

Introductory Finance Lab Manual

Third Edition

Profitability Ratio

150

140

130

120

110

100

90

80

70

60

50

40

30

20

10

Joseph W. Wilson

Donald F. Lopez



First Year



Second Year

 College
Custom
Series

Introductory

Finance Lab Manual

Third Edition

McGraw-Hill, Inc.

College Custom Series

*New York St. Louis San Francisco Auckland Bogotá
Caracas Lisbon London Madrid Mexico Milan Montreal
New Delhi Paris San Juan Singapore Sydney Tokyo Toronto*

McGraw-Hill's College Custom Series consists of products that are produced from camera-ready copy. Peer review, class testing, and accuracy are primarily the responsibility of the author(s).

INTRODUCTORY FINANCE LAB MANUAL

Copyright © 1994, 1993, 1992 by McGraw-Hill, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a data base retrieval system, without prior written permission of the publisher.

1 2 3 4 5 6 7 8 9 0 HAM HAM 9 0 9 8 7 6 5 4

ISBN 0-07-070915-7

Editor: Julie Kebrwald

Cover Design: Maggie Lytle

Printer/Binder: HAMCO Corporation

INTRODUCTION

Today's financial manager cannot hope to function effectively without the help of a computer. The boring paper-and-pencil work which consumed so much of the finance student's time is past. The use of the computer, and of spreadsheet programs, have virtually eliminated the need for hand calculation. Careers of the future will demand that new employees become productive very quickly, and the computer will help them to do so with relative ease. Above all, the computer allows many people to do those tasks once relegated only to the select few.

This is a practical text which will help students understand how much the personal computer can ease the tough process of mastering a course in finance. This manual will allow the finance professor the chance to spend more time on the theory of finance, and less on the computer application. The manual was designed to be used with a variety of finance text books with individual computer modules covering specific aspects of financial theory. This modular structure allows the computer lab instructor to tailor his or her class to the outline followed by the lecture professor.

It has been our experience that students have a more integrated understanding of financial concepts through practical computer application, as opposed to a strictly lecture oriented presentation. The authors feel that this approach allows students a chance to more readily absorb the theories of finance through hands on usage of the financial theories in computer applied problem solving. The authors have found that students actually enjoy preparing their own templates and solving problems to questions if they are properly guided through the process in a non-frustrating manner and at the student's own pace.

The modules in this text were generated using Borlands Quattro with Lotus command menus.* The modules cover the basic topics found in any introductory financial analysis and management text. The level of presentation is functionally simple and compatible with the requirements of the various topics presented in an introductory finance course. The material is presented in a clear instructional format, with numerous brief exercises that can be covered in a single class period.

Five years of development and computer lab testing have gone into this text. The authors welcome comments or suggestions from any student or professor in the hope that the text will continue to provide a positive learning experience.

Joseph W. Wilson
Donald F. Lopez
California State University, Fresno

Acknowledgements:

We would like to thank Dr. K.C. Chen and the many lab assistants over the past five years for their untiring efforts to make this lab manual a workable and meaningful document. Special thanks to Kumara Monie, Eric Soto, Vanessa Davis, Rhonda Dunnigan & Sharon Schee.

*Quattro & Lotus are registered trademarks of Borland International and Lotus Development Corp. respectively.

TABLE OF CONTENTS

Introduction

Quattro Pro 4.0 - Lotus 123 Menu

Quattro Pro 4.0 - Quattro Menu

Most Often Used:

Function Key Commands & Short Cut Commands in This Manual

MODULES:

Formulation of Financial Statements	Module I
Financial Analysis	Module II
Risk and Rates of Return	Module III
Time Value of Money	Module IV
Bond and Stock Valuation	Module V
Cost of Capital Calculations	Module VI
Cash Flow Estimation	Module VII
Capital Budgeting Techniques	Module VIII
Long Term Debt Financing	Module IX
Sources and Uses of Funds Statement	Module X
Ex-Post Rates of Return	Appendix - A
Cash Budgeting	Appendix - B
Final Exam Case	Appendix - C
How To Use a Financial Calculator Hewlett Packards HP-10B Texas Instruments BA-II Plus	Appendix - D

