REAL ESTATE ONLINE is an exclusive web tool from McGraw-Hill/Irwin. For each of the 24 key real estate topics, students can complete challenging exercises and discussion questions that draw upon recent articles, company reports, government data, and other Web-based resources. Some topics include: valuation methods, lease analysis, acquisition, risk analysis, and cycles and trends. For instructors, there are also password-protected teaching notes to assist with classroom integration of the material.

Access to Real Estate Online is free for instructors and students. Link to this and other useful course tools at www.mhhe.com/lf13e.

USEFUL WEBSITES

www.alia.org The American Land Title Association
www.ired.com International Real Estate Digest
www.reals.com This is a real estate directory for such subjects as commercial real estate, international real estate, and professional services.
www.homeglossary.com This is an online real estate dictionary.
www.FindLaw.com A good source of legal information including real estate.
www.mortgagelaw.com Includes real estate related articles and links to sites covering Mortgage Banking, Legal Services, and Technology.
dictionary.law.com Legal dictionary.
real-estate-law.freeware.com Real estate law FAQs.
www.bai.org Current market rates on various financial investments.
www.interest.com Current average mortgage rates, a mortgage calculator, and basic information on home buying.
www.interestratecalculator.com Various tools including a mortgage calculator.
www.bankrate.com Source of interest rates for CDs and other investments, also provides tools and information on mortgages.
www-mortgages-loan-search.com Information on types of mortgages, recommended refinance options, pre-qualifications vs. pre-approval, and tips on saving money on your mortgage.

www.nabl.com National Association of Home Builders
www.Countrywide.com National lender that provides mortgage rate information on their website.
www.pueblo.gsa.gov FAQs on various real estate tools.
www.fanniemae.com Federal National Mortgage Association
www.hud.gov Department of Housing and Urban Development
www.freddiemac.com Federal Home Loan Mortgage Corporation
www.mbaa.org Mortgage Bankers Association of America
www.aba.com American Banker Association
www.fha-home-loans.com/buydown_fha_loan.htm Discussion of how FHA Buydown Loans are structured.
www.mlmi.com Mortgage Guaranty Insurance Corporation
www.realtor.com National Association of Realtors
www.bestplaces.net Statistics on places to live.
www.ers.usda.gov/Data/Unemployment/ U.S. Department of Agriculture. This site includes median household income and unemployment data on every county in the U.S.
www.etatesentral.com Provides tax information for every state.
realstate.yahoo.com/real estate/homevalues Tools and information on home buying.
www.owners.com (John Chow on Mortgage) This site provides information and articles on buying a home and financing.
www.hud.gov/offices/hsg/hsgabout.cfm Discussion of FHA.
www.va.gov Veterans Affairs
www.reis.com Provides commercial real estate trends, analytics, market research, and news that support transactions by real estate professionals.
www.leasingprofessional.com Source of information about leases including terminology, sample leases, and links to other sites.
www.globest.com Provides current real estate news that is updated daily.
www.appraisalinstitute.org The Appraisal Institute
www.naia.com/information/process/ National Association of Independent Fee Appraisers
www.nreia.com/national Real Estate Investor
www.sage.com Institutional Real Estate Inc. provides current rates and on "the research" page includes links to research reports provided by several institutional investment firms.
www.buildings.com Buildings magazine
www.reis.com The National Council of Real Estate Investment Fiduciaries
www.reia.org Real Estate Investment Advisory Council
www.gecapitalrealestate.com/ GE Capital Real Estate
www.gmac.com/ GAAC Commercial Mortgage
Real Estate
Finance and
Investments
Preface

