ECON UN3265 ▪ MONEY AND BANKING ▪ SUMMER 2026 ▪ SESSION 4

CHAPTER 9

# Banking and the Management of Financial Institutions

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# Outline

## Reading and objectives

- Mishkin, *The Economics of Money, Banking, and Financial Markets*, 13th ed.
- This deck: **Chapter 9** — Banking and the Management of Financial Institutions.
- Companion to Chapter 8 (this session): asymmetric-information ideas become concrete bank-management tools.

### Learning objectives

**9.1** List and describe the principal items on a bank's balance sheet.

**9.2** Trace the basic operation of a bank.

**9.3** Apply the general principles of bank management: liquidity, asset, liability, and capital adequacy.

**9.4** Discuss the role of off-balance-sheet activities.

**9.5** Identify and manage the main risks a bank faces — credit risk and interest-rate risk.

PART 1

# The Bank Balance Sheet

# The fundamental identity

## Bank balance sheet

$$\underbrace{\text{Total assets}}_{\text{uses of funds}} = \underbrace{\text{Total liabilities}}_{\text{sources of funds}} + \underbrace{\text{Bank capital}}_{\text{owners' equity}}$$

- Assets sit on the left; liabilities and capital on the right.
- A bank *makes its profit* by paying less on its liabilities than it earns on its assets.

*Mishkin Ch. 9, Section 9.1.*

## Liabilities — sources of funds

- **Checkable deposits** — demand deposits, NOW accounts. Payable on demand; bank pays low (or zero) interest.
- **Nontransaction deposits** — savings deposits, small-denomination time deposits (CDs), large negotiable CDs. The *largest* source of bank funds.
- **Borrowings** — from the Fed (discount loans), from other banks (federal funds), and from parent companies, repo, eurodollars.
- **Bank capital** — the cushion of owners' equity. Difference between assets and liabilities. Absorbs losses.

*Mishkin Ch. 9, Section 9.1.*

## Assets — uses of funds

- **Reserves** — deposits at the Fed plus vault cash.
  - *Required reserves*: a fraction of checkable deposits mandated by the Fed (the ratio is currently 0 since 2020, but conceptually we'll keep it).
  - *Excess reserves*: anything above required — voluntary liquidity buffer.
- **Cash items in process of collection** — checks deposited but not yet cleared.
- **Deposits at other banks** — correspondent banking.
- **Securities** — U.S. Treasuries, agency MBS, state and local bonds. "Secondary reserves" — liquid.
- **Loans** — commercial & industrial, real estate, consumer, interbank. The largest and most profitable asset, but illiquid.
- **Other assets** — bank premises, equipment.

*Mishkin Ch. 9, Section 9.1.*

# A stylized U.S. commercial bank balance sheet

| Assets | % total | Liabilities + Capital | % total |
|---|---|---|---|
| Reserves & cash items | 14 | Checkable deposits | 14 |
| Securities (Treas., agency, state) | 22 | Nontransaction deposits | 56 |
| Loans (C&I, real estate, consumer) | 54 | Borrowings | 14 |
| Other assets | 10 | Bank capital | 11 |
| **Total** | **100** | **Total** | **100** |

*Mishkin Ch. 9, Table 1. Approximate composition; FDIC Quarterly Banking Profile.*

PART 2

# Basic Banking

## What happens when you deposit $100

You walk into First National Bank and deposit $100 of cash into your checking account.

**First National Bank**

| Assets | | Liabilities | |
|---|---|---|---|
| Vault cash (reserves) | +$100 | Checkable deposits | +$100 |

Both sides of the balance sheet rise by $100. The bank now has an asset (cash/reserves) and a liability (your deposit) of equal size.

*Mishkin Ch. 9, Section 9.2.*

## If the deposit is by check on another bank

You deposit a $100 check drawn on Second National.

**First National Bank**

| Assets | | Liabilities | |
|---|---|---|---|
| Cash items in collection | +$100 | Checkable deposits | +$100 |
| After check clears: | | | |
| Reserves at Fed | +$100 | | |
| Cash items in collection | −$100 | | |

Second National loses an equal amount of reserves and deposits.

