

J. Fred Weston  
Eugene F. Brigham

# Essentials of Managerial Finance

Fourth Edition



**J. Fred Weston**

*University of California, Los Angeles*

**Eugene F. Brigham**

*University of Florida*

**Essentials  
of Managerial  
Finance**  
fourth edition



**THE DRYDEN PRESS**  
Hinsdale, Illinois

Copyright © 1974, 1977 by The Dryden Press  
A division of Holt, Rinehart and Winston, Publishers  
Copyright © 1968, 1971 by Holt, Rinehart and Winston, Inc.  
All rights reserved  
Library of Congress Card Catalog Number: 76-3072  
ISBN: 0-03-017551-8  
Printed in the United States of America  
8 9 074 9 8 7 6 5 4

# Preface

Financial management continues to reflect important new developments. Strong inflationary pressures have pushed interest rates to unprecedented heights, and the resulting high cost of capital has led to profound changes in corporate financial policies and practices. Academic researchers have made significant advances, especially in the areas of capital budgeting and the cost of capital. At the same time, business practitioners are making increasing use of financial theory, and feedback from the “real world” has led to revisions in financial theory. To a large extent, these trends dictated the revisions made in this Fourth Edition of *Essentials of Managerial Finance*.

In addition to containing new materials, the revision reflects our experience, and that of others, in teaching business finance. Organizational changes have been made to provide for smoother flow and greater continuity; points that proved troublesome to students have been clarified; a few outright errors have been corrected; and, of course, descriptive materials have been updated. Moreover, the end-of-chapter questions, problems, and references have been clarified and strengthened.

Much of the specific content of the book is the result of our experience in executive development programs over a number of years. This experience, in addition to our consulting with business firms on financial problems and policies, has helped us to identify the most significant responsibilities of financial managers, the most fundamental problems facing firms, and the most feasible approaches to practical decision-making. Some topics are conceptually difficult, but so are the issues faced by financial managers. Business managers must be prepared to handle complex problems, and finding solutions to these problems necessarily involves the use of advanced tools and techniques.

We have not sought to avoid the many unresolved areas of business financial theory and practice. Although we could have simplified the text in many places by avoiding the difficult issues, we preferred to provide a basic framework based on the “received doctrine,” then to go on to present materials on a number of important but controversial issues. It is hoped that our presentation will stimulate the reader to further inquiry.

We acknowledge that the level and difficulty of the material is somewhat uneven. Certain sections are simply descriptions of the institutional features of the financial environment and, as such, are not difficult to understand. Other parts—notably the material on capital budgeting, uncertainty, and the cost of capital—are by nature rather abstract, and, as such, are difficult for those not used to thinking in abstract terms. In some of the more complex sections, we simply outline procedures in the text, then refer the interested reader to more advanced works.

## CHANGES IN THE FOURTH EDITION

The Fourth Edition of *Essentials* differs from the Third in several key respects. Some of the more significant alterations are itemized below.

1. *Updating.* Finance is a highly dynamic subject, and many changes have occurred since the Third Edition came out in 1973. Important theoretical advances have been made; and important shifts have occurred in the level and structure of interest rates, stock prices, and money and capital markets in general. These changes have been reflected in this edition.
2. *Risk analysis.* We have continued to emphasize the importance of risk analysis in financial decision-making. Although some new materials on risk are introduced, our major thrust in this revision has been to clarify and better illustrate the more analytical sections.
3. *Modifications in cost of capital presentation.* Students generally have more difficulty understanding valuation and cost of capital concepts than any other aspects of finance. We have made a major effort to clarify these concepts, as well as their relationship to the capital budgeting process. Based on class testing of the prepublication manuscript, we achieved larger gains in the students’ benefits-received/time-spent ratio here than in any other section of the book.
4. *Modifications in capital budgeting presentation.* The chapters on capital budgeting under certainty and uncertainty have both been clarified significantly.
5. *End-of-chapter questions and problems.* The questions and problems have been thoroughly revised to emphasize and illustrate the major points raised in the text chapters, and to remove ambiguities. At the urging of our students, we have also provided suggested numerical answers to se-

lected problems. After working a problem, students were sometimes not sure if they had the correct answer. The suggested answers will help resolve such uncertainty.

