# Financial Statement Analysis

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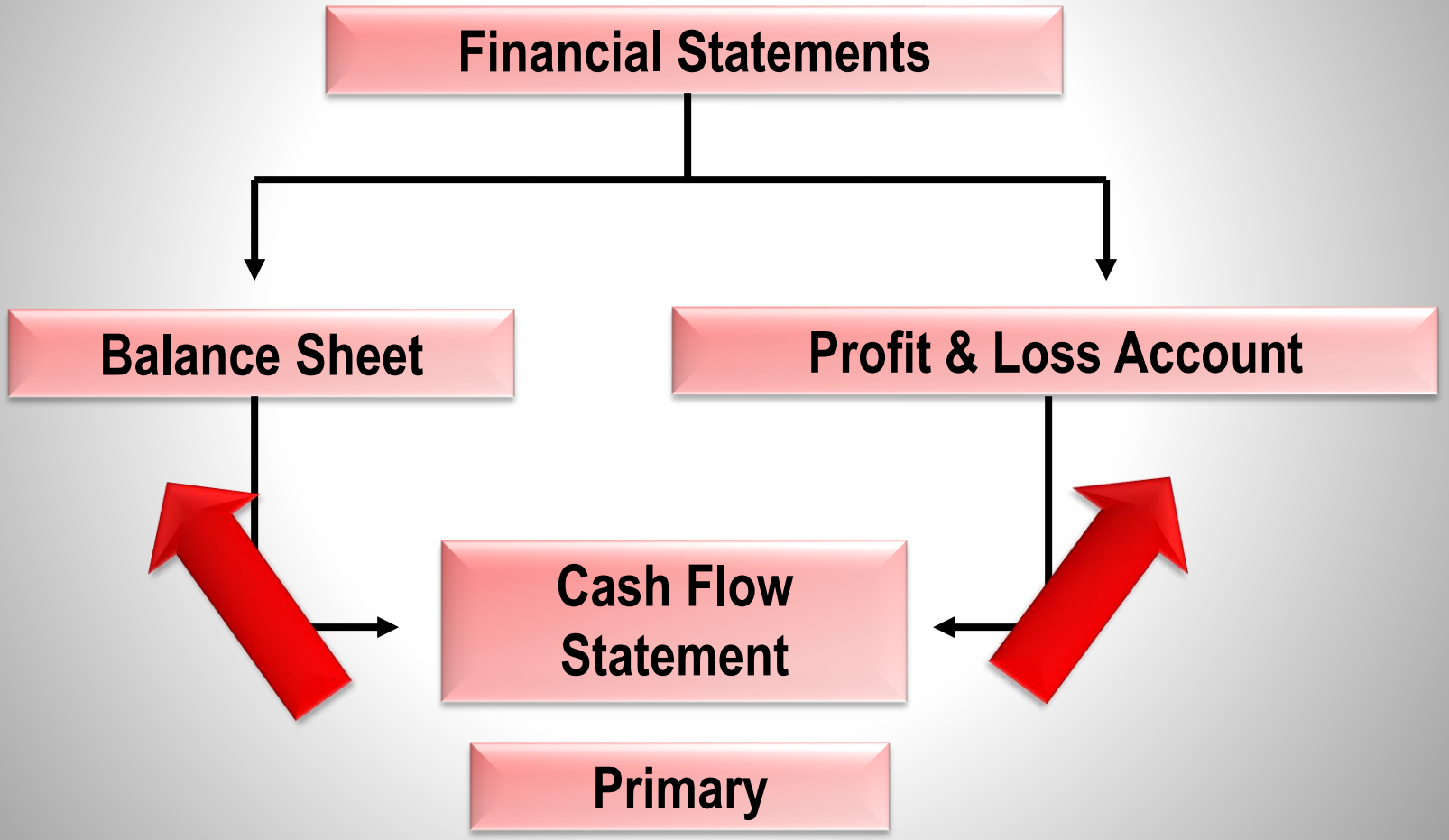
# Financial Statements – Basic Relationships



# Financial Statements

## Balance Sheet

- The entity in order to achieve its objectives has arrived at a decision to apportion the resources and deployed it in fixed assets and in current assets
- The proportions of funds that are borrowed on short term, on long term as well as what is the contribution of owners towards the total financial requirement of the entity

## Profit & Loss Account

- Gives the cost structure of the business and the relationship of costs to the revenues
- It gives the information relating to margin available on the sales

# Steps to Analyse Financial Statements

- Establish the objectives of analysis of the firm
- Study the industry, in which the firm operates, the dynamics therein, and the impact on the objective of analysis
- Based on the objectives of analysis, decide on the appropriate financial tools
- Know about the firm(s) and their management styles; and take the same into account at the time *of making your interpretations.*

Thus, the resources used for financial analysis would compulsorily include:(a) Published Financial Statements; (b) Auditors' Report *plus Report on Corporate Governance; and* (c) Report of the Directors *plus Management Discussion & Analysis.*

# Relation and Comparison of Data

- Accounting data in absolute terms do not provide much meaning – the analysis involves comparison and relation
- Ratio → Whenever one item is expressed (as a fraction or a decimal fraction or an integer) in terms of another item
- Example – A firm earns a net profit of Rs. 20,000 on a sale of Rs. 500,000. We could express this relationship as ____?
- Comparisons could be made
  - With Company's past performance
  - With Competing Firms
  - With an Absolute Standard
  - With Industry/Economy trend
  - With Budgets (Planning and Control)

# But…

- In most cases, there are **no standards** against which a particular ratio value could be tested
- We make relative conclusions by **comparing the ratios with industry averages**
- Thus, at best the conclusions could be ‘better than’ or ‘worse than’ or ‘average’
- Possible pitfalls in these comparisons could be the different accounting conventions
  - Inventory valuation (LIFO vs. FIFO)
  - Different methods of depreciation
  - Typical items (eg. Retirement benefits)

