Financial Statement Analysis

Common-Size Analysis

- **Common-size analysis** is the restatement of financial statement information in a standardized form.

- **Horizontal common-size analysis** uses the amounts in accounts in a specified year as the base, and subsequent years' amounts are stated as a percentage of the base value.
- **Trend Analysis.**

- **Vertical common-size analysis** uses the aggregate value in a financial statement for a given year as the base, and each account's amount is restated as a percentage of the aggregate.
    - **Balance sheet: Aggregate amount is total assets.**
    - **Income statement: Aggregate amount is revenues or sales.**

Example: Common-Size Analysis

Horizontal Common-Size Analysis (base year is 20X1 – only for Assets)

Year	20X1	20X2	20X3	20X4	20X5	20X6
Cash	100.00%	101.00%	102.01%	103.03%	104.06%	105.10%
Inventory	100.00%	103.00%	106.09%	109.27%	112.55%	115.93%
Accounts receivable	100.00%	102.00%	104.04%	106.12%	108.24%	110.41%
Net plant & equipment	100.00%	104.00%	108.16%	112.49%	116.99%	121.67%
Intangibles	100.00%	100.50%	101.00%	101.51%	102.02%	102.53%
Total assets	100.00%	103.08%	106.27%	109.57%	112.99%	116.53%

VERTICAL COMMON SIZE STATEMENTS –I (Balance Sheet)

Particulars	20x1	20x2	20x3	20x4
Capital	26	22	32	30
Res.& surplus	17	23	19	22
Secured Loans	33	30	28	27
Unsec. Loans	6	6	5	5
Current Liab.	18	19	16	16
TOTAL	100	100	100	100
Fixed Assets	62	61	62	64
Investments	5	4	4	3
Debtors	14	17	16	16
Inventories	17	16	17	16
Misc. Expenses	2	2	1	1
TOTAL	100	100	100	100

VERTICAL COMMON SIZE STATEMENTS –II (Income Statement)

Particulars	20X1	20X2	20X3	20X4
Total Revenue	100	100	100	100
(COGS)	74	70	73	76
Gross Margin	26	30	27	24
(Operating Expenses)	7	8	7	8
Non-Operating (Expenses)/ Income	-	-	-	-
EBITDA	19	22	20	16
(Depreciation)	1	1	1	1
EBIT	18	21	19	15
(Interest)	4	4	4	4
EBT	14	14	15	11
(Tax)	6	8	7	7
EAT (+) Other Income	8	6	8+1	4+1
Dividends	4	4	4	4
Retained earnings	4	2	5	1

Financial Ratio Analysis

- Use of relationships among financial statement accounts to gauge the financial condition and performance of a firm
- Can be classified as :

1. Liquidity Ratios: Ability to meet immediate short-term obligations
2. Activity Ratios: Effectiveness in putting investment to use
3. Debt or Solvency Ratios: Ability to satisfy debt obligations
4. Profitability Ratios: Ability to manage expenses to produce profit from sales
5. Capital Market Ratios: Ability to understand & interpret capital market

(1) Liquidity Ratios

- **Liquidity** is the ability to satisfy the company's short-term obligations using assets that can be most readily converted into cash

$$\textbf{Current ratio} = \frac{\textbf{Current assets}}{\textbf{Current liabilities}}$$

Ability to satisfy current liabilities using current assets.

$$\textbf{Quick ratio} = \frac{\textbf{Cash}^{*} + \textbf{Short-term investments} + \textbf{Receivables}}{\textbf{Current liabilities}}$$

Ability to satisfy current liabilities using the most liquid of current assets **[Current Assets – Inventories]**

Bank finance to Working Capital Gap Ratio=

$$\frac{\textbf{Short-term bank borrowings}}{\textbf{Working Capital Gap}}$$

It shows the dependence on bank finance and the working capital is equal to C.A. less C.L. other than bank borrowings

2. Operating Performance or Activity Ratios

Measure how well a company turns its assets into revenue & converts its sales into cash

1) Inventory turnover = $\frac{\text{COGS}}{\text{Average inventory}}$

Measures how fast the inventory is moving through the firm & generating sales A high turnover ratio, in cases, may be caused by a low level of inventory which may result in frequent stock-outs & loss of sales (customer goodwill)

2) Receivables turnover = $\frac{\text{Total revenue}*}{\text{Average receivables}**}$

No. of times accounts receivable are created and collected during the period. The higher the A/R turnover, the greater the efficiency of credit management