6. Particular attention was given to the *glossary* and *index*. The completeness of these two items will ease problems that might otherwise be encountered if an instructor assigns chapters out of sequence.

### Ancillary Materials

Several items are available to supplement *Essentials*. First, there are two casebooks, *Cases in Managerial Finance, 3rd Edition* and *Decisions in Financial Management: Cases*, by Eugene F. Brigham et al., designed specifically to accompany *Essentials*. Second, there are a number of readings books which can be used to supplement the text. One book in particular, *Issues in Managerial Finance*, edited by E. F. Brigham and R. E. Johnson, was prepared specifically to supplement *Essentials*. Finally, many students will find the *Study Guide* useful. The *Study Guide* highlights the key points in the text and presents a comprehensive set of problems similar to those at the end of each chapter. Each problem is solved in detail, so a student who has difficulty working the end-of-chapter problems can be aided by reviewing the *Study Guide*.

### Acknowledgments

In its several revisions, the book has been worked on and critically reviewed by numerous individuals, and we have received many detailed comments and suggestions from instructors (and students) using the book in our own schools and elsewhere. All this help has improved the quality of the book, and we are deeply indebted to the following individuals, and others, for their help: M. Adler, E. Altman, J. Andrews, R. Aubey, P. Bacon, W. Beranek, V. Brewer, W. Brueggeman, R. Carleson, S. Choudhury, P. Cooley, C. Cox, D. Fischer, R. Gray, J. Griggs, R. Haugen, S. Hawk, R. Hehre, J. Henry, A. Herrmann, G. Hettenhouse, R. Himes, C. Johnson, R. Jones, D. Kaplan, M. Kaufman, D. Knight, H. Krogh, R. LeClair, W. Lee, D. Longmore, J. Longstreet, H. Magee, P. Malone, R. Moore, T. Morton, T. Nantell, R. Nelson, R. Norgaard, J. Pappas, R. Pettit, R. Pettway, J. Pinkerton, G. Pogue, W. Regan, F. Reilly, R. Rentz, R. Richards, C. Rini, R. Roenfeldt, W. Sharpe, K. Smith, P. Smith, D. Sorenson, M. Tysseland, P. Vanderheiden, D. Woods, J. Yeakel, and D. Ziegenbein for their careful reviews of this and previous editions.

We owe special thanks to Roger Bey, Keith Johnson, and Ramon Johnson for providing us with a set of problems they had developed for their classes, and also for providing us with detailed reviews of the manuscript of

this book. We would like to thank C. Barngrover, S. Mansinghka, W. Eckardt, H. Rollins, H. Alwan, D. Wort, and J. Zumwalt for their assistance in helping us develop the acetate program. We would also like to express our appreciation to Bob LeClair and to The American College for their help in preparing transparencies and masters. (Note to instructors: a set of supplementary problems developed by Professors Bey, Johnson, and Johnson will be available to adoptors from The Dryden Press in the very near future. Transparencies and masters are also available from The Dryden Press.)

The Universities of California and Florida, and our colleagues on these campuses, provided us with intellectual support in bringing the book to completion. Finally, we are indebted to the Dryden Press staff—principally Mary Ellen Stocker and Martha Cobb—for their special efforts in getting the manuscript into production and for following through to the bound book.

The field of finance will continue to experience significant changes. It is stimulating to participate in these exciting developments, and we sincerely hope that *Essentials* will contribute to a better understanding of the theory and practice of finance.