# Common Size Financial Statements

- A financial statement presented by representing each item as a percentage to the total amount of which it is a part
- Example:X had a sale of Rs 15 mn during the year and cost of goods sold of Rs 12 mn whereas Y has a sale of Rs 8 mn and cost of goods sold of Rs 4.8 mn
- The above is not amenable to direct understanding.
- Cost of goods sold of X is 80% of sales and for Y it is 60% of sales
- This is more lucid and meaningful. Useful while dealing with many companies in the same industry

# Common Size Financial Statements

## Profit & Loss Account

- Here we show the net sales as 100% and each of the components of expenses and profits as a percentage of net sales
- When there are other revenues and expenses of a non-operating nature, it may be advantageous to treat them separately

# Tools & Tools Ltd
# Common Size Profit & Loss Account
# For the year ended Dec 31,2011

| | 2011 | | 2010 | |
|---|---|---|---|---|
| | Rs Million | % | Rs Million | % |
| Sales | 300 | 100 | 280 | 100 |
| Cost of Goods Sold | 148 | 49.33 | 140 | 50.00 |
| Gross Profit | 152 | 50.67 | 140 | 50.00 |
| Selling Expenses | 25 | 8.33 | 22 | 7.86 |
| General Expenses | 60 | 20.00 | 58 | 20.71 |
| Total Operating Expenses | 85 | 28.33 | 80 | 28.57 |
| Operating Income | 67 | 22.33 | 60 | 21.43 |
| Interest Expense | 14 | 4.67 | 13 | 4.64 |
| Net Income before tax | 53 | 17.67 | 47 | 16.79 |
| Income Tax | 26 | 8.67 | 23 | 8.21 |
| Profit After Tax | 27 | 9.00 | 24 | 8.57 |
| Dividends | 2 | 0.67 | 2 | 0.71 |
| Profits retained | 25 | 8.33 | 22 | 7.86 |

| Tools & Tools Limited<br>Dis-aggregation of change in Net Income | |
|---|---|
| | % Change in expenses and net income in relation to sales |
| Decrease in cost of goods sold | 0.67 |
| Decrease in general expenses | 0.71 |
| **Total decrease in the cost increasing net income** | **1.38** |
| Increase in selling expense | 0.47 |
| Increase in interest expense | 0.03 |
| Increase in income tax | 0.46 |
| **Cost increases decreasing net income** | 0.96 |
| **Net change in net income** | **0.42** |

Interpretation:

- Net profit earned by the company has increased from 8.6% to 9.0%
- Dis-aggregation of change shows an increase in net income of 0.4%
- It is the combined result of 1.4% reduction in cost and 1% increase in the indirect cost

# Contd. . .

- Balance Sheet
  - Constructed by showing each item of asset as a percentage of total assets, similarly each item of liability and owner's equity is shown as a percentage of total liabilities and owners equity
  - The common-size financial statements could either be prepared in summary or in details

# Tools & Tools Ltd
# Common Size Balance Sheet
# As at Dec 31, 2011

| | 2011 | | 2010 | |
|---|---|---|---|---|
| **ASSETS** | **Rs Million** | **%** | **Rs Million** | **%** |
| Cash | 19 | 5.76 | 11 | 4.07 |
| Accounts Receivable | 32 | 9.70 | 20 | 7.41 |
| Loans and Advances | 43 | 13.03 | 34 | 12.59 |
| Inventory | 121 | 36.67 | 99 | 36.67 |
| Other Current Assets | 17 | 5.15 | 26 | 9.69 |
| **Total Current Assets** | **232** | **70.31** | **190** | **70.37** |
| Fixed Assets | 94 | 28.48 | 79 | 29.26 |
| Other Assets | 4 | 1.21 | 1 | 0.37 |
| Total Assets | 330 | 100.00 | 270 | 100 |
| **Total Liabilities & Capital** | | | | |
| **Current Liabilities** | | | | |
| Acceptances | 5 | 1.52 | 2 | 0.74 |
| Accounts Payable | 27 | 8.18 | 19 | 7.04 |

# Contd. . . .

| | | | | |
|---|---|---|---|---|
| Advance Against Sale | 26 | 7.88 | 21 | 7.78 |
| Other Liability | 9 | 2.73 | 8 | 2.96 |
| Interest accrues but not due | 3 | 0.90 | 2 | 0.74 |
| Total Current Liabilities | 70 | 21.21 | 52 | 19.26 |
| **Provisions:** | | | | |
| For Tax | 26 | 7.88 | 21 | 7.77 |
| For Proposed Dividends | 2 | 0.61 | 2 | 0.74 |
| For Bonus | 3 | 0.90 | 2 | 0.74 |
| For Other | 4 | 1.21 | 3 | 1.11 |
| Total Provision | 35 | 10.61 | 28 | 10.37 |
| Total Current Liabilities and Provisions | 105 | 31.82 | 80 | 29.63 |
| **Long Term Liabilities** | | | | |
| Bank term loans | 40 | 12.12 | 32 | 11.85 |
| 10.5%Debentures | 26 | 7.88 | 26 | 9.63 |
| Financial Institutions | 24 | 7.27 | 22 | 8.15 |

# Contd. . . .

| | | | | |
|---|---|---|---|---|
| Total Long Term Liabilities | 90 | 27.27 | 80 | 29.63 |
| Total Liabilities | 195 | 59.08 | 160 | 59.26 |
| **Shareholders Equity** | | | | |
| Paid up capital | 37 | 11.21 | 37 | 13.70 |
| Retained Earning | 98 | 29.70 | 73 | 27.04 |
| Total Shareholder Equity | 135 | 40.91 | 110 | 40.74 |
| **Total Liabilities & Shareholders Equity** | **330** | **100** | **270** | **100** |

Interpretation:

- During both the years, over two-thirds of the total assets were current assets viz., 2010 (70.4%) and 2011 (70.3%) – and this was stable.

