

Introduction to Finance

Markets, Investments, and Financial Management

16th Edition

RONALD W. MELICHER

Professor of Finance
University of Colorado at Boulder

EDGAR A. NORTON

Professor of Finance
Illinois State University

WILEY

Brief Contents

PREFACE **iii**

Part **1** Institutions and Markets **1**

- 1** The Financial Environment **3**
- 2** Money and the Monetary System **21**
- 3** Banks and Other Financial Institutions **45**
- 4** Federal Reserve System **76**
- 5** Policy Makers and the Money Supply **102**
- 6** International Finance and Trade **130**

Part **2** Investments **163**

- 7** Savings and Investment Process **165**
- 8** Interest Rates **190**
- 9** Time Value of Money **218**
- 10** Bonds and Stocks: Characteristics and Valuations **252**
- 11** Securities and Markets **298**
- 12** Financial Return and Risk Concepts **342**

Part **3** Financial Management **379**

- 13** Business Organization and Financial Data **381**
- 14** Financial Analysis and Long-Term Financial Planning **422**
- 15** Managing Working Capital **454**
- 16** Short-Term Business Financing **490**
- 17** Capital Budgeting Analysis **520**
- 18** Capital Structure and The Cost of Capital **565**

APPENDIX **599**

GLOSSARY **609**

INDEX **619**

Contents

Part 1 Institutions and Markets 1

1 The Financial Environment 3

- 1.1 What Is Finance? 4**
 - Two Themes 5
- 1.2 Why Study Finance? 6**
- 1.3 Six Principles of Finance 8**
 - Time Value of Money 8
 - Risk Versus Return 8
 - Diversification of Risk 8
 - Financial Markets Are Efficient 9
 - Management Versus Owner Objectives 10
 - Reputation Matters 10
- 1.4 Overview of the Financial System 11**
 - Characteristics and Requirements 11
 - Financial System Components and Financial Functions 12
 - Creating Money 13
 - Transferring Money 13
 - Accumulating Savings 13
 - Lending and Investing Savings 13
 - Marketing Financial Assets 13
 - Transferring Financial Assets 14
- 1.5 Financial Markets: Characteristics and Types 14**
 - Money and Capital Markets 14
 - Primary and Secondary Markets 15
 - Major Types of Financial Markets 15
- 1.6 Careers in Finance 16**
- 1.7 The Plan of Study 18**
 - Applying Finance To... 19
 - Summary 19
 - Key Terms 19
 - Review Questions 19
 - Exercises 20

2 Money and the Monetary System 21

- 2.1 The 2007–2008 Financial Crisis 22**
- 2.2 Process of Moving Savings Into Investments 23**
- 2.3 Overview of the Monetary System 25**
- 2.4 Importance and Functions of Money 26**
- 2.5 Development of Money in the United States 28**
 - Physical Money (Coin and Paper Currency) 28
 - Credit Money and Deposit Money 32
- 2.6 Money Market Securities 33**

- 2.7 Measures of the U.S. Money Supply 35**
 - M1 Money Supply 35
 - M2 Money Supply 36
 - Exclusions from the Money Supply 37
- 2.8 Money Supply and Economic Activity 37**
- 2.9 International Monetary System 39**
 - Applying Finance To... 40
 - Summary 41
 - Key Terms 42
 - Review Questions 42
 - Exercises 42
 - Problems 43