Interest in real estate has increased dramatically in recent years. In addition, approaches to real estate investment and financing continue to expand and evolve. There are now a myriad of ways of investing in real estate. These include purchasing properties directly as an individual or with other investors in a partnership, or investing in the stock of publicly traded real estate companies. The latter companies, called real estate investment trusts (REITs), develop and own properties throughout the nation. Investments can also be made in mortgage loans that are used to finance real estate. These investments could include making a mortgage loan (as a lender) or purchasing publicly traded mortgage-backed securities (residential or commercial). This book prepares readers to understand the risks and rewards associated with many approaches that may be used when investing in and financing both residential and commercial real estate. Concepts and techniques included in the chapters and problem sets are used in many careers related to real estate. These could include investing, financing, appraising, consulting, managing real estate portfolios, leasing, managing property, analyzing site locations, and managing corporate real estate. This material is also relevant to individuals who want to better understand real estate for their own personal investment and financing decisions.

Excel Spreadsheets and ARGUS Software

The book is rigorous yet practical and blends theory with applications to real-world problems. These problems are illustrated and solved by using a blend of financial calculators, EXCEL spreadsheets, and specialized software designed to analyze real estate income property. EXCEL spreadsheets, provided on the book’s Web site at www.mhhe.com/brf13e, are an aid for students to understand many of the exhibits displayed in chapters throughout the text. By modifying these exhibits, students also may solve many end-of-chapter problems without having to design new spreadsheets.

A trial version of the ARGUS software is also included on the Web site. ARGUS is a Windows-based program that is widely used throughout the real estate investment industry to solve complex lease-by-lease investment and valuation problems. Problems including leases appear in various chapters throughout the book. Data files have been replicated so that students can modify examples and solving homework problems at the end of chapters.

Internet Tools and Assets

Making informed real estate investment and financing decisions depends on being able to obtain useful information. Such information may include national and local market trends, interest rates, properties available for acquisition, financing alternatives, and the opinions of experts concerning the outlook for various real estate sectors.

The Internet now provides a rich source of information to real estate investors and lenders. Knowing how to find information on the Web is an important part of the “due diligence” that should be done before making any real estate investments. This edition includes an expanded number of Web App boxes that provide exercises that require finding relevant information on the Internet. These Web App boxes provide practical examples of the types of data and other resources that are available on the Internet. The eleventh edition also contains more URLs that students can use to research various real estate topics. In addition to research, these resources provide readers with an opportunity to remain current on many of the topics discussed in the book.
McGraw-Hill/Irwin has also created an Internet resource called Real Estate Online. Real Estate Online allows the reader to stay current and obtain knowledge of real estate through online discussion questions, articles, and exercises. Access to this and other student/instructor’s resources, including a new online quiz feature, is available at www.mhhe.com/blr1e.

Plan of the Thirteenth Edition

This edition is organized in five major sections:

Part I introduces real estate investment and financing by examining important legal concepts related to ownership rights and real estate notes and mortgages. The importance of the time value of money (TVM) in financing is also reviewed. Many students will have been exposed to the TVM in other courses; however, this material provides a framework for many applications that are specifically related to real estate.

Part II of this edition focuses on financing residential properties. Chapters 4, 5, and 6 describe various types of mortgages, including fixed rate, adjustable rate, hybrid, subprime, and home equity-based loans. Chapter 7 has been substantially revised. In addition to evaluating single family housing as an investment, it contains a discussion of the demand for housing, how to analyze whether a residence should be rented or owned, tax considerations, expected price appreciation, and other factors. A discussion of hedging, “housing bubbles,” and investing in “distressed properties” is also included.

Part III turns to investment analysis and financing of income properties. It includes an expanded discussion of leases and addresses rent determination, expense recoveries, and other options and features that are peculiar to the four major property types. It also includes in-depth coverage of methods used to estimate the value of income properties, an analysis of various financing alternatives, risk analysis, and disposition decisions. The role of real estate in corporations not in the real estate business, but that must decide whether to lease or own facilities and that to many other real estate decisions in their operations, is also discussed. EXCEL spreadsheets as well as the ARGUS software are also utilized throughout this section of the text.