- Similarly in 2010, 29.3% total assets were fixed assets which came down to 28.5% in 2011

- Financial pattern has remained stable over 2 yrs at around 59% by out sources and 41% by shareholders
- Hence it has maintained a stable financial structure during the period, in term of current assets versus fixed assets and outside finances versus shareholder's equity
- Working capital has increased in Rupee by 17 million
- But the proportionate term, working capital has decline by 2.3%

| Working Capital Change as Percentage of Total Assets | | | |
|---|---|---|---|
| | 2011 | 2010 | Change in WC |
| Total Current Assets | 70.31 | 70.37 | -0.07 |
| Total Current Liability & Provision | 31.82 | 29.63 | -2.19 |
| Working Capital | 38.49 | 40.74 | -2.25 |

# Index Based Analysis

- Accounting information represent by over multiple year as a percentage of amounts of an observant base year
- It helps to compare accounts for two or more years to the corresponding items for a single company
- The base year figures of each item are always indexed to 100
- And the changes from the base year are determined
- A longer time frame of data always help in better understanding index based analysis
- We present the Index based balance sheet numbers of CPIL Colgate Palmolive (India) Ltd  with FY2007 taken as base years

# Index Based Balance Sheet of CPIL

| Balance Sheet Items | Colgate Palmolive (India) Ltd | | | |
|---|---|---|---|---|
| **Assets Side** | **FY2010** | **FY2009** | **FY2008** | **FY2007** |
| Cash & Bank Balances | 302.7 | 220.6 | 129.0 | 100.0 |
| Accounts Receivable | 103.8 | 118.3 | 99.8 | 100.0 |
| Loans & Advances | 77.1 | 89.5 | 99.1 | 100.0 |
| Inventories | 138.6 | 112.3 | 107.4 | 100.0 |
| **Current Assets** | **164.1** | **137.5** | **110.5** | **100.0** |
| **Fixed Assets** | **135.8** | **133.9** | **125.1** | **100.0** |
| **Other Assets** | **23.9** | **31.9** | **60.0** | **100.0** |
| **Total Assets** | **125.4** | **113.2** | **103.4** | **100.0** |

# Contd..

| Liability Side | FY2010 | FY2009 | FY2008 | FY2007 |
|---|---|---|---|---|
| Account payables | 158.1 | 155.3 | 131.7 | 100.0 |
| Other Current Liabilities & Provision | 95.7 | 112.3 | 129.7 | 100.0 |
| **Current Liabilities & Provision** | **130.0** | **135.9** | **130.8** | **100.0** |
| **Long Term Liabilities** | **107.5** | **109.8** | **109.8** | **100.0** |
| **Net Worth** | **118.6** | **78.7** | **61.6** | **100.0** |
| **Total Liabilities** | **125.4** | **113.2** | **103.4** | **100.0** |

- Comparing this with actual number of CPIL, one can make out that it involves calculating each year's 'item-wise' balances as percentages of the first year, also known as the *base year*
- It computes, percentage change from year to year for all items in balance sheet, such as cash and inventory

# CPIL Balance Sheet

| Colgate Palmolive (India) Ltd, Financial Year 2007-10, All Figure in Rs Crores | | | | |
|---|---|---|---|---|
| **Balance Sheet** | | | | |
| **Assets Side** | **FY2010** | **FY2009** | **FY2008** | **FY2007** |
| Cash & Bank Balance (a) | 347.67 | 253.40 | 148.13 | 114.86 |
| Accounts Receivable (b) | 9.77 | 11.13 | 9.39 | 9.41 |
| Loans and Advances (c) | 118.00 | 137.05 | 151.64 | 153.08 |
| Inventories (d) | 111.36 | 90.24 | 86.25 | 80.33 |
| Current Assets (a+b+c+d) | 586.80 | 491.82 | 395.41 | 357.68 |
| Fixed Assets | 260.73 | 257.12 | 240.31 | 192.03 |
| Other Assets | 37.18 | 49.69 | 93.52 | 155.88 |
| **Total Assets** | **884.71** | **798.63** | **729.24** | **705.59** |

# Contd. . .

| Liability Side | FY2010 | FY2009 | FY2008 | FY2007 |
|---|---|---|---|---|
| Account Payable (e) | 367.80 | 361.22 | 306.49 | 232.66 |
| Other Current Liabilities & Provisions (f) | 182.11 | 213.72 | 246.70 | 190.26 |
| Current Liabilities | 549.91 | 574.94 | 553.19 | 422.92 |
| Long-Term Liabilities | 4.59 | 4.69 | 4.69 | 4.47 |
| Net Worth (Total Shareholders' Fund) | 330.22 | 219.01 | 171.37 | 278.40 |
| **Total Liabilities** | **884.72** | **798.64** | **729.25** | **705.59** |

# Contd…

- Example, the computation of Cash & Bank Balance for FY2010

$$\text{Common Base Cash in FY2010} = \frac{\text{Cash in FY2010} \times 100}{\text{Cash in FY2007}} = \frac{347.67 \times 100}{114.86} = 302.7$$

- The analysis shows that during the four year period CPIL's assets had increased by about 25%
- Other Assets and loans & Advances item decreased continuously
- A stark contrast to these items is the massive rise in its Cash and Bank Balances – which has gone up by over two times

# Possible reasons include

- CPIL sold off its investment in FY2008 and parked them as cash … possibly due … Guess?
- Volatility in Capital Markets AND / OR
- Sale of its Nepal subsidiaries AND / OR
- Some other informed strategy (such as, to chase potential takeover opportunity or for impending needs of its parent firm) AND / OR
- Huge profits with no big investment in fixed assets during the four year period
- … all these add to the bulging cash balance

# Further Interpretations

- Are feasible on the accounts receivable of CPIL trends …
- On the decreasing trend of CPIL's 'Loans and Advances' from FY2008.

