

Second Edition

# FINANCIAL INSTITUTIONS MANAGEMENT

A MODERN PERSPECTIVE



ANTHONY SAUNDERS

SECOND EDITION

# FINANCIAL INSTITUTIONS MANAGEMENT

A Modern Perspective

**Anthony Saunders**

*John M. Schiff Professor of Finance  
Salomon Center  
Stern School of Business  
New York University*



**Mc  
Graw  
Hill** **Irwin  
McGraw-Hill**

Boston, Massachusetts Burr Ridge, Illinois Dubuque, Iowa  
Madison, Wisconsin New York, New York San Francisco, California St. Louis, Missouri

## Irwin/McGraw-Hill

A Division of The McGraw-Hill Companies



This symbol indicates that the paper in this book is made of recycled paper. Its fiber content exceeds the recommended minimum of 50% waste paper fibers as specified by the EPA.

© The McGraw-Hill Companies, Inc., 1994, and 1997

*All rights reserved.* No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

### Irwin Book Team

Publisher: *Michael W. Junior*

Associate editor: *Maureen M. Harrington*

Developmental editor: *Ann Sass*

Marketing manager: *Katie Rose*

Project editor: *Gladys True*

Production supervisor: *Bob Lange*

Designer: *Larry J. Cope*

Cover illustration: *Paul Johnson*

Assistant manager, graphics: *Charlene R. Perez*

Compositor: *Weimer Graphics, Inc., Division of Shepard Poorman Communications Corp.*

Typeface: *10/12 Times Roman*

Printer: *Von Hoffmann Press, Inc.*

### Library of Congress Cataloging In-Publication Data

Saunders, Anthony.

Financial institutions management : a modern perspective / Anthony

Saunders. — 2nd ed.

p. cm. — (The Irwin series in finance)

Includes bibliographical references and index.

ISBN 0-256-15367-1

1. Financial institutions—United States—Management. 2. Risk management—United States. 3. Financial services industry—United States—Management. I. Title. II. Series.

HG181.S33 1997

332.1'068—dc20

96-8514

Printed in the United States of America

4 5 6 7 8 9 0 VH 3 2 1 0 9 8



# THE IRWIN SERIES IN FINANCE, INSURANCE AND REAL ESTATE

Stephen A. Ross  
Sterling Professor of Economics and Finance  
Yale University  
Consulting Editor

## FINANCIAL MANAGEMENT

- Block and Hirt  
**Foundations of Financial Management**  
*Eighth Edition*
- Brooks  
**PC FinGame: The Financial Management Decision Game**  
*Version 2.0 - DOS and Windows*
- Bruner  
**Case Studies in Finance: Managing for Corporate Value Creation**  
*Second Edition*
- Eun and Resnick  
**International Financial Management**
- Fruhan, Kester, Mason, Piper and Ruback  
**Case Problems in Finance**  
*Tenth Edition*
- Helfert  
**Techniques of Financial Analysis: A Modern Approach**  
*Ninth Edition*
- Higgins  
**Analysis for Financial Management**  
*Fourth Edition*
- Levich  
**International Financial Markets**
- Nunnally and Plath  
**Cases in Finance**  
*Second Edition*
- Ross, Westerfield and Jaffe  
**Corporate Finance**  
*Fourth Edition*
- Ross, Westerfield and Jordan  
**Essentials of Corporate Finance**
- Ross, Westerfield and Jordan  
**Fundamentals of Corporate Finance**  
*Third Edition*
- Stonehill and Eiteman  
**Finance: An International Perspective**
- White  
**Financial Analysis with an Electronic Calculator**  
*Second Edition*