Quattro Pro 4.0 - Lotus 123 Menu

Main Menu

Sub-Menu

Worksheet	Global, Insert, Delete, Column, Erase, Titles, Window, Status, Page, Macro, Undo, Audit, Library, Copy Special
Range	Format, Label, Erase, Name, Justify, Protect, Unprotect, Input, Value, Transpose, Column, Search & Replace, Alignment, Data Entry, Output Style
Copy	{Source}, {Destination}
Move	{Source}, {Destination}
File	Retrieve, Save, Combine, Xtract, Erase, List, Import, Directory, New, Open, Workspace, !Sqz, Update Links, Save All
Print	* Draft Mode Printing * Printer, File * Final Quality Printing * Binary File, Graphics Printer, Screen Preview, Chart Print, Print Manager
Graph	Type, X, A, B, C, D, E, F, Reset, View, Save, Options, Name, Instant Graph, Quit
Date	Fill, Table, Sort, Query, Distribution, Matrix, Regression, Parse, Optimizer, Solve For, Paradox Access
View	Zoom, Tile, Stack, Move/Size, Pick, Close, Close All, Exit
System	OS, Display Mode, File Manager, WYSIWYG Zoom %, Network
Quit	No, Yes

Quattro Pro 4.0 - Quattro Menu

Main Menu

Sub-Menu

File	New, Open, Retrieve, Save, Save As, Save All, Close, Close All, Erase, Directory, Workspace, Utilities, Exit
Edit	Copy, Copy Special, Move, Erase Block, Undo, Insert, Delete, Names, Fill, Values, Transpose, Search & Replace
Style	Alignment, Numeric Format, Protection, Column Width, Reset Width, Hide Column, Block Size, Line Drawing, Shading, Font, FontTable, Use Style, Define Style, Insert Break
Graph	Graph Type, Series, Test, Customize Series, X-Axis, Y-Axis, Overall, Insert, Hide, Name, View, Fast Graph, Annotate, Quit
Print	Block, Headings, Destination, Layout, Format, Copies, Adjust Printer, Spreadsheet Print, Print-To-Fit, Graph Print, Print Manager, Quit
Database	Sort, Query, Restrict Input, Data Entry, Paradox Access
Tools	Macro, Reformat, Import, Combine, Xtract, Update Links, Advanced Math, Parse, What-If, Frequency, Solve For, Optimizer, Audit, Library
Options	Hardware, Colors, International, WYSIWIG Zoom %, Display Mode, Startup, SpeedBar, Graphics Quality, Other, Network, Update, Values, Formats, Recalculation, Protection, Quit
Window	Zoom, Tile, Stack, Move/Size, Options, Pick

Most Often Used Function Key Commands in This Manual

F1	Help Menu
F2	Edit the contents of a cell
F3	Displays list of range/block names
F4	Makes a cell address absolute
F5	Moves the curser to a selected address
F6	Moves the curser from one open window to another
F9	Recalculates the formulas in the spreadsheet
F10	Displays current graph

Most Often Used Short Cut Commands in This Manual

Ctrl-C	Copy command
Ctrl-M	Move command
Ctrl-I	Insert columns or rows
Ctrl-S	Save a file
Ctrl-W	Change a column width
Ctrl-E	Erase a cell or block
Ctrl-F	Format a cell or block

MODULE I

FORMULATION OF FINANCIAL STATEMENTS

FORMULATION OF FINANCIAL STATEMENTS

INTRODUCTION

Publicly held corporations are required by the Securities Exchange Commission to prepare standardized reports to inform shareholders, management, government regulators, and creditors of a firm's financial activities. The four basic financial statements are the income statement, the balance sheet, the statement of retained earnings, and the statement of cash flows.

The formulation of the income statement, the balance sheet, and the statement of cash flows will be discussed in the following sections. You will be shown how to create a general format for each of these statements, after which you will be shown how to create formulas using Quattro or Lotus 1-2-3 to simplify the task of performing calculations associated with each statement.

INCOME STATEMENT

The income statement is a financial summary of a firm's operating results for a specified period of time. While most income statements cover a one-year period ending at a specified date, it is not unusual for management to use monthly statements. Also, the SEC requires that quarterly statements be made available to the stockholders of publicly held companies.