# Using Financial Ratios…

- Many pieces of information do not have significant meaning in isolation – they become more meaningful when related to an appropriate base
- Ratios reduce large figures to an easily understood relationship
- Ratios do not make conclusions – It is for the analyst to draw conclusion by evaluating and relating the ratios
- There are no “good” ratios and “bad” ratios – It is only possible to make relative inferences
- Company performance is usually analyzed on two parameters
  - Profitability
  - Liquidity

# Profitability Ratios

| | |
|---|---|
| **Margin on sales** | Gross Profit Margin |
| | Operating Profit Margin |
| | Earnings Before Interest & Tax |
| | Profit before tax |
| | Net Profit Margin (i.e., Profit after tax) |
| **Return on Investment** | Operating Profit to Operating Assets |
| | Net Income to Total Assets |
| | Return on Equity |
| **Efficiency** | Total Asset Turnover |
| | Operating Asset Turnover |
| | Working Capital Turnover |
| | Shareholder Equity Turnover |
| **Return per share** | Earnings per share |
| | Earnings to price |
| | Dividends per share |

# Solvency Ratios

| | |
|---|---|
| **Short-term** | Net Working Capital |
| | Current Ratio |
| | Quick Ratio |
| | Accounts Receivable Turnover |
| | Collection Period |
| | Inventory Turnover |
| | Conversion Period |
| **Long-term** | Total Debt to Total Capital |
| | Long Term Debt to Total Capital |
| | Long Term Debt to Fixed Assets |
| | Interest Cover |
| | Times Fixed Charges Covered |
| | Gearing |
| | Equity Multiplier |

# Profitability

- The long-term survival depends on ability to earn sufficient surpluses and to grow
- Only if the operations are profitable the company will survive in the long run
- Margin on Sales
  - Profits are generated by sales
  - First step in analyzing profitability is understanding of costs in relation to revenue and thus profits in relation to revenue
  - Each component of profit & loss account is expressed as percentages of sales

# Illustration – Tools & Tools Ltd. (Table on Profit Margins)

| | FY 2011 | | FY 2010 | |
|---|---|---|---|---|
| | Rs Million | % | Rs Million | % |
| Sales | 300 | 100 | 280 | 100 |
| Cost of goods sold | 148 | 49.33 | 140 | 50.00 |
| **Gross Profit (i)** | **152** | **50.67** | **140** | **50.00** |
| Total operating expenses | 85 | 28.33 | 80 | 28.57 |
| **Operating Profit (ii)** | **67** | **22.33** | **60** | **21.43** |
| Interest expense | 14 | 4.67 | 13 | 4.64 |
| **Profit Before Tax (iii)** | **53** | **17.67** | **47** | **16.79** |
| Income tax | 26 | 8.67 | 23 | 8.21 |
| **Profit After Tax (iv)** | **27** | **9.00** | **24** | **8.57** |
| Dividends | 2 | 0.67 | 2 | 0.71 |
| **Profit Retained (v)** | **25** | **8.33** | **22** | **7.86** |
| Depreciation expense | **13** | | **11** | |

# Gross Margins & Operating Margins

- Gross Margins
  - The surplus available out of sales revenues after subtracting cost of goods sold
  - It is obtained over the input costs and as such would reflect the efficiency of use of direct inputs given the price

Gross Profit = Sales – COGS

$$Gross\ Profit\ Marin\ (GPM) = \frac{Gross\ Profit\ X\ 100}{Sales}$$

- Operating Margins
  - It is the reflection of the operations of the company and hence considered as a reflection of the management's performance

# Contd…

- Frequently used as a basis of comparison across companies

Operating Profit = PBDIT – Depreciation

$$Operating\ Profit\ Marin\ (\boldsymbol{OPM}) = \frac{Operating\ Profit\ \times 100}{Sales}$$

- Earnings before interest & taxes
  - Any non-operating surplus or deficit is adjusted to the operating profit margin to obtain the earnings before interest and taxes

- Profit Before Tax
  - It is the surplus amount obtained after meeting interest expense
  - Influenced to a great extent by the financing decisions

# PAT, and Retained Earnings

- Profit After Tax (a.k.a. Net Income)
  - Overall surplus available out of sales to shareholders
  - This is influenced by three major factors namely, operating efficiency, financing efficiency and taxation
  - As a percentage of sales it is known as Net Profit Margin and is used to compare margins of players in the same industry

$$Net\ Profit\ Margin\ (NPM) = \frac{Net\ Profit\ \times 100}{Sales}$$

- Retained Earnings (a.k.a. Retained Profit)
  - Amount of profit remaining after the distribution of dividends

# Tools & Tools Ltd. – Analysis

| | Rs Million | % (11) | Rs Million | % (10) |
|---|---|---|---|---|
| Sa | 300 | 100 | 280 | 100 |
| Co | 148 | 49.33 | 140 | 50.00 |
| **Gross Prom (i)** | **152** | **50.67** | **140** | **50.00** |
| Tot | 85 | 28.33 | 80 | 28.57 |
| **C** | **67** | **22.33** | **60** | **21.43** |
| Interest exp | 14 | 4.67 | 13 | 4.64 |
| **Pr** | **53** | **17.67** | **47** | **16.79** |
| Inc | 26 | 8.67 | 23 | 8.21 |
| **Profit Af** | **27** | **9.00** | **24** | **8.57** |
| Di | 2 | 0.67 | 2 | 0.71 |
| **P** | **25** | **8.33** | **22** | **7.86** |

**Most margin Indicators are improving**

**Net margins increased to 9%**

**Gross margins increased to 50.6%**

**Decrease in company's direct costs & operating expenses**

# Return on Investment

- The management has to be evaluated on the basis of how far they had been successful in ***profitably utilizing the assets***

➔ The assets used is to be related to the profit earned

- **Return on Operating Assets (ROA)**
  - ***Operating profit to operating assets*** is obtained by dividing the operating profit by average value of operating assets used during the year

$$\text{Return on Operating Assets } (\textbf{ROA}) = \frac{\text{Operating Profit} \times 100}{\text{Average Operating Assets}}$$

  - Operating assets refer to total current assets and fixed assets used

# Tools & Tools Ltd. - ROA

| Return on Operating Assets (ROA) | 2011 | 2010 |
|---|---|---|
| Current assets (Rs Million) | 232 | 190 |
| Fixed assets (Rs Million) | 94 | 79 |
| Total operating assets (Rs Million) | 326 | 269 |
| Operating Profit Before Interest and Taxes (OPBIT) (Rs Million) | 67 | 60 |
| Return on Operating Assets (%) | 20.55 | 22.30 |
| ROA based on average operating assets i.e., (326+269)/2 (%) | **22.52** | |