## INVESTMENTS

- Bodie, Kane and Marcus  
**Essentials of Investments**  
*Second Edition*
- Bodie, Kane and Marcus  
**Investments**  
*Third Edition*
- Cohen, Zinbarg and Zeikel  
**Investment Analysis and Portfolio Management**  
*Fifth Edition*
- Hirt and Block  
**Fundamentals of Investment Management**  
*Fifth Edition*
- Lorie, Dodd and Kimpton  
**The Stock Market: Theories and Evidence**  
*Second Edition*
- Morningstar, Inc. and Remaley  
**U.S. Equities OnFloppy**  
*Annual Edition*
- Shimko  
**The Innovative Investor**  
*Version 2.0 - Lotus and Excel*
- FINANCIAL INSTITUTIONS AND MARKETS
- Flannery and Flood  
**Flannery and Flood's BankMaster: A Financial Services Simulation**
- Rose  
**Commercial Bank Management: Producing and Selling Financial Services**  
*Third Edition*
- Rose  
**Money and Capital Markets: The Financial System in an Increasingly Global Economy**  
*Sixth Edition*
- Rose and Kolari  
**Financial Institutions: Understanding and Managing Financial Services**  
*Fifth Edition*
- Santomero and Babbel  
**Financial Markets, Instruments, and Institutions**
- Saunders  
**Financial Institutions Management: A Modern Perspective**  
*Second Edition*

## REAL ESTATE

- Berston  
**California Real Estate Principles**  
*Seventh Edition*
- Berston  
**California Real Estate Practice**  
*Sixth Edition*
- Brueggeman and Fisher  
**Real Estate Finance and Investments**  
*Tenth Edition*
- Lusht  
**Real Estate Valuation: Principles and Applications**
- Smith and Corgel  
**Real Estate Perspectives: An Introduction to Real Estate**  
*Second Edition*
- FINANCIAL PLANNING AND INSURANCE
- Allen, Melone, Rosenbloom and VanDerhei  
**Pension Planning: Pensions, Profit-Sharing, and Other Deferred Compensation Plans**  
*Eighth Edition*
- Crawford  
**Law and the Life Insurance Contract**  
*Seventh Edition*
- Crawford  
**Life and Health Insurance Law**  
*LOMA Edition*
- Hirsch  
**Casualty Claim Practice**  
*Sixth Edition*
- Kapoor, Dlabay and Hughes  
**Personal Finance**  
*Fourth Edition*
- Kellison  
**Theory of Interest**  
*Second Edition*
- Skipper  
**International Risk and Insurance**

## About the Author

# Anthony Saunders

Anthony Saunders is the John M. Schiff Professor of Finance and Chair of the Department of Finance at the Stern School of Business at New York University. Professor Saunders received his PhD from the London School of Economics and has taught both undergraduate and graduate level courses at NYU since 1978. Throughout his academic career, his teaching and research have specialized in financial institutions and international banking. He has served as a visiting professor all over the world, including INSEAD, the Stockholm School of Economics, and the University of Melbourne. He is currently on the Executive Committee of the Salomon Center for the Study of Financial Institutions, NYU.

Professor Saunders holds positions on the Board of Academic Consultants of the Federal Reserve Board of Governors as well as the Council of Research Advisors for the Federal National Mortgage Association. In addition, Dr. Saunders has acted as a visiting scholar at the Comptroller of the Currency and at the Federal Reserve Bank of Philadelphia. He also held a visiting position in the research department of the International Monetary Fund. He is the editor of the *Journal of Banking and Finance* and the *Journal of Financial Markets, Instruments and Institutions*, as well as the associate editor of eight other journals, including *Financial Management* and the *Journal of Money, Credit and Banking*. His research has been published in all of the major money and banking journals and in several books. In addition, he has authored or coauthored several professional books.

# PREFACE

The financial services industry is undergoing great changes. Not only are the boundaries between traditional industry sectors, such as commercial banking and investment banking, breaking down but competition is becoming increasingly global in nature. There are many forces contributing to this breakdown in interindustry and intercountry barriers, including financial innovation, technology, taxation, and regulation. It is in this context that this book is written.

Although the traditional nature of each sector's product activity is analyzed, a greater emphasis is placed on *new* areas of activities such as asset securitization, off-balance-sheet banking, international banking, and so on.