Part IV discusses the analysis of construction and land development projects. Analysis of these projects differs considerably from that of existing properties because of the additional risk introduced by the development process. These risks and expected returns are discussed from the perspective of both lenders and investors. Topics include how construction and land development loans are structured, how a developer receives advances, or “draws,” during development and the lease-up phase, and how such loans are repaid. Concept boxes containing terms frequently used in development are also included in these chapters.

Part V has been expanded to include more material related to joint venture investment structures used by developers and investors. Mortgage-backed securities have been expanded to include collateralized debt obligations (CDOs) in addition to residential and mortgage-backed securities. Real estate investment trusts (REITs) have been expanded to include international securities. International real estate investment diversification is also discussed. Readers will also see how “derivatives” can be created using real estate (or mortgages on real estate) as collateral. The final chapter considers the assessment of real estate in a diversified investment portfolio that also includes stocks and bonds. This provides readers with an introduction to institutional investors and how portfolio managers view real estate relative to other asset classes both domestically and globally.

Supplements

Several ancillary materials are available for instructor use. These include:

• Instructor’s Manual—developed by Jeffrey Fisher and William Brueggeman.

• Test Bank—developed by Jeffrey Fisher and William Brueggeman.

• PowerPoint slides—developed by Edward Barylka and Pamela Pfleger, East Tennessee State University.

Acknowledgments

We would like to thank several people who contributed to the thirteenth edition revision by either being a reviewer or providing feedback to us in other ways that helped improve the current edition. These include Michael Fratantoni at Georgetown University, Roy T. Black at Georgia State University, Michael Schonberger at Rutgers University–New Brunswick, Edward Barylka at East Tennessee State University, Thomas P. Boehm at the University of Tennessee–Knoxville, Ping Cheng at Florida Atlantic University, Carlos Slawson at Louisiana State University, and W. Keith Munsell at Boston University.

In addition, we are grateful to Robert Martin, MAI, who helped prepare the ARGUS examples used in the book. Ron Donohue with the Homer Hoyt Institute helped revise the chapter on real estate investment trusts. Youguo Liang at Prudential Real Estate Investors provided significant input on the structure of joint ventures. Charles Johnson and Aaron Temple helped with Web references. Jacey Leonard helped prepare the Excel templates for the previous edition that were used in this edition. Azand Kumar helped with Web references and spreadsheets that were added in this edition. Mary Zotos and Jill Taylor helped in the preparation and submission of the manuscript.

We will miss the late Theron Nelson who contributed to prior editions of the book, including creating the original version of several of the spreadsheet templates. We appreciate his contributions to this book and to the real estate profession.

Our thanks to the book team at McGraw-Hill/Irwin for their help in developing the new edition: Paul Ducham, executive editor; Michelle Driscoll, editorial coordinator; Dan Wiencek, marketing manager; Brian Nacik, media project manager; Kristin Bradley, project manager; Debra Sylvester, production supervisor; Cara David, designer; and Beecy Zuza, supplement producer.

We also want to thank people who have contributed to previous editions, especially the late Henry E. Hoagland, who wrote the first edition of this book, and Leo D. Stone, who participated in several editions. Finally, we thank all of the adopters of previous editions of the book, who, because of their feedback, have made us feel that we have helped them prepare students for a career in real estate.

Jeffrey D. Fisher
William B. Brueggeman

(Names of people who contributed to previous editions and their contributions)
# Table of Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Chapter 5: Inflation, Mortgage Pricing, and Payment</td>
<td>73-189</td>
</tr>
<tr>
<td>6</td>
<td>Chapter 6: Residential Financial Analysis</td>
<td>190-192</td>
</tr>
<tr>
<td>7</td>
<td>Chapter 7: Underwriting and Financing Residential Properties</td>
<td>193-200</td>
</tr>
<tr>
<td>8</td>
<td>Chapter 8: Underwriting and Financing Residential Properties</td>
<td>201-203</td>
</tr>
<tr>
<td>9</td>
<td>Chapter 9: PART THREE FINANCING INCOMEPROPERTIES (DEBT AND EQUITY)</td>
<td>204-205</td>
</tr>
</tbody>
</table>