*If net credit sales is not available, one may consider net sales figure.** If Average A/R is not available, manage with Closing A/R figure

3) Total asset turnover = $\frac{\text{Total revenue}}{\text{Average total assets}}$

Measures the degree to which a firm generates sales with its total asset base - important to use average assets in the denominator to eliminate bias in the ratio calculation

4) Fixed Asset turnover = $\frac{\text{Net sales}}{\text{Property, Plant \& Equipment}}$

Measure of the productivity of a company's fixed assets (property, plant & equipment) with respect to generating sales - the higher the yearly turnover rate, the better

3. Debt or Solvency or Leverage Ratios

1)Debt−to−equity Ratio

$$= \frac{\text{Total debt}}{\text{Total shareholders' equity}}$$

Debt financing relative to equity financing - measurement of how much suppliers, lenders, creditors have committed to the company versus what the shareholders have committed

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2) Liabilities−to−equityRatio

$$= \frac{\text{All Liabilities}}{\text{Total Shareholders'Equity}}$$

Measures dependence on liabilities, much of which is interest free (some Current liabilities take a long-term character & are not essentially different from interest-free debt)

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3) Interest coverage Ratio

$$= \frac{\text{EBIT}}{\text{Interest payments}}$$

Ability of the company to satisfy interest obligations

(4) Profitability Ratios

- Reflect the final result of the business operations –(of two types) – (a) *Profit margin ratios* & (b) *Rate of return ratios*.
- (a) Margin Ratios: a measure of income with total revenues. Return on sales (ROS) – indicates cushion available in the event of increase in cost or drop in selling price

1. Gross profit margin = $\frac{\text{Gross profit}}{\text{Total revenue}}$

% mark-up on merchandise from its cost - pure profit from the sale of inventory that can go to paying operating expenses

2. Operating profit margin = $\frac{\text{Operating profit}}{\text{Total revenue}}$

% of profit a company produces from its operations, prior to subtracting taxes & interest charges – considers all variable costs of production

3. Net profit margin = $\frac{\text{Net profit}}{\text{Total revenue}}$

Net profit is calculated by subtracting all expenses including wages, salaries, utilities & other expenses from revenues - a 'noisy' measure because of inclusion of other income & exceptional items

4. Pretax profit margin = $\frac{\text{Earnings before taxes}}{\text{Total revenue}}$

used by market analysts & investors – identifies the year-over-year organic growth that a company experiences, as it focuses on the intrinsic value(PV of all expected future cash flows) that the business generates

(4) Profitability Ratios ……..

(b) Return ratios compare a measure of profit with the investment that produces the profit

1. Return on Assets (ROA) = $\frac{\text{Net income}}{\text{Average total assets}}$

Also known as ROI, is a measure of profitability from an investment in all categories of assets in the B/S – excellent indicator of overall performance- ROA of 5% or better is a good ratio

2. Return on Equity (ROE)= $\frac{\text{Net income}}{\text{Average shareholders' equity}}$

Profitability ratio from the investor's point of view—not the company - as every industry has different levels of investors and income, ROE can't be used to compare companies outside of their industries very effectively

3. Return on Capital Employed (ROCE) = $\frac{\text{Net income/EBIT}}{\text{Average interest−bearing debt + Average total equity}}$

Depicts the company's ability to efficiently utilize its capital, which includes both debts as well as equity - it is calculated by dividing earnings before interest and tax (EBIT) to capital employed

Capital Employed = (Total Assets – Current Liabilities)

5. Capital Market Ratio

1. Price- earning Ratio (PE Multiple) –[Market Price/ EPS] - extensively used in investment analysis– earning power of business based on its future growth
    - A ratio of 12 implies that an investor is ready to pay ₹12 for ₹1 of earning
    - Historical or Trailing PE is based on past earnings; & Forward or Leading PE uses earnings forecast
    - Cyclically Adjusted PE ratio (CAPE) advocated by Prof. Robert Shiller (2013)– calculates forward PE by using earnings of 10 years

- Earnings Yield – reciprocal of EPS [EPS/ Market Price per share] – investor's return on the stock based on earnings
- Dividend Yield – [Dividend per share/ Market price per share] – current cash return to shareholders
- Stock Return – [(Δ in stock price over the period + Dividend for the period)/ Beginning Stock price]

2. Price-to-Book Ratio: Compares firm's stock price with its book value – a low ratio indicates the stock is underpriced in the stock market – a ratio more than 1 indicates that market expects the firm to earn more than the required rate of return on equity

