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BUILDING A COMPUTER MODEL FOR FINANCIAL STATEMENT ANALYSIS

By
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The financial statements, i.e. balance sheet and profit and loss statements, are probably the most important documents produced by a company. As a vital information link between the company and the outside world, they provide a "window" through which any outsiders or interested parties, namely bankers, creditors, investors and analysts, can get a glimpse of what's going on within a company.

When properly analyzed, the information contained in these statements can reveal a lot about a company's operations, its past performance, its strengths and weaknesses, where and how things went right (and wrong!) and from which, corrective measures can be identified. In fact, they are not much different from the medical X-ray scanning reports which, in the hand of a capable "business doctor", can provide a complete picture of the health of a "corporate patient".

Important as such, many credit officers may not feel perfectly at ease with the subject of financial statement analysis. There are several reasons for this. First of all, the financial data contained in the financial statements is in its "raw" form and as such not immediately "digestible"! One can make a few casual remarks about a company's financial results by glancing at its annual report, but it is just impossible to give a good description of the forest when one is surrounded by all the trees. Secondly, to make any meaningful use of it, the financial information must be "spreaded" into some standard pattern. Before the advent of personal computers, this spreading exercise was a nightmare to generations of old bankers. Young credit officers nowadays wouldn't realize how lucky they are to have this chore, which used to take hours and days to complete, now done within minutes with the help of the computer.

However, having a computer to spread the financial statements is still not enough since one must also have a good framework for analysis. Actually, there is no such thing as a perfect method to assist us in analyzing the performance of all types of different companies in various industries. Such a framework, nevertheless will help us a great deal in establishing a systematic way to look at a company's performance, to distinguish between the causes and effects of certain financial events, to have a common base for comparison with other companies, and thus helping us to quickly get a

"feel" for the company under consideration before any credit or investment decision can be made.

Within the limited scope of this article, I merely wish to present some basic suggestions based on my own experience in developing such a model over the years. The reader should modify it accordingly to suit their objectives and requirements. The financial report contained in this article is from a fictitious company which serves only to illustrate the points discussed herein.

- 1 Any spread sheet program for PC currently available in the market can be used as long as there is enough memory in your computer. I started out by writing a program in FORTRAN using time-sharing mainframe computer in the mid 1970's, then switched to VISICALC on an APPLE II, and now to LOTUS 1-2-3 on an IBM PC compatible with a 640K memory. The formulae contained in this article are thus written for the LOTUS spread sheet program.
- 2 The program should be built to accommodate input data for 5 years. Subsequently, when running the program, if there is less than 5 year data to analyze, you can always copy the last year's input column into the remaining column(s).
- 3 The input area should be placed at the upper left corner of the spread sheet (cells A1 to G110) while the output area at the lower right (Cells, I111 to T429). This will greatly facilitate the making of future changes involving insertion/deletion of columns and rows in each area.
- 4 Once the model is completed and all formulae verified, the entire program should be locked to prevent accidental erasure or, alteration by using the protection feature (/WGPE). The input and variable cells, however should remain unlocked (/RU). These cells are namely, the years, name of the company, fiscal year end, input data and some variable input labels.
- 5 In order to analyze statements of different companies, we should allow some flexibility for making changes in the input labels by keeping some lines in the input label section unlocked while protecting other standard labels such as

Cash, Receivables, etc. In the output area, these variable labels can be reproduced by entering a formula "+ input cell address" at the desired output cells. (Note: This works in LOTUS Release 2 version).