**The company had used on average Rs 297.5 million and it has to be justified in terms of the opportunity cost**

# ROTA

- Return on Total Assets (ROTA)
  - The rate of profit the company is able to earn after meeting the cost of financing of a portion of the total assets
  - It is the amount available to the shareholders in relation to the total amount of resources used in the business
  - Here again the average total assets is used (Why?)

$$\textit{Return on Total Assets } (\textbf{\textit{ROTA}}) = \frac{\textit{Net Profit} \times 100}{\textit{Average Total Assets}}$$

# ROE

- Return on Equity (ROE)
  - Net income is the amount available to owners for compensating their investment and the risk being carried by them
  - It measures the net income as a percentage of shareholders investment

$$Return\ on\ Equity\ (ROE) = \frac{Net\ Income\ \times 100}{Average\ Net\ Worth}$$

# Net Income to Total Assets

| Return on Total Assets (ROTA) | 2011 | 2010 |
|---|---|---|
| Total Assets (Rs Million) | 330 | 270 |
| Profit After Taxes (PAT) | 27 | 24 |
| Return on Total Assets | 8.18% | 8.89% |
| ROTA based on average total assets (330+270)/2 | 9.00% | |

**Able to earn 9% return on Total Assets**

**The company used an average Rs 300 mn in total assets to earn Rs 27 mn**

# ROE Computations …

| Return on Equity (ROE) | 2011 | 2010 |
|---|---|---|
| Total Equity (Rs Million) | 135 | 110 |
| Profit After Taxes (PAT) | 27 | 24 |
| Return on Equity (%) | 20.00 | 21.82 |
| ROE based on average total assets | 22.04 | |

- ROE of 22% is not only the result of management's ability to employ the assets profitably, but also the result of its ability to use a ***favorable debt equity structure***
- Whenever, management is able to borrow money and use it to earn more than the cost of such borrowing the ROE increases

# Return Per Share

- Interest of a shareholder lies in the amount of dividend that can be earned on the investment in shares and the increase in the price of shares that can be had by holding the same
- ***Earnings per share*** (EPS) is computed by dividing 'net income to ordinary shareholders' by the 'number of ordinary shares outstanding'

$$Earnings\ Per\ Share\ (EPS) = \frac{Net\ Income\ (PAT)}{Number\ of\ Equity\ Shares\ (n)}$$

| Earnings per Share (EPS) | 2011 | 2010 |
|---|---|---|
| Profit After Taxes (PAT) (Rs Million) | 27 | 24 |
| Number of ordinary shares (Million) | 3.7 | 3.7 |
| Earnings per Share (EPS) (Rs) | 7.30 | 6.49 |

# Earnings-Price Ratio (E/P)

- The earnings per share related to the current market price of the share provides a measure of the ***rate of yield***

$$\text{Earnings PriceRatio} = \frac{\textit{Earnings per share}}{\text{Market price per share}}$$

- This yield measure could be used by the shareholder in making decisions about this investment in comparison to other alternate investments

| Earnings-Price Ratios (E/P) | 2011 | 2010 |
|---|---|---|
| Earnings per Share (EPS) (Rs) | 7.30 | 6.49 |
| Market price per share (Rs) | 30 | 28 |
| Earnings/Price Ratio (%) | 24.3 | 23.18 |
| Price Earnings Ratio | 4.1 | 4.31 |

# Contd…

- It is a common practice to express the E/P ratio by reversing the relationship to measure the price-earnings (P/E) relationship
- Here, this relationship expresses market price as a certain multiple of the earnings per share
- Dividend per Share
- It shows the cash income available to the shareholder of a share

$$\text{Dividend Per Share } (\boldsymbol{DPS}) = \frac{\text{Dividend}}{\text{Number of Equity Shares } (n)}$$

| Dividend per Share (DPS) (Rs) | 2011 | 2010 |
|---|---|---|
| Dividend (Rs Million) | 2 | 2 |
| Number of ordinary shares (Million) | 3.7 | 3.7 |
| Dividend per Share (Rs) | 0.54 | 0.54 |

# Efficiency

- The relationship of assets used to sales measures the level of sales generated by given quantum of assets
- This is a measure of the efficiency of use of assets
- This relationship of assets to sales indicates the number of times assets turned over as a result of volume of sales generated
- Thus, the relationship of net income to assets is the turnover of assets times' margin on sales
- The return on total assets, measured by net income to total assets, comes about by calculating the net income to sales times sales to total assets

$$\text{Return on Total Assets (ROTA)} = \frac{\text{Net Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average Total Assets}}$$

# Example – Tools & Tools Ltd

| Particulars | 2011 | 2010 |
|---|---|---|
| Total Assets (Rs Million) | 330 | 270 |
| Profit After Taxes (PAT) (Rs Million) | 27 | 24 |
| Sales (Rs Million) | 300 | 280 |
| Net Income/ Sales (%) | 9.00 | 8.57 |
| Sales / Total Assets (a.k.a. Asset Utilization Ratio) | 0.91 | 1.04 |
| Return on Total Assets (Net Income / Total Assets) (%) | 8.18 | 8.89 |
| Sales / Average Total Assets | 1.00 | |

- Various asset (or investment) turnover ratios are measures of efficiency of their use in terms of their ability to convert profit margins to rate of return on assets

# Operating Assets Turnover

- Relates sales to the operating assets used
- This ratio assesses the efficiency of the use of operating assets, that is, their ability to generate revenue
- Similar to return on total assets the operating assets turnover times operating profit margin gives us the operating profit to operating asset

$$Dividend\ Per\ Share\ (DPS) = \frac{Dividend}{Number\ of\ Equity\ Shares\ (n)}$$

