SECOND EDITION

Elements of Financial Analysis

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ELEMENTS OF FINANCIAL ANALYSIS

Second Edition

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VNR VAN NOSTRAND REINHOLD COMPANY

Library of Congress Catalog Card Number: 83-23408
ISBN: 0-442-28161-7

Manufactured in the United States of America

Published by Van Nostrand Reinhold Company Inc.
135 West 50th Street
New York, New York 10020

Van Nostrand Reinhold Company Limited
Molly Millars Lane
Wokingham, Berkshire RG11 2PY, England

Van Nostrand Reinhold
480 Latrobe Street
Melbourne, Victoria 3000, Australia

Macmillan of Canada
Division of Gage Publishing Limited
164 Commander Boulevard
Agincourt, Ontario M1S 3C7, Canada

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging in Publication Data

Schwartzman, Sylvan D. (Sylvan David)
Elements of financial analysis.

Includes index.
1. Corporations—Finance. 2. Business enterprises—Finance. I. Ball, Richard E. (Richard Edward), 1919– . II. Title.
HG4026.S36 1984 658.1'51 83-23408
ISBN 0-442-28161-7

Preface

Over a number of years, many of our students in courses and seminars in finance have told us that they need a ready source that would easily clarify financial terms, tools, and techniques for the application of financial theory to the solution of problems in an academic or business environment. As teachers and researchers in business finance, we frequently lamented the basic formality or rigor of textbooks, and the logistical problems of assigning scattered readings that sought to teach decision making in diverse areas of finance.

With its direct application to decision making, *Elements of Financial Analysis* should be particularly valuable to students enrolled in those undergraduate and graduate courses in finance. To teach financial theory and techniques, our book uses a hypothetical business firm. The material is presented in the context of a single case study of that company involved in multiple financial situations requiring analysis. By organizing the presentation around this extended case study, we reinforce and clarify the subject matter. This approach is, we believe, unique in financial literature, and was recognized when the first edition was selected by *Business Week* for its "Annual Bookshelf for Investors."

This new edition draws upon all the strengths of the former one, and has both updated and enlarged upon the original contents. In this regard, it can serve as a desirable text in basic finance, since virtually all major interests of present-day instruction in finance are dealt with here.

We acknowledge our indebtedness to all the authors of numerous volumes and articles who have enriched the field of finance and contributed in countless ways to the authors' knowledge and interest in this dynamic area of study. Special appreciation goes to Professor Z. L. Melnyk, of the Department of Finance, University of Cincinnati, for his generous assistance and encouragement in developing this manuscript. To him also belongs full credit for constructing the Present Value Tables 5 and 6.

Finally, our warmest personal thanks are expressed to Alberta Gordon, Managing Editor, who supervised the production of this volume, and to all those involved in the preparation and production of this volume, from typescript to the printed text.

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1. The Basic Financial Documents

A CASE IN BRIEF: THE LMN CORPORATION

The LMN Corporation, a large Midwestern industrial firm, is in the process of deciding whether or not it should introduce a new line of merchandise. To manufacture this particular product line, the company would have to spend a net amount of $20 million at the start to purchase the necessary equipment. Or, if it prefers, it can lease the equipment over a five-year period at a cost of $5.5 million a year. In addition, the project will necessitate other capital outlays, including those connected with the extra cash on hand that will be needed, larger inventories, and considerably increased accounts receivable. The company estimates that over a five-year period its total sales will increase by $200 million, with net benefits after taxes of about $25 million.

As an alternative to buying or leasing the equipment, the LMN Corporation could purchase a smaller firm, the RS Company, which already manufactures this product line. The common stock of the RS Company sells over the counter for $10 per share, with earnings per share of $2.00. It has one million shares outstanding and pays an annual dividend of $.50 per share. From the sale of this product, which is its only line, the RS Company currently earns $2 million after taxes.

The situation just described raises many questions. Deciding which ones are vital and how to deal with them involves much consideration. Even more, this decision-making clearly calls for the understanding and use of appropriate techniques of financial analysis.