- 6 Column B, which is next to the input label column, should be reserved for some coding identifications e.g. A1, A2, A3 The purpose of this is that you can subsequently write these codes directly on the original financial statements and then have someone enter the values of the coded lines into the computer, calculate and print the reports for you.
- 7 Don't try to get too accurate to the decimal points as our objective is mainly to get a macro picture of the company's operation. As such, round your data to the '000 figures. Results from the program printout should be in the ,000 format, (/WGF,0) except in some cells where other formats (e.g. percent) are specified.
- 8 A standard format of the financial statements for our model should be adopted. Many existing financial statements however, are presented differently and worse still, important information especially on the profit and loss side is not always available! For example, cost of goods sold may not usually be given and sometimes the total sale figure is not even be revealed. In this case, you have to work backward to get them, especially the total sale, depreciation and interest expenses figures.
- 9 Input data from lines 80 to 96 are optional if they are not available for your company or industry. These data include share price statistics for a public company, p/e ratio as well as other industry's averages.
- 10 An input verification area (lines 97 to 110) should be set up to check if the data has been entered correctly. The main test is to verify that, from the input-data just entered, the total assets would equal total liabilities. You can also check to see if your current assets and current liabilities would match those shown in the published statements.
- 11 On the output side (cells I112 to T301), all the labels and values are obtained from the input area by entering the formula "+ input cell address" into the desired output cells. The entire output area should be completely protected.
- 12 For the Balance Sheet report, the current and total assets, liabilities lines are calculated by using the @SUM function. Only one column (Column O) is reserved for the calculation of a 5-year growth rate as I feel that 4 columns for year to year growth rates of the entire period are not necessary. Columns P to T are for vertical analysis which expresses each item on the statement as a percentage of the total assets or total liabilities. On the Profit and Loss statement, the calculations are straight forward and the horizontal and vertical analysis should be similar to those on the balance sheet.
- 13 In the Source and Application of Funds, the main problem is creating the formula to show that any increase in fixed assets will be treated as use of funds and decrease in assets as source of funds. For this purpose, one can use the logical @IF, @MAX or @MIN functions, for example @MAX (1987 asset - 1986 asset,0) will give the difference of the two values if there is an increase in asset, and a nil value if there is a decrease.
- 14 The Ratio Analysis section contains all the key ratios classified into various groupings. New ratios may be added to suit your particular requirements however new ratios should be calculated using standard (rather than variable) input items if the model is to remain general. One should also note that the inventory turnover ratio calculation is based on total sales instead of cost of goods sold as the latter may not always be available, and that goodwill should be a "locked" asset item in the program instead of a variable so that ratios involving net tangible assets can be properly calculated in all cases.
- 15 On the General Assessment section, I have presented a simple way to break the ROE ratio into the product of an Operating Management index and a Financial Management index so that at a glance, one can immediately assess the performance of the operation and financial aspects of the company. Each index in turn is a product of two other ratios which help analyzing the matter further.
- 16 The Causal Ratios Analysis section deserves a whole book to explain as well. Basically, there are 6 key ratios which are considered to be the causes of all other financial results:
 - 1 (D3) Net fixed assets/Net worth
 - 2 (C3) Average collection period
 - 3 (C4) Inventory turnover period
 - 4 (B3) Sales/Net Worth
 - 5 (A2) Profit/Sales
 - 6 Miscellaneous Assets/Net WorthThese primary "causal" ratios are basically controllable by management and their positions will affect other ratios such as current ratio, leverage ratios etc..... For a further discussion on these cause and effect ratios, please refer to the book entitled "The Meaningful Interpretation of Financial Statements - The Cause and Effect Ratio Approach" by Donald E Miller published by the American Management Association.
- 17 The Z score, or the bankruptcy rating, was designed to forecast corporate failure in the

short term, i.e. up to two years, and as such presents another way to look at the company's overall financial health. As one of the components of the Z score calculation requires the company's market value, a line for net book value was created which will be picked up in the valuation cell (line 289) if the company is a private corporation (using @ MAX function).

18 For those who don't want to read numbers, lines 301 to 429 present a report written in plain English! The trick here is to let the computer choose all the descriptive words such as "good, bad, improving, declining, deteriorating etc". This can be done by using the @IF function such as @IF (1987 data > 5 year average, "favourable", "unfavourable"). The result is an instant draft report, which forms the basis for further modification and analysis.

19 The recommended order for analysis, as stated in the above report is as follows:

- a General assessment : to get an overall view of the profitability (ROE) of the company and trace it to the performances in the two main areas, namely operation management and financial management (which include debt servicing capability).
- b Six Causal ratios : to evaluate the 6 major causal aspects of the company operations.
- c Z score analysis : to assess the survival capability of a company in the short term.
- d Following the above basic analyses, one can then concentrate on any other specific areas. For example if the Operation Management index is declining, further review must be made on the vertical analysis section of the Profit and Loss statement; and if the Financial Management index is weak, one can look

at the leverage ratios (short term/long term debt structure) as well as the vertical analysis on interest expenses etc.....

20 Last but not least, one should always keep in mind that the analysis can only show us the what, where and how things went wrong but can't tell us what to do since the decision is entirely up to us. The purpose of our analysis is to get an understanding of the subject matter so that it will guide us in making our decisions whether just to continue monitoring a certain development, to devise some new loan covenants to prevent further erosion in certain ratios, to restructure the loan, or to lend more, or less etc....

I have highlighted a few major points about the model, however within the limit of this article, it is impossible to give a complete description of the computer program and its operations. If you want to have a full printout of the latest version of the report, please write to the following address: MR HAN VO-TA, Senior Manager, Special Projects, City Developments Limited, 36 Robinson Road, #20-01, City House, Singapore 0106.

HAN VO-TA

Editor's Note: HAN VO-TA received his B.S. and M.S. in Management from the Sloan School of Management, Massachusetts Institute of Technology (MIT). He worked with the Bank of Montreal for 12 years in Montreal, Toronto, Manila and Singapore in various areas including Corporate Financial Planning, Project Financing, International Banking (credit and marketing) and Merchant Banking. Mr VO-TA is currently a Senior Executive of the Hong Leong Group.