# Example – Tools & Tools

| Operating Assets Turnover and Return (ROA) | 2011 | 2010 |
|---|---|---|
| Sales (Rs Million) | 300 | 280 |
| Operating profit (Rs Million) | 67 | 60 |
| Operating Profit Margin (OPM) (%) | 22.33 | 21.43 |
| Fixed assets (Rs Million) | 94 | 79 |
| Total operating assets (Rs Million) | 326 | 269 |
| Operating Asset Turnover (OAT) | 0.92 | 1.04 |
| Fixed Asset Turnover | 3.19 | 3.54 |
| Return on Operating Assets (OPM×OAT) (%) | 20.55 | 22.30 |
| Avg. Operating Assets Turnover = Sales /AO Assets | 1.01 | |
| ROA - on average operating assets (326+269)/2 (%) | 22.52 | |

# Working Capital Turnover

- It is an efficiency ratio intended at evaluating the efficiency of use of working capital
- It looks at the relationship of revenues earned to working capital investment

$$Working\ Capital\ Turnover = \frac{Sales}{Average\ Working\ Capital}$$

| Net Working Capital efficiency | 2011 | 2010 |
|---|---|---|
| Sales (Rs Million) | 300 | 280 |
| Net Working Capital | 127 | 110 |
| Working Capital Turnover | 2.36 | 2.55 |
| Avg. Working Capital Turnover (127 + 110)×0.5 | 2.53 | |

# Shareholders Equity Turnover

- Shows the management ability in terms of efficiently utilizing the shareholders funds both with respect to efficient operations and in terms of efficient financial management

$$\text{Shareholders Equity Turnover} = \frac{\text{Sales}}{\text{Average Shareholders Equity}}$$

$$\text{Return on Equity} = \text{Equity Turnover} \times \text{Net Profit Margin}$$

| Particulars | 2011 | 2010 |
|---|---|---|
| Sales (Rs Million) | 300 | 280 |
| Shareholders Equity | 135 | 110 |
| Shareholders Equity Turnover (ETO) | 2.22 | 2.55 |
| Average Equity Turnover (135 + 110)×0.5 | 2.45 | |

# Solvency

- Ability to meet all the short-term commitments and ability to keep sufficient assets to cover all the liabilities in the long run
- Companies can be liquid (solvent) but not profitable.
  - For example, imagine a cash rich construction company with no orders
- Companies can be profitable but not liquid.
  - For example, a construction company with lot of orders but no cash to execute them
- Hence, we need both profitability and solvency
- Solvency can be of two types – Short Term and Long Term

# Evaluating Short-Term Solvency

- Liquidity is of major concern to short-term creditors and management
- Sale of merchandise (inventory turnover) and collection of receivable generates liquidity (receivable turnover)
- Assessing excess of current assets over current liabilities – *Working Capital*
- Net working capital is financed by long-term sources of funds and as such provides a cushion for liquidity
- This is obvious since it is financed by long-term sources it is not required to be repaid in the short-term

# Illustration – Ramsons

| RAMSONS, Balance sheet | | | |
|---|---|---|---|
| Assets | Rs | Liabilities & Capital | Rs |
| Current Assets | 500 | Current liabilities | 250 |
| N | 500 | Long-term loans | 500 |
| | | Shareholders equity | 250 |
| To | 1000 | Liabilities & Capital | 1000 |

**Short Term finance available is Rs. 250**

➔ Net Working capital is: Current assets – Current liabilities = 250

| RAMSONS, Balance sheet (Long-Term) | | | |
|---|---|---|---|
| Assets | Rs | Liabilities & Capital | Rs |
| Net Working Capital | 250 | Long-term loans | 500 |
| Net Fixed Assets | 500 | Shareholders equity | 250 |
| Total Assets | 750 | Liabilities & Capital | 750 |

# Current Ratio

- Current Ratio is one of the most widely used balance sheet ratios
- However, making a specific conclusion on the adequacy of any value of current ratio would depend on several factors such as:
  - Proportion of various components of the current assets
  - Time taken for conversion of these current assets to cash
  - Speed of maturity of current liabilities, etc.

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilites}$$

# Discussion ...

- The rationale for financing part of the current assets with long-term finance is that a part of the current asset remains in stock all through the life of the business
- So, Working Capital is the long-term investment in operating CA
- Current Ratio measures the relationship of CA to CLs

| | Limited | 2011 | 2010 |
|---|---|---|---|
| Cu | on) | 232 | 190 |
| Cur | ilities(Rs Million) | 105 | 80 |
| | pitalYR | 127 | 110 |
| Cu | CA / CL | **2.21** | **2.38** |

**Margin of Safety increased By Rs. 17mn**

**Current Ratio has decreased**

**Increase in CA is not in proportion to that of CL**

# Quick Ratio

- Quick ratio or Acid test ratio is usually computed by taking assets, which are **quick to be converted into cash and divide them by the current liability**
- As a practical simplification, it is usual practice to subtract the inventories from the current assets, to arrive at the quick assets

| Quick Ratio-Tools & Tools Ltd | 2011 | 2010 |
|---|---|---|
| Current assets (Rs Million) | 232 | 190 |
| Inventory (Rs Million) | 121 | 99 |
| Quick Assets(Rs Million) | 111 | 91 |
| Current liabilities(Rs Million) | 105 | 80 |
| Net Working Capital(Rs Million) | 127 | 110 |
| Quick ratio: Quick assets/Current liabilities | **1.06** | **1.14** |

# Expenses Cover

- We hold the current asset mostly as an insurance against ***future contingencies***
  - Cash is held with the objective of making payments whenever required
  - Inventory is held to meet the need for inventory either for production or for sale
- Liquidity is essential as cover for the daily operating expenses

$$\textit{Average Daily Expenses} = \frac{(\textit{Cost of Goods Sold} + \textit{Operating Expense} + \textit{Tax} - \textit{Depreciation})}{365}$$

$$\textit{Current Assets Cover} = \frac{\textit{Current Assets}}{\textit{Average Daily Expenses}}$$

$$\textit{Cash Cover} = \frac{\textit{Cash}}{\textit{Average Daily Expenses}}$$

# Example…

| | 2011 | 2010 |
|---|---|---|
| Cash | 19 | 11 |
| Curren | 232 | 190 |
| Quick Assets (Rs Million) | 111 | 91 |
| Curre Million) | 105 | 80 |
| A (Rs Million) | 0.6027 | 0.5726 |
| C days) | 32 | 19 |
| Quick (numb | 184 | 158 |
| Current assets cover ( | 384 | 332 |
| Current liabilities cover ( | 174 | 140 |