The formulation of the income statement usually follows the following format. The statement begins with sales revenue to which any additional income is added. The cost of goods sold is then subtracted from the total revenue to yield the gross profits. After this, operating expenses, which includes sales expense, general and administrative expenses, and depreciation expenses, are subtracted from the gross profits to obtain operating profits or earnings before interest and taxes. The interest expense is then deducted from the operating profits to get the earnings before taxes or EAT. The appropriate taxes are then deducted, resulting in the net income.

Once the net income is obtained, any preferred stock dividends have to be deducted to arrive at the earnings available to common stockholders. This earnings per share figure is obtained by dividing the earnings available to common stockholders by the number of common shares outstanding.

The description above on the structure of an income statement can be used whether it is done on paper or on a spreadsheet.

The same mathematical functions are used in a spreadsheet, i.e. addition, subtraction, multiplication, and division. The only difference is that instead of using the actual numbers to get an answer for a problem using a calculator, on a spreadsheet you would simply type a formula in the space where the answer should be. The spreadsheet then calculates the results automatically.

Income Statement Exercise

Chevron Corporation's records provided the following information at June 30, 1994. Prior year's (1991-93) records are also included. As a senior accountant, you have been asked to prepare a consolidated statement of income for 1988 and 1989. Your deadline is next week!

(All figures in millions except the tax rate)

	1991	1992	1993	1994
Sales and other operating revenues	\$24,589	\$25,945	\$21,350	\$29,549
Net income of affiliated companies	875	422	256	358
Other income	659	713	350	519
COSTS:				
Crude oil and products	10,450	12,010	12,276	13,297
Operating expenses	4,688	4,892	5,338	5,432
Exploration expenses	1,615	1,649	1,747	1,739
Selling and Administrative	2,887	1,758	2,758	2,887
Depreciation, depletion and amortization	1,411	859	1,038	1,222
Other taxes	1,256	1,255	1,255	1,256
Interest and debt expenses	686	628	590	715
Tax Rate	39%			
Common shares outstanding	342.109258	356.243534	365.190288	372.2355
Dividends Paid	\$750	\$860	\$860	\$828

Requirement:

Prepare a consolidated income statement for Chevron for years 1991 through 1994. Use the format provided in the following page. This format along with the few formulas created will enable you to complete this assignment with relative ease. You will save this spreadsheet using the filename INCSTATE.

	A	B	C	D	E	F	G	H	I	J
1	INPUT SECTION									
2										
3	ASSIGNMENT #		INCOME STATEMENT							
4										
5			NAME:							
6			SSN:							
7			LAB TIME:							
8										
9	COMPUTATION SECTION									
10										
11	CHEVRON CORPORATION									
12	CONSOLIDATED STATEMENT OF INCOME									
13	FOR THE YEAR ENDING 1994									
14										
15										
16	(IN MILLIONS EXCEPT PER SHARE)					1991	1992	1993	1994	
17										
18	SALES AND OTHER OPERATING INCOME					#	#	#	#	
19	NET INCOME OF AFFILIATED COMPANIES					#	#	#	#	
20	OTHER INCOME					#	#	#	#	
21										
22	TOTAL REVENUES					formula	formula	formula	formula	
23	LESS COSTS AND OTHER DEDUCTIONS:									
24	PURCHASED CRUDE OIL AND PRODUCTS					#	#	#	#	
25	OPERATING EXPENSES					#	#	#	#	
26	EXPLORATION EXPENSES					#	#	#	#	
27	SELLING AND GENERAL EXPENSES					#	#	#	#	
28	DEPRECIATION, DEPLETION & AMORITIZATION					#	#	#	#	
29	TAXES OTHER THAN ON INCOME					#	#	#	#	
30										
31	TOTAL COSTS AND OTHER DEDUCTIONS					formula	formula	formula	formula	
32										
33	EARNINGS BEFORE INTEREST AND TAXES					formula	formula	formula	formula	
34	INTEREST EXPENSE					#	#	#	#	
35										
36	INCOME BEFORE TAXES					formula	formula	formula	formula	
37	PROVISION FOR TAXES				%	formula	formula	formula	formula	
38										
39	NET INCOME AVAILABLE TO SHAREHOLDERS					formula	formula	formula	formula	
40										
41										
42	COMMON SHARES OUTSTANDING					#	#	#	#	
43	EARNINGS PER SHARE					formula	formula	formula	formula	
44	COMMON STOCK DIVIDENDS PAID					#	#	#	#	
45	DIVIDENDS PER SHARE					formula	formula	formula	formula	
46										