	A	B	C	D	E	F	G
1	MAN VO-TA		PROGRAM :ABC		LAST REVISION : NOV 10,87		
2	FINANCIAL STATEMENT ANALYSIS PROGRAM						
3	-----						
4		YEAR	YEAR	YEAR	YEAR	YEAR	
5	A.	DATA INPUT PROCEDURE	1	2	3	4	5
6	-----						
7	1.	ENTER YEAR :	1983	1984	1985	1986	1987
8	2.	NAME OF COMPANY :	A B C COMPANY				
9	3.	FISCAL YEAR END :	DEC 31ST				
10	4. CHANGE HEADINGS IF NECESSARY						
11	5. ENTER DATA FROM FINANCIAL STATEMENTS AND VERIFY						
12	6. RECALC AND PRINT REPORT						
13	-----						
14	CURRENT ASSETS						
15							
16	CASH	A1	600	1,000	1,700	900	1,100
17	ACCOUNTS RECEIVABLE	A2	15,200	13,200	7,700	8,500	9,500
18	INVENTORY	A3	35,700	34,400	33,100	33,400	37,500
19	OTHER CURRENT ASSETS						
20	INVESTMENTS	A5	0	0	0	0	0
21	DUE FROM RELATED COMP	A6	200	300	300	100	200
22	DEPOSITS/PREPAYMENTS	A7	0	0	0	0	0
23	TAX RECOVERABLE	A8	0	0	0	0	0
24	OTHER CURRENT ASSETS	A9	0	0	3,600	3,300	3,700
25							
26	LONG TERM ASSETS						
27							
28	REAL ESTATE	B1	5,800	6,100	3,000	2,500	2,800
29	PLANT AND MACHINERY	B2	11,600	10,900	9,700	9,700	10,800
30	LEASEHOLD LAND/BUILDING	B3	11,800	11,400	14,100	14,300	16,000
31	INVESTMENTS-QUOTED	B4	0	0	0	0	0
32	-UNQUOTED	B5	400	600	700	500	600
33	GOODWILL	B6	1,100	0	0	0	0
34	OTHER LT ASSETS	B7	2,300	2,600	3,600	4,400	4,900
35							
36	CURRENT LIABILITIES						
37							
38	BANK OVERDRAFT	C1	10,700	5,800	3,400	3,600	4,100
39	BILLS/ACCOUNTS PAYABLE	C2	21,500	24,400	9,300	10,900	12,200
40	CURR POR OF LT DEBT	C3	6,800	4,900	20,300	15,000	16,800
41	INCOME TAX	C4	100	0	0	0	0
42	EMPLOYEES PROVISION	C5	500	2,300	1,200	1,400	1,600
43	DUE TO ASSOC COMP	C6	1,500	2,000	3,700	7,800	8,800
44	DIVIDEND PAYABLE	C7	0	0	0	1,000	1,100
45	OTHER CURR LIABILITIES	C8	0	0	1,000	1,400	1,600
46							
47	LT LIABILITIES & CAPITAL						
48							
49	TERM LOAN	D1	14,100	14,500	10,700	6,400	7,100
50	OTHER LOANS	D2	0	2,000	2,000	2,000	2,200
51	DEFERRED TAXATION	D3	0	0	0	0	0
52	LONG SERVICE PROVISION	D4	1,200	1,400	900	1,000	1,200
53	OTHER LT LIABILITIES	D5	0	0	400	400	500
54	MINORITY INTEREST	D6	0	0	0	0	0
55	CAPITAL	D7	13,000	13,000	13,000	13,000	14,600
56	SURPLUS (DEFICIT)	D8	15,300	10,200	11,600	13,700	15,300
57	***NOTE :ASSET REVALUATION		0	0	0	0	0
58	:CONTINGENT LIAB.						
59	:PAR VALUE (\$)		\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
60							
61	PROFIT&LOSS STATEMENT						
62	-----						
63	NET SALES	E1	119,300	130,000	118,300	134,100	138,200
64	COST OF GOODS SOLD	E2	0	0	0	0	0
65	OTHER REVENUE	E3	0	0	0	0	0
66							
67	OPERATING EXPENSES	E4	113,600	124,800	108,700	122,800	124,000
68	DEPRECIATION	E5	2,400	1,600	2,000	2,600	2,900
69	INTEREST	E6	5,700	5,100	4,500	4,500	5,100
70	OTHER EXPENSES	E7	1,800	2,300	2,500	2,200	2,400
71							
72	TAXES (TAX CREDIT)	E8	400	(60)	(800)	(1,000)	300
73	EXTRA-ORDINARY ITEMS	E9	(100)	(200)	100	40	0
74							
75	DIVIDENDS	E10	0	0	0	1,000	1,800
76	OTHER ADJUSTMENTS	E11	0	0	0	0	0
77							
78	NO. OF SHARES (000)	F1	13,000	13,000	13,000	13,000	13,000
79							
80	SHARE PRICES - ORDINARY						
81	- HIGHEST	F2	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
82	- LOWEST	F3	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
83	- YEAR END	F4	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
84							
85	YEAR END P/E RATIO	F5					
86							
87	INDUSTRY AVERAGE :						
88	RET ON EQUITY (BT)		10.0%				
89							
90	CAUSAL RATIOS :						
91		D3	60.0%				
92		C3	30				
93		C4	30				
94		B3	6.00				
95		A2	10.00%				
96		MIS/MW	30.0%				
97	-----						
98							
99	B.INPUT VERIFICATION AREA						
100	-----						
101	1.	CURRENT ASSETS :	51,700	48,900	46,400	46,200	52,000
102	2.	CURRENT LIABILITIES :	41,100	39,400	38,900	41,100	46,200
103	3.	TOTAL ASSETS :	84,700	80,500	77,500	77,600	87,100
104	4.	TOTAL LIABILITIES :	84,700	80,500	77,500	77,600	87,100
105							
106	5.	NET SOURCE/APPL OF FUNDS	(1,740)	(1,700)	(2,460)	600	ERR
107	6.	INCR/DECR IN WORKING CAP	(1,100)	(2,000)	(2,400)	700	0
108							
109	*****						
110	*****						

