

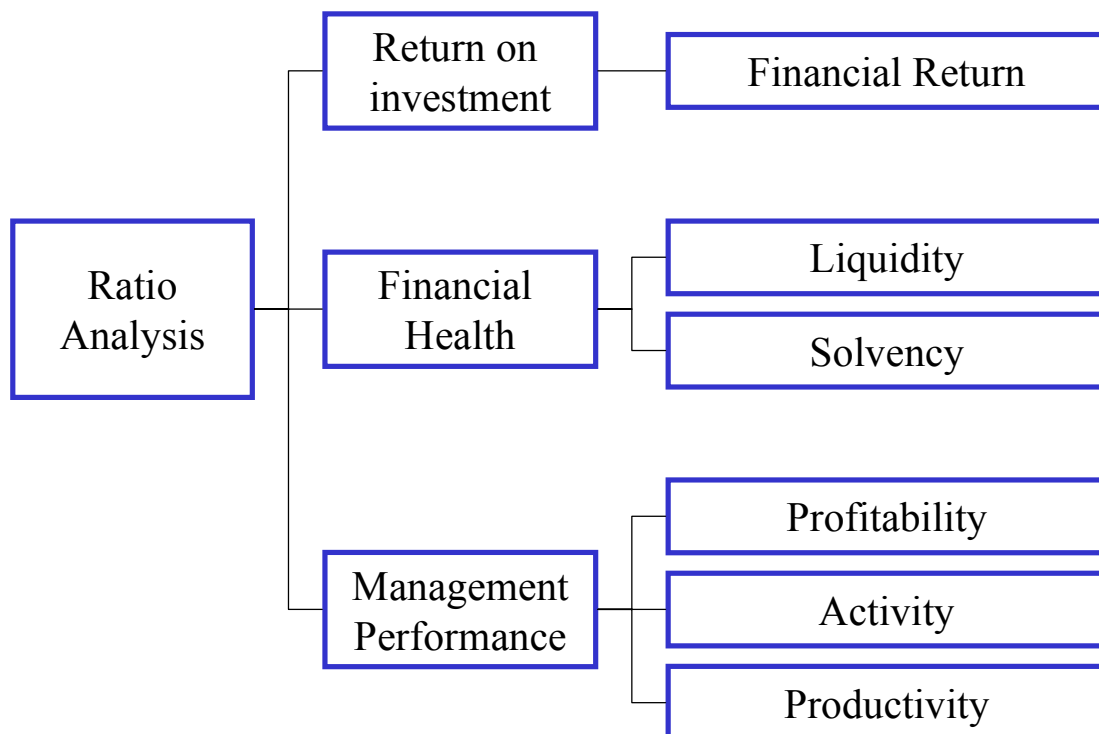
NOTE ON FINANCIAL STATEMENT ANALYSIS

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Categorization of ratios

From a 1993 Canadian Institute of Chartered Accountants (CICA) research study, we could identify the following categorization of ratios.

Financial Statement Ratio Analysis



Source : CICA (1993, p.27)

Sources of information

- Internal sources
 - Annual Report
 - Management Discussion & Analysis (MD&A)
 - Financial Statement
 - Balance Sheet
 - Income Statement
 - Statement of Retained Earnings
 - Statement of Cash Flows
 - Notes to the Financial Statements
 - Others
- External sources
 - Database
 - Special Report (corporation, industry)
 - Governmental Report (industry)
 - News

Ratios and other measurements

Based partly on the literature and a 1993 Canadian Institute of Chartered Accountants (CICA) research study, we could identify a range of ratios and some of the most important ratios (*).

Return on investment

Financial return			
A1	Earnings per share (EPS)	$\frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Average Number of Common Shares Outstanding}}$	*
A2	Price-Earnings Ratio	$\frac{\text{Current Stock Price}}{\text{Earnings per share}}$	*
A3	Book Value per share	$\frac{\text{Common Shareholders' Equity}}{\text{Number of Common Shares Outstanding}}$	
A4	Cash Flow per share	$\frac{\text{Cash Flow} - \text{Preferred Dividends}}{\text{Average Number of Common Shares Outstanding}}$	
A5	Dividend per share	$\frac{\text{Annual Common Dividends}}{\text{Average Number of Common Shares Outstanding}}$	
A6	Dividend Yield	$\frac{\text{Annual Dividend}}{\text{Market Price per Share}}$	
A7	Dividend Payout Ratio	$\frac{\text{Dividends}}{\text{Net Income}}$	

Financial Health

Liquidity			
B1	Working Capital	Currents assets - Current liabilities	*
B2	Current ratio	$\frac{\text{Currents assets}}{\text{Current liabilities}}$	*
B3	Quick ratio (or Acid-test ratio)	$\frac{\text{Cash} + \text{marketable securities} + \text{accounts receivable}}{\text{Current liabilities}}$	*
B4	Cash current debt coverage ratio	$\frac{\text{Net Cash from Operating Activities}}{\text{Average Current Liabilities}}$	
B5	Net Cash Flow	Net Cash from Operating Activities	*
B6	Free Cash Flow	Net Cash from Operating Activities - Cash used for Investing Activities and Dividends	

