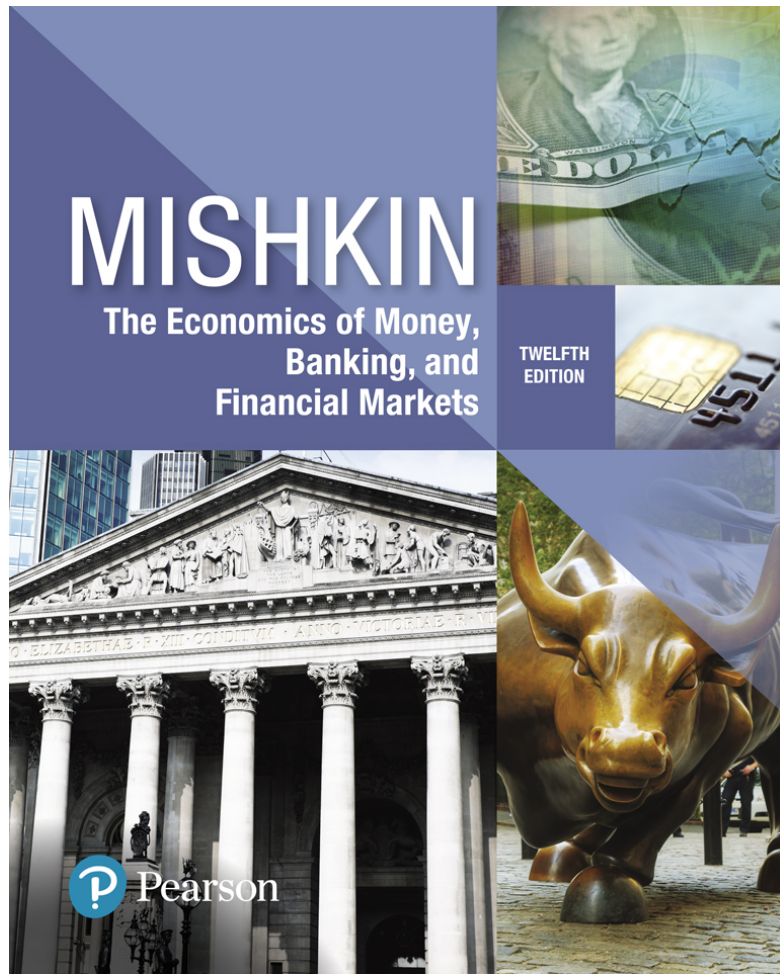


The Economics of Money, Banking, and Financial Markets

Twelfth Edition



Chapter 9

Banking and the Management of Financial Institutions

Preview

- This chapter examines how banks attempt to maximize their profits.
- Although the discussion that follows focuses primarily on commercial banks, many of the same principles apply to other financial intermediaries as well.

Learning Objectives (1 of 2)

- Summarize the features of a bank balance sheet.
- Apply changes to a bank's assets and liabilities on a T-account.
- Identify ways in which banks can manage their assets and liabilities to maximize profit.

Learning Objectives (2 of 2)

- List the ways in which banks deal with credit risk.
- Apply gap and duration analysis and identify interest-rate risk.
- Examine off-balance sheet activities.

The Bank Balance Sheet (1 of 2)

- **Liabilities:**
 - Checkable deposits
 - Nontransaction deposits
 - Borrowings
 - Bank capital

The Bank Balance Sheet (2 of 2)

- **Assets:**
 - Reserves
 - Cash items in process of collection
 - Deposits at other banks
 - Securities
 - Loans
 - Other assets

Table 1 Balance Sheet of All Commercial Banks (Items as a Percentage of the Total, June 2017 (1 of 2))

Assets (Uses of Funds)*		Liabilities (Sources of Funds)	
Reserves and cash items	14%	Checkable deposits	11%
Securities		Nontransaction deposits	
U.S. government and agency	15	Savings deposits	49
State and local government and other securities	6	Small denomination time deposits	2
		Large-denomination time deposits	10
		Borrowings	17
		Bank capital	11

Table 1 Balance Sheet of All Commercial Banks (Items as a Percentage of the Total, June 2017 (2 of 2))

Assets (Uses of Funds)*		Liabilities (Sources of Funds)	
Loans			
Commercial and industrial	13		
Real estate	26		
Consumer	8		
Interbank	1		
Other	9		
Other assets (for example, physical capital)	8		
Total	100	Total	100

*In order of decreasing liquidity.