	I	J	K	L	M	N	O	P	Q	R	S	T
112 NAME OF COMPANY :	A B C COMPANY					HAN VO-TA FINANCIAL STATEMENT ANALYSIS PROGRAM						
113												
114	FISCAL YEAR ENDED :					DEC 31ST						
115	*****											
116	*****											
117	BALANCE SHEET					HORIZONTAL			VERTICAL			
118	*****											
119												
120		YEAR	YEAR	YEAR	YEAR	YEAR	% GROWTH					
121		1983	1984	1985	1986	1987	1983	1983	1984	1985	1986	1987
122	*****											
123 CASH		600	1,000	1,700	900	1,100	83.3%	0.7%	1.2%	2.2%	1.2%	1.3%
124 ACCOUNTS RECEIVABLE		15,200	13,200	7,700	8,500	9,500	-37.5%	17.9%	16.4%	9.9%	11.0%	10.9%
125 INVENTORY		35,700	34,400	33,100	33,400	37,500	5.0%	42.1%	42.7%	42.7%	43.0%	43.1%
126 OTHER CURRENT ASSETS												
127 INVESTMENTS		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
128 DUE FROM RELATED COMP		200	300	300	100	200	0.0%	0.2%	0.4%	0.4%	0.1%	0.2%
129 DEPOSITS/PREPAYMENTS		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
130 TAX RECOVERABLE		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
131 OTHER CURRENT ASSETS		0	0	3,600	3,300	3,700	ERR	0.0%	0.0%	4.6%	4.3%	4.2%
132 CURRENT ASSETS		51,700	48,900	46,400	46,200	52,000	0.6%	61.0%	60.7%	59.9%	59.5%	59.7%
133	*****											
134 REAL ESTATE		5,800	6,100	3,000	2,500	2,800	-51.7%	6.8%	7.6%	3.9%	3.2%	3.2%
135 PLANT AND MACHINERY		11,600	10,900	9,700	9,700	10,800	-6.9%	13.7%	13.5%	12.5%	12.5%	12.4%
136 LEASEHOLD LAND/BUILDING		11,800	11,400	14,100	14,300	16,000	35.6%	13.9%	14.2%	18.2%	18.4%	18.4%
137 INVESTMENTS-QUOTED		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
138 -UNQUOTED		400	600	700	500	600	50.0%	0.5%	0.7%	0.9%	0.6%	0.7%
139 GOODWILL		1,100	0	0	0	0	-100.0%	1.3%	0.0%	0.0%	0.0%	0.0%
140 OTHER LT ASSETS		2,300	2,600	3,600	4,400	4,900	113.0%	2.7%	3.2%	4.6%	5.7%	5.6%
141	*****											
142 TOTAL ASSETS		84,700	80,500	77,500	77,600	87,100	2.8%	100.0%	100.0%	100.0%	100.0%	100.0%
143	*****											
144 BANK OVERDRAFT		10,700	5,800	3,400	3,600	4,100	-61.7%	12.6%	7.2%	4.4%	4.6%	4.7%
145 BILLS/ACCOUNTS PAYABLE		21,500	24,400	9,300	10,900	12,200	-43.3%	25.4%	30.3%	12.0%	14.0%	14.0%
146 CURR POR OF LT DEBT		6,800	4,900	20,300	15,000	16,800	147.1%	8.0%	6.1%	26.2%	19.3%	19.3%
147 INCOME TAX		100	0	0	0	0	-100.0%	0.1%	0.0%	0.0%	0.0%	0.0%
148 EMPLOYEES PROVISION		500	2,300	1,200	1,400	1,600	220.0%	0.6%	2.9%	1.5%	1.8%	1.8%
149 DUE TO ASSOC COMP		1,500	2,000	3,700	7,800	8,800	486.7%	1.8%	2.5%	4.8%	10.1%	10.1%
150 DIVIDEND PAYABLE		0	0	0	1,000	1,100	ERR	0.0%	0.0%	0.0%	1.3%	1.3%
151 OTHER CURRENT LIABILITIES		0	0	1,000	1,400	1,600	ERR	0.0%	0.0%	1.3%	1.8%	1.8%
152	*****											
153 CURRENT LIABILITIES		41,100	39,400	38,900	41,100	46,200	12.4%	48.5%	48.9%	50.2%	53.0%	53.0%
154	*****											
155 TERM LOAN		14,100	14,500	10,700	6,400	7,100	-49.6%	16.6%	18.0%	13.8%	8.2%	8.2%
156 OTHER LOANS		0	2,000	2,000	2,000	2,200	ERR	0.0%	2.5%	2.6%	2.6%	2.5%
157 DEFERRED TAXATION		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
158 LONG SERVICE PROVISION		1,200	1,400	900	1,000	1,200	0.0%	1.4%	1.7%	1.2%	1.3%	1.4%
159 OTHER LT LIABILITIES		0	0	400	400	500	ERR	0.0%	0.0%	0.5%	0.5%	0.6%
160 MINORITY INTEREST		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
161 CAPITAL		13,000	13,000	13,000	13,000	14,600	12.3%	15.3%	16.1%	16.8%	16.8%	16.8%
162 SURPLUS (DEFICIT)		15,300	10,200	11,600	13,700	15,300	0.0%	18.1%	12.7%	15.0%	17.7%	17.6%
163	*****											
164 TOTAL LIABILITIES		84,700	80,500	77,500	77,600	87,100	2.8%	100.0%	100.0%	100.0%	100.0%	100.0%
165	*****											
166	*****											
167	*****											
168	*****											
169	*****											
170	*****											
171	*****											
172	*****											
173 NET SALES		119,300	130,000	118,300	134,100	138,200	15.8%	100.0%	100.0%	100.0%	100.0%	100.0%
174 LESS :COST OF GOODS SOLD		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
175	*****											
176 OPERATING REVENUE		119,300	130,000	118,300	134,100	138,200	15.8%	100.0%	100.0%	100.0%	100.0%	100.0%
177 ADD :OTHER REVENUE		0	0	0	0	0	ERR	0.0%	0.0%	0.0%	0.0%	0.0%
178	*****											
179 GROSS REVENUE		119,300	130,000	118,300	134,100	138,200	15.8%	100.0%	100.0%	100.0%	100.0%	100.0%
180	*****											
181 OPERATING EXPENSES		113,600	124,800	108,700	122,800	124,000	9.2%	95.2%	96.0%	91.9%	91.6%	89.7%
182 DEPRECIATION		2,400	1,600	2,000	2,600	2,900	20.8%	2.0%	1.2%	1.7%	1.9%	2.1%
183 INTEREST		5,700	5,100	4,500	4,500	5,100	-10.5%	4.8%	3.9%	3.8%	3.4%	3.7%
184 OTHER EXPENSES		1,800	2,300	2,500	2,200	2,400	33.3%	1.5%	1.8%	2.1%	1.6%	1.7%
185	*****											
186 TOTAL EXPENSES		123,500	133,800	117,700	132,100	134,400	8.8%	103.5%	102.9%	99.5%	98.5%	97.3%
187	*****											
188 NET PROFIT BEFORE TAX		(4,200)	(3,800)	600	2,000	3,800	190.5%	-3.5%	-2.9%	0.5%	1.5%	2.7%
189	*****											
190 TAXES		400	(60)	(800)	(1,000)	300	-25.0%	0.3%	0.0%	-0.7%	-0.7%	0.3%
191	*****											
192 NET PROFIT AFTER TAX		(4,600)	(3,740)	1,400	3,000	3,500	176.1%	-3.9%	-2.9%	1.2%	2.2%	2.9%
193	*****											
194 EXTRA-ORDINARY ITEMS		(100)	(200)	100	40	0	100.0%	-0.1%	-0.2%	0.1%	0.0%	0.0%
195	*****											
196 NET PROFIT (LOSS)		(4,700)	(3,940)	1,500	3,040	3,500	174.5%	-3.9%	-3.0%	1.3%	2.3%	2.5%
197	*****											
198	*****											
199	*****											
200	*****											