The second edition of this text takes the same innovative approach as the first edition and focuses on managing return and risk in modern financial institutions (FIs). *Financial Institutions Management's* central theme is that the risks faced by FI managers and the methods and markets through which these risks are managed are becoming increasingly similar whether the institution is chartered as a commercial bank, a savings bank, an investment bank, or an insurance company.

As in any stockholder-owned corporation, the goal of FI managers should always be to maximize the value of the financial intermediary. However, pursuit of value maximization does not mean that risk management can be ignored.

Indeed, modern FIs are in the risk-management business. As we discuss in this book, in a world of perfect and frictionless capital markets, FIs would not exist and individuals would manage their own financial assets and portfolios. But since real-world financial markets are not perfect, FIs provide the positive function of bearing and managing risk on behalf of their customers through the pooling of risks and the sale of their services as risk specialists. Thus, just as a shoe manufacturer has to manage an inventory of shoe leather, the FI has to manage an inventory of risks.

## Intended Audience

*Financial Institutions Management: A Modern Perspective* is aimed at upper-level undergraduate and MBA audiences. Occasionally, in Chapters 7, 8, 10, 11, 24, and 26, there are more technical sections that are marked with an asterisk (\*). *Sections*

*highlighted with an \* may be included or dropped from the chapter reading, depending on the rigor of the course, without harming the continuity of the chapters.*

---

## Main Features

Throughout the text, special features have been integrated to encourage student interaction with the text and to aid them in absorbing the material. Some of these features include:

- **Chapter-opening outlines**, which offer students a snapshot view of what they can expect to learn from each chapter discussion.
- **Bold key terms and marginal glossary**, which emphasize the main terms and concepts throughout the chapter. They emphasize the most important terms and aid in studying.
- **Concept questions**, which allow students to test themselves on the main concepts within each major chapter section.
- **Professional Perspectives boxes**, which feature financial practitioners and how they apply some of the topics throughout the text.
- **Contemporary Perspectives boxes**, which demonstrate the application of chapter material in real, current events.
- **Integrative problem material**, which covers all the main topics within the chapter.

---

## Organization

Since our focus is on return and risk and the sources of that return and risk, this book relates ways in which the managers of modern FIs can expand return with a managed level of risk to achieve the best, or most favorable, return-risk outcome for FI owners.

Chapters 1, 2, and 3 provide an overview describing the key balance sheet and regulatory features of the major sectors of the U.S. financial services industry. We discuss depository institutions in Chapter 1, insurance institutions in Chapter 2, and other financial institutions in Chapter 3. Chapter 4 takes an analytical look at how financial intermediation benefits today's economy.

In Chapter 5, we start the risk-measurement section with an overview of the risks facing a modern FI. In Chapters 6, 7, and 8, we investigate the net interest margin as a source of profitability and risk, with a focus on the effects of interest rate volatility and the mismatching of asset and liability durations on FI risk exposure. In Chapter 9, we analyze market risk, a risk that results when FIs actively trade bonds, equities, and foreign exchange.

In Chapter 10, we look at the measurement of credit risk on individual loans and bonds and how this risk adversely impacts an FI's profits through losses and provisions against the loan and debt security portfolio. In Chapter 11, we look at the risk of loan (asset) portfolios and the effects of loan concentrations on risk exposure. Modern FIs do more than generate returns and bear risk through traditional maturity mismatching and credit extensions. They also are increasingly engaging in off-balance-sheet activities to generate fee income (Chapter 12), making technological investments to reduce costs (Chapter 13), pursuing foreign exchange activities and overseas financial investments (Chapter 14), and engaging in sovereign lending and securities activities (Chapter 15). Each of these has implications for the size and variability of an FI's profit and/or its



revenues. In addition, as a by-product of the provision of their interest rate and credit intermediation services, FIs face liquidity risk. We analyze the special nature of this risk in Chapter 16.