Los Angeles, California  
Gainesville, Florida  
September 1976

J. Fred Weston  
Eugene F. Brigham

# Contents

## **preface**

### **Part One**

#### **Overview of Finance: Analysis, Planning, and Control      1**

#### **1    Scope and Nature of Managerial Finance      3**

Changing Role of financial Management	3
Goals of the Firm	7
Financial Decisions: Risk-Return Trade-off	10
Organization and Structure of this Book	11

#### **2    The Tax Environment      15**

Fiscal Policy	15
Corporate Income Taxes	17
Personal Income Tax	23
Summary	27
Appendix: Depreciation Methods	31

#### **3    Ratio Analysis      35**

Basic Financial Statements	35
Basic Types of Financial Ratios	39
Du Pont System of Financial Analysis	51



	Rates of Return in Different Industries	54
	Sources of Comparative Ratios	55
	Use of Financial Ratios in Credit Analysis	58
	Use of Financial Ratios in Security Analysis	59
	Some Limitations of Ratio Analysis	59
	Summary	60
<b>4</b>	<b>Profit Planning</b>	66
	Break-Even Analysis	66
	Sources and Uses of Funds Statement	77
	Summary	81
<b>5</b>	<b>Financial Forecasting</b>	86
	Cash Flow Cycle	86
	Financing Patterns	89
	Percent-of-sales Method	90
	Scatter Diagram, or Simple Regression, Method	94
	Multiple Regression Method	96
	Comparison of Forecasting Methods	96
	Summary	99
<b>6</b>	<b>Financial Planning and Control: Budgeting</b>	104
	Budgeting	104
	Nature of the Budgeting Process	105
	Cash Budgeting	108
	Variable, or Flexible, Budgets	111
	Problems of Budgeting	113
	Use of Financial Plans and Budgets	114
	Divisional Control in a Decentralized Firm	115
	External Uses of financial Forecasts and Budgets	117
	Summary	117
 <b>Part Two</b>		
<b>Working Capital Management</b>		
		121
<b>7</b>	<b>Working Capital Policy</b>	123
	Importance of Working Capital Management	123
	Original Concept of Working Capital	124
	Extending the Working Capital Concept	125
	Long-Term versus Short-Term Debt	128
	Relationship of Current Assets to Sales	135

Working Capital Policy: Combining Current Asset and Current Liability Management	138
Summary	139

<b>8 Current Asset Management</b>	<b>143</b>
Cash Management	143
Determining the Minimum Cash Balance	148
Marketable Securities	150
Management of Accounts Receivable: Credit Policy	153
Inventory	159
Determinants of the Size of Inventories	160
Generality of Inventory Analysis	161
Inventory Decision Models	162
Use of EOQ Model: An Illustration	164
Summary	164

<b>9 Major Sources and Forms of Short-Term Financing</b>	<b>169</b>
Trade Credit	169
Concept of "Net Credit"	171
Short-Term Financing by Commercial Banks	172
Commercial Paper	176
Use of Security in Short-Term Financing	178
Financing Accounts Receivable	178
Inventory Financing	182
Summary	185

## **Part Three**

### **Decisions Involving Long-Term Assets** 191

<b>10 The Interest Factor in Financial Decisions</b>	<b>193</b>
Compound Value	193
Present Value	196
Compound Value versus Present Value	198
Compound Value of an Annuity	199
Present Value of an Annuity	201
Annual Payments to Accumulate a Future Sum	202
Annual Receipts from an Annuity	203
Determining Interest Rates	204
Present Value of an Uneven Series of Receipts	204
Semiannual and other Compound Periods	206