201	SOURCE AND APPLICATION OF FUNDS											
202	-----											
203	YEAR	YEAR	YEAR	YEAR		YEAR	YEAR	YEAR	YEAR			
204	1984	1985	1986	1987		1984	1985	1986	1987			
205	SOURCE OF FUNDS					INCREASE (DECREASE) IN CURRENT ASSETS						
206	-----					-----						
207	1.NET PROFIT (LOSS)	(3,940)	1,500	3,040	3,500	MERCHANDISE	(1,300)	(1,300)	300	4,100		
208						ACCT RECEIVABLE	(2,000)	(5,500)	800	1,000		
209	2.DEPRECIATION	1,600	2,000	2,600	2,900	BILLS RECEIVABLE	0	0	0	0		
210						CASH	400	700	(800)	200		
211	TOTAL CASH SOURCE	(2,340)	3,500	5,640	6,400	OTHER CURR ASSET	100	3,600	(500)	500		
212						TOTAL	(2,800)	(2,500)	(200)	5,800		
213	3.ASSET REVALUATION	0	0	0	0							
214	4.DECREASE:REAL ESTATES	0	1,100	0	0							
215	:PLANT&MACH	700	1,200	0	0							
216	:OTHER LT ASSETS	1,200	0	0	0							
217						INCREASE (DECREASE) IN LIABILITIES						
218	5.INCREASE :LT LOANS	400	0	0	700	BANK O/D	(4,900)	(2,400)	200	500		
219	:OTH LT LIAB	200	0	100	300	BILLS PAYABLE	2,900	(15,100)	1,600	1,300		
220	:CAPITAL	0	0	0	1,600	ACCOUNT PAYABLE	(1,900)	15,400	(5,300)	1,800		
221						INCOME TAX	(100)	0	0	0		
222	TOTAL NONCASH SOURCE	2,500	2,300	100	2,600	CUR PORT LT DEBT	1,800	(1,100)	200	200		
223						OTHER CURR LIAB	500	2,700	5,500	1,300		
224	TOTAL SOURCE OF FUND	160	5,800	5,740	9,000	TOTAL	(1,700)	(500)	2,200	5,100		
225												
226	APPLICATION OF FUNDS					INCREASE (DECREASE) IN						
227	-----					WORKING CAPITAL						
228	1.DIVIDENDS&WITHDRAWALS	0	0	1,000	1,800		(1,100)	(2,000)	(2,400)	700		
229												
230	2.INCREASE:REAL ESTATE	1,900	0	2,100	3,200	*****						
231	:PLANT/MACH	0	0	0	1,100							
232	:OTH LT ASSETS	0	3,800	800	2,300							
233						YEAR	YEAR	YEAR	YEAR	YEAR		
234	3.DECREASE:LT BANK LOANS	0	3,800	4,300	0	1983	1984	1985	1986	1987		
235	:OTHER LT LIAB	0	(100)	0	0	A.GENERAL ASSESSMENT						
236	:CAPITAL	0	0	0	0	A. OPERATING PROFIT MARGIN (EBIT/SALES) - %						
237												
238	TOTAL APPLICATION	1,900	7,500	8,200	8,400	1.3%	1.0%	4.3%	4.8%	6.4%		
239												
240	INCREASE (DECREASE) IN					B. TURNOVER OF ASSETS (SALES/ASSET) - TIMES						
241	WORKING CAPITAL	(1,740)	(1,700)	(2,460)	600	1.4	1.6	1.5	1.7	1.6		
242		=====	=====	=====	=====							
243												
244	*****											
245	RATIO ANALYSIS					C. (A*B) OPERATING MANAGEMENT INDEX - %						
246	YEAR	YEAR	YEAR	YEAR	YEAR							
247	1983	1984	1985	1986	1987	1.8%	1.6%	6.6%	8.4%	10.2%		
248												
249	A.PROFITABILITY RATIOS (%)					-----						
250	1.PROFIT(BT)/SALES	-3.52%	-2.92%	0.51%	1.49%	2.75%						
251	/NET WORTH	-15.44%	-16.38%	2.44%	7.49%	12.71%						