**Supplemental Notes**

- **The Real Rate of Interest:** Underlying Considerations 73
- **Interest Rates and Inflation Expectations:** 73
- **Interest Rates and Risk:** 74
- **A Summary of Factors Important to Mortgage Loan Pricing:** 75
- **Development of Mortgage Loan Payment Patterns:** 76
- **Early Loan Patterns:** 76
- **The Constant Amortization Mortgage Loan (CAM): 77**
- **Fully Amortizing, Constant Payment Mortgage Loans (CPM): 78**
- **Constant Payment and Constant Amortization Loans:** A Comparison 81
- **Determining Loan Balances:** 84
- **Loan Closing Costs and Effective Borrowing Costs:** Fully Amortized 85
- **Truth-in-Lending Requirements and the Annual Percentage Rate:** 88
- **Loan Fees and Early Repayment:** Fully Amortizing Loans 88
- **Charging Fees to Achieve Yield:** or Pricing FRA 92
- **Other Loan Patterns:** 93
- **Partially Amortizing Constant Payment Loans:** 93
- **Zero Amortization or “Interest Only” Loans:** 94
- **Increasing Loan Balances:** or Negative Amortization 95
- **Interest-Only Option Mortgages:** 96
- **Amortization Schedules and Callable Loans:** 97
- **Reverse Annuity Mortgages (RAMs):** 97
- **Appendix:** Inflation, Mortgage Pricing, and Payment Structuring 103

**Chapter 5: Inflation, Mortgage Pricing, and Payment**

- **Adjustable Rate Mortgages:** 112
- **ARMs and Lender Considerations:** 113
- **The Price Level Adjusted Mortgage (PLAM):** 114
- **PLAM: Payment Mechanics:** 115
- **ARMs: An Overview:** 117
- **ARM Balances Illustrated:** 117
- **Other ARM Characteristics:** 118
- **Additional Basic ARM Loans:** 120
- **Importance of the “Teaser Rate” on ARMs:** 121
- **Risk Premia, Interest Rate Risk, and Default Risk on ARMs:** 123
- **Expected Yield Relationships and Interest Rate Risk:** 125

**Chapter 6: Residential Financial Analysis**

- **More Complex ARM Features:** 126
- **ARM Payment Mechanics:** 128
- **Expected Yields on ARMs:** A Comparison 133

**Chapter 7: Single Family Housing: Pricing, Investment, and Tax Considerations**

- **Overview:** 176
- **Appreciation in House Prices:** 176
- **Income and Employment:** 177
- **Rental versus Owning:** 178
- **Regional Economic Influences on Property Values:** 185
- **Analyzing with the Law of Comparative Advantage:** 188
- **Economic Base Analysis—Location Quotients:** 189

**Chapter 8: Underwriting and Financing Residential Properties**

- **Underwriting Default Risk:** 213
- **Classification of Mortgage Loans:** 214
- **Conventional Mortgage Loans:** 214
- **Insured Conventional Mortgage Loans:** 216
- **FHA Insured Mortgage Loans:** 216
- **VA Guaranteed Mortgage Loans:** 217

