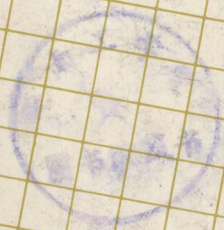


Eugene F. Brigham
Roy L. Crum

Cases in
Managerial
Finance
FIFTH EDITION



F225
BI
EJ

8461551

Cases in Managerial Finance

FIFTH EDITION

Eugene F. Brigham
University of Florida

Roy L. Crum
University of Florida



E8461551

Chicago New York Philadelphia San Francisco
Montreal Toronto London Sydney Tokyo
Mexico City Rio de Janeiro Madrid



The Dryden Press

1983

Acquisitions Editor Elizabeth Widdicombe
Editorial Assistant Judy Sarwark
Project Editor Kathleen Gleason
Design Director Alan Wendt
Managing Editor Jane Perkins
Production Manager Mary Jarvis

Text and cover design by Muriel Underwood
Copy editing by Bernice Eisen

Copyright © 1983 CBS College Publishing
All rights reserved
Copyright © 1970, 1974, 1977, 1980 by The Dryden Press
A division of Holt, Rinehart and Winston, Publishers

Address orders to:
383 Madison Avenue
New York, New York 10017

Address editorial correspondence to:
One Salt Creek Lane, Hinsdale, Illinois 60521

Library of Congress Catalog Card Number: 82-72310
ISBN 0-03-060101-0
Printed in the United States of America
345-090-98765432

CBS College Publishing
The Dryden Press
Holt, Rinehart and Winston
Saunders College Publishing

8461551

The Dryden Press
Series in Finance

Aronson
The Scorecard

Bradley
Administrative Financial Management, Fourth Edition

Brigham
Financial Management, Third Edition

Brigham
Fundamentals of Financial Management, Third Edition

Brigham, Crum, et al.
Cases in Managerial Finance, Fifth Edition

Brigham and Johnson
Issues in Managerial Finance, Second Edition

Clayton and Spivey
The Time Value of Money

Fama and Miller
The Theory of Finance

Gitman
Personal Finance

Kidwell and Peterson
Financial Institutions and Markets



Lorie and Brealey
Modern Developments in Investment Management

Mayo
Basic Investments

Mayo
Finance

Myers
Modern Developments in Financial Management

Reilly
Investment Analysis and Portfolio Management

Reilly
Investments

Weston and Brigham
Essentials of Managerial Finance, Sixth Edition

Weston and Brigham
Managerial Finance, Seventh Edition

Preface

Although corporation finance can be fascinating, student interest in the subject must first be stimulated. Feedback from students, especially those not majoring in finance, suggests that many of them regard finance as either too mechanical or too theoretical. In an effort to overcome this attitude, we experimented with several different ideas. First, we learned from questionnaires and discussions that student attitudes toward finance closely reflect our ability to relate the subject matter to the “real world.” If, in a lecture on a particular topic, we illustrate a point by referring to an actual situation, students’ curiosity seems to intensify, their powers of concentration are sharpened, and we are able to impart more knowledge than we would if we dealt strictly with abstractions or hypothetical situations.

Recognition of the fact that we can improve the value of a course by increasing students’ awareness of its relevance led us to experiment with the case method. We tried various types of cases, ranging from the Harvard-type case to simpler, more structured ones, without notable success. The Harvard cases were too complicated for our introductory students, who spent an inordinate amount of time trying to figure out what steps they should follow to solve the case and what data were actually necessary and useful in reaching the solution. A number of students became frustrated and simply gave up. Others, especially finance majors, were sufficiently interested in the cases to spend the perhaps excessive time required to learn something from them. On balance, we concluded that Harvard-type cases are suitable only for relatively advanced students. We also experimented with a number of the simpler cases that are available in published form. Some of these are quite good, and we had success with them. However, we found it difficult to use many of them because they were not designed to complement specific text assignments. This lack of direct relationship held even for the combined text-and-cases textbooks that some of us tried.

In informal discussions with our colleagues, we raised the question of

whether we could devise a set of cases that would retain the virtues of the Harvard-type cases—that is, motivate students by putting the text material into a real world context—while overcoming the drawbacks mentioned above. Over the years, each of us had collected a number of examples that we used in our lectures to illustrate the text material. Most of these examples had come from consulting experiences, although some had been presented by corporate officers in executive development programs or were drawn from publications such as *Fortune*. We decided to restructure a limited number of these “case illustrations” into short but formal cases to see how useful they would be as teaching vehicles. As we proceeded, the following two rules were uppermost in our minds:

1. Each case should be keyed to a specific topic—ratio analysis, capital budgeting, dividend policy, and so on—to limit the scope of the case and thus make it correspond to a specific chapter in a textbook.
2. It should be possible for a student to work the case within a reasonable period of time. We used two hours as a target, and tried to design the cases so that a student could, after having studied the relevant chapter, work the case in roughly the desired time.