252	/NET ASSET	-5.02%	-4.72%	0.77%	2.58%	4.36%	D. FINANCIAL PROFIT MARGIN (PROFIT/EBIT) - %					
253	2.PROFIT(AT)/SALES	-3.94%	-3.03%	1.27%	2.27%	2.53%						
254	/NET WORTH	-17.28%	-16.98%	6.10%	11.39%	11.71%	-280.0%	-292.3%	11.8%	30.8%	42.7%	
255	/NET ASSET	-5.62%	-4.89%	1.94%	3.92%	4.02%	E. LEVERAGE POSITION (1 + DEBT/EQUITY) - TIMES					
256												
257	B.OPERATING RATIOS (TIMES)											
258	1.SALES/NET FIXED ASSET	7.32	7.65	9.31	10.99	10.16	3.1	3.5	3.2	2.9	2.9	
259	2.SALES/NET TOTAL ASSET	1.43	1.61	1.53	1.73	1.59						
260	3.SALES/NET WORTH	4.39	5.60	4.81	5.02	4.62						
261						F. (D+E) FINANCIAL MANAGEMENT INDEX - TIMES						
262	C.LIQUIDITY RATIOS (TIMES)											
263	1.CURRENT RATIO	1.26	1.24	1.19	1.12	1.13	-8.7	-10.1	0.4	0.9	1.2	
264	2.QUICK RATIO	0.39	0.37	0.34	0.31	0.31	=====					
265	3.SALES/RECEIVABLES	7.85	9.85	15.36	15.78	14.55	G. (C*F) RETURN ON EQUITY (BEFORE TAX)					
266	AV COLLECTN PERIOD-DY	47	37	24	23	25						
267	4.SALES/INVENTORY	3.34	3.78	3.57	4.01	3.69	-15.4%	-16.4%	2.4%	7.5%	12.7%	
268	RATE OF TURNOVER -DAY	109	97	102	91	99	*****					
269	5.SALES/WORKING CAPITAL	11.25	13.68	15.77	26.29	23.83						
270												
271	D.LEVERAGE RATIOS (TIMES)					B.CAUSAL RATIOS ANALYSIS						
272	1.TOTAL LIAB/TOT ASSET	66.6%	68.7%	65.7%	63.0%	63.1%	D3	59.9%	73.3%	51.6%	45.7%	45.5%
273	2.TOTAL LIAB/NET WORTH	2.07	2.38	2.07	1.83	1.84	C3	47	37	24	23	25
274	ST LIAB /NET WORTH	0.49	0.50	0.52	0.54	0.54	C4	109	97	102	91	99
275	LT LIAB /NET WORTH	1.58	1.88	1.55	1.29	1.30	B3	4.39	5.60	4.81	5.02	4.62
276	3.NET FIXD ASST/M WORTH	59.9%	73.3%	51.6%	45.7%	45.5%	A2	-3.94%	-3.03%	1.27%	2.27%	2.53%
277							MIS/MW	51.9%	64.2%	90.7%	84.6%	84.9%
278	E.COVERAGE RATIOS (TIMES)											
279	1.E.B.I.T./INTEREST	0.26	0.25	1.13	1.44	1.75						
280	2.CASH FLO/CUR MAT LTD	-0.34	-0.48	0.17	0.38	0.38						
281												
282	F.VALUATION DATA PER SHARE					*****						
283												
284	1.GROSS EARNING EPS(BT)	-0.323	-0.292	0.046	0.154	0.292	C. Z SCORE ANALYSIS					
285	2.EPS(AT)	-0.354	-0.288	0.108	0.231	0.269	-----					
286	3.EPS(AFTER EXTRAORD)	-0.362	-0.303	0.115	0.234	0.269	SHARE PRICE	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
287							SHARE VALUE	\$13,000	\$13,000	\$13,000	\$13,000	\$13,000
288	4.GROSS DIVIDENDS	0.000	0.000	0.000	0.128	0.231	NT BOOK VALUE	\$27,200	\$23,200	\$24,600	\$26,700	\$29,900
289	5.NET DIVIDENDS	0.000	0.000	0.000	0.077	0.138	EST VALUATION	\$27,200	\$23,200	\$24,600	\$26,700	\$29,900
290	6.TIMES COVERED	ERR	ERR	ERR	3.00	1.94						
291												