OBTAINING THE FUNDAMENTAL INFORMATION

Where does the decision-making process begin? Financial analysis usually starts with the examination of a company's four basic fiscal documents. The first and most basic document revealing the financial state of a firm is its *balance sheet,* so named because it presents the balance between the firm's assets and its liabilities, including the stockholders' equity, at a particular point in time, generally at the end of the fiscal year. It is also frequently called a *financial position statement.*

The second basic financial document is the company's *income statement,* which presents the gain or loss achieved during the firm's most recent period of operation. Hence, it is also known as the *profit and loss statement.*

The third basic document, associated with both the balance sheet and the income statement, is the *statement of accumulated retained earnings.* This shows how much money the firm has retained for itself from its earnings over the years, after it has paid out dividends to the preferred and common stockholders. To all the prior accumulated earnings will now be added those funds retained by the company from its net current earnings, less dividends.

The final major financial document of a company is its *statement of the source and application of funds,* also called the *sources and uses of funds* and the *statement of changes in financial position.* Accompanying it is an *analysis of the change in working capital.* This document reveals the financial changes that have resulted from the operations of a company and reports the flow of all funds between two stated periods of time—generally the two most recent years. The statement of the source and application of funds will thus show the flow of the firm's cash as well as its *near cash* (that is, the remaining liquid assets), which together constitute its flow of *working capital.* Our preferred term in this case, *funds flow,* includes the flow of all forms of capital that may have occurred in any of the firm's transactions, such as the purchase and sale of property, equipment, investments, and so on.

In recent years these documents have been supplemented by an additional one required by the accounting profession under *FASB* (Financial Accounting Standards Board) *Statement 33.* This document is intended to show the effect of inflation upon (1) sales, expenses, and income measured in constant dollars based on the Consumer Price Index—Urban (base year 1967), and (2) the current estimated replacement cost of inventories and net property, plant, and equipment (less depreciation). This statement goes by various names, as for instance *selected financial data adjusted for the effects of changing prices or inflation,* and generally offers a five-year summary of the results.

THE BALANCE SHEET OR FINANCIAL POSITION STATEMENT

As previously noted, the balance sheet or financial position statement shows the financial condition of the firm in terms of the relationship between its total assets and liabilities. Naturally, unless qualified by accompanying footnotes—which should always be carefully read—the value placed upon each item is that which prevailed as of the end of the stated accounting period, customarily the close of the fiscal year. But it is always possible that unanticipated but highly significant changes have occurred since then.

Another qualification to be kept in mind is that the determination of the value of any number of items among the company's fixed assets—such as its plant and equipment—involves certain somewhat arbitrary decisions and may therefore be open to question. For example, equipment is subject to varying amounts of depreciation, and the replacement costs of these assets may well be considerably more than the values that appear on the books. Nevertheless, the balance sheet is a valuable document from which much basic information about the condition of a company may be extracted. Figure 1-1 shows a two-year balance sheet or financial position statement for the LMN Corporation. By comparing both sets of figures we can recognize and evaluate the changes that have occurred over the two most recent years of the company's operation.

Some of the following items listed in the balance sheet may call for an explanation:

Current assets and *current liabilities* are items that relate specifically to the firm's present or near-future transactions, all taking place within the coming 12-month period or less. Thus current assets are items that are already cash or "near cash" marketable securities, or those assets expected to be converted into cash during the year, such as accounts receivable and inventories. Similarly, current liabilities are obligations that the firm is expected to pay during the coming year, such as accounts payable and accrued expenses payable. Current assets and current liabilities differ from *other assets* and *long-term liabilities,* in that the latter two are items involving periods longer than a year. Since property, plant, and equipment are assets generally held over quite a number of years, and bonds are issued for extended periods of time, these are all considered "long-term" items.

FIGURE 1-1.