**Current assets amount to more than a year's Operating expenses**

**Cash holding sufficient for a month's expenses**

**Current liabilities amount to almost 6 months' daily expenses**

# Account Receivable Turnover

$$Accounts\ Receivable\ Turnover = \frac{Sales}{Average\ Accounts\ Receivable}$$

- When credit sales figures are not available we could still compute using net sales (assuming that all the sales are on credit basis)
- The time period taken for collection of receivable is of great interest in evaluating working capital, known as, Average Collection Period
- Comments will depend on the normal period of credit and credit terms given by the company and the level of deviation

# Accounts Receivable Turnover …

| | 2011 | 2010 |
|---|---|---|
| Sales ( | 300 | 280 |
| Sales per day ( | 0.82 | 0.77 |
| Accounts receivable(Rs Million) | 32 | 20 |
| Accounts receivable turnover | 9.37 | 14 |
| Average Collection period (number of days) | 38.9 | 26.1 |
| Average Collection period using Average Accounts Receivable during the period (number of days) | 31.6 | |
| le turnover | 11.54 | |

**On an average it takes approximately 32 days for collection of accounts receivable**

**Cycle of credit Sales and its collection happened more than 11 times during the year**

# Inventory Turnover …

| Particulars | 2011 | 2010 |
|---|---|---|
| Cost of goods sold (Rs Million) | 148 | 140 |
| Cost of goods sold per day (Rs Million) | 0.41 | 0.38 |
| Inventory (Rs Million) | 121 | 99 |
| Inventory turnover | 1.22 | 1.41 |
| | 299 | 259 |
| | 1.35 | |
| Inventory Holding Period based on average inventory | 270 | |

**Inventory turnover =**
**Cost of Goods Sold/Average inventory**

**Inventory turns over just about 1.3 times**

**Inventory Holding period is 270 days or 9 months**

# Inventory Conversion Period

- Excess inventory represents wasteful use of the resources
- The need for holding inventory will also be influenced by the availability, time taken for deliveries, seasonal nature of business and a host of other factors
- Inventory turnover tries to assess the velocity with which inventories are converted to revenue
- Conversion period is the time taken for the money invested in raw material to convert into a sale. In Tools & Tools case this is about 9 months on the average
- Management's objective should be to turn over the inventory as fast as possible

# Account Payable Turnover

- Account Payable Turnover analyze the trade liabilities on the balance sheet to see how long it takes a firm to pay its creditors
- Average Payables Turnover (APT) is computed by dividing Cost of Goods Sold by Average Accounts payable

$$Accounts\ Payable\ Turnover = \frac{Cost\ of\ Goods\ Sold}{Average\ Accounts\ Payable}$$

- A high accounts payable turnover means a relatively short time between purchase of goods and services and payment for them i.e. the company pays its bills quickly
- A low turnover would indicate the opposite.

# Operating Cycle and Cash Conversion Period

- Operating Cycle is the duration of the period to generate cash through the investment of cash
- To measure operating cycle we need to know
  - Time taken to convert "cash → inventory → sales → accounts receivable" – Inventory Conversion Period (ICP) does capture this period
  - Time taken to collect accounts receivable "accounts receivable → cash" – Average Collection Period (ACP) does capture this period

$$Operating\ Cycle = Inventory\ Coversion\ Period + Average\ Collection\ Period$$

# Example of Colgate Palmolive

| CPIL | er Year and Cash Conversion Period (in Days) | | |
|---|---|---|---|
| | FY2010 | FY2009 | FY2008 |
| CP) (in | 2 | 2 | 2 |
| iod (ICP) (in da | 48 | 47 | |
| Operating Cycle (in days) | 50 | 50 | |
| Average Payable Period (APP) (in days) | 175 | 179 | |
| Operating Cycle per Year | 7.3 | 7.4 | |
| Cash Conversion Period (CCP) | -124 | -129 | -111 |

**CPIL's Operating Cycle has come down from 53 days in FY2008 to 50 days in FY2010 Due to reduction in the Inventory Holding Period**

**CCP has been negative throughout and has been steady at over 3 month duration**

# Contd….

- Cash Conversion Period (CCP) is calculated by subtracting Average Payable Period from Operating Cycle
- Based on CCP figure generated, one can make the following interpretation
  - In case of  positive figure, CCP conveys the duration, for which a firm will need to tie up cash. The longer the CCP, the greater is the need for liquidity and working capital funding arrangements especially using long term sources
  - In case of negative figure CCP conveys the duration, for which , a firm will have excess cash to invest. The more negative is the CCP, the greater will be the scope for the firm to use these funds elsewhere

# Long-Term Solvency

- Two approaches in evaluating long-term solvency
  - Evaluating the margin of safety available for lenders represented by owners' equity
  - Ability of the firm to earn sufficient surpluses to meet all the long-term commitments
- Debt-Equity Ratios
- The claims against assets are those of creditors and shareholders
- Creditors have a prior claim on the assets of the company and to that extent the owner's equity forms the extent of margin of safety for lenders' claims

# Debt-Equity Ratio

| Particulars of Tools & Tools Limited | 2011 | 2010 |
|---|---|---|
| Total Debt (Rs Million) | 195 | 160 |
| Shareholders Equity (Rs Million) | 135 | 110 |
| Total Debt to Shareholders Equity | 1.44 | 1.45 |

$$\text{Total Debt to Equity Ratio} = \frac{\text{Current Liabilities} + \text{Long Term Liabilities}}{\text{Net Worth}}$$