The DuPont Analysis

- DuPont analysis is an extended analysis of a company's return on equity. It concludes that a company can earn a high return on equity if:
- It earns a high net profit margin;
- It uses its assets effectively to generate more sales; and/or
- It has a high financial leverage

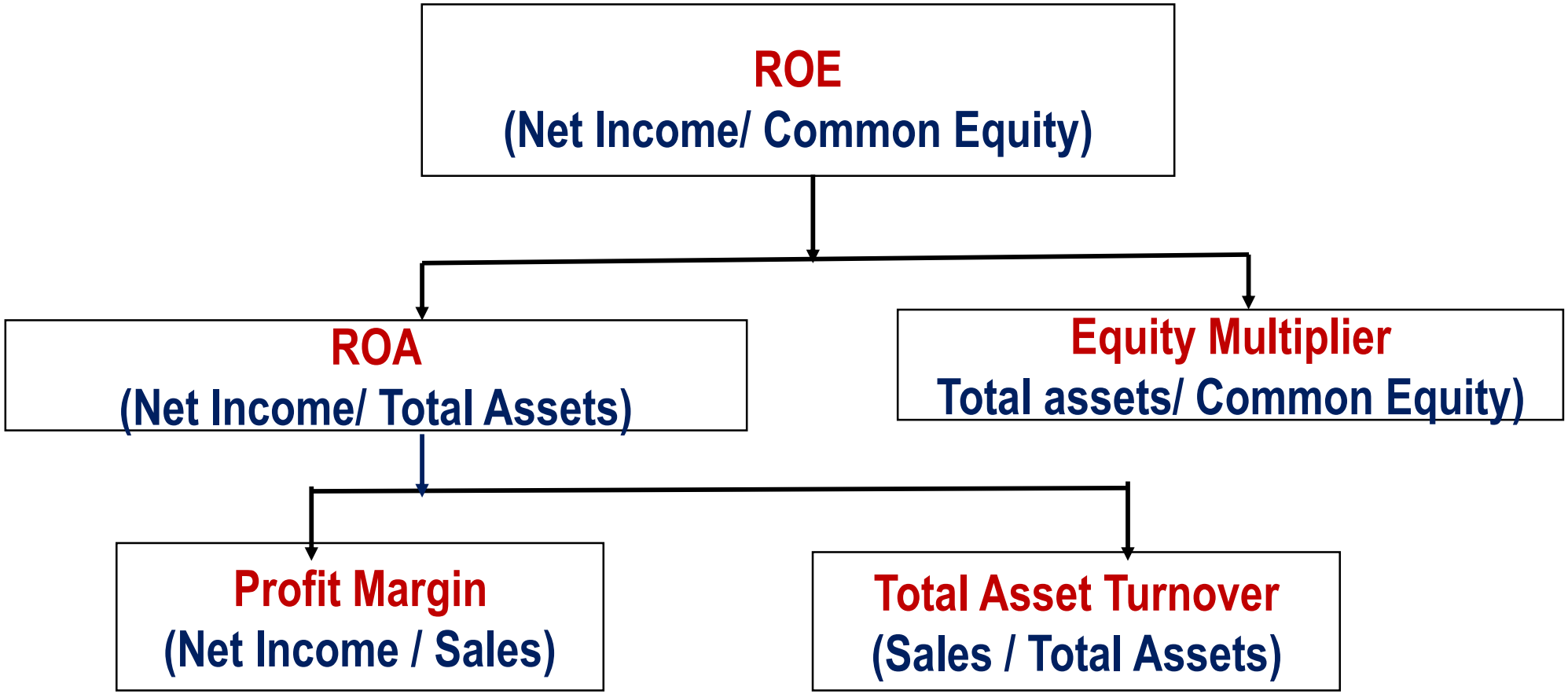
According to DuPont analysis, ROE is affected by three things:

i) Operating efficiency, measured by profit margin

ii) Asset use efficiency, measured by total asset turnover

iii) Financial leverage, measured by the equity multiplier

The DuPont Equation



The DuPont analysis takes into consideration other key financial metrics that drive the ROE and helps investors make an informed decision

Modified Du Pont Equation

- Hawawini and Viallet (1999) offered one modification to the original model resulting in five different ratios that combine to form (Return on Common Stockholders' Equity - ROCSE)

- (EBIT / sales) * (sales / invested capital) * (EBT / EBIT) * (invested capital / equity) * (EAT / EBT) = ROCSE
- (Where invested capital = Total Assets)

- Margin * Turnover * Interest burden * Leverage * Tax burden = ROCSE