	A Special Case of Semiannual Compounding: Bond Values	208
	Appropriate Compounding or Discounting Rates	209
	Summary	211
<b>11</b>	<b>Capital Budgeting Techniques</b>	215
	Significance of Capital Budgeting	216
	A Simplified View of Capital Budgeting	217
	Application of the Concept	218
	Administrative Details	219
	Capital Budgeting Analysis: Choosing Among Alternative Proposals	220
	Importance of Good Data	221
	Ranking Investment Proposals	221
	Basic Differences Between The <i>NPV</i> and <i>IRR</i> Methods	228
	Which Ranking Technique, <i>NPV</i> or <i>IRR</i> , Should be Used?	231
	Capital Budgeting Project Evaluation	232
	Alternative Capital Budgeting Worksheet	236
	Capital Rationing	237
	Summary	239
<b>12</b>	<b>Investment Decisions Under Uncertainty</b>	245
	Risk in Financial Analysis	245
	Portfolio Risk	254
	Alternative Methods of Treating Risk	256
	Public Expenditure Decisions	264
	Summary	265
 <b>Part Four</b>		
	<b>Sources and Forms of Long-Term Financing</b>	269
<b>13</b>	<b>The Market for Long-Term Securities</b>	271
	Security Markets	271
	Over-the-Counter Security Markets	274
	Decision to List Stock	275
	Investment Banking	276
	Investment Banking Operation	278
	Costs of Flotation	283
	Regulation of Security Trading	285
	Appraisal of Regulation of Security Trading	286
	Summary	287
<b>14</b>	<b>Common Stock</b>	292
	Apportionment of Income, Control, and Risk	292
	Common Stock Financing	294

Evaluation of Common Stock as a Source of Funds	298
Use of Rights in Financing	300
Theoretical Relationships	300
Effects on Position of Stockholders	304
Advantages of Use of Rights in New Financing	308
Summary	309

**15 Fixed Income Securities: Debt and Preferred Stock** 314

Instruments of Long-term Debt Financing	314
Secured Bonds	318
Unsecured Bonds	319
Characteristics of Long-Term Debt	322
Decisions on Use of Long-Term Debt	324
Nature of Preferred Stock	325
Major Provisions of Preferred Stock Issues	330
Evaluation of Preferred Stock	328
Decision Making on Use of Preferred Stock	331
Rationale for Different Classes of Securities	331
Refunding a Bond or a Preferred Stock Issue	333
Summary	336

**16 Term Loans and Leases** 343

Term Loans	343
Lease Financing	347
Summary	357

**17 Warrants and Convertibles** 360

Warrants	360
Convertibles	364
Decisions on Use of Warrants and Convertibles	367
Reporting Earnings if Convertibles or Warrants are Outstanding	369
Summary	369

**Part Five**  
**Financial Structure and the Use of Leverage** 375

**18 Valuation and Rates of Return** 377

Definitions of Value	377
The Required Rate of Return, $k$	379
Bond Valuation	382
Preferred Stock Valuation	386

Common Stock Valuation and Rates of Return	387
Factors Leading to Changes in Market Prices	391
Marketability and Rates of Return	392
Summary	393
Appendix: Multi-Period Stock Valuation Models	400

## **19 Financial Structure and the Use of Leverage** 407

Basic Definitions	407
Theory of Financial Leverage	408
Effects of Financial Leverage	410
Break-Even Analysis	415
Relationship of Financial Leverage to Operating Leverage	417
Variations in Financial Structure	420
Factors Influencing Financial Structure	421
Summary	424

## **20 The Cost of Capital** 430

Composite, or overall, Cost of Capital	431
Basic Definitions	431
Before-Tax Component Cost of Debt ( $k_d$ )	433
Preferred Stock	434
Tax Adjustment	435
Cost of Retained Earnings ( $k_r$ )	436
Cost of Newly Issued Common Stock, or External Equity ( $k_e$ )	438
Finding the Basic Required Rate of Return on Common Equity	439
Effect of Leverage on the Cost of Equity	441
Effect of Leverage on the Component Cost of Debt	442
Combining Debt and Equity: Weighted Average, or Composite, Cost of Capital	445
High-Risk and Low-Risk Firms	446
Calculating the Marginal Cost of Capital for the Actual Company	448
Combining the <i>MCC</i> and the Investment Opportunity Schedules	454
Dynamic Considerations	456
Large Firms versus Small Firms	456
Summary	457