Source: Federal Reserve Bank of St. Louis, FRED database:

<http://www.federalreserve.gov/releases/h8/current/> and

<https://www.federalreserve.gov/releases/H6/current.>

Basic Banking (1 of 3)

- Cash Deposit:

First National Bank				First National Bank			
Assets		Liabilities		Assets		Liabilities	
Vault cash	+\$100	Checkable deposits	+\$100	Reserves	+\$100	Checkable deposits	+\$100

- Opening of a checking account leads to an increase in the bank's reserves equal to the increase in checkable deposits.

Basic Banking (2 of 3)

First National Bank			
Assets		Liabilities	
Cash items in process of collection	+\$100	Checkable deposits	+\$100

Check Deposit:

When a bank receives additional deposits, it gains an equal amount of reserves; when it loses deposits, it loses an equal amount of reserves.

First National Bank			
Assets		Liabilities	
Reserves	+\$100	Checkable deposits	+\$100

Second National Bank			
Assets		Liabilities	
Reserves	-\$100	Checkable deposits	-\$100

Basic Banking (3 of 3)

- Making a profit:

First National Bank			
Assets		Liabilities	
Required reserves	+\$10	Checkable deposits	+\$100
Excess reserves	+\$90		

First National Bank			
Assets		Liabilities	
Required reserves	+\$10	Checkable deposits	+\$100
Loans	+\$90		

- Asset transformation: selling liabilities with one set of characteristics and using the proceeds to buy assets with a different set of characteristics
- The bank borrows short and lends long

General Principles of Bank Management

- Liquidity Management
- Asset Management
- Liability Management
- Capital Adequacy Management
- Credit Risk
- Interest-rate Risk

Liquidity Management and the Role of Reserves (1 of 6)

- Excess reserves:

Assets		Liabilities		Assets		Liabilities	
Reserves	\$20M	Deposits	\$100M	Reserves	\$10M	Deposits	\$90M
Loans	\$80M	Bank Capital	\$10M	Loans	\$80M	Bank Capital	\$10M
Securities	\$10M			Securities	\$10M		

- Suppose a bank's required reserves are 10%.
- If a bank has ample excess reserves, a deposit outflow does not necessitate changes in other parts of its balance sheet.

Liquidity Management and the Role of Reserves (2 of 6)

- Shortfall:

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

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

- Reserves are a legal requirement and the shortfall must be eliminated.
- Excess reserves are insurance against the costs associated with deposit outflows.

Liquidity Management and the Role of Reserves (3 of 6)

- Borrowing:

Assets		Liabilities	
Reserves	\$9M	Deposits	\$90M
Loans	\$90M	Borrowing	\$9M
Securities	\$10M	Bank Capital	\$10M

- Cost incurred is the interest rate paid on the borrowed funds

Liquidity Management and the Role of Reserves (4 of 6)

- Securities sale:

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

- The cost of selling securities is the brokerage and other transaction costs.

Liquidity Management and the Role of Reserves (5 of 6)

- Federal Reserve:

Assets		Liabilities	
Reserves	\$9M	Deposits	\$90M
Loans	\$90M	Borrow from Fed	\$9M
Securities	\$10M	Bank capital	\$10M

- Borrowing from the Fed also incurs interest payments based on the discount rate.

Liquidity Management and the Role of Reserves (6 of 6)

- Reduce loans:

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

- Reduction of loans is the most costly way of acquiring reserves.
- Calling in loans antagonizes customers.
- Other banks may only agree to purchase loans at a substantial discount.

Asset Management (1 of 2)

Three goals:

1. Seek the highest possible returns on loans and securities.
2. Reduce risk.
3. Have adequate liquidity.

Asset Management (2 of 2)

Four Tools:

1. Find borrowers who will pay high interest rates and have low possibility of defaulting.
2. Purchase securities with high returns and low risk.
3. Lower risk by diversifying.
4. Balance need for liquidity against increased returns from less liquid assets.

Liability Management

- Recent phenomenon due to rise of money center banks
- Expansion of overnight loan markets and new financial instruments (such as negotiable CDs)
- Checkable deposits have decreased in importance as source of bank funds.