*Mishkin Ch. 9, Section 9.2.*

## How the bank earns the spread

The $100 deposit just sits as reserves — earning very little. To make money, the bank *uses* the funds.

**First National Bank — after lending $90**

| Assets | | Liabilities | |
|---|---|---|---|
| Reserves (required) | 10 | Checkable deposits | 100 |
| Loans | 90 | | |

- The bank pays, say, 1% on the deposit and earns, say, 6% on the loan.
- Gross spread on $100: $\$0.06 - \$0.01 = \$0.05$ per dollar of deposit kept lent out.
- This is **asset transformation**: turning short-term deposits into longer-term loans.

*Mishkin Ch. 9, Section 9.2.*

PART 3

# General Principles of Bank Management

## Four management problems

A bank manager has four concerns:

1. **Liquidity management** — making sure the bank can meet depositor withdrawals.
2. **Asset management** — choosing assets to balance return, risk, and liquidity.
3. **Liability management** — finding cheap, reliable sources of funds.
4. **Capital adequacy management** — holding enough capital to absorb losses.

*Mishkin Ch. 9, Section 9.3.*

# Liquidity management: setup

Start with a bank holding *excess* reserves.

| **Assets** | | **Liabilities** | |
|---|---|---|---|
| Reserves | 20 | Deposits | 100 |
| Loans | 80 | Bank capital | 10 |
| Securities | 10 | | |

Required reserve ratio $= 10\%$. Required $= \$10$, excess $= \$10$.

Now \$10 of deposits is withdrawn.

*Mishkin Ch. 9, Section 9.3.*

# Liquidity management: with excess reserves

**After $10 withdrawal**

| Assets | | Liabilities | |
|---|---|---|---|
| Reserves | 10 | Deposits | 90 |
| Loans | 80 | Bank capital | 10 |
| Securities | 10 | | |

- Required reserves now $= 0.10 \times 90 = 9$. The bank holds $10 — still in compliance.
- No scramble. **Excess reserves are insurance against deposit outflows.**

*Mishkin Ch. 9, Section 9.3.*

## Liquidity management: without excess reserves

Suppose the bank had started with only \$10 of reserves (no excess).

After a \$10 outflow: reserves = 0, deposits = 90, required = 9 — *shortfall of \$9*.

Four ways to come up with the \$9:

1. **Borrow from other banks** (federal funds market) or in repo.
2. **Sell securities** — "secondary reserves" play the role of a buffer.
3. **Borrow from the Fed** via the discount window.
4. **Reduce loans** — call loans in or refuse to renew. Costly: damages customer relationships, may force fire-sales.

### Why excess reserves are worth holding

They are insurance against the cost of options 1–4 — not free, but cheaper than being caught short.

*Mishkin Ch. 9, Section 9.3.*

## Asset management

The manager picks assets to maximize return, subject to risk and liquidity constraints.

- **Seek high-return borrowers** who will not default. Screen using the Ch. 8 tools (information production, collateral, covenants).
- **Buy securities** with high return relative to risk.
- **Diversify** the loan and securities portfolios to reduce concentration risk.
- **Manage liquidity of assets** — hold enough secondary reserves (Treasuries) to meet outflows without forced loan calls.

*Mishkin Ch. 9, Section 9.3.*

## Liability management

Before the 1960s, liabilities were essentially fixed (checkable deposits) — the focus was all on the asset side.

- Since the 1960s: development of overnight loan markets, large **negotiable CDs**, repo, commercial paper, eurodollars.
- Banks now *actively manage* the liability side — raising funds whenever they have a good lending opportunity.
- Consequence: banks rely more on *wholesale* funding, less on *retail* deposits. Excess reserves are smaller because liabilities can flex.
- Downside: wholesale funding is *run-prone* — exposed in 2007–09.

*Mishkin Ch. 9, Section 9.3.*

## Capital adequacy: why hold capital?

Three reasons:

1. **Prevent bank failure.** Capital absorbs losses before depositors are hurt.
2. **Affect returns to shareholders.** More capital lowers ROE (we'll see why).
3. **Required by regulators.** Capital ratios are set by Basel III and U.S. rules.

### Definition

$$\text{Bank capital} = \text{Assets} - \text{Liabilities}.$$

A bank is *insolvent* when capital is negative.