In Chapter 17, we begin the risk-management section by looking at ways in which FIs can insulate themselves from liquidity risk. In Chapter 18, we look at the key role deposit insurance and other guaranty schemes play in reducing liquidity risk. At the core of FI risk insulation is the size and adequacy of the owners' capital stake, which is the focus of Chapter 19. Chapters 20 and 21 analyze how and why both product and geographic diversification can improve an FI's return-risk performance and the impact of regulation on the diversification opportunity set. Chapters 22 through 26 review various new markets and instruments that have been innovated or engineered to allow FIs to better manage three important types of risk: interest rate risk, credit risk, and foreign exchange risk. These markets and instruments and their strategic use by FIs include futures and forwards (Chapter 22); options, caps, floors, and collars (Chapter 23); swaps (Chapter 24); loan sales (Chapter 25), and securitization (Chapter 26).

---

## Changes in this Edition

New to this edition is a boxed feature entitled "Contemporary Perspectives," which provides added insights as to how the various chapter topics are being applied in the real world. Some of the topics addressed in these boxes include the phenomenal growth of the mutual fund industry and its impact on the U.S. financial landscape (Chapter 3); the recent activities of rogue traders and the subsequent collapse of some banks (Chapter 9); and the race among credit card companies to develop payment products for the Internet (Chapter 13).

Also, each chapter in this edition has been revised thoroughly to reflect the most up-to-date information available. End of chapter question and problem material has also been revised to provide a more complete selection of testing material. Finally, the order of the chapters has been revised to permit a better flow of information.

The following are some of the highlights of this revision.

In Part I, Introduction, we have increased our coverage of nonbank financial institutions to reflect the changing landscape of the financial institutions industry. In keeping with this, a new chapter has been added that focuses exclusively on the insurance industry sector of the financial service industry (Chapter 2).

In Part II, Measuring Risk, a wealth of new information has been added, along with two new chapters. New to this edition, Chapter 9, Market Risk, explores the measurement of market risk by presenting among other things the JPM RiskMetrics Model for measuring market risk exposure on a daily basis. It also discusses the 1995 standardized framework of capital requirements proposed by the BIS in an attempt to regulate the market risk exposure of banks. These capital requirements come into effect in 1997.

Chapter 10, Credit Risk: Individual Loan Risk, introduces the RAROC model, a popular means for evaluating credit risk based on market data. Pioneered by Bankers Trust, RAROC models have been adopted by virtually all large banks in the United States and Europe.

New to this edition, Chapter 11, Credit Risk: Loan Portfolio Risk, focuses exclusively on FI managers' ability to measure credit risk in a loan portfolio context. In addition to describing several technical models, it includes coverage of the approaches of bank and insurance regulators for measuring credit concentration risk.

In Chapter 15, Sovereign Risk, the importance of assessing the sovereign risk of a borrowing country is underscored by the recent example provided by the Mexican

devaluation of the peso. Clearly, this event is likely to have serious repercussions for fund flows from U.S. FIs to similar emerging-market countries for a long time.

Chapter 16, Liquidity Risk, includes a new measurement technique—the liquidity index—for measuring a bank’s liquidity exposure. Also, a discussion of liquidity planning has been added.

In Part III, the focus moves from the measurement of risk to the management of risk. In this edition, several chapters have been rearranged to permit a better flow of information across Parts II and III of the text. In order to present the chapters on measuring and managing liquidity risk in closer proximity, Chapter 17, Liability and Liquidity Management, now follows Chapter 16, Liquidity Risk, and introduces (rather than concludes) Part III. The chapter on deposit insurance (new Chapter 18) has been moved to follow Chapter 17.

Chapter 19, Capital Adequacy, continues to explore the capital requirements of various FIs, and now includes a new section on the capital requirements for property-casualty insurers.

In Chapter 20, Product Expansion, and Chapter 21, Geographic Diversification, coverage has been expanded to reflect the increased inroads of banks into product expansion such as insurance, the move toward nationwide branching in the United States, and the rapid growth of foreign banks in the United States.