BALANCE SHEET

The balance sheet is a summary statement, or basically a snapshot, of a firm's financial position at a particular point in time. It shows a breakdown of a firm's assets as well as the proportions of these assets that are financed by debt and by stockholders' equity.

The balance sheet therefore consists of two main sections; the assets section and the liabilities and stockholders' equity section. The totals of these two sections will equal one another if all transactions are correctly posted.

The asset section is divided into two parts, the current assets which are assets that are expected to be converted to cash in less than a year, and the long-term or fixed assets which are assets that are expected to remain on the books for periods exceeding one year.

The liabilities section is basically the same as the assets section in the way short-term or current liabilities and long-term liabilities are classified.

The stockholders' equity section represents the owners' claims on the corporation. The preferred stock entry shows the original proceeds from the sale of preferred stock. The common stock entry shows the par value of the stocks and is basically used for accounting purposes. Paid-in capital in excess of par shows the amount of proceeds above par value received from the original sale of common stock. Last but not least, the retained earnings entry represents the cumulative total of all earnings retained and reinvested in the firm since it was first created. It should be kept in mind that this figure is not a cash amount.

With the information given above, along with the general spreadsheet format of balance sheets that is given following the balance sheet exercise below, you will be able to create a balance sheet utilizing the same types of formulas that were used for the income statement.

Balance Sheet Exercise

Chevron Corporation's record for 1991 through 1994 are presented below. Prepare a consolidated balance sheet for 1991 through 1994. Your deadline is next week!

(All figures in millions)	1991	1992	1993	1994
Cash and equivalents	\$1,885	\$1,602	\$1,297	\$1,252
Marketable Securities	455	479	518	895
Accounts and notes receivable	2,708	2,850	3,310	3,881
Inventories	2,184	2,299	2,485	2,689
Prepaid expenses and other current assets	291	306	331	422
Long-term receivable	286	301	325	227
Investments and advances	1,984	2,088	1,717	2,595
Property Plant & Equipment cost	47,859	48,950	52,985	50,895
Accumulated Depreciation	7,179	7,358	7,542	7,731
Intangible Assets, Net	25,000	24,175	23,377	22,606
Deferred charges	152	198	143	191
Accounts Payable	4,525	3,785	5,013	4,895
Short-term debt	1,566	895	1,469	785
Federal & other taxes on income	1,181	1,125	978	456
Other taxes payable	656	624	543	499
Long-term debt	5,241	5,895	7,145	6,859
Capital lease obligations	369	352	306	245
Deferred income taxes	1,052	1,025	3,276	1,905
Deferred credits	1,133	985	1,450	1,056
Preferred Stock:				
Par value \$1.00 times # of shares outstanding	0	0	0	0
Common Stock:				
Par value \$3.00 times # of shares outstanding	1,026	1,069	1,096	1,117
Additional Paid-In Capital	590	647	874	1831
Currency translation	474	78	105	45
Retained Earnings	57,812	59,410	56,691	58,229
Requirement:				

Prepare a consolidated balance sheet for Chevron for the years 1991 through 1994. Use the format provided in the following page. This format along with the few formulas created will enable you to complete this assignment with relative ease. You will save this spreadsheet using the filename BALSHEET.