**Chapter 9: PART THREE FINANCING INCOME PROPERTIES (DEBT AND EQUITY)**

- **Introduction:** 204
- **Valuation Fundamentals:** 205
- **Appraisal Process and Its Relationship to Valuation:** 206
- **Sales Comparison Approach:** 207
- **Income Approach:** 208
- **Capitalization Rate:** 209
- **Capitization Rate—A Note of Caution:** 209
- **Discounted Present Value Techniques:** 209
- **Selection of a Discount Rate (r):** 209
- **Using Approximations to Estimate Reversion Values:** 210
- **Land Values:** Highest and Best Use Analysis 210
- **Valuation in Land Prices:** 210
- **“Highest and Best Use” Analysis:** 210
Mortgage-Equity Capitalization 296
Reconciliation: Sales Comparison and Income
Capitalization Approaches 298
Exploring the Relationships Between Changing Market
Conditions, Cap Rates, and Property Values 298
A Closing Note on Cap Rates and Market
Conditions 302
A Word of Caution—Simultaneous Effects of Real
Estate Market Forces and Interest Rates on Property
Values 303
Valuation of a Leased Fee Estate 303
Cost Approach 304
Valuation Case Study—Oakwood Apartments 307
ARGUS Solution 311

Chapter 11
Investment Analysis and Taxation of Income
Properties 319
Motivation for Investing 319
Real Estate Market Characteristics and Investment
Strategies 320
“The Real Estate Cycle” 320
Investment Strategies 322
Marketing Investments: Projecting Cash Flows 322
Office Building Example 322
Base Rent 325
CPI Adjustment 326
Expense Stops 327
Net Operating Income 328
Expected Outlays for Replacements and Capital
Improvements 328
Estimated Sale Price 329
Introduction to Investment Analysis 331
Internal Rate of Return (IRR) 331
Present Value 331
ARGUS Solution 332
Introduction to Debt Financing 332
Measures of Investment Performance Using Ratios 332
Before-Tax Cash Flow from Sale 334
Summary of Investment Analysis Calculations 335
Taxation of Income-Producing Real Estate 336
Taxable Income from Operation of Real Estate 336
Depreciation Allowances 337
Loan Points 338
Tax Liability and After-Tax Cash Flow 338
Taxable Income from Disposal of Depreciable Real
Property 339
After-Tax Investment Analysis 339
After-Tax Cash Flow from Operations 341
After-Tax IRR 342
Effective Tax Rate 342
A Note about Passive Losses 343
Special Expectations on PMI Rules 344

Chapter 12
Financial Leverage and Financing
Alternatives 348
Introduction to Financial Leverage 348
Conditions for Positive Leverage—Before Tax 349
Conditions for Positive Leverage—After Tax 353
Break-Even Interest Rate 354
Risk and Leverage 356
Underwriting Loans on Income Properties 358
Borrower Financials 358
The Loan-to-Value Ratio 359
The Debt Coverage Ratio 359
Other Loan Terms and Mortgage Covenants 360
Alternatives to Fixed Rate Loan Structures 362
Participation Loans 363
Lender Motivations 363
Investor Motivations 364
Participation Example 364
Sale-Leaseback of the Land 368
Effective Cost of the Sale-Leaseback 370
Interest-Only Loans 370
Accrual Loans 370
Structuring the Payment for a Target Debt Coverage
Ratio 372
Convertible Mortgages 374
Lender’s Yield on Convertible Mortgage 374
Comparison of Financing Alternatives 376
Monument Office Example—ARGUS Solution 376
Other Financing Alternatives 380

Chapter 13
Risk Analysis 384
Introduction 384
Comparing Investment Returns 384
Types of Risk 385
Due Diligence in Real Estate Investment Risk
Analysis 387
Sensitivity Analysis 387
Partitioning the IRR 391
Variation in Returns and Risk 392
Retail Case Study—Westgate Shopping
Center 396
Westgate Shopping Center Scenario Analysis 399
Westgate Shopping Center—ARGUS Analysis 399
Lease Rollover Risk 390
Market Leasing Assumptions with Renewal
Probabilities 401
Market Rent 402
Month Vacant 402
Leasing Commissions 402
Tenant Improvements 402
Industrial Case Study—Wintergton Distribution
Center 403
Solution with ARGUS 404
Risk and Leverage 404
A “Real Options” Approach to Investment
Decisions 409
Traditional Approach to Land Valuation 410
Real Option Approach to Land Valuation 410
Real Options Extensions and Strategy 411