Solvency (or long-term credit risk)			
C1	Debt ratio	$\frac{\text{Total liabilities}}{\text{Total assets}}$	
C2	Long-term Debt ratio	$\frac{\text{Long-term debt}}{\text{Long-term Debt} + \text{Shareholders' Equity}}$	*
C3	Equity ratio	$\frac{\text{Total Shareholders' Equity}}{\text{Total assets}}$	
C4	Debt-to-Equity ratio	$\frac{\text{Total liabilities}}{\text{Total Shareholders' Equity}}$	*
C5	Debt-to-capital employed	$\frac{\text{Total liabilities}}{\text{Total Assets} - \text{Current Assets}}$	
C6	Interest Coverage Ratio	$\frac{\text{Operating Income}}{\text{Annual Interest Expense}}$	*
C7	Times Interest earned	$\frac{\text{EBIT}}{\text{Annual Interest Expense}}$	
C8	Cash total debt coverage ratio	$\frac{\text{Net Cash from Operating Activities}}{\text{Average Total Liabilities}}$	*

Management Performance

Profitability			
D1	Net Income	Net Income	*
D2	Earnings before interest expense and income tax expense (EBIT)	Net Income + Interest expense + Income tax expense	
D3	Earnings before interest expense, income tax expense, and amortization expense (EBITA)	Net Income + Interest expense + Income tax expense + Amortization expense	
D4	Gross Profit Margin	Net Sales - Cost of Good Sold	*
D5	Gross Profit Margin Rate	$\frac{\text{Gross Profit Margin}}{\text{Net Sales}}$	
D6	Operating Profit Margin Rate	$\frac{\text{Operating Income}}{\text{Net Sales}}$	
D7	Return on Sales (or Profit Margin)	$\frac{\text{Net Income}}{\text{Net Sales}}$	
D8	Return on common shareholders equity	$\frac{\text{Net Income} + \text{Extraord. items} - \text{Preferred Dividends}}{\text{Average Common Shareholders' Equity}}$	*
D9	Return on Investment (ROI)	$\frac{\text{Return (Net Income)}}{\text{Average Amount Invested}}$	
D10	Return on Assets (ROA)	$\frac{\text{Net Income}}{\text{Total Assets}}$	*
D11	Return on Gross Assets	$\frac{\text{EBITA}}{\text{Average Total Assets} + \text{Accumulated Amortization}}$	
D12	Return on Equity (ROE)	$\frac{\text{Net Income}}{\text{Shareholders' Equity}}$	*

Activity			
E1	Receivables Turnover Rate	$\frac{\text{Net Sales}}{\text{Average Net Accounts Receivable}}$	
E2	Days in Accounts Receivable	$\frac{365 \text{ days}}{\text{Receivable Turnover Rate}}$	
E3	Inventory Turnover Rate	$\frac{\text{Cost of Good Sold}}{\text{Average Inventory}}$	*
E4	Days in Inventory	$\frac{365 \text{ days}}{\text{Inventory Turnover Rate}}$	
E5	Lenght of the operating cycle	Days in Accounts Receivable + Days in inventory	
E6	Payables Turnover Rate	$\frac{\text{Purchases}}{\text{Average Accounts Payable}}$	
E7	Days in Accounts Payable	$\frac{365 \text{ days}}{\text{Payables Turnover Rate}}$	

Productivity			
F1	Asset Turnover Ratio	$\frac{\text{Net sales}}{\text{Average Total Assets}}$	
F2	Average useful life of capital assets	$\frac{\text{Average cost of capital assets}}{\text{Amortization expense}}$	
F3	Average age of capital assets	$\frac{\text{Accumulated amortization}}{\text{Amortization expense}}$	
F4	Capital Assets Turnover Ratio	$\frac{\text{Net Sales}}{\text{Average Capital Assets}}$	

Other models

Altman Model [Altman Z score] (US - 1968)		Interpretation	
		Unhealthy	Healthy
G1	For Public industrial companies $Z = 1,2 X_1 + 1,4 X_2 + 3,3 X_3 + 0,6 X_4 + 1,0 X_5$	$Z < 1,81$	$Z > 2,99$
	For Private industrial companies $Z = 6,56 X_1 + 3,26 X_2 + 6,72 X_3 + 1,05 X_4$	$Z < 1,1$	$Z > 2,60$
	X1 = Working Capital / Total Assets X2 = Retained Earnings / Total Assets X3 = Earnings before Interest and Taxes (EBIT) / Total Assets X4 = Market value of Equity / Book value of total Debt X5 = Sales / Total Assets		

Springate (Canadian - 1978)		Interpretation
G2	$Z = 1,03 A + 3,07 B + 0,66 C + 0,4 D$	Failed $Z < 0,862$
	A = Working Capital / Total Assets B = Net Income before Interest and Taxes (EBIT) / Total Assets C = Net Income before Taxes (EBIT) / Current liabilities D = Sales / Total Assets	

Fulmer Model (US - 1984)		Interpretation
G3	$H = 5,528 v_1 + 0,212 v_2 + 0,073 v_3 + 1,270 v_4 - 0,120 v_5 + 2,335 v_6 + 0,575 v_7 + 1,083 v_8 + 0,894 v_9 - 6,075$	Failed $H < 0$
	v1 = Retained Earnings / Total Assets v2 = Sales / Total Assets v3 = Net Income before Taxes (EBIT) / Equity v4 = Cash Flow / Total Debt v5 = Debt / Total Assets v6 = Current liabilities / Total Assets v7 = Log Tangible Total Assets v8 = Working Capital / Total Debt v9 = Log EBIT / Interest	

CA Score (Canadian - 1987)		Interpretation
G4	CA-score = $4,5913 A + 4,5080 B + 0,3936 C - 2,7616$	Failed CA-score $< - 0,3$
	A = Shareholders' investments (1) / Total Assets (1) Shareholders' investments = Shareholders' equity + net debt owing to directors B = Net Income before, extra., Interest and Taxes (1) / Total Assets (1) C = Sales (2) / Total Assets (2)	(1) figures from previous period (2) figures from two previous periods

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