

CHAPTER 9

Banking and the Management of Financial Institutions

The Bank Balance Sheet

Table 1 Balance Sheet of All Commercial Banks (Items as a percentage of the total, January 2003)

Assets (Uses of Funds)*		Liabilities (Sources of Funds)	
Reserves and cash items	5	Checkable deposits	9
Securities		Nontransaction deposits	
U.S. government and agency	15	Small-denomination time deposits	42
State and local government and other securities	10	(≤ \$100,000) + savings deposits	
Loans		Large-denomination time deposits	14
Commercial and industrial	14	Borrowings	28
Real estate	29	Bank capital	7
Consumer	9		
Interbank	4		
Other	8		
Other assets (for example, physical capital)	6		
Total	100	Total	100

*In order of decreasing liquidity.
Source: www.federalreserve.gov/releases/h8/current/

Bank Operation

T-account Analysis:

Deposit of \$100 cash into First National Bank

Assets	Liabilities
Vault Cash + \$100 (=Reserves)	Checkable Deposits + \$100

Deposit of \$100 check into First National Bank

Assets	Liabilities
Cash items in process of collection + \$100	Checkable Deposits + \$100

First National Bank

Assets	Liabilities
Reserves + \$100	Checkable Deposits + \$100

Second National Bank

Assets	Liabilities
Reserves - \$100	Checkable Deposits - \$100

Conclusion: When bank receives deposits, reserves ↑ by equal amount; when bank loses deposits, reserves ↓ by equal amount

Principles of Bank Management

1. Liquidity Management

2. Asset Management

Managing Credit Risk

Managing Interest-rate Risk

3. Liability Management

4. Capital Adequacy Management

Principles of Bank Management

Liquidity Management

Reserve requirement = 10%, Excess reserves = \$10 million

Assets		Liabilities	
Reserves	\$20 million	Deposits	\$100 million
Loans	\$80 million	Bank Capital	\$ 10 million
Securities	\$10 million		

Deposit outflow of \$10 million

Assets		Liabilities	
Reserves	\$10 million	Deposits	\$ 90 million
Loans	\$80 million	Bank Capital	\$ 10 million
Securities	\$10 million		

With 10% reserve requirement, bank still has excess reserves of \$1 million: no changes needed in balance sheet

Liquidity Management

No excess reserves

Assets		Liabilities	
Reserves	\$10 million	Deposits	\$100 million
Loans	\$90 million	Bank Capital	\$ 10 million
Securities	\$10 million		

Deposit outflow of \$ 10 million

Assets		Liabilities	
Reserves	\$ 0 million	Deposits	\$ 90 million
Loans	\$90 million	Bank Capital	\$ 10 million
Securities	\$10 million		

Liquidity Management

1. Borrow from other banks or corporations

Assets		Liabilities	
Reserves	\$ 9 million	Deposits	\$ 90 million
Loans	\$90 million	Borrowings	\$ 9 million
Securities	\$10 million	Bank Capital	\$ 10 million

2. Sell Securities

Assets		Liabilities	
Reserves	\$ 9 million	Deposits	\$ 90 million
Loans	\$90 million	Bank Capital	\$ 10 million
Securities	\$ 1 million		

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Liquidity Management

3. Borrow from Fed

Assets		Liabilities	
Securities	\$10 million	Bank Capital	\$ 10 million
Reserves	\$ 9 million	Deposits	\$ 90 million
Loans	\$90 million	Discount Loans	\$ 9 million

4. Call in or sell off loans

Assets		Liabilities	
Reserves	\$ 9 million	Deposits	\$ 90 million
Loans	\$81 million	Bank Capital	\$ 10 million
Securities	\$10 million		

Conclusion: excess reserves are insurance against above 4 costs from deposit outflows

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Asset and Liability Management

Asset Management

1. Get borrowers with low default risk, paying high interest rates
2. Buy securities with high return, low risk
3. Diversify
4. Manage liquidity

Liability Management

1. Important since 1960s
2. Banks no longer primarily depend on deposits
3. When see loan opportunities, borrow or issue CDs to acquire funds

