

Banking

[Ch.9 in Mishkin ed.11-12. Ch.10 in Mishkin ed. 10.]

1. Bank balance sheets

2. Reserve Management

- Holding reserves
- Borrowing from other banks => Fed-funds market
- Borrowing from the Fed => Discount loans (regular and term auction)

3. Asset & Liability Management

Issues: Risk, Return & Liquidity (Like Mishkin ch.5)

- Credit risk: The economic role of banks is to evaluate borrowers
- Interest Rate Risk: Short-term deposits and longer-term loans
- Liquidity Risk => Reserve management

The Essence of Banking: Deposits & Loans

Assets	Liabilities
Loans L	Deposits D
Reserves R	Bank Capital

- **Deposits D.** Pay interest rate $i_D \Rightarrow$ Cost of deposit-taking: $[i_D + (\text{expenses})] \cdot D$
- **Loans L.** Pay interest rate $i_L \Rightarrow$ Earnings: $[i_L - (\text{monitoring cost}) - (\text{default rate})] \cdot L$
 - After adjusting for: Credit risk \Rightarrow Monitoring cost
 - Deposit taking & lending is profitable if $(i_L - i_D)$ exceeds the cost
- **Reserves R** = Vault cash or balance in a Federal Reserve account
 - **Reserves do not pay interest.** They reduce deposits that can be loaned out
 \Rightarrow Task of reserve management: Keep R low.
 - U.S. currently: **Required reserve ratio $rr = 10\% = R/D$** (with loopholes)
- **Bank Capital:** protection against loan losses, but expensive: leverage raises ROE. Regulated to prevent deposit insurance losses.

The Economics of a Simple Bank

- Credit Risk: common to all lenders
 - Adverse selection. Moral Hazard. Should banks avoid credit risk? (No!)
 - Risk reduction: screening; monitoring; loan covenants; collateral; long-term relations (+information across business lines, e.g. checking transactions)
 - Risk management: diversification; sufficient equity capital; securitization.
- Interest Rate Risk: threat to many lenders
 - Long-term loans & short-term deposits. Should banks avoid this risk? (Yes!)
 - Old tools: Adjustable rates. New tools: derivatives—futures, options, swaps.
- Liquidity Risk: specific to banks as deposit-taking institutions
 - Deposits can be withdrawn any time => Threat of a **Bank Run**
 - Conflict between maintaining liquidity and minimizing cost of reserves.
 - Gives the Fed power over the banking system as provider of liquidity
 - Need to maintain liquidity **explains most other items on banks' balance sheets**

Balance Sheet of the current U.S. Banking System

Table 1 Balance Sheet of All Commercial Banks
(Items as a Percentage of the Total, June 2017)

Assets (Uses of Funds)*	Blank	Liabilities (Sources of Funds)	Blank
Reserves and cash items	14%	Checkable deposits	11%
Securities	Blank	Nontransaction deposits	Blank
U.S. government and agency	15	Savings deposits	49
State and local government and other securities	6	Small denomination time deposits	2
<u>Loans</u>	Blank	Large-denomination time deposits	10
Commercial and industrial	13	Borrowings	17
Real estate	26	Bank capital	11
Consumer	8	Blank	Blank
Interbank	1	Blank	Blank
Other	9	Blank	Blank
Other assets (for example, physical capital)	8	Blank	Blank
Total	100	Total	100

Liquidity Management Perspective

- Balance sheet items motivated by liquidity management:

Assets		Liabilities	
Loans to customers	L	Deposits	D
Reserves	R	Loans from the Fed	BR
Loans to other banks		Loans fr.other banks	
Liquid securities		Negotiable CDs	
		Bank Capital	

- Overnight loans between banks = **The Fed-funds market**
- The Fed balance sheet:

Assets		Liabilities	
Loans to Banks	\$	Reserve Account - Bank#1	\$\$
		Reserve Account - Bank#2	\$\$
		Reserve Account - Bank#3	\$\$

Bank Runs and Bank Regulation

- Economics of demand deposits:

Depositors value the option of immediate withdrawal, but most deposits are not withdrawn quickly => Banks can use a large fraction of their deposit volume as funding source for longer-term, illiquid assets (bank loans).

- **Bank Run:** game situation with multiple equilibrium outcomes.

- Normal play: Expect the bank to be solvent. Withdraw balances only when needed. Bank is solvent.
- Run equilibrium: Expect the bank to fail. Everyone wants to withdraw. Bank is forced to sell illiquid assets at “fire sale” prices. Bank is insolvent.
- Common solutions for banks: Discount Loans. Deposit Insurance.

- Problem:

- Guarantees create incentives to make risky investments. If returns are high, stockholders/managers profit. If low, government/taxpayers pay.
- Common solutions: Regulations imposing minimum capital requirements.

Financial Crisis 2007-09: Runs on Non-Banks & The TBTF problem

- **Can bank runs occur at non-bank institutions?** (Investment banks etc.)
 - Traditional answer: No. Investment banks hold liquid assets (securities), so they can and do provide collateral to their “depositors”.
Repo = Overnight loans structured as sale and repurchase of securities. Typically “rolled over” daily. Normally provides stable funding source.
 - Crisis: Liquid securities turn illiquid (e.g., MBS). Repo lenders expect failure of future rollovers => Everyone stops lending. Result: run equilibrium.
- **Too Big To Fail** (TBTF): Concern about “systemic risk” = chain reaction of failures. Motivates government interventions. Key distinction:
 - Central Bank as **Lender of Last Resort**: emergency loans at penalty rates. [Note: Fed interventions in 2007-09 have been profitable.]
 - **Bailout**: Government payment without expectation of full repayment.
- Sensible mitigation measures: capital requirements; relation to size/TBTF risk
 - Obstacles: 1. Politics. 2. International competition & lack of coordination.

Bank Capital Requirements

- Expressed as minimum ratio equity/assets, or maximum leverage (assets/equity)
- Basic U.S rules: ratio $\geq 5\%$ is well capitalized; regulatory restrictions if ratio $< 3\%$
 - Problems: ratio based on book values; incentive to hold risky assets.
- International rules (“Basel” standards): ratios based on risk-weighted assets
 - Basel I (1988): risks measured by credit rating & asset type (for most banks).
 - Basel II (phased in after 2004): complicated rules for large banks – reliance on “internal” statistical models.
 - Problems: Low weight on AAA. Zero on governments debt (=the regulators!).
 - => Incentives to “engineer” AAA securities; lending to governments.
 - Basel III (in progress): higher capital requirements – more sophisticated?