3 Banks and Other Financial Institutions 45

- 3.1 Financial Institution Problems During the Financial Crisis 46**
- 3.2 Types and Roles of Financial Institutions 47**
 - Depository Institutions 48
 - Contractual Savings Organizations 49
 - Securities Firms 50
 - Finance Firms 51
- 3.3 Overview of the Banking System 51**
 - Commercial, Investment, and Universal Banking 51
 - Functions of Banks and the Banking System 53
- 3.4 Historical Development of the U.S. Banking System 54**
 - Before the Civil War 55
 - Entry of Thrift Institutions 56
- 3.5 Regulation of the Banking System 56**
 - General Banking Legislation 57
 - The Savings and Loan Crisis 59
 - Protection of Depositors' Funds 60
- 3.6 Structure of Banks 61**
 - Bank Charters 61
 - Degree of Branch Banking 61
 - Bank Holding Companies 62
- 3.7 The Bank Balance Sheet 62**
 - Assets 63
 - Liabilities and Stockholders' Equity 65
- 3.8 Bank Management 67**
 - Liquidity Management 67
 - Capital Management 69
- 3.9 International Banking and Foreign Systems 71**
 - Applying Finance To... 72
 - Summary 72
 - Key Terms 73

Review Questions 73

Exercises 74

Problems 74

4 Federal Reserve System 76

4.1 U.S. Central Bank Response to the Financial Crisis and Great Recession 77

4.2 The U.S. Banking System Prior to the Fed 78

Weaknesses of the National Banking System 79

The Movement to Central Banking 80

4.3 Structure of the Federal Reserve System 80

Member Banks 80

Federal Reserve District Banks 82

Board of Governors 83

Federal Open Market Committee 84

Advisory Committees 84

Role of the Chair of the Fed Board of Governors 84

4.4 Monetary Policy Functions and Instruments 86

Overview of Responsibilities 86

Reserve Requirements 87

Discount Rate Policy 89

Open-Market Operations 90

Quantitative Easing 91

Implementation of Monetary Policy 92

4.5 Fed Supervisory and Regulatory Functions 93

Specific Supervisory Responsibilities 93

Specific Regulatory Responsibilities 94

4.6 Fed Service Functions 95

The Payments Mechanism 95

Transfer of Credit 97

Other Service Activities 97

4.7 Central Banks in Other Countries 98

Applying Finance To... 98

Summary 99

Key Terms 99

Review Questions 99

Exercises 100

Problems 100

5 Policy Makers and the Money Supply 102

5.1 National Economic Policy Objectives 103

Economic Growth 104

High Employment 104

Price Stability 105

Domestic and International Implications 105

5.2 Four Policy Maker Groups 105

Ethical Behavior in Government 106

Policy Makers in the European Economic Union 106

5.3 Government Influence on the Economy 107

Government Reaction to the Perfect Financial Storm 108

5.4 Treasury Cash and General Management Responsibilities 109

Managing the Treasury's Cash Balances 110

Powers Relating to the Federal Budget and to Surpluses or Deficits 110

Recent Financial Crisis Related Activities 112

5.5 Treasury Deficit Financing and Debt Management Responsibilities 113

5.6 Changing the Money Supply 115

Checkable Deposit Expansion 115

Offsetting or Limiting Factors 119

Contraction of Deposits 120

5.7 Factors Affecting Bank Reserves 121

Changes in the Demand for Currency 121

Federal Reserve System Transactions 122

5.8 The Monetary Base and the Money Multiplier 124

Applying Finance To... 126

Summary 126

Key Terms 127

Review Questions 127

Exercises 128

Problems 128

6 International Finance and Trade 130

6.1 International Monetary System 131

Development of International Finance 131

How the International Monetary System Evolved 132

6.2 European Unification 133

European Union 133

Eurozone Members 134

The Euro 134

European Union Financial Crises 134

6.3 Currency Exchange Markets and Rates 135

Currency Exchange Markets 135

Exchange Rate Quotations 136

Currency Exchange Rate Appreciation and Depreciation 137

6.4 Factors that Affect Currency Exchange Rates 138

Arbitrage 141

6.5 Conducting Business Internationally 142

Exchange Rate Developments for the U.S. Dollar 142

Managing Currency Exchange Risk 143

Ethical Considerations 144

6.6 Financing International Trade 145

Financing by the Exporter 145

Financing by the Importer 147

Banker's Acceptance 149

Other Aids to International Trade 150

6.7 Developments in U.S. International Transactions 151

International Business Issues 151

Balance-of-Payments Accounts 151

Applying Finance To...	154
Summary	154
Key Terms	154
Review Questions	155
Exercises	155
Problems	156
6.8 Exchange Rate Risks in Global Business	158
Hedging Cash Flows	159
Speculating or Taking Educated Guesses on Exchange Rate Movements	160
Where to Invest?	161
Summary	162
Review Questions	162