Chapter 14
Disposition and Renovation of Income
Properties 415
Disposition Decisions 415
A Decision Rule for Property Disposal 416
IRR for Holding versus Sale of Property 417
Return to a New Investor 420
Marginal Rate of Return 420
Refinancing as an Alternative to Disposition 424
Incremental Cost of Refinancing 424
Refinancing at a Lower Interest Rate 425
Other Disposition Considerations—Portfolio
Balancing 426
Renovation as an Alternative to Disposition 427
Renovation and Refinancing 429
Rehabilitation Investment Tax Credits 431
Low-Income Housing 432

Chapter 15
Financing Corporate Real Estate 437
Lease-versus-Own Analysis 437
Leasing versus Owning—An Example 438
Cash Flow from Leasing 438
Cash Flow from Owning 438
Cash Flow from Owning versus Leasing 440
Return on Owning versus Leasing 440
Importance of the Residual Value of Real Estate 441
The Investor’s Perspective 443
A Note on Project Financing 444
Factors Affecting Own-versus-Lease Decisions 445
The Role of Real Estate in Corporate
Restructuring 450
Sale-Leaseback 451

Refinancing 454
Investing in Real Estate for Diversification 454
Appendix
Real Estate Asset Pricing and Capital Budgeting
Analysis: A Synthesis 457

PART FOUR
FINANCING PROPOSED PROJECTS

Chapter 16
Financing Project Development 459
Introduction 459
Overview: The Planning and Permitting Process 459
The Development of Income-Producing Property 462
Market Risks and Project Feasibility 464
Project Risks 466
Project Development Financing—An Overview 466
Lender Requirements in Financing Project
Development 468
Loan Submission Information for Loan Requests—An
Overview 468
Contingencies in Lending Commitments 472
The Construction or Interim Loans 473
Methods of Disbursement—Construction
Lending 474
Interest Rates and Fees 474
Additional Information for Interim Loan
Submission 475
Requirements to Close the Interim Loan 475
The Permanent Loan Closing 478
Project Development Illustrated 479
Project Description and Project Costs 477
Market Data and Transactions 482
Pro Forma Construction Costs and Cash Flow
Projections 483
Feasibility, Profitability, and Risk—Credit and
Issue 486
Profitability before and after Taxes 486
Sensitivity Analysis, Risk, and Feasibility
Analysis 489

Chapter 17
Financing Land Development
Projects 496
Characterization of the Land Development
Business 496
The Land Development Process—An Overview 498
Acquisition of Land—Use of the Option
Contract 498
PART FIVE
ALTERNATIVE REAL ESTATE FINANCING AND INVESTMENT VEHICLES