THE LMN CORPORATION
Balance Sheet
Years Ending December 31, 1983, and 1982
(thousands of dollars)

ASSETS

	1983	1982	CHANGE
Current assets			
Cash on hand and in bank	$ 10,000	$ 8,000	+$ 2,000
Accounts and notes receivable (net of estimated loss from bad debts)	35,500	32,000	+ 3,500
Inventories	30,000	27,000	+ 3,000
Prepaid expenses and deferred charges	3,500	3,200	+ 300
Marketable securities (at cost)	2,900	2,100	+ 800
TOTAL CURRENT ASSETS	$ 81,900	$ 72,300	+$ 9,600
Other assets			
Property, plant, and equipment, gross	$133,200	$125,500	+$ 7,700
Less accumulated depreciation (straight-line)	30,500	27,700	+ 2,800
Net fixed assets	$102,700	$ 97,800	+$ 4,900
Miscellaneous assets (including notes receivable)	3,700	3,200	+ 500
TOTAL ASSETS	$188,300	$173,300	+$15,000

LIABILITIES AND STOCKHOLDERS' EQUITY

	1983	1982	CHANGE
Current liabilities			
Accounts payable	$ 25,000	$ 27,000	−$ 2,000
Accrued income tax payable	27,100	25,200	+ 1,900
Accrued expenses payable	8,900	7,800	+ 1,100
Bonds payable (current portion of long-term debt)[a]	1,000	1,200	− 200
TOTAL CURRENT LIABILITIES	$ 62,000	$ 61,200	+$ 800
Long-term liabilities			
Bonds (6% due 1991)	$ 37,500	$ 39,000	−$ 1,500
TOTAL LIABILITIES	$ 99,500	$100,200	−$ 700
Stockholders' equity (net worth)			
$5 preferred stock ($100 par) (20,000 shares outstanding)	2,000	2,000	—
Common stock ($1.25 par) (4 million shares outstanding, 1983)	5,000	4,800	+ 200
Capital surplus (additional paid-in capital)	12,050	11,500	+ 550
Accumulated retained earnings	69,750	54,800	+ 14,950
TOTAL STOCKHOLDERS' EQUITY (net worth)	$ 88,800	$ 73,100	+$15,700
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$188,300	$173,300	+$15,000

[a]Though the bonds are due in 1991, the company elected to redeem $200,000 worth this year.

Prepaid expenses are debts that are due during the coming year but which the firm has already paid. A good example might be a two-year subscription to a tax service publication taken out during the present year. Any portion of the subscription remaining after the end of the current year is a prepaid expense, and therefore an asset owned by the company.

Deferred charges are items, such as discounts or research costs, that have not yet been taken or amortized (i.e., written off over a number of years). They thus continue to be current assets for the time being.

Accumulated depreciation represents the total amount to date by which the value of an asset has been reduced, based upon its expected life. Hence it incorporates all the depreciation taken during prior years, plus the depreciation for the current year. In the case of the LMN Corporation, the most recent amount of accumulated depreciation is $30,500,000, showing an increase of $2,800,000 over that of the previous year.

Footnotes generally accompany a firm's balance sheet and income statement; they should be read because they often contain important information. Here we learn that the LMN Corporation has adopted a policy of reducing a portion of its outstanding bonds instead of using these funds for new projects. This could be of significance to the investor.

Stockholders' equity is the net worth of the company, or that portion of the value of the firm that belongs to the preferred and common stockholders. In reality it is the difference between what the company owns (its assets) and what it owes (its liabilities). The residue belongs to the stockholders and consists of the value of (1) the preferred stock and (2) the common stockholders' equity. The latter incorporates the par value of the common stock, capital surplus, and accumulated retained earnings, which taken together constitute the *common stockholders' equity.*

Capital surplus is the difference a firm receives from the sale of its common stock over and above the stated par value of the shares. Thus if a share of common stock of the LMN Corporation has a par value of $1.25 and was originally sold to the public at $15, the $13.75 difference, times the number of shares sold, represents the capital surplus.