Part 2 Investments 163

7 Savings and Investment Process 165

7.1 Gross Domestic Product and Capital Formation	166
GDP Components	167
Implications of International Payment Imbalances	168
Saving and Investment	169
7.2 Federal Government Receipts and Expenditures	171
The Budget	171
Fiscal Policy Makers	171
Debt Financing	172
7.3 Role and Major Sources of Savings	173
Historical Sources	173
Creation of Savings	174
Personal Savings	174
Corporate Savings	176
7.4 Factors Affecting Savings	177
Levels of Income	178
Economic Expectations	178
Economic Cycles	179
Life Stages of the Individual Saver	179
Life Stages of the Corporation and Other Business Firms	180
7.5 Capital Market Securities	181
7.6 Mortgage Markets	182
Types of Mortgages and Mortgage-Backed Securities	183
Credit Ratings and Scores	184
Major Participants in the Secondary Mortgage Markets	184
7.7 Role of the Individual in the 2007–08 Financial Crisis	185
Early Factors	185
A Borrowing-Related Cultural Shift	185

Applying Finance To...	186
Summary	186
Key Terms	187
Review Questions	187
Exercises	188
Problems	188

8 Interest Rates 190

8.1 Supply and Demand for Loanable Funds	191
Historical Changes in U.S. Interest Rate Levels	193
Loanable Funds Theory	194
8.2 Components of Market Interest Rates	197
8.3 Default Risk-Free Securities: U.S. Treasury Debt Instruments	198
Marketable Obligations	198
Dealer System	200
Tax Status of Federal Obligations	200
Ownership of Public Debt Securities	200
Maturity Distribution of Marketable Debt Securities	202
8.4 Term or Maturity Structure of Interest Rates	203
Relationship Between Yield Curves and the Economy	205
Term Structure Theories	205
8.5 Inflation Premiums and Price Movements	207
Historical International Price Movements	207
Inflation in the United States	208
Types of Inflation	210
8.6 Default Risk Premiums	212
Applying Finance To...	214
Summary	214
Key Terms	215
Review Questions	215
Exercises	216
Problems	216

9 Time Value of Money 218

9.1 Basic Time Value Concepts	219
9.2 Compounding to Determine Future Values	221
Inflation or Purchasing Power Implications	225
9.3 Discounting to Determine Present Values	225
Equating Present Values and Future Values	228
9.4 Finding Interest Rates and Time Requirements	230
Solving for Interest Rates	230
Solving for Time Periods	231
Rule of 72	231
9.5 Future Value of an Annuity	232
9.6 Present Value of an Annuity	235
9.7 Interest Rates and Time Requirements for Annuities	237
Solving for Interest Rates	237
Solving for Time Periods	238

- 9.8 Determining Periodic Annuity Payments 239**
 - Examples Involving Annual Payments 239
 - Real Estate Mortgage Loans with Monthly Payments 240
- 9.9 More Frequent Time Intervals and The Cost of Consumer Credit 241**
 - More Frequent Than Annual Compounding or Discounting 241
 - Cost of Consumer Credit 242
- Applying Finance To... 244
- Summary 244
- Key Terms 245
- Review Questions 245
- Exercises 245
- Problems 246
- 9.10 Annuity Due Problems 248**
 - Future Value of an Annuity Due 248
 - Present Value of an Annuity Due 249
 - Interest Rates and Time Requirements for Annuity Due Problems 250
- Summary 251
- Questions and Problems 251