Our first experimental cases were used in both undergraduate and graduate introductory finance courses, as well as in the second undergraduate corporation finance course. The cases were utilized somewhat differently in the various courses. More emphasis was put on student presentation in the graduate and, especially, the intermediate undergraduate courses. In the introductory undergraduate course, students were generally instructed to read the case and familiarize themselves with the situation, after which the instructor presented the solution to the case in class in lieu of a lecture on the text material. In spite of the fact that these early cases had weaknesses, the instructors who used them received favorable evaluation reports from their students, and comments on the questionnaires distributed indicated that this favorable reaction came about in large part *because of the cases*. On the basis of the success of the experiment, we decided to go ahead with the project and write cases to complement each chapter in the major texts.

Although the initial cases had been highly successful, two problems were readily apparent. First, we concluded that it was virtually impossible to write a case that would not initially have a number of ambiguities, omissions of essential data, or outright errors. This led us to have each case worked thoroughly and independently by several teaching and research assistants before it was used in class. Even so, we made major modifications in every case after presenting it in class. Second, we found that the largest single problem with the early cases was that many students simply did not know how to begin solving them. We already had, of course, a written solution for each case, showing what decision the company had actually taken, as well as the steps

used in reaching the decision. Because we wanted the students to understand how the text material was used in reaching the decision, we simply added a series of questions at the end of each case. These questions point out the direction of the decision process that was actually followed, but do not lead the student "by the hand" to the correct solution. The inclusion of these carefully structured sets of questions greatly improved the usability of the cases. This was especially true at the introductory level.

We, and others, found that using cases makes it much easier to motivate our students, majors and nonmajors alike. Students can now see the importance of finance in actual business decisions, and, for many students, the cases have transformed finance from a sterile, mechanical, "theoretical" subject into an interesting, pragmatic one. By showing the students why it is important to master theory, the cases actually *cause* them to learn more of the abstract, theoretical material than they would otherwise.

Changes in the Fifth Edition

Although earlier editions of the book met with more success than we had anticipated, they did have a number of errors and confusing sections. These problems have been corrected. Also, in earlier editions it was clear that some cases "worked out" better than others; some were more interesting and informative, and got their message across better. Upon examination, it turned out that the better cases were generally those that involved an extensive discussion of subjective, judgmental considerations as well as numerical calculations. In preparing the fourth edition, we reviewed each case and made sure that these subjective elements were present. In addition, we added questions where necessary to ensure that students think through these subjective considerations. This policy has been carried over to the new edition.

Almost half of the cases in the fourth edition were either completely new or extensively revised to reflect changes in the finance literature. This trend is continued here in the fifth edition where over forty percent of the cases have been revised substantially or are totally new. As is invariably true when extensive revisions are involved, errors and ambiguities tend to appear in some of the cases. We have taken particular care in this edition to eliminate such errors through extensive classroom testing. The cases that have not been modified drastically are those that are still consistent with the theoretical literature and "work out" well in class. These have simply been updated, and in some instances, streamlined. Among the new cases, several topics have been included for the first time. American Business Machines, Inc., not only gives students practice in determining relevant costs for use in an economic analysis, it also shows how acquisitions that change the timing of the cash flow stream can be valuable to a firm. In American Telephone and Electronics Company, the emphasis is on operating and financial leverage, but the case departs from the usual situation of an existing firm changing its operating or financial

leverage and determining the effect on the value of its stock. Rather, we focus on a new fully-separated subsidiary, see how its initial value changes with leverage, and let the founders (the parent company) capture the gains from leverage.

Two other key features of the fifth edition are: (1) a major effort to reduce “busy work;” and (2) the inclusion of an appendix that provides partial answers to numerical questions. Some cases require extensive but somewhat repetitive calculations; for example, one simply cannot undertake a realistic leveraged lease analysis without making so many numerical calculations that the case cannot be worked in a reasonable length of time. In such situations, we have simply supplied most of the calculations, leaving enough blanks for students to fill in to ensure that they understand the calculating procedure. This allows for presentation of some important but numerically complex topics, and it also frees students to devote some time to the subjective issues embodied in the “essay questions” at the end of each case.