	A	B	C	D	E	F	G	H	I
1	INPUT SECTION:								
2									
3	ASSIGNMENT #		BALANCE SHEET						
4		NAME:							
5		SSN:							
6		LAB TIME:							
7									
8	COMPUTATION SECTION:								
9									
10		CHEVRON CORPORATION							
11		CONSOLIDATED BALANCE SHEET							
12		YEAR(S)							
13	(MILLIONS OF DOLLARS)								
14	ASSETS:					1991	1992	1993	1994
15									
16	CASH AND EQUIVALENTS					#	#	#	#
17	MARKETABLE SECURITIES					#	#	#	#
18	ACCOUNTS AND NOTES RECEIVABLE					#	#	#	#
19	INVENTORIES					#	#	#	#
20	PREPAID EXPENSES AND OTHER CURRENT ASSET					#	#	#	#
21									
22	TOTAL CURRENT ASSETS					formula	formula	formula	formula
23									
24	LONG TERM RECEIVABLES					#	#	#	#
25	INVESTMENTS AND ADVANCES					#	#	#	#
26									
27	PROPERTIES, PLANT, AND EQUIPMENT, AT COST					#	#	#	#
28	LESS: ACCUMULATED DEPRECIATION AND DEPLETI					#	#	#	#
29									
30	NET PLANT AND EQUIPMENT					#	#	#	#
31	INTANGIBLE ASSETS								
32	DEFERRED CHARGES					#	#	#	#
33									
34	TOTAL ASSETS					formula	formula	formula	formula
35									
36									
37	LIABILITIES AND STOCKHOLDERS' EQUITY:								
38	ACCOUNTS PAYABLE					#	#	#	#
39	SHORT TERM DEBT					#	#	#	#
40	FEDERAL AND OTHER TAXES ON INCOME					#	#	#	#
41	OTHER TAXES PAYABLE					#	#	#	#
42									
43	TOTAL CURRENT LIABILITIES					formula	formula	formula	formula
44	LONG TERM DEBT					#	#	#	#
45	CAPITAL LEASES OBLIGATIONS					#	#	#	#
46	DEFERRED INCOME TAXES					#	#	#	#
47	DEFERRED CREDITS					#	#	#	#
48									
49	TOTAL LIABILITIES					formula	formula	formula	formula
50									
51	PFD STK	0	SHARES PAR	#		+ B51*E51			
52	COM STK	#	SHARES 1991 PAR	#		+ B52*E52			
53	COM STK	#	SHARES 1992 PAR	#			+ B53*E53		
54	COM STK	#	SHARES 1993 PAR	#				+ B54*E54	
55	COM STK	#	SHARES 1994 PAR	#					+ B55*E55
56	ADDITIONAL PAID IN CAPITAL					#	#	#	#
57	CURRENCY TRANSLATION ADJUSTMENT					#	#	#	#
58	RETAINED EARNINGS					#	#	#	#
59									
60	TOTAL STOCKHOLDERS EQUITY					formula	formula	formula	formula
61									
62	TOTAL LIABILITIES AND STOCKHOLDERS EQUITY					formula	formula	formula	formula
63									

MODULE II

FINANCIAL ANALYSIS

FINANCIAL ANALYSIS

INTRODUCTION

In the previous section you should have completed assignments related to the various components that make up the financial statements of a firm. These financial statements will now be used along with financial analysis techniques to evaluate the financial performance and status of a firm.

Financial ratios are used to evaluate the operating performance of a firm. While an absolute figure such as net income of \$250,000 may appear to be adequate in making an investment decision, its acceptability can be better measured by comparing it with other relevant values. We can compare the ratios of a firm with ratios for the industry, or with ratios attained in previous periods.

Ratio analysis does not merely involve the application of a particular formula to obtain ratios as these ratios by themselves are not useful. What is sought by ratio analysis is an evaluation of the firms performance through an understanding of the trends of the ratios. The firms performance is measured both in the rise or fall of the various ratios' trends as well as a comparison to other firms in the industry.

Summary of Ratios

A. Profitability ratios

- | | |
|------------------------------|--|
| 1. Gross profit margin | gross profits/sales |
| 2. Operating profit margin | operating profits/sales |
| 3. Net profit margin | net profit after taxes/sales |
| 4. Return on investment(ROI) | net profit after taxes/total assets |
| 5. Return on equity (ROE) | net profit after taxes/stockholders' equity |
| 6. EPS | earnings available for common stockholders
/number of common shares outstanding |
| 7. P/E ratio | market price per share of common stock/per share earnings |