10 Bonds and Stocks: Characteristics and Valuations 252

- 10.1 Long-Term External Financing Sources for Businesses 253**
- 10.2 Bonds 255**
 - Who Buys Bonds? 256
 - Bond Covenants 257
 - Bond Ratings 257
 - Global Bond Market 259
 - Reading Bond Quotes 260
- 10.3 Different Types of Bonds 262**
 - Time to Maturity 263
 - Income From Bonds 264
- 10.4 Corporate Equity Capital 266**
 - Common Stock 266
 - Preferred Stock 268
 - Reading Stock Quotes 269
- 10.5 Dividends and Stock Repurchases 270**
 - How Do Firms Decide on the Dollar Amount of Dividends? 271
 - Stock Dividends and Stock Splits 272
 - Share Repurchases 273
- 10.6 Valuation Principles 274**
- 10.7 Valuation of Bonds 276**
 - Determining a Bond's Present Value 277
 - Calculating the Yield to Maturity 279
 - Risk in Bond Valuation 281
 - Interest Rate Risk 282
- 10.8 Valuation of Stocks 284**
 - Valuing Stocks with Constant Dividends 285
 - Valuing Stocks with Constant Dividend Growth Rates 285
 - Risk in Stock Valuation 287
 - Valuation and the Financial Environment 287
 - Global Economic Influences 287
 - Domestic Economic Influences 288
 - Industry and Competition 288
- Applying Finance To... 289
- Summary 289
- Key Terms 290
- Review Questions 290
- Problems 291
- 10.9 Holding Period Returns 295**
 - Annualized Rates of Return 295
- Summary 297
- Problems 297

11 Securities and Markets 298

- 11.1 Issuing Securities: Primary Securities Markets 299**
 - Primary Market Functions of Investment Bankers 299
- 11.2 The Facebook IPO 303**
- 11.3 Other Ways to Assist Issuing Firms 306**
 - Shelf Registration 306
 - Sell Securities to a Private Party 306
 - Rights Offerings 306
 - Competitive Bidding 307
- 11.4 Cost of Going Public 308**
- 11.5 Investment Banking Firms: Other Functions, Innovations, Regulations 312**
 - Investment Banking Regulation 312
 - Innovations among Investment Banking Firms 313
- 11.6 Trading Securities—Secondary Securities Markets 314**
 - Organized Security Exchanges 314
 - Structure of The New York Stock Exchange 315
- 11.7 Security Transactions 317**
 - Market Order 317
 - Limit Order 317
 - Stop-Loss Order 317
 - Short Sale 318
 - Buying on Margin 318
 - Record Keeping 319
 - Program Trading 320
- 11.8 Over-The-Counter Market 320**
 - Third and Fourth Security Markets 321
 - High Frequency Trading 321
- 11.9 What Makes a Good Market? 322**
 - A Word on Commissions 324
- 11.10 Security Market Indexes and Trading Foreign Securities 324**
 - Indexes 324
 - Foreign Securities 326
- 11.11 Inside Information and Other Ethical Issues 327**
 - Ethics and Job Opportunities in Investments 328