We are grateful to a number of individuals for giving suggestions that materially improved the book. Edward Altman, Abdul Aziz, Peter Bacon, Steven Bolten, William Brueggeman, Santosh Choudbury, David Ewert, Louis Gapenski, Anna Hackman, Irwin Harvey, Steven Hawk, Pearson Hunt, Keith Johnson, Donald Knight, Charles Kroncke, Harry Magee, Kathy McShane, Robert Moore, Kose John, James Pettijohn, Hugo Phillips, John Pinkerton, Robert Radcliffe, William Regan, Pietra Rivoli, Ellen Rose, Judith Rosenblum, Dayal Singh, Donald Sorenson, Milford Tysseland, Paul Vanderheiden, Steven Vincent, J. Fred Weston, and Elizabeth Wood all made helpful contributions. In particular, we wish to thank Linda Bricker and Chris Prestopino for their careful review and critique of the manuscript. The College of Business at the University of Florida provided us with intellectual support in writing and testing the manuscript, and Joyce Crum did her usual great job typing, proofing, and coordinating the many revisions and last minute changes that had to be made. Finally, we want to express our appreciation to The Dryden Press staff, especially Liz Widdicombe, Judy Sarwark, and Kathy Gleason for their support in bringing the book to completion.

The field of finance continues to undergo significant changes and advances. It is stimulating to participate in these developments, and we sincerely hope that these cases will help to communicate the important issues in finance to future generations of students.

Eugene F. Brigham
Gainesville, Florida

Roy L. Crum
Gainesville, Florida

Cases in Managerial Finance

FIFTH EDITION

Contents

1. **Financial Analysis, Planning, and Control** 1
 1. Forest Resources Corporation *Financial Analysis* 3
 2. Sparkle Toy Company *Break-Even Analysis and Leverage* 13
 3. Structural Analytics Corporation *Financial Planning and Forecasting* 21
 4. Sharman Industries, Inc. *Financial Planning and Control* 29
 5. Lenox Furniture Company *Cash Budgeting* 33
2. **Asset Management** 39
 6. Kendall Dairies *Credit Policy and Accounts Receivable Management* 41
 7. Barracuda Marine Corporation *Inventory Management* 47
 8. Brownsville Crate Company *Working Capital Policy* 53
 9. Eastex Resources Corporation *Disposal of Excess Working Capital* 57
 10. Precision Control and Engineering, Inc. *Replacement Decisions* 61
 11. Lastinger Implement Company *Capital Budgeting: Relevant Costs* 67
 12. Fibertech Labs, Inc. *Capital Budgeting with Unequal Project Lives; Competitive Bidding* 73
 13. Tarheel Forwarding, Inc. *Capital Budgeting* 77
 14. American Business Machines, Inc. *Capital Budgeting* 83
 15. Datronix Corporation *Capital Budgeting under Uncertainty* 89
3. **Financial Instruments and Markets** 95
 16. Ashford Cycle Works, Inc. *Short-Term Credit* 97
 17. Cumberland Gas and Electric *Refunding a Bond Issue* 103
 18. Ariel Electronics, Inc. *Investment Banking* 107

19.	Fairchild Industries	<i>Rights Offerings</i>	111
20.	Sequoia Timber Corporation	<i>Decision to Go Public</i>	117
21.	Chicago Intertype Corporation	<i>Stocks versus Bonds</i>	123
22.	Stratton Electronics, Inc.	<i>Stocks versus Bonds</i>	129
23.	Franklin Foto Finishing	<i>Lease versus Loan</i>	135
24.	Pringle, Inc.	<i>Sale and Leaseback</i>	139
25.	North American Airlines	<i>Leveraged Lease; Multiple Rates of Return</i>	145
26.	Kennesaw Edison Power & Light	<i>Financing with Convertibles</i>	151
27.	Benson Petroleum Corporation	<i>Convertibles</i>	161
4.	Financial Structure, Dividend Policy, and the Cost of Capital		165
28.	Medical Innovations Corporation	<i>Financial Leverage</i>	167
29.	Page Solarlite, Inc.	<i>Optimum Capital Structure</i>	173
30A.	American Telephone and Electronics Company, Part I	<i>Operating Leverage</i>	179
30B.	American Telephone and Electronics Company, Part II	<i>Operating and Financial Leverage</i>	183
31.	Hamner Courts	<i>Valuation</i>	187
32.	Nature's Bounty, Inc.	<i>Cost of Capital</i>	191
33A.	National Telecommunications Corporation, Part I	<i>Integrated Case on Capital Budgeting and Cost-of-Capital</i>	199
33B.	National Telecommunications Corporation, Part II	<i>Divisional and Project Hurdle Rates</i>	217
34.	Bellweather Oil Company	<i>Dividend Policy</i>	227
35.	Genetic Industries, Inc.	<i>Dividend Policy</i>	233
36.	Michigan Engine Works, Inc.	<i>Timing of Financial Policy</i>	239
5.	Other Topics in Financial Management		245
37.	Armada Corporation	<i>Mergers</i>	247
38.	Miller Hardware and Supply	<i>Reorganization</i>	255
39.	Geodyne Exploration	<i>Multinational Finance: Capital Budgeting under Uncertainty</i>	263
40.	Russo Winery, Inc.	<i>Multinational Business Finance: Capital Budgeting</i>	271
41.	Sampson Brothers	<i>Suggested Financing Alternatives</i>	277
	Appendix A		283
	Appendix B		301