In Chapter 24, Swaps, a new section has been added regarding the controversial “inverse floater” swaps that have made news recently in the bankruptcy of Orange County and in the legal suits issued against Bankers Trust by Gibson Greetings Cards and Procter & Gamble.

Chapter 25, Loan Sales and Other “New” Credit Risk Management Techniques, explores the growing role of loan sales as a credit risk management tool. New coverage in this chapter includes a discussion of the role of good banks and bad banks as a restructuring device.

---

## Ancillaries

To assist in course preparation, the following ancillaries are offered:

- Instructor’s Manual/Test Bank includes detailed chapter contents, additional examples for use in the classroom, complete solutions to end of chapter question and problem material, and additional problems for test material.
- Computest, our computerized version of the test bank, allows the instructor to pick and choose the order and number of questions to include for each test.
- Flannery and Flood’s BankMaster: A Financial Services Simulation, designed by Mark Flannery of the University of Florida and Mark Flood of Concordia University, is a bank management simulation game offered for the first time with this edition.

---

## Acknowledgments

Finally, I would like to thank a number of colleagues who assisted with both the first and second editions of this book. In no particular order, they are Linda Allen, Anoop Rai, Mitch Berlin, Allen Berger, and Greg Udell. Anoop Rai wrote the end of chapter problems, the Instructors Manual, and the Test Bank for the second edition. Also of great help were the book reviewers whose painstaking comments and advice guided the second edition through its first and second revisions.

Michael H. Anderson

*Suffolk University*

M. E. Bond

*The University of Memphis*

Yen Mow Chen

*San Francisco State University*

Jeffrey A. Clark

*Florida State University*

S. Steven Cole

*University of North Texas*

James H. Gilkeson

*University of Central Florida*

John H. Hand

*Auburn University*

Julapa Jagtiani

*Baruch College*

Nelson J. Lacey

*University of Massachusetts at Amherst*

Rick LeCompte

*Wichita State University*

Patricia C. Mathews

*Mount Union College*

Robert McLeod

*University of Alabama*

Richard Stolz

*California State University—Fullerton*

Sonya Williams-Stanton

*University of Michigan Ann Arbor*

I very much appreciate the contributions of Ann Sass and Mike Junior at Irwin, my research assistant Gayle de Long, and my secretary Robyn Vanterpool.

**Anthony Saunders**

***LIST OF CONTEMPORARY PERSPECTIVES BOXES***

50 Years of Blockbuster Bank Mergers	5
The Bottom Line	49
Rogue Trader Loses £730M	158
Payment Flows in a Typical Credit Card Transaction	183
Card-Sharpers and Cyberwars	252
FDIC Cuts Commercial Bank Premiums	375
The Sears Financial Supermarket: A Timeline	440
The Nation's New Interstate Banking Law	469

***LIST OF PROFESSIONAL PERSPECTIVES BOXES***

Efficiency in Banking	264
<b>Allen N. Berger</b> , <i>Board of Governors of the Federal Reserve System</i>	
Economies of Scale and Scope	265
<b>Loretta J. Mester</b> , <i>Federal Reserve Bank of Philadelphia</i>	
The Secondary Market for Distressed and High Yield Bank Loans	591
<b>Geoffrey A. Gold</b> , <i>ING Bank</i>	
The Mortgage Prepayment Option	613
<b>Prafulla G. Nabar</b> , <i>Lehman Brothers</i>	

# BRIEF CONTENTS

## PART I

---

### INTRODUCTION

- 1 The Financial Services Industry: Depository Institutions 1
- 2 The Financial Services Industry: Insurance Companies 23
- 3 The Financial Services Industry: Other Financial Institutions 41
- 4 Why Are Financial Intermediaries Special? 55