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Capital Adequacy Management

1. Bank capital is a cushion that helps prevent bank failure
2. Higher is bank capital, lower is return on equity
 ROA [return on assets] = Net Profits/Assets
 ROE [return on equity] = Net Profits/Equity Capital
 EM [equity multiplier] = Assets/Equity Capital
 $ROE = ROA \times EM$
 Capital \uparrow , $EM \downarrow$, $ROE \downarrow$
3. Tradeoff between safety (high capital) and ROE
4. Banks also hold capital to meet capital requirements
5. Managing Capital:
 - A. Sell or retire stock
 - B. Change dividends to change retained earnings
 - C. Change asset growth

Managing Credit Risk

Solving Asymmetric Information Problems

1. Screening
2. Monitoring and Enforcement of Restrictive Covenants
3. Specialize in Lending
4. Establish Long-Term Customer Relationships
5. Loan Commitment Arrangements
6. Collateral and Compensating Balances
7. Credit Rationing

Managing Interest Rate Risk

First National Bank

Assets		Liabilities	
Rate-sensitive assets	\$20 m	Rate-sensitive liabilities	\$50 m
Variable-rate loans		Variable-rate CDs	
Short-term securities		MMDAs	
Fixed-rate assets	\$80 m	Fixed-rate liabilities	\$50 m
Reserves		Checkable deposits	
Long-term bonds		Savings deposits	
Long-term securities		Long-term CDs	
		Equity capital	

Managing Interest-Rate Risk

Gap Analysis

$GAP = \text{rate-sensitive assets} - \text{rate-sensitive liabilities}$
 $= \$20 - \$50 = -\$30 \text{ million}$

When $i \uparrow 5\%$:

1. Income on assets = + \$1 million
(= $5\% \times \$20\text{m}$)
2. Costs of liabilities = +\$2.5 million
(= $5\% \times \$50\text{m}$)
3. $\Delta\text{Profits} = \$1\text{m} - \$2.5\text{m} = -\$1.5\text{m}$
 $= 5\% \times (\$20\text{m} - \$50\text{m}) = 5\% \times (GAP)$
 $\Delta\text{Profits} = \Delta i \times GAP$

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Duration Analysis

Duration Analysis

$\% \Delta \text{ value} \cong -(\% \text{ point } \Delta i) \times (DUR)$

Example: $i \uparrow 5\%$, duration of bank assets = 3 years, duration of liabilities = 2 years;

$\% \Delta \text{ assets} = -5\% \times 3 = -15\%$

$\% \Delta \text{ liabilities} = -5\% \times 2 = -10\%$

If total assets = \$100 million and total liabilities = \$90 million, then assets \downarrow \$15 million, liabilities \downarrow \$9 million, and bank's net worth \downarrow by \$6 million

Strategies to Manage Interest-rate Risk

1. Rearrange balance-sheet
2. Interest-rate swap
3. Hedge with financial futures

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Off-Balance-Sheet Activities

1. Loan sales
2. Fee income from
 - A. Foreign exchange trades for customers
 - B. Servicing mortgage-backed securities
 - C. Guarantees of debt
 - D. Backup lines of credit
3. Trading Activities
 - A. Financial futures
 - B. Financial options
 - C. Foreign exchange
 - D. Swaps

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Risk Management

Principal-Agent Problem

Traders have incentives to take big risks

Risk Management Controls

1. Separation of front and back rooms
2. Value-at-risk modeling
3. Stress testing

Regulators encouraging banks to pay more attention to risk management

Financial Innovation

Innovation is result of search for profits

Response to Changes in Demand

Major change is huge increase in interest-rate risk starting in 1960s

Example: Adjustable-rate mortgages

Response to Changes in Supply

Major change is improvement in computer technology

1. Increases ability to collect information
2. Lowers transactions costs

Examples:

1. Bank credit cards
2. Electronic banking facilities

Avoidance of Existing Regulations

Regulations Behind Financial Innovation

1. Reserve requirements

Tax on deposits = $i \times r_D$

2. Deposit-rate ceilings (Reg Q)

As $i \uparrow$, loophole mine to escape reserve requirement tax and deposit-rate ceilings

Examples:

1. Eurodollars
2. Bank Commercial Paper
3. NOW Accounts
4. ATS Accounts
5. Sweep Accounts and Overnight RPs
6. Money Market Mutual Funds