Part 1: Financial Analysis,
Planning,
and Control

Case 1: Financial Analysis

Forest Resources Corporation

Laurie Phillips, vice-president and senior loan officer of the First Florida National Bank of Jacksonville, was recently alerted to the deteriorating financial position of one of the bank's long-standing clients, Forest Resources Corporation (FRC), via the bank's computer analysis program. The bank requires quarterly financial statements from each of its major loan customers. Information from such statements is fed into the computer, which then calculates key ratios for each customer, charts trends in these ratios, and compares the statistics for each company with the average ratios of other firms in the same industry and against any protective requirements in the loan agreements. If any ratio is significantly worse than the industry average, reflects a marked adverse trend, or fails to meet contractual requirements, the computer highlights the deficiency.

An analysis of FRC's financial statements revealed a number of significant trends (see Tables 1-5 for the financial statements and partial analyses thereof). Particularly disturbing were the 1979 current and debt ratios, which failed to meet the contractual limits of 2.0 and 55 percent, respectively. Because the current and debt ratios do not meet contractual requirements, the bank legally could call for immediate repayment of both the long- and short-term loans and, if they were not repaid within ten days, could force the company into bankruptcy. However, Phillips was reluctant to take such drastic action, preferring to approach FRC's management and persuade them to initiate immediate, decisive action to improve the company's financial position. Accordingly, she sent a copy of the computer output, together with her comments on the company's financial position, to George Whiting, founder and president of FRC, with a request that he review this material and submit to the bank proposals for immediate corrective action.

Forest Resources Corporation's common stock is traded over-the-counter. The company manufactures and distributes a wide range of forest products including building lumber, pulp and paper, plywood, and wood specialties.

Table 1 Forest Resources Corporation Balance Sheets
December 31 (\$ in thousands)

	1977	1978	1979
Cash	\$ 807	\$ 628	\$ 612
Accounts receivable	2,682	2,896	4,605
Inventory	2,970	5,181	7,319
Current assets	\$6,459	\$ 8,705	\$12,536
Land, buildings, plant and equipment (gross)	2,786	3,153	3,588
Accumulated depreciation	470	730	1,050
Net fixed assets	\$2,316	\$ 2,423	\$ 2,538
Total assets	\$8,775	\$11,128	\$15,074
Short-term bank loans	\$ 500	\$ 800	\$ 2,860
Accounts payable	1,061	1,648	3,137
Accruals	540	800	1,150
Current liabilities	\$2,101	\$ 3,248	\$ 7,147
Long-term bank loan	1,000	1,500	1,500
Mortgage	450	408	367
Long-term debt	\$1,450	\$ 1,908	\$ 1,867
Total liabilities	\$3,551	\$ 5,156	\$ 9,014
Common stock (3.65 million shares)	3,650	3,650	3,650
Retained earnings	1,574	2,322	2,410
Owners' equity	\$5,224	\$ 5,972	\$ 6,060
Total liabilities and owners' equity	\$8,775	\$11,128	\$15,074

a. Market price of shares: 1977—\$2.79; 1978—\$1.52; 1979—\$0.16.

b. Price-earnings (P/E) ratios: 1977—6.7; 1978—5.6; 1979—5.0.

c. Assume that all changes in interest-bearing loans and gross fixed assets occur at the start of the relevant years.

d. The mortgage loan is secured by a first mortgage bond on land and buildings.