## PART II

---

### MEASURING RISK

- 5 Risks of Financial Intermediation 73
- 6 Interest Rate Risk: The Maturity Model 87
- 7 Interest Rate Risk: The Duration Model 100
- 8 Interest Rate Risk: The Repricing Model 137
- 9 Market Risk 157
- 10 Credit Risk: Individual Loan Risk 176
- 11 Credit Risk: Loan Portfolio Risk 217
- 12 Off-Balance-Sheet Activities 226
- 13 Operating Cost and Technology Risk 247
- 14 Foreign Exchange Risk 276

- 15 Sovereign Risk 291
- 16 Liquidity Risk 323

## PART III

---

### MANAGING RISK

- 17 Liability and Liquidity Management 340
- 18 Deposit Insurance and Other Liability Guarantees 363
- 19 Capital Adequacy 391
- 20 Product Expansion 424
- 21 Geographic Diversification 461
- 22 Futures and Forwards 493
- 23 Options, Caps, Floors, and Collars 527
- 24 Swaps 557
- 25 Loan Sales and Other "New" Credit Risk Management Techniques 583
- 26 Securitization 600

- Appendixes 635  
References 643  
Solutions 652  
Index 657

# CONTENTS

## PART I

### INTRODUCTION

#### 1 The Financial Services Industry: Depository Institutions 1

- Commercial Banks 1
  - Size, Structure, and Composition of the Industry 2
  - Balance Sheet and Trends 3
  - Regulation 8
- Thrifts 12
  - Savings and Loans (S&Ls) 12
  - Savings Banks 17
  - Credit Unions 18
- Summary 18
- Appendix:** Depository Institutions and Their Regulators 20

#### 2 The Financial Services Industry: Insurance Companies 23

- Life Insurance Companies 23
  - Size, Structure, and Composition of the Industry 23
  - Balance Sheet and Recent Trends 26
  - Regulation 29
- Property-Casualty Insurance 29
  - Size, Structure, and Composition of the Industry 29
  - Balance Sheet and Recent Trends 33
  - Regulation 38
- Summary 40

#### 3 The Financial Services Industry: Other Financial Institutions 41

- Securities Firms and Investment Banks 41
  - Size, Structure, and Composition of the Industry 41
  - Balance Sheet and Recent Trends 43
  - Regulation 45
- Finance Companies 47
  - Size, Structure, and Composition of the Industry 47
  - Balance Sheet and Recent Trends 47
  - Regulation 47
- Mutual Funds 48
  - Size, Structure, and Composition of the Industry 49
  - Balance Sheet and Recent Trends 52
  - Regulation 52
- Summary 54

#### 4 Why Are Financial Intermediaries Special? 55

- Financial Intermediaries' Specialness 56
  - Information Costs 58
  - Liquidity and Price Risk 59
  - Other Special Services 60
- Other Aspects of Specialness 61
  - The Transmission of Monetary Policy 61
  - Credit Allocation 61
  - Intergenerational Wealth Transfers or Time Intermediation 61
  - Payment Services 61
  - Denominational Intermediation 62

Specialness and Regulation	63	The Duration of a Zero-Coupon Bond	104
Safety and Soundness Regulation	64	The Duration of a Consol	
Monetary Policy Regulation	65	Bond (Perpetuities)	105
Credit Allocation Regulation	65	Features of Duration	105
Consumer Protection Regulation	66	Duration and Maturity	106
Investor Protection Regulation	66	Duration and Yield	106
Entry Regulation	66	Duration and Coupon Interest	106
The Changing Dynamics of Specialness	67	The Economic Meaning of Duration	107
Trends in the United States	67	The Six-Year Eurobond	109
International Trends	68	The Consol Bond	109
Future Trends	69	Semiannual Coupon, Two-Year Maturity,	
Summary	71	Treasury Bond	109
		Duration and Immunization	110
		Duration and Immunizing Future Payments	110
		Immunizing the Whole Balance Sheet of	
		an FI	113
		Immunization and Regulatory Considerations	117
		Difficulties in Applying the Duration Model to	
		Real-World FI Balance Sheets*	118
		Duration Matching Can Be Costly*	118
		Immunization Is a Dynamic Problem*	119
		Large Interest Rate Changes and Convexity*	120
		The Problem of the Flat Term Structure*	128
		The Problem of Default Risk*	130
		Floating-Rate Loans and Bonds*	130
		Demand Deposits and Passbook Savings*	132
		Mortgages and Mortgage-Backed Securities*	133
		Futures, Options, Swaps, Caps, and Other	
		Contingent Claims*	133
		Summary	134
		<b>8 Interest Rate Risk: The</b>	
		<b>Repricing Model</b>	<b>137</b>
		The Repricing Model	137
		Rate-Sensitive Assets	139
		Rate-Sensitive Liabilities	140
		Weaknesses of the Repricing Model	142
		Market Value Effects	142
		Overaggregation	143
		The Problem of Runoffs	144
		New Regulatory Approaches to Interest Rate	
		Risk Measurement*	145
		The BIS Proposal	145
		The Federal Reserve's 1995 Proposal	152