Capital Adequacy Management (1 of 4)

- Bank capital helps prevent bank failure.
- The amount of capital affects return for the owners (equity holders) of the bank.
- Regulatory requirement

Capital Adequacy Management (2 of 4)

How Bank Capital Helps Prevent Bank Failure:

High Capital Bank				Low Capital Bank			
Assets		Liabilities		Assets		Liabilities	
Reserves	\$10 million	Deposits	\$90 million	Reserves	\$10 million	Deposits	\$96 million
Loans	\$90 million	Bank capital	\$10 million	Loans	\$90 million	Bank capital	\$ 4 million

High Capital Bank				Low Capital Bank			
Assets		Liabilities		Assets		Liabilities	
Reserves	\$10 million	Deposits	\$90 million	Reserves	\$10 million	Deposits	\$96 million
Loans	\$85 million	Bank capital	\$ 5 million	Loans	\$85 million	Bank capital	-\$ 1 million

Capital Adequacy Management (3 of 4)

How the Amount of Bank Capital Affects Returns to Equity Holders:

Return on Assets: net profit after taxes per dollar of assets

$$\text{ROA} = \frac{\text{net profit after taxes}}{\text{assets}}$$

Return on Equity: net profit after taxes per dollar of equity capital

$$\text{ROE} = \frac{\text{net profit after taxes}}{\text{equity capital}}$$

Relationship between ROA and ROE is expressed by the Equity Multiplier: the amount of assets per dollar of equity capital

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

$$\frac{\text{net profit after taxes}}{\text{equity capital}} = \frac{\text{net profit after taxes}}{\text{assets}} \times \frac{\text{assets}}{\text{equity capital}}$$

$$\text{ROE} = \text{ROA} \times \text{EM}$$

Capital Adequacy Management (4 of 4)

- Trade-off between safety and returns to equity holders:
 - Benefits the owners of a bank by making their investment safe
 - Costly to owners of a bank because the higher the bank capital, the lower the return on equity
 - Choice depends on the state of the economy and levels of confidence

Application: Strategies for Managing Bank Capital

- As the manager of the First National Bank, you have to make decisions about the appropriate amount of bank capital to hold in your bank.
- Our discussion of the strategies for managing bank capital leads to the following conclusion, which deserves particular emphasis: a shortfall of bank capital is likely to lead a bank to reduce its assets and therefore is likely to cause a contraction in lending.

Application: How a Capital Crunch Caused a Credit Crunch During the Global Financial Crisis

- Shortfalls of bank capital led to slower credit growth:
 - Huge losses for banks from their holdings of securities backed by residential mortgages.
 - Losses reduced bank capital
- Banks could not raise much capital on a weak economy and had to tighten their lending standards and reduce lending.

Managing Credit Risk (1 of 2)

- Screening and Monitoring:
 - Screening
 - Specialization in lending
 - Monitoring and enforcement of restrictive covenants

Managing Credit Risk (2 of 2)

- Long-term customer relationships
- Loan commitments
- Collateral and compensating balances
- Credit rationing

Managing Interest-Rate Risk

	First National Bank		
Assets		Liabilities	
Rate-sensitive assets	\$20 million	Rate-sensitive liabilities	\$50 million
Variable-rate and short-term loans		Variable-rate CDs	
Short-term securities		Money market deposit accounts	
Fixed-rate assets	\$80 million	Fixed-rate liabilities	\$50 million
Reserves		Checkable deposits	
Long-term loans		Savings deposits	
Long-term securities		Long-term CDs	
		Equity capital	

Gap and Duration Analysis (1 of 2)

- Basic gap analysis:
 - (rate sensitive assets – rate sensitive liabilities) × Δ
interest rates = Δ in bank profit
- Maturity bucked approach:
 - Measures the gap for several maturity subintervals
- Standardized gap analysis:
 - Accounts for different degrees of rate sensitivity

Gap and Duration Analysis (2 of 2)

$\% \Delta$ in market value of security H – percentage point Δ in interest rate \times duration in years.

- Uses the weighted average duration of a financial institution's assets and of its liabilities to see how net worth responds to a change in interest rates.

Off-Balance-Sheet Activities (1 of 3)

- Loan sales (secondary loan participation)
- Generation of fee income. Examples:
 - Servicing mortgage-backed securities
 - Creating SIVs (structured investment vehicles), which can potentially expose banks to risk, as it happened in the global financial crisis

Off-Balance-Sheet Activities (2 of 3)

- Trading activities and risk management techniques:
 - Financial futures, options for debt instruments, interest rate swaps, transactions in the foreign exchange market, and speculation
 - Principal-agent problem arises

Off-Balance-Sheet Activities (3 of 3)

- Internal controls to reduce the principal-agent problem:
 - Separation of trading activities and bookkeeping
 - Limits on exposure
 - Value-at-risk
 - Stress testing

Rogue Traders and the Principal–Agent Problem

- The demise of Barings, a venerable British bank more than a century old, is a sad morality tale of how the principal–agent problem operating through a rogue trader can take a financial institution that has a healthy balance sheet one month and turn it into an insolvent tragedy the next.

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