292	7.R.O.E.	-0.163	-0.161	0.057	0.112	0.117	WC/AS 1.2	0.13	0.12	0.10	0.07	0.07
293	8.NET TANGIBLE ASSET	2.09	1.78	1.89	2.05	2.30	RE/AS 1.4	0.18	0.13	0.15	0.18	0.18
294							EBIT/AS 3.3	0.02	0.02	0.07	0.08	0.10
295	9.SHARE PRICES						VAL/DEBT .6	0.48	0.42	0.48	0.55	0.54
296	-HIGHEST	1.00	1.00	1.00	1.00	1.00	SALE/AS 1.0	1.43	1.61	1.53	1.73	1.59
297	-LOWEST	1.00	1.00	1.00	1.00	1.00						
298	-YEAR END	1.00	1.00	1.00	1.00	1.00	Z SCORE :	2.2	2.2	2.4	2.7	2.6
299												
300	10.P/E RATIO	(3)	(3)	9	4	4						

301 *****

302 I. GENERAL ASSESSMENT

303							5 Year		General			
304	Subject's ROE(BT) are:	1983	1984	1985	1986	1987	Average		Trend			
305		-15.4%	-16.4%	2.4%	7.5%	12.7%	-1.8%		Favorable			
306												
307	Compared to the industry's average of			10.0%	subject's	1987	profitability ratio of	12.7%	is	good		
308	With an Operating Management index of			10.2%	subject seems to perform satisfactorily							
309	This is the product of a profit margin of			6.4%	and a turnover of assets of		1.6	times in	1987			
310												
311	A Financial Management index of		1.2	times ,	which is above 1:1 is considered good							
312	This is the product of an "interest-impact-on-profit" index of			42.7%	and a debt / equity structure of		1.9	times in	1987			
313												
314												
315	Total sales grew by	15.8%	over the period to	138,200	while gross profit grew	190.5%	to	3,800	in	1987		
316												
317	Subject's liquidity, as indicated by the latest current ratio of			1.13	: 1 is deemed acceptable							
318												
319	Its leverage structure , as indicated by a debt/equity ratio of			1.84	is considered conservative							
320	With a short term / long term structure of			0.54	1.30	the company tends to rely more on long term debt to finance its operations						
321												
322												
323	With the latest interest coverage ratio of			1.75	times ,	the company is able to service the interest on its debts						
324	Its cash flow / curr mat of long term debt ratio of			0.38	times indicates that	the company may have problem repaying its loan						
325												
326												

327 II. THE SIX CAUSAL RATIOS

328 -----
329 1 FIXED ASSETS TO NET WORTH

330							5 Year		General			
331	This ratio measures the extent that invested capital is tied up in permanent, depreciable assets. A high ratio signifies a burden on the											
332	company since it limits current assets and productive assets, increases debts and may depress profits through heavy fixed costs.											
333												
334	Subject's ratios are:	1983	1984	1985	1986	1987	Average		Trend			
335		59.9%	73.3%	51.6%	45.7%	45.5%	55.2%		Decreasing			
336												
337	Compared to the industry's average of			60.0%	subject's	1987	ratio of	45.5%	is	below average		
338	In other words, the company is investing			not enough capital in productive assets								
339												