## PART II

## MEASURING RISK

**5 Risks of Financial Intermediation 73**

Interest Rate Risk	73
Market Risk	75
Credit Risk	76
Off-Balance-Sheet Risk	78
Technology and Operational Risk	79
Foreign Exchange Risk	80
Country or Sovereign Risk	82
Liquidity Risk	83
Insolvency Risk	83
Other Risks and the Interaction of Risks	84
Summary	85

**6 Interest Rate Risk: The Maturity Model 87**

The Central Bank and Interest Rate Risk	87
The Maturity Model	89
The Maturity Model: An Example	89
The Maturity Model with a Portfolio of	
Assets and Liabilities	91
Maturity Matching and Interest Rate	
Risk Exposure	95
Summary	98

**7 Interest Rate Risk: The Duration Model 100**

Duration	101
A General Formula for Duration	103
The Duration of a Six-Year Eurobond	103
The Duration of a Two-Year U.S.	
Treasury Bond	104

- The Office of Thrift Supervision (OTS) Model 153
- Summary 155
- 9 Market Risk 157**
  - Market Risk Measurement 159
  - JPM's RiskMetrics Model 160
    - The Market Risk of Fixed-Income Securities 161
      - Foreign Exchange 163
      - Equities 164
      - Portfolio Aggregation 164
  - Regulatory Models: The BIS Standardized Framework 167
    - Fixed Income 167
    - Foreign Exchange 169
    - Equities 171
  - Large Bank Internal Models 172
  - Summary 173
- 10 Credit Risk: Individual Loan Risk 176**
  - Credit Quality Problems 176
  - Types of Loans 178
    - Commercial and Industrial Loans 178
    - Real Estate Loans 180
    - Individual (Consumer) Loans 181
    - Other Loans 182
  - The Return on a Loan 184
    - The Contractually Promised Return on a Loan 184
    - The Expected Return on the Loan 187
  - Retail versus Wholesale Credit Decisions 188
    - Retail 188
    - Wholesale 188
  - Measurement of Credit Risk 190
  - Default Risk Models 191
    - Qualitative Models 191
    - Credit Scoring Models 194
    - Term Structure Derivation of Credit Risk 198
    - Mortality Rate Derivation of Credit Risk 205
    - RAROC Models 207
    - Option Models of Default Risk\* 209
  - Summary 214
- 11 Credit Risk: Loan Portfolio Risk 217**
  - Simple Models of Loan Concentration Risk 217
  - Loan Portfolio Diversification and Modern Portfolio Theory (MPT) 218
    - Partial Applications of Portfolio Theory\* 220
    - Loan Loss Ratio-Based Models 222
    - Regulatory Models 223
  - Summary 224
- 12 Off-Balance-Sheet Activities 226**
  - Off-Balance-Sheet Activities and FI Solvency 227
  - Returns and Risks of Off-Balance-Sheet Activities 230
    - Loan Commitments 232
    - Commercial Letters of Credit and Standby Letters of Credit 236
    - Derivative Contracts: Futures, Forwards, Swaps, and Options 238
    - Forward Purchases and Sales of When Issued Securities 240
    - Loans Sold 241
  - Schedule L and Nonschedule L Off-Balance-Sheet Risks 241
    - Settlement Risk 242
    - Affiliate Risk 242
  - Off-Balance-Sheet Activities Are Not Always Risk Increasing 243
  - Summary 244
- 13 Operating Cost and Technology Risk 247**
  - Technological Innovation and Profitability 247
  - The Impact of Technology on Wholesale and Retail Banking 250
    - Wholesale Banking Services 250
    - Retail Banking Services 251
  - The Effects of Technology on Revenues and Costs 252
    - Technology and Revenues 256
    - Technology and Costs 256
  - Testing for Economies of Scale and Economies of Scope 261
    - The Production Approach 261
    - The Intermediation Approach 261
  - Empirical Findings on Economies of Scale and Scope and Implications for Technology Expenditures 262
  - Economies of Scale and Scope and X-Inefficiencies 262



