks pay low interest on short-term deposits but receive high interests on long-term loans
  - savings deposit is transformed into a mortgage loan

- Tool: T-account
  - write only the **changes** that occur in items (use +/- signs to indicate an increase/decrease)

Participation: T-account Example I

- Q1: Jane opens a checking account with a $100 bill at the First National Bank, and the bank puts her $100 bill into vault.

Assets	**Liabilities+Capital**
Reserves	Deposits
Securities	Borrowings
Loans	Capital

*Instruction: To complete this balance sheets, show the **changes** of values for each item. For example, if you think the value of an item decreased by $10, write down -$10. If you think the value of an item increases by $10, write down +$10. If you think the value of an item isn't changed, leave it blank*

Participation: T-account Example I

Assets	**Liabilities+Capital**
Reserves: +$100	Deposits: +$100
Securities	Borrowings
Loans	Capital

- Net result: an increase in the bank's reserves equals to the increase in checkable deposits

Participation: T-account Example II

- Q2: Jane opens a checking account at the First National Bank with a $100 check written on an account at the Second National Bank

First National Bank		Second National Bank	
Assets	**Liabilities**	**Assets**	**Liabilities**
Reserves	Deposits	Reserves	Deposits
Securities	Borrowings	Securities	Borrowings
Loans	Capital	Loans	Capital

*Instruction: To complete this balance sheets, show the **changes** of values for each item. For example, if you think the value of an item decreased by $10, write down -$10. If you think the value of an item increases by $10, write down +$10. If you think the value of an item isn't changed, leave it blank*

Participation: T-account Example II

- First National Bank deposits the check in its account at the Fed, and the Fed transfers $100 of reserves from the Second National Bank to the First National Bank

First National Bank		Second National Bank	
Assets	**Liabilities**	**Assets**	**Liabilities**
Reserves: +$100	Deposits: +$100	Reserves: -$100	Deposits: -$100
Securities	Borrowings	Securities	Borrowings
Loans	Capital	Loans	Capital

- Net result: when a bank receives additional deposits, it gains an equal amount of reserves; when it loses deposits, it loses an equal amount of reserves

Participation: T-account Example III

- Assume: 10% required reserve ratio
- Q3: First National Bank receives a $100 of checkable deposits. Then this bank puts to productive use all excess reserves by making loans. Show the changes in the balance sheet.

Assets	**Liabilities+Capital**
Reserves	Deposits
Securities	Borrowings
Loans	Capital

*Instruction: To complete this balance sheets, show the **changes** of values for each item. For example, if you think the value of an item decreased by $10, write down -$10. If you think the value of an item increases by $10, write down +$10. If you think the value of an item isn't changed, leave it blank*

Participation: T-account Example III

- Increase in reserves = $100 = increase in deposits
- Increases in required reserves = required reserve ratio $\times$ increase in deposits = 10% $\times$ 100 = $10
- Increase in excess reserve = total increase in reserves - increase in required reserves = $100 - $10 = $90
- Inrease in loans = increase in excess reserve = $90

Participation: T-account Example III

Assets	**Liabilities+Capital**
Reserves: +$10	Deposits: +$100
Securities	Borrowings
Loans: +$90	Capital

- Bank is making a profit by borrowing short and lending long
  - holds low-cost short-term liabilities (checkable deposits), and uses the proceeds to fund longer-term assets (loans) with higher interest rates

Participation: Sufficient Excess Reserves

Q4: The bank is required to keep 10% of deposits as reserves. Initial balance sheet is as follows. (Unit: millions)

Assets	**Liabilities+Capital**
Reserves: $20 million	Deposits: $100 million
Securities: $10 million	Borrowings: $0 million
Loans: $80 million	Capital: $10 million

(1) How much excess reserves does this bank hold?

- Required reserve = required reserve ration $\times$ deposits = 10% $\times$ 100 million = $10 million
- Excess reserve = total reserves - required reserve = $20 million - $10 million = $10 million

Participation: Sufficient Excess Reserves

(2) Suppose a deposit outflow of $10 million occurs. Update the balance sheet.

Assets	**Liabilities+Capital**
Reserves	Deposits
Securities	Borrowings
Loans	Capital

*Instruction: To complete the following balance sheets, do **NOT** show **changes** of values for each item. Instead, you should write **levels** of updated values for each item. For example, an item starts with value $100. If you think its value decreases by $10, write down $90 **instead of** -$10; if you think its value increases by $10, write down $110, **instead of** +$10; if you think its value isn't changed, write down $100*

Participation: Sufficient Excess Reserves

- loses $10 million of deposits and $10 million of reserves

Assets	**Liabilities+Capital**
Reserves: $10 million	Deposits: $90 million
Securities: $10 million	Borrowings: $0 million
Loans: $80 million	Capital: $10 million

Participation: Sufficient Excess Reserves

(3) After deposit outflow occurs, does this bank meet the 10% required reserve requirement? If so, how much excess reserves does this bank hold?

- Required reserve = required reserve ration $\times$ deposits = 10% $\times$ 90 million = $9 million
- Excess reserve = total reserves - required reserve = $10 million - $9 million = $1 million
- Net result: if a bank has **ample excess reserves**, a deposit outflow does not necessitate changes in other parts of its balance sheet

- This is the end of materials covered in Midterm #2. We will continue with the rest of Chapter 9 **after** Midterm #2
- Problem Set #4 is due **11:59pm (PDT), Sunday, May 10**. The first two questions ask about Chapter 6, and the third question asks about today's content
- Practice problems and answer key have been posted to Canvas, which will help you work on Problem Set #4.
- Participation #5, #6, #7, and #8 are due 11:59 (PDT), Sunday June 7. However, an extra credit assignment has been created for early submissions. If you submit Participation #5, #6, #7, and #8 by **11:59 (PDT), Sunday, May 10**, you will get 1 extra credit.
- An announcement about Midterm #2 will be made soon