

Banking and Management of Financial Institutions

Chapter 9 of Mishkin

The Bank Balance Sheet

- It must be the case that:
 - $\text{total assets} = \text{total liabilities} + \text{equities}$
- Banks makes profits by charging an interest rate on their holdings of securities and loans that is higher than the expenses on their liabilities.

Balance Sheet of All Commercial Banks in Thailand

(As of Jan 2016)

Assets	Value	Proportion	Liabilities	Value	Proportion
1. Cash	265,187	1.5%	14. Deposits	12,015,464	69.0%
2. Interbank and money market items, net	2,296,624	13.2%	15. Interbank and money market items, net	1,284,472	7.4%
3. Claims on securities	65,575	0.4%	16. Liabilities payable on demand	82,381	0.5%
4. Derivatives assets	493,024	2.8%	17. Liabilities to deliver securities	65,947	0.4%
5. Investments - net	2,361,711	13.6%	18. Financial liabilities designated at fair value through profit or loss	31,903	0.2%
6. Investments in subsidiaries and associates, net	167,952	1.0%	19. Derivatives liabilities	493,426	2.8%
7. Loans to customers, net	11,201,641	64.3%	20. Debt issued and Borrowings	810,043	4.6%
8. Customers' liabilities under acceptances	3,531	0.0%	21. Bank's liabilities under acceptances	3,531	0.0%
9. Properites foreclosed, net	77,602	0.4%	22. Provision	74,155	0.4%
10. Premises and equipment, net	200,458	1.2%	23. Deferred tax liabilities	10,883	0.1%
11. Goodwill and other intangible assets, net	51,996	0.3%	24. Other liabilities	300,274	1.7%
12. Deferred tax assets	17,719	0.1%	25. Shareholders' Equity	1,782,775	10.2%
13. Other assets, net	218,206	1.3%	26. Head office and other branches of the same Juristic person's Entity	465,972	2.7%
Total Assets	17,421,225	100.0%	Liabilities and Equities / Equity of Head Office	17,421,225	100.0%

Source:

<https://www.bot.or.th/English/Statistics/FinancialInstitutions/Pages/StatAssetsandLiabilities.aspx>

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	
State and local government and		(< \$100,000) + savings deposits	42
other securities	10	Large-denomination time deposits	14
Loans		Borrowings	28
Commercial and industrial	14	Bank capital	7
Real estate	29		
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

- Banks make profits by selling liabilities (e.g. deposits) with one set of characteristics and using the proceeds to buy assets (e.g. loans) with a different set of characteristics. → Asset transformation.
- Normally, banks borrows from short-dated deposits and lends through long-term loans.

Bank Operation

T-account Analysis:

Deposit of \$100 cash into First National Bank

Assets

Vault Cash + \$100
(=Reserves)

Liabilities

Checkable Deposits + \$100

Deposit of \$100 check into First National Bank

Assets

Cash items in process
of collection + \$100

Liabilities

Checkable Deposits + \$100

First National Bank

Assets

Reserves
+ \$100

Liabilities

Checkable
Deposits
+ \$100

Second National Bank

Assets

Reserves
– \$100

Liabilities

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

1. Liquidity Management (1)

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		

Suppose there is a *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

1. Liquidity Management (2)

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		

1. Liquidity Management (3)

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		

1. Liquidity Management (4)

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

2. Asset 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

3. Liability Management

Liability Management

1. Nowaday, banks no longer need to depend on deposits, which they cannot manage
2. When see loan opportunities, they borrow, issue CDs, or issue bonds to acquire funds
3. They may even invent new products to the market

4. Capital Adequacy Management

1. Bank capital is a cushion that helps prevent bank failure
2. Higher is bank capital, lower is return on equity

$$ROA = \text{Net Profits} / \text{Assets}$$

$$ROE = \text{Net Profits} / \text{Equity Capital}$$

$$EM = \text{Assets} / \text{Equity Capital}$$

$$ROE = ROA \times EM$$

$$\text{Capital} \uparrow, EM \downarrow, ROE \downarrow$$

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 (Vs Signaling)
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 (1)

- If a bank has more rate-sensitive liabilities than assets, a rise in interest rates will reduce bank profits and a decline in interest rates will raise bank profits

Managing Interest Rate Risk (2)

First National Bank

Assets

Rate-sensitive assets	\$20 m
Variable-rate loans	
Short-term securities	

Fixed-rate assets	\$80 m
Reserves	
Long-term bonds	
Long-term securities	

Liabilities

Rate-sensitive liabilities	\$50 m
Variable-rate CDs	
MMDAs	

Fixed-rate liabilities	\$50 m
Checkable deposits	
Savings deposits	
Long-term CDs	
Equity capital	

Managing Interest-Rate Risk (3)

Gap Analysis

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

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} = -\1.5m
 $= 5\% \times (\$20\text{m} - \$50\text{m}) = 5\% \times (GAP)$
 $\Delta \text{ Profits} = \Delta i \times GAP$

Managing Interest-Rate Risk (4)

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

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: Calculate the maximum loss from its portfolio over a given time interval
3. Stress testing

Regulators encouraging banks to pay more attention to risk management