*Mishkin Ch. 9, Section 9.3.*

# Capital and the safety–ROE trade-off

Two banks, each with \$100 in assets earning \$1 (ROA $= 1\%$):

| **High Capital Bank** | |
|---|---|
| Assets 100 | Deposits 90 |
| | Capital 10 |

| **Low Capital Bank** | |
|---|---|
| Assets 100 | Deposits 96 |
| | Capital 4 |

$$\text{ROE} = \frac{\text{Net income}}{\text{Equity}} = \text{ROA} \times \underbrace{\frac{\text{Assets}}{\text{Equity}}}_{\text{equity multiplier}}.$$

High Capital: ROE $= 1\% \times 10 = 10\%$. Low Capital: ROE $= 1\% \times 25 = 25\%$.

*Mishkin Ch. 9, Section 9.3.*

## The capital trade-off

- More capital $\Rightarrow$ *safer* bank (more cushion).
- More capital $\Rightarrow$ *lower ROE* for shareholders.
- Shareholders prefer less capital; depositors and regulators prefer more.

**Why regulators must require minimum capital**

With deposit insurance, depositors are protected and don't demand capital. Without regulation, banks would hold very little — and gamble. This is exactly the moral-hazard logic of Ch. 8.

Basel III: minimum common-equity Tier 1 capital $\geq 4.5\%$ of risk-weighted assets, plus buffers.

*Mishkin Ch. 9, Section 9.3; Basel Committee.*

PART 4

# Off-Balance-Sheet Activities

## Off-balance-sheet activities

Modern banks earn a large fraction of profits from activities that do not appear as assets or liabilities.

- **Loan sales (secondary loan participations)** — bank originates a loan and sells claims on it; earns origination + servicing fees.
- **Fee income** — standby letters of credit, loan commitments, foreign-exchange transactions, trust services, credit-card fees.
- **Trading activities and derivatives** — futures, options, swaps. Used for hedging *and* speculation.

### Why regulators worry

Off-balance-sheet exposures can become very large and are hard to measure. Famous losses: Barings 1995, JPMorgan "London Whale" 2012.

*Mishkin Ch. 9, Section 9.4.*

PART 5

# Credit Risk Management

## Credit risk and asymmetric information

**Credit risk:** the risk that a borrower defaults.
Same root as in Ch. 8 — adverse selection (who applies) and moral hazard (what they do after).

- Borrowers most eager for loans may be the worst risks.
- Once funded, borrowers have an incentive to take risks.

The bank's tools mirror the Ch. 8 solutions, but applied operationally.

*Mishkin Ch. 9, Section 9.5.*

## Screening and information production

- Application forms ask for income, assets, prior loans, employment.
- Credit scoring: statistical models of default probability (FICO).
- For business loans: financial statements, plans, audited records.
- Field visits.

### Specialization in lending

Banks specialize by industry or geography. A bank that has lent to local restaurants for 30 years has *information capital* no outsider can quickly replicate.

*Mishkin Ch. 9, Section 9.5.*

## Monitoring and long-term relationships

- **Restrictive covenants** — enforced via monitoring (financial reports, audits).
- **Long-term customer relationships:**
  - Past performance is the cheapest information.
  - A borrower who values the relationship has an incentive not to misbehave.
  - The bank can offer credit at lower cost — a renewable asset for both sides.

*Mishkin Ch. 9, Section 9.5.*

## Loan commitments, collateral, compensating balances

- **Loan commitment.** A bank promises (for a fee) to lend up to a fixed amount over a fixed period. Creates an ongoing relationship; the bank gets information; the firm gets a flexible credit line.
- **Collateral.** If the borrower defaults, the bank seizes the asset. Mitigates loss; reduces adverse selection.
- **Compensating balances.** The borrower must keep a minimum deposit balance with the bank. Functions as partial collateral and gives the bank a window into the borrower's cash flow.

*Mishkin Ch. 9, Section 9.5.*

## Credit rationing

Sometimes the bank refuses to lend even though the borrower is willing to pay a higher rate. Why not just charge more?