Chapter 18
Joint Ventures, Syndications, and Partnerships 525

Joint Ventures 525

Organizational Forms 526

Profit Sharing 526

Initial Capital Contributions 526

Sharing Cash Flow from Operations 527

Sharing of Cash Flow from Sale 528

Summary of Cash Flows Distributed in Each Operating Year 529

Cash Flow from Sale 530

IRR to Each Joint Venture Party 531

Variation on the Preferred Return 531

Syndications 532

Use of the Limited Partnership in Private and Public Syndicates 532

Private Syndication Problem Illustrated 534

Joint Ventures, Syndications, and Partnerships 525

Chapter 19
The Secondary Mortgage Market: Pass-Through Securities 554

Introduction 554

Evolution of the Secondary Mortgage Market 554

Early Buyers of Mortgage Loans 555

The Secondary Market after 1954 555

FNMA's Changing Role 556

The Government National Mortgage Association 556

Mortgage-Backed Securities and the GNMA Payment Guarantee 557

The Federal Home Loan Mortgage Corporation 558

Operation of the Secondary Mortgage Market 558

Direct Sale Programs 558

The Development of Mortgage-Related Security Pools 559

Mortgage-Backed Bonds 560

Pass-Through Mortgage-Backed Bonds 561

Subsequent Prices 562

Mortgage Pass-Through Securities 564

Important Characteristics of Mortgage Pools 565

Mortgage Pass-Through Securities: A General Approach to Pricing 569

Mortgage Pass-Through Payment Mechanics Illustrated 571

Prepayment Patterns and Security Prices 572

Prepayment Assumptions 574

The Effects of Prepayment Illustrated 575

Security Prices and Expected Yields 577

Market Interest Rates and Price Behavior on Mortgage Pass-Throughs 577

A Note on MBSs and MPTs 578

Chapter 20
The Secondary Mortgage Market: CMOs and Derivative Securities 581

Introduction 581

Mortgage Pay-Through Bonds (MPTBs) 581

Collateralized Mortgage Obligations 582

CMOs Illustrated 583

CMO Mechanics 585

CMOs: Pricing and Expected Maturities 596

CMO Price Behavior and Payment Rates 593

CMO Tranche Variations 594

Derivatives Illustrated 596

Yield Enhancement 599

IO and PO Strips 599

Convexity 602

Residential Mortgage-Related Securities 549

Residential Mortgage-Related Securities: A Summary 602

Residential Mortgage-Related Securities: Some Closing Observations 604

Commercial Mortgage-Backed Securities (CMBSs) 605

Rating Commercial Mortgage-Backed Securities 608

Collateralized Debt Obligations (CDOs) 610

Mortgage-Related Securities and REMICs 612

REMICs: Other Considerations 614

Appendix

Duration—An Additional Consideration in Yield Measurement 618

Chapter 21
Real Estate Investment Trusts (REITs) 621

Introduction 621

Legal Requirements 621

Tax Treatment 623

Violation Penalties and Status Termination 624

Taxable REIT Subsidaries 624

Types of Trusts 624

Equity Trusts 625

The Investment Appeal of Equity Trusts 626

Private REITs 650

Importance of FFO (Funds from Operations) 630

REIT Expansion and Growth 632

Important Issues in Accounting and Financial Disclosure: Equity REITs 635

Tenant Improvements and Free Rents: Effects on FFO 636

Leasing Commissions and Related Costs 636

Use of Straight-Line Rents 636

FFO and Income from Managing Other Properties 637

Types of Mortgage Debt and Other Obligations 637

Existence of Ground Leases 638

Lease Renewal Options and REIT Rent Growth 638

Occupancy Numbers: Leased Space or Occupied Space? 639

Retail REITs and Sales per Square Foot 639

Additional Costs of Being a Public Company 639

The Investment Appeal of Mortgage REITs 640

Financial Analysis of an Equity REIT Illustrated 641

Chapter 22
Real Estate Investment Performance and Portfolio Considerations 648

Introduction 648

The Nature of Real Estate Investment Data 648

Sources of Data Used for Real Estate Performance Measurement 649

REIT Data: Security Prices 649

Hybrid and Mortgage REITs 650

NCREE Property Index: Property Values 651

Data Sources for Other Investments 651

Cumulative Investment Return Patterns 651

Computing Holding Period Returns 652

Risk, Return, and Performance Measurement 654

Risk-Adjusted Returns: Basic Elements 655

Elements of Portfolio Theory 656

Calculating Portfolio Returns 658

Portfolio Risk 658

Portfolio Weighting: Trading Off Risk and Return 661

Real Estate Returns. Other Investments, and the Potential for Portfolio Diversification 663

Portfolio Diversification: REITs and Other Investments 663

Public versus Private Real Estate Investments 663

Real Estate Performance and Inflation 665

Diversification by Property Type and Location 668

Global Diversification 670

Risk of Global Investment 670

Use of Derivatives to Hedge Portfolio Risk 670

Examples—Swaps: Office for Retail 671

INDEX 675