- For every Rupee of shareholders funds in the company there is Rs 1.4 of lenders claim
- Lower the lender's claim to shareholders claim; lower are the demands on firm's earnings for meeting fixed commitment in terms of interest
- There is lesser leverage in the capital structure of the company

# Long-term Debt to Total Capital

- Measures the relationship long-term debt bears to owners' total investment in the company

$$\text{Long Term Debt to Equity Ratio} = \frac{\text{Long Term Liabilities}}{\text{Net Worth}}$$

| Tools & Tools Ltd. | 2011 | 2010 |
|---|---|---|
| Long-term Debt (Rs Million) | 90 | 80 |
| Shareholders Equity (Rs Million) | 135 | 110 |
| Long-term Debt to Shareholders Equity (%) | 66.67 | 72.73 |

- For every Rupee of owners' funds there is a long-term debt commitment of Rs 0.67 only

# Long-term Debt to Fixed Asset

- Measures the amount of fixed assets available as a backing for long-term debt

$$Long-term\ Debt\ to\ Fixed\ Asset = \frac{Long-term\ Debt}{Net\ Fixed\ Assets}$$

| Tools & Tools Ltd. | 2011 | 2010 |
|---|---|---|
| Long-term Debt (Rs Million) | 90 | 80 |
| Net Fixed Assets (Rs Million) | 94 | 79 |
| Long-term Debt to Net Fixed Assets (%) | 95.8 | 101 |

- The long-term debt is more than covered by net fixed assets of the company during 2011

# Times Interest Earned

- This ratio measures the relationship of earnings before interest and taxes to the fixed interest commitment
- Larger the cover greater is the safety of lender's interest
- Alternately it also shows the risk in case the firm's earnings decrease

$$\text{Times Interest Earned Ratio} = \frac{\text{Earnings Before Interest and Tax}}{\text{Interest Expense}}$$

| Particulars | 2011 | 2010 |
|---|---|---|
| Earnings before interest and taxes | 67 | 60 |
| Interest expense (Rs Million) | 14 | 13 |
| Long-term Debt to Net Fixed Assets (%) | 4.8 | 4.6 |

# Times fixed charges covered

- It is computed usually if the company has other fixed commitments (say lease payments) under non-cancelable lease obligations:

$$\text{Times Fixed Charges Covered} = \frac{\text{Earnings Before Interest and Fixed Charges}}{\text{Interest and Fixed Charges}}$$

- If information is available then one should also be including items like scheduled repayment of the loans (a commitment made by the company) in the fixed charges as above
- Interpretation of this ratio is similar to the interest cover and shows the extent of safety provided by current operating earnings

# Gearing …

- It is the extent to which the company is in a position to increase the earnings to shareholders by having fixed interest bearing borrowing in the capital structure. This could be worked out by disaggregating the earnings on borrowed funds as follows:

| **Tools & Tools Limited** | | **FY2011** |
|---|---|---|
| Profit earned by average borrowed funds (using the earlier computed operating profit margin) | 0.5(195 + 160) × 22.33 | 38.52 |
| Less: interest cost | | 14.0 |
| Gain from borrowed funds | | 24.52 |
| Less tax liability on the gain | 24.52 × 49.06% | 12.03 |
| Net gain from borrowed funds | | 12.49 |
| The net profit realized as a result of gearing | (12.49/177.5)×100 | 7.04% |

# Equity Multiplier

- The equity multiplier will show the extent of enhancement of return to equity holder due to leverage or borrowing

$$Equity\ Multiplier = \frac{Total\ Assets}{Net\ Worth}$$

| Tools & Tools Ltd. | 2011 | 2010 |
|---|---|---|
| Total Debt (Rs Million) | 195 | 160 |
| Shareholders Equity (Rs Million) | 135 | 110 |
| Total Assets | 330 | 270 |
| Equity multiplier (Total Assets/Owners Equity) | 2.44 | 2.45 |
| Return on Total Assets (%) | 8.18 | 8.89 |
| Return on Equity ( ROTA * Equity Multiplier)(%) | **20** | **21.8** |

# Du Pont Analysis

- A combination of margin on sales ratio, efficiency ratio, and long-term solvency ratio is popularly known as the DuPont analysis

$$\text{Return on Equity } (\mathbf{ROE}) = \frac{\text{Net Income}}{\text{Average Net Worth}}$$

- The DuPont break up conveys that one can maximize profitability (ROE) by focusing on playing a margin-based game and/or the asset utilization, and/or the financial leverage game
- The DuPont analysis approach helps in identifying and pinpointing the reasons behind high or low profitability of a firm vis-à-vis its competitors

$$\text{Profitability} = \text{Margin Game} \times \text{Volume Game} \times \text{Financial Leverage Game}$$

# Using Financial Information

- Computation of financial statement ratios does enhance the understanding of the financial statement information
- The rich information could be used for many purposes:
  - Evaluating investments
  - Deciding on credit terms for customers
  - Comparing financial performance of companies, etc.
- Important tool for supporting planning for future
  - Financial analysis of other competing firms can be used for tracking the “time-trend” behavior of the industry
  - It is also a usual practice to identify a peer group and keep monitoring for benchmarking

# Hidden Assumptions Mean Caution … quick contexts …

- All the firms have similar accounting policies and practices (such as the method of depreciation allocation)
- All the firms did not have any significant change in accounting policy (such as a change in the inventory valuation policy)
- The processes of generating the accounting numbers are reliable across the firms
- Financial ratios are primarily used for comparison (instead of absolute values) in order to facilitate adjustments for size. However, while doing this we are also assuming that ratios posses the appropriate statistical properties for handling and summarizing data

# Hidden Assumptions Mean Caution … quick contexts …

- A large number of such assumptions might be violated even while making comparisons of a single firm over many years
- Hence, care must be taken in terms of making any significant conclusions
- One should carefully read the notes of accounts for any significant comments such as changes on accounting policy or any significant provisions or contingent liabilities that may arise
- Importance ought to be given to qualitative factors, such as differing economic and cultural environments, while doing financial analysis for firms across industries, geographies, and time periods

# Thank You