- Technology and the Evolution of the Payments System 266
- Risks that Arise in a Wire Transfer Payment System 267
- Summary 274
- 14 Foreign Exchange Risk 276**
- Sources of Foreign Exchange Risk Exposure 276
- Foreign Exchange Rate Volatility and FX Exposure 278
- Foreign Currency Trading 279
- FX Trading Activities 279
- The Profitability of Foreign Currency Trading 280
- Foreign Asset and Liability Positions 281
- The Return and Risk of Foreign Investments 281
- Risk and Hedging 283
- Multicurrency Foreign Asset-Liability Positions 287
- Summary 289
- 15 Sovereign Risk 291**
- Credit Risk versus Sovereign Risk 294
- Debt Repudiation versus Debt Rescheduling 294
- Country Risk Evaluation 296
- Outside Evaluation Models 296
- Internal Evaluation Models 296
- Using Market Data to Measure Risk: The Secondary Market for LDC Debt 306
- Mechanisms for Dealing with Sovereign Risk Exposure 313
- Debt-Equity Swaps 313
- Multiyear Restructuring Agreements (MYRAs) 315
- Loan Sales 320
- Debt for Debt Swaps (Brady Bonds) 320
- Choice between the Four Mechanisms 320
- Summary 321
- 16 Liquidity Risk 323**
- Causes of Liquidity Risk 323
- Liquidity Risk at Banks and Thrifts 324
- Liability-Side Liquidity Risk 324
- Asset-Side Liquidity Risk 328
- Measuring a Bank's Liquidity Exposure 329
- Liquidity Risk, Unexpected Deposit Drains, and Bank Runs 332
- Bank Runs, the Discount Window, and Deposit Insurance 334
- Liquidity Risk and Life Insurance Companies 335
- Liquidity Risk and Property-Casualty Insurers 335
- Mutual Funds 336
- Summary 338
- PART III**
- MANAGING RISK**
- 17 Liability and Liquidity Management 340**
- Liquid Asset Management 341
- Monetary Policy Reasons 341
- Taxation Reasons 341
- The Composition of the Liquid Asset Portfolio 342
- Return-Risk Trade-Off for Liquid Assets 342
- The Liquid Asset Reserve Management Problem for U.S. Banks 343
- Liability Management 350
- Funding Risk and Cost 350
- Choice of Liability Structure 351
- Demand Deposits 351
- Interest-Bearing Checking Accounts 352
- Passbook Savings 353
- Money Market Deposit Accounts (MMDAs) 354
- Retail Time Deposits and CDs 354
- Wholesale CDs 355
- Federal Funds 356
- Repurchase Agreements (RPs) 357
- Other Borrowings 358
- Liquidity and Liability Structures for U.S. Banks 359
- Summary 360
- 18 Deposit Insurance and Other Liability Guarantees 363**
- The History of Bank and Thrift Guaranty Funds 364