340 2 COLLECTION PERIOD :

341							5 Year		General			
342	This measures the internal credit/collection efficiency as well as the probability of bad debt write-offs. If collection period is greater											
343	than company's credit term, we should look at the ageing schedule to see if the company is building up a heavy percentage of "deadwood"											
344	on its book. Receivable difficulty is the cause of most company failures. If collection period is less than credit term, this maybe a sign											
345	of extreme credit wariness where its salesmen solicited orders from prime credit risk only.											
346												
347	Subject's results are:	1983	1984	1985	1986	1987	Average		Trend			
348		47	37	24	23	25	31		Decreasing			
349												
350	Compared to the industry's average of			30	days, subject's latest collection period of		25	days is	below average			
351	In other words, its credit/collection policy may deem to be			rather restrictive								
352												

353 3 INVENTORY TURNOVER :

354							5 Year		General			
355	This measures the merchandising efficiency of the company. a low turnover will make inventory susceptible to possible markdown due to physical											
356	deterioration, obsolescence, loss through pilferage thus leading to write-off. Moreover, more inventory must be financed through short term											
357	debt, which in turns affects working capital, current ratio, profit and net worth.											
358												
359	Subject's results are:	1983	1984	1985	1986	1987	Average		Trend			
360		109	97	102	91	99	100		Deteriorating			
361												
362	Compared to the industry's average of			30	days, subject's latest turnover period of		99	days is	slower than average			
363												

364 4 NET SALES TO NET WORTH

365 This is also known as the TRADING RATIO. An overtrading situation will lead to sharp increase in debt, particularly in current liabilities. Sales will outrun production capacity, the company will require additional funds for new buildings, machinery etc. thus creating a strain on working capital. The shareholders must inject more capital (rather than shareholders' loans) to show confidence in company. Overtrading may cause a complete breakdown in the perfect meshing of all financial gears.

- 370 In an overtrading situation, one could :
- 371 1 Borrow from banks and suppliers
 - 372 2 To ease the strain on working capital = shorten credit term (increase collection), increase inventory turnover to improve cashflow, use sale and leaseback to release funds for working capital.
 - 373 3 Get additional capital, but this may lead to loss of control of the company
 - 374 4 Reduce sale, add to networth through retention of all earnings, adopt selective selling strategy, eliminate less profitable items.

375							5 Year		General			
376	In an undertrading situation, the obvious strategy is to bring sales up!											
377												
378												
379												
380												
381	Subject's results are:	1983	1984	1985	1986	1987	Average		Trend			
382		4.4	5.6	4.8	5.0	4.6	4.9		Decreasing			

383

384 Compared to the industry's average of 6.0 times, subject's latest trading ratio of 4.6 times is lower than average
 385 In other words, subject appears to be in a position of undertrading

386

387 5 NET PROFIT TO NET SALES :

388

389 This ratio measures the success of the company in achieving its profit objective. This is obviously the easy financial measure as unless a
 390 company profits from selling its goods and services, it has little reason to exist. A pre-tax profit figure should be used as it eliminates
 391 any bias caused by unequal comparative current tax liabilities.

392

Subject's ratios are:	1983	1984	1985	1986	1987	5 Year Average	General Trend
	-3.9%	-3.0%	1.3%	2.3%	2.5%	-0.2%	Improving

393

394 Compared to the industry's average of 10.0%, subject's 1987 ratio of 2.5% is quite poor

395

396 6 MISCELLANEOUS ASSETS TO NET WORTH :

397

398 Miscellaneous assets include all assets that are not current assets, not fixed assets and not intangible assets i.e. :

399

- 400 . Due from officers, directors or employees
- 401 . Investments, advances or loans to subsidiaries and affiliated companies
- 402 . Prepaid expenses and deferred charges
- 403 . Investment in other than readily available securities etc...

404

405 As a company has a limited amount of invested capital with which to achieve its objectives, over commitment in misc assets will restrict
 406 working capital and productive assets and may increase the company's debt position.

407

Subject's ratios are:	1983	1984	1985	1986	1987	5 Year Average	General Trend
	51.9%	64.2%	90.7%	84.6%	84.9%	75.3%	Increasing

408

409 Compared to the industry's average of 30.0%, subject's 1987 ratio of 84.9% is quite high
 410 In other words, the company is investing a large portion of its capital funds in unproductive assets

411

412

413 III. Z SCORE ANALYSIS

414

415 Z score, or the bankruptcy rating, was designed to forecast corporate failure in the short term, ie up to two years. It has been found that :

416

417 If Z is less than 1.8, the company is almost certain to go bust.

418 If Z is more than 3.0, it almost certainly will not.

419

Subject's Z scores are:	1983	1984	1985	1986	1987	5 Year Average	General Trend
	2.2	2.2	2.4	2.7	2.6	2.4	Improving

420

421 The latest Z score of 2.6 for fiscal year 1987 shows a better than average risk

422

423

424