Applying Finance To... 330

Summary 330

Key Terms 331

Review Questions 331

Problems 332

11.12 Why Do Derivatives Exist? 334

Futures Contracts 335

Options 336

Option Profit/Loss Diagrams 339

Summary 341

Key Terms 341

Discussion Questions 341

Problems 341

12 Financial Return and Risk Concepts 342

12.1 Historical Return for a Single Financial Asset 343

Arithmetic Average Annual Rates of Return 344

12.2 Historical Risk Measures for a Single Financial Asset 345

Standard Deviation as a Measure of Risk 346

12.3 Where Does Risk Come From? 348

12.4 Expected Measures of Return and Risk 350

12.5 Historical Returns and Risk of Different Assets 354

12.6 Efficient Capital Markets 355

12.7 Portfolio Returns 358

Expected Return on a Portfolio 359

12.8 Variance and Standard Deviation of Return on a Portfolio 359

To Diversify or Not to Diversify? 361

12.9 Portfolio Risk and the Number of Investments in the Portfolio 362

Systematic and Unsystematic Risk 363

12.10 Capital Asset Pricing Model 364

Applying Finance To... 368

Summary 368

Key Terms 369

Review Questions 369

Problems 370

12.11A Estimating Beta 373

12.11B Security Market Line 375

Summary 376

Problems 376

Part 3 Financial Management 379

13 Business Organization and Financial Data 381

13.1 Starting a Business 382

Strategic Plan with a Vision or Mission 383

Business and Financial Goals 383

13.2 Forms of Business Organization in the United States 384

Proprietorship 384

Partnership 386

Corporation 387

13.3 Accounting Principles 389

The Annual Report 391

13.4 Income Statement 391

13.5 The Balance Sheet 393

Assets 394

Liabilities 395

Owners' Equity 396

13.6 Statement of Cash Flows 396

13.7 Financial Statements of Different Companies 399

Common-Size Financial Statements 399

The Auto Bailout and Financial Statements 400

13.8 Goal of a Firm 402

Measuring Shareholder Wealth 402

Linking Strategy and Financial Plans 404

Criterion for Nonpublic Firms 404

What About Ethics? 404

13.9 Corporate Governance 405

Principal-Agent Problem 406

Reducing Agency Problems 407

13.10 Finance in the Organization Chart 409

Applying Finance To... 411

Summary 411

Key Terms 412

Review Questions 412

Problems 413

13.11A Income Tax 417

13.11B Depreciation Basics 419

A Few Words on Depreciation Methods 420

Summary 421

Review Questions and Problems 421

14 Financial Analysis and Long-Term Financial Planning 422

14.1 Financial Statement Analysis 423

Ratio Analysis of Balance Sheet and Income Statement 424

Types of Financial Ratios 425

14.2 Liquidity Ratios and Analysis 427

14.3 Asset Management Ratios and Analysis 429

14.4 Financial Leverage Ratios and Analysis 432

14.5 Profitability Ratios and Analysis 435

14.6 Market Value Ratios and Analysis 437

Summary of Ratio Analysis for Walgreens 439

14.7 DuPont Method of Ratio Analysis 440

14.8 Long-Term Financial Planning 442

Percentage of Sales Technique 442

Asset Investment Requirements 443

14.9 Cost-Volume-Profit Analysis 445**14.10 Degree of Operating Leverage 446**

Applying Finance To... 448

Summary 449

Key Terms 450

Review Questions 450

Problems 450

15 Managing Working Capital 454**15.1 Importance of Working Capital 455****15.2 Operating and Cash Conversion Cycles 457**

Operating Cycle 457

Cash Conversion Cycle 457

Determining the Length of the Operating Cycle and
Cash Conversion Cycle 458**15.3 Investments in Receivables, Inventory,
and Payable Financing 460****15.4 Cash Budgets 463**