Accumulated retained earnings are the profits realized over the years—less the payment of all dividends—which the firm has kept for reinvestment in its various enterprises. The LMN Corporation adds its net profit (less all dividends) of $14,950,000 for the current year to

$54,800,000, its accumulation of net profits over all prior years, to produce a new total of accumulated retained earnings of $69,750,000. (This information is presented in Figure 1-3, showing the third major financial document as it applies to the LMN Corporation.)

THE INCOME, OR PROFIT AND LOSS, STATEMENT

The second fundamental source of information about a firm, we recall, is its income statement, also known as its profit and loss statement. This document shows the state of a company's financial development during a given period of time—usually a year—that has ended in a net gain or loss. In a real sense it also provides a good picture of the management's efficiency in its use of the firm's assets.

Figure 1-2 is the income statement of the LMN Corporation for its most recent two-year period of operation. By comparing the two sets of figures, we can observe and evaluate the changes that have taken place during this span of time.

Various entries in the income statement may require further explanation. *Gross profit* is that amount remaining after the cost of all items sold is deducted from the total receipts from sales. *Operating income* is the amount of profit realized after the cost of goods sold and operational expenses are deducted. This is the firm's income from its normal business activities.

Nonoperating income is the revenue the firm realizes from sources other than its essential business, as for instance, a gain from fluctuations in foreign currency, the sale of assets, dividends from stock in other corporations, and the like. Because of its nonrepetitive nature, much of this type of income could seriously distort the "bottom line" results shown in the income statement.

Primary earnings per share, as described here, are the profits available to the common stockholder after the preferred dividends have been paid. The total, of course, is divided by the number of common shares outstanding. (Technically, any warrants and convertibles likely to be converted into common stock *soon* would normally also be counted here.) In the case of the LMN Corporation's current primary earnings per share, it is:

$$\frac{\$16{,}850{,}000 \text{ [net profit]} - \$100{,}000 \text{ [preferred dividend]}}{4{,}000{,}000 \text{ [number of shares]}} = \$4.19$$

FIGURE 1-2.

THE LMN CORPORATION
Income Statement
Years Ending December 31, 1983, and 1982
(thousands of dollars)

	1983	1982	CHANGE
Net sales	$340,150	$320,000	+$ 20,150
Cost of goods sold	205,000	197,000	+ 8,000
Gross profit	$135,150	$123,000	+$ 12,150
Selling, general, and administrative expenses	100,000	92,000	+ 8,000
Contributions to employee retirement fund	1,000	1,900	− 900
Total Operating Expense	$101,000	$ 93,900	+$ 7,100
Total Operating Income	$ 34,150	$ 29,100	+$ 5,050
Nonoperating income[a]	$ 500	$ 600	−$ 100
TOTAL INCOME	$ 34,650	$ 29,700	+$ 4,950
Less Interest Paid on Bonds	2,250	2,340	− 90
NET INCOME BEFORE TAXES	$ 32,400	$ 27,360	+$ 5,040
Provision for income taxes	$ 15,550	$ 13,135	+$ 2,415
NET INCOME AFTER TAXES	$ 16,850	$ 14,225	+$ 2,625
Less cash dividends (preferred $100 and common $1,800)	1,900	1,730	+ 170
NET PROFIT FOR YEAR	$ 14,950	$ 12,495	+$ 2,455
Earnings available for common stock	$ 16,750	$ 14,125	+$ 2,625
Common shares outstanding	4,000,000	3,840,000	+ 160,000
Primary earnings per share	$ 4.19	$ 3.68	+$ .51
Fully diluted earnings per share	$ 4.19	$ 3.68	+$ .51

[a]Nonoperating income is due largely to gains on the fluctuation of foreign currencies.

Fully diluted earnings per share represent the profits per share available to common stockholders, if *all other potential* common shares outstanding are taken into account. For instance, if a company has issued convertible bonds or warrants to purchase stock, it has created a potential of additional common shares that would have a claim on its earnings. The primary earnings per share would be "diluted," or reduced, were all these additional shares to come into existence.

ACCUMULATED RETAINED EARNINGS

The third basic financial document is the statement of accumulated retained earnings. For its information, it draws on data supplied by both