Major markets for the company's products are in the residential housing, commercial/industrial construction, and packaging products areas. The company purchases part of its raw timber requirements and obtains the balance from its own forests. With some exceptions, the company's products are not subject to deterioration or technological obsolescence over a period of from three to five years.

During the eight years prior to 1977, FRC had sustained fairly stable rates of growth in assets, sales, and earnings. During the last quarter of 1977, the

Table 2 Forest Resources Corporation Income Statements
Years Ended December 31 (\$ in thousands)

	1977	1978	1979
Net sales	\$26,820	\$28,966	\$30,703
Cost of goods sold	21,216	23,550	26,140
Gross profit	\$ 5,604	\$ 5,416	\$ 4,563
Administrative and selling expenses	2,006	2,407	2,648
Depreciation	250	260	320
Miscellaneous expenses	318	558	898
Total operating expenses	\$ 2,574	\$ 3,225	\$ 3,866
Earnings before interest and taxes	3,030	2,191	697
Interest: Short-term loans	50	88	286
Interest: Long-term loans	—	150	150
Interest: Mortgage	41	37	33
Net income before taxes	\$ 2,939	\$ 1,916	\$ 228
Taxes (48 percent)	1,411	919	110
Net income after taxes	1,528	997	118
Dividends on common stock	382	249	30
Retained earnings	\$ 1,146	\$ 748	\$ 88

a. Earnings per share (EPS): 1977—\$0.419; 1978—\$0.273; 1979—\$0.033.

b. Interest rates on borrowed funds:

Short-term loan: 1977—10 percent; 1978—11 percent; 1979—10 percent.

Long-term loan: 10 percent for each year.

Mortgage: 9 percent for each year.

c. For case purposes, assume that expenses other than depreciation and interest are all variable.

company experienced some difficulty in marketing its full production. Although FRC did achieve an 8 percent growth in sales for that year, management noticed a slight softening of the market and encountered some resistance when it tried to cover rising costs through increasing selling prices. However, management had expected a revitalization of demand in 1978 and had therefore increased production towards the end of 1977. When sales continued to fall dramatically during the first half of 1978, the company started offering price discounts and more liberal credit terms in an effort to stimulate demand. Even though the decline in the market was steeper than anticipated, it was still considered to be a temporary phenomenon. Despite these sales promotion moves, the company was unable to dispose of the increased production. 1979

Table 3 Forest Resources Corporation Ratio Analyses December 31

	1977	1978	1979	Industry Average
<i>Liquidity ratios:</i>				
Current ratio	3.1	2.7		2.5
Quick ratio	1.7	1.1		1.0
<i>Leverage ratios:</i>				
Debt ratio (%)	40.5	46.3		50.0
Times-interest-earned	33.5	8.0		7.7
<i>Asset management ratios:</i>				
Inventory turnover (cost) ^a	7.1	4.5		5.7
Inventory turnover (selling) ^b	9.0	5.6		7.0
Fixed assets turnover	11.6	12.0		12.0
Total assets turnover	3.1	2.6		3.0
Average collection period (days)	36.0	36.0		32.0
<i>Profitability ratios:</i>				
Profit margin (%)	5.7	3.4		2.9
Gross profit margin (%)	20.9	18.7		18.0
Return on total assets (%)	17.4	9.0		8.8
Return on owners' equity (%)	29.3	16.7		17.5
Dividend payout ratio (%)	25.0	25.0		20.0
<i>Potential failure indicators:</i>				
Altman Z factors ^c	6.8	4.8		1.81/2.99

a. Uses cost of goods sold as the numerator.

b. Uses net sales as the numerator.

c. The 'Altman Z factor' range of 1.81/2.99 represents the so-called 'zone of ignorance'. Refer to Appendix 6A of Eugene F. Brigham, *Financial Management: Theory and Practice*, 3rd ed., (Hinsdale, Ill.: Dryden Press, 1982), for details concerning the Z factor.

d. Year end balance sheet values were used throughout in the computation of ratios embodying balance sheet items.

e. Assume constant industry-average ratios throughout the period 1977-1980.

witnessed a continuation of the relatively depressed 1978 market conditions, yet management still increased production in anticipation of a surge in demand. By the fourth quarter of 1979, demand had increased somewhat, mainly due to favorable housing markets in the sunbelt states. At this point, FRC had more than adequate inventory to meet any surge in demand.