Minimum Desired Cash Balance 463

Estimated Cash Inflows 464

Estimated Cash Outflows 465

Constructing the Cash Budget 465

Seasonal Versus Level Production 466

15.5 Management of Current Assets 468

Cash Management 468

Marketable Securities 470

15.6 Getting—and Keeping—the Cash 476**15.7 Accounts Receivable Management 479**

Credit Analysis 479

Credit-Reporting Agencies 479

Credit Terms and Collection Efforts 481

15.8 Inventory Management 482**15.9 Technology and Working Capital
Management 484**

Cash Management 484

Processing Invoices and Float 484

Tracking Inventory 485

Applying Finance To... 485

Summary 485

Key Terms 486

Review Questions 486

Problems 487

16 Short-Term Business Financing 490**16.1 Strategies for Financing Working Capital 491**

Maturity-Matching Approach 492

Aggressive Approach 493

Conservative Approach 494

16.2 Factors Affecting Short-Term Financing 495

Operating Characteristics 495

Other Influences in Short-Term Financing 498

16.3 Providers of Short-Term Financing 499

Bank Lines of Credit 499

Computing Interest Rates 501

Revolving Credit Agreements 501

Small Business Administration 502

16.4 Nonbank Short-Term Financing Sources 504

Trade Credit from Suppliers 504

Commercial Finance Companies 505

Commercial Paper 506

**16.5 Additional Varieties of Short-Term
Financing 508**

Accounts Receivable Financing 508

Acceptances 511

**16.6 Inventory Financing and Other Secured
Loans 512**

Inventory Loans 513

Loans Secured by Stocks and Bonds 514

Other Forms of Security for Loans 514

16.7 The Cost of Short-Term Financing 515

Applying Finance To... 515

Summary 516

Key Terms 516

Review Questions 517

Problems 517

17 Capital Budgeting Analysis 520**17.1 Mission, Vision, and Capital Budgeting 521**

Identifying Potential Capital Budget Projects 522

17.2 Capital Budgeting Process 524**17.3 Capital Budgeting Techniques—Net Present
Value 527**

Using Spreadsheet Functions 530

**17.4 Capital Budgeting Techniques—Internal Rate
of Return 530**

NPV and IRR 534

**17.5 Capital Budgeting Techniques—Modified Internal
Rate of Return 535****17.6 Capital Budgeting Techniques—Profitability
Index 536****17.7 Capital Budgeting Techniques—Payback
Period 537****17.8 Conflicts Between Discounted Cash Flow
Techniques 538**

Different Cash Flow Patterns 538

Different Time Horizons 538

Different Sizes 539

Difference Between Theory and Practice 539

17.9 Estimating Project Cash Flows 540

Isolating Project Cash Flows 540

Approaches to Estimating Project Cash Flows 542

17.10 Keeping Managers Honest 546**17.11 Risk-Related Considerations 547**

Applying Finance To...	549	What Do Businesses Use as Their Cost of Capital?	576
Summary	549	Difficulty of Making Capital Structure Decisions	578
Key Terms	550	18.5 Planning Growth Rates	579
Review Questions	550	Internal Growth Rate	579
Problems	551	Sustainable Growth Rate	580
17.12 Project Stages and Cash Flow Estimation	554	Effects of Unexpectedly Higher (or Lower) Growth	581
Initial Outlay	554	18.6 EBIT/Eps Analysis	582
Cash Flows During the Project's Operating Life	555	Indifference Level	582
Salvage Value and NWC Recovery at Project Termination	555	Implications of EBIT/Eps Analysis	583
17.13 Applications	556	18.7 Combined Operating and Financial Leverage Effects	584
Cash Flow Estimation for a Revenue Expanding Project	556	Unit Volume Variability	585
Cash Flow Estimation for a Cost-Saving Project	558	Price-Variable Cost Margin	585
Setting a Bid Price	561	Fixed Costs	585
Summary	563	Degree of Financial Leverage	586
Review Questions	563	Total Risk	586
Problems	563	18.8 Insights From Theory and Practice	588
		Taxes and Nondebt Tax Shields	588
		Bankruptcy Costs	588
		Agency Costs	590
		A Firm's Assets and Its Financing Policy	590
		The Pecking Order Hypothesis	591
		Market Timing	591
		Beyond Debt and Equity	592
		Guidelines for Financing Strategy	592
		Applying Finance To...	594
		Summary	594
		Key Terms	595
		Review Questions	595
		Problems	596
		APPENDIX	599
		GLOSSARY	609
		INDEX	619
18 Capital Structure and The Cost of Capital	565		
18.1 Why Choose a Capital Structure?	566		
Trends in Corporate Use of Debt	567		
Cashing in on Low Interest Rates	568		
18.2 Required Rate of Return and The Cost of Capital	569		
18.3 Cost of Capital	571		
Cost of Debt	571		
Cost of Preferred Stock	572		
Cost of Common Equity	572		
Cost of New Common Stock	573		
18.4 Weighted Average Cost of Capital	574		
Capital Structure Weights	574		
Measuring The Target Weights	574		