## **21 Dividend Policy and Internal Financing** 463

Factors Influencing Dividend Policy	463
Dividend Policy Decisions	466
Rationale for Stable Dividends	468
Alternative Dividend Policies	469
Residual Theory of Dividends	470

Long-Run Viewpoint	473
High and Low Dividend Payout Industries	473
Conflicting Theories on Dividends	474
Dividend Payments	475
Payment Procedure	475
Stock Dividend and Stock Splits	476
Stock Repurchases as an Alternative to Dividends	478
Summary	482

## **Part Six**

### **Integrated Topics in Financial Management**

<b>22</b>	<b>Timing of Financial Policy</b>	489
	Significance to Financial Management	489
	Historical Patterns in the Costs of Financing	490
	Interest Rates as an Index of Availability of Funds	492
	Costs of Different Kinds of Financing Over Time	493
	Relationship Between Long-Term and Short-Term Interest Rates	495
	Characteristic Patterns in Cost of Money	497
	Money and Capital Market Behavior	499
	Fiscal Policy	499
	Interest Rate Forecasts	500
	Effects of Price Level Changes on Interest Rates	506
	Implications of Interest Rate Patterns for Financial Timing	507
	Summary	507
<b>23</b>	<b>External Growth: Mergers and Holding Companies</b>	513
	Mergers versus Internal Growth	514
	Terms of Mergers	515
	Holding Companies	522
	Tender Offers	527
	Summary	528
	Appendix: Accounting Policies in Mergers	534
<b>24</b>	<b>Failure, Reorganization, and Liquidation</b>	542
	The Firm's Life Cycle	542
	Failure	543
	Causes of Failures	544
	The Failure Record	545

Extension and Composition	547
Reorganization	549
Financial Decisions in Reorganization	549
Liquidation Procedures	555
Bankruptcy	557
Summary	562

<b>25 Managerial Finance: A Summary</b>	567
Role of Managerial Finance within the Economy	567
Financial Analysis, Planning, and Control	568
Working Capital Management	572
Long-Term Investment Decisions	572
Long-Term Financing	574
Financial Structure and the Cost of Capital	575
Review of Financial Theory	577
Timing of Financial Policy	579
Merger Policy	580
Conclusion	581

<b>Appendix A Mathematical Tables</b>	587
---------------------------------------	-----

<b>Appendix B Answers to Selected End-of-Chapter Problems</b>	594
---	-----

<b>Glossary</b>	599
-----------------	-----

<b>Index</b>	611
--------------	-----

# **Overview of Finance: Analysis. Planning. and Control**

## **Part One**

Part One consists of six chapters. The first describes the scope and nature of managerial finance and serves as an introduction to the book. Next, in Chapter 2, we examine the tax system; since a high percentage of business income is paid to the government, taxes are an important consideration in finance. In Chapter 3 we examine the construction and use of the basic ratios of financial analysis; through ratio analysis, the firm's strengths and weaknesses can be pinpointed. Chapter 4 explains two key tools used in financial planning: break-even analysis and the sources and uses of funds statement. In Chapter 5 we take up financial forecasting: given a projected increase in sales, how much money must the financial manager raise to support this level of sales? Finally, in Chapter 6, we consider the budget system through which management controls and coordinates the firm.

Finance deals, in the main, with very specific questions: Should we lease or buy the new machine? Should we expand capacity at the Hartford plant? Should we raise capital this year by long-term or short-term debt or by selling stock? Should we go along with the marketing department, which wants to expand inventories, or with the production department, which wants to reduce them? Specific questions such as these, which are



typical of the types of decisions facing the financial manager, are considered in the remainder of the book. But here in Part One we take an *overview* of the firm. Because all specific decisions are made within the context of the firm's overall position, this overview is critical to an understanding of any specific proposal.