### Two forms of rationing

1. **Type 1:** Refuse to lend at *any* rate. The applicants who would accept a very high rate are precisely the riskiest — classic adverse selection.
2. **Type 2:** Lend, but *less* than the borrower wants. Larger loans give the borrower more incentive for risk-shifting — moral hazard.

A higher rate would attract worse borrowers and worse behavior — so price doesn't clear the market.

*Mishkin Ch. 9, Section 9.5; Stiglitz & Weiss (1981).*

PART 6

# Interest-Rate Risk Management

## Interest-rate risk

Banks borrow short and lend long. When rates change, the values of assets and liabilities reprice at different speeds.

### Rate-sensitive vs. fixed-rate items

A balance sheet item is *rate-sensitive* if it reprices within the analysis horizon (e.g. one year) — floating-rate loans, variable-rate CDs, fed-funds borrowings.
*Fixed-rate* items keep the old rate — 30-year fixed mortgages, long-term Treasuries, savings deposits in practice.

*Mishkin Ch. 9, Section 9.6.*

## Gap analysis: a numerical example

Consider a bank with the following structure ($ millions):

| **Assets** | | **Liabilities** | |
|---|---|---|---|
| Rate-sensitive (variable loans, ST securities) | 20 | Rate-sensitive (CDs, fed funds) | 50 |
| Fixed-rate (LT loans, LT securities) | 80 | Fixed-rate (checkable, savings) | 50 |

$$\text{GAP} = \text{RSA} - \text{RSL} = 20 - 50 = -30.$$

If rates rise by 1%: change in income $= \text{GAP} \times \Delta i = -30 \times 0.01 = -\$0.3\text{m}$.

A negative gap $\Rightarrow$ the bank **loses** when rates rise. Typical of U.S. commercial banks.

*Mishkin Ch. 9, Section 9.6.*

## Duration analysis

Gap analysis tracks *income* effects. Duration tracks *market-value* effects.

### Duration

The weighted-average term to maturity of an asset's cash flows. For small rate changes:

$$\%\Delta P \approx -D \times \Delta i.$$

- **Duration gap** $= D_A - \frac{L}{A} D_L$.
- If $D_A > D_L$ (typical bank), a rise in rates reduces asset value more than liability value $\Rightarrow$ **capital falls**.

*Mishkin Ch. 9, Section 9.6.*

## Duration: numerical illustration

Bank with \$100 assets, $D_A = 3$ years; \$90 liabilities, $D_L = 1$ year.

$$\text{Duration gap} = 3 - \tfrac{90}{100}(1) = 2.1 \text{ years.}$$

If rates rise 1%:

- Assets fall by $\approx 3\% \times 100 = \$3$.
- Liabilities fall by $\approx 1\% \times 90 = \$0.9$.
- Net: capital falls by $\$3 - \$0.9 = \$2.1$ — exactly Duration gap $\times A \times \Delta i$.

This is the textbook **1980s S&L story** (Ch. 8): long-duration mortgage assets funded by short-duration deposits.

*Mishkin Ch. 9, Section 9.6.*

## Managing interest-rate risk

Once measured, the gap or duration mismatch can be reduced.

- **Restructure the balance sheet** — match durations.
- **Adjustable-rate loans** — make assets more rate-sensitive.
- **Financial derivatives:** interest-rate swaps, futures, options. (More in Ch. 24.)

**Trade-off**

A perfectly matched book is safe but gives up the spread from maturity transformation — the bank's basic business. Banks accept some interest-rate risk on purpose.

*Mishkin Ch. 9, Section 9.6.*

PART 7

# Wrap-up

# Key terms from Chapter 9

- bank balance sheet
- checkable / nontransaction deposits
- required vs. excess reserves
- secondary reserves
- bank capital
- asset transformation
- ROA, ROE, equity multiplier
- liquidity / asset / liability / capital management
- off-balance-sheet activities
- loan commitment, compensating balance
- credit rationing
- gap analysis, duration analysis
- rate-sensitive assets / liabilities

## Looking ahead

- Next session: **Chapter 10** — Banking Industry: Structure and Competition. How the U.S. banking system became what it is today.
- Then **Chapter 11** — Economic Analysis of Financial Regulation.
- And **Chapter 12** — Financial Crises in Advanced Economies, where we go deeper into 2007–09 using the Ch. 8–9 toolkit.