विद्या परं दैवतम्
IIM
VISAKHAPATNAM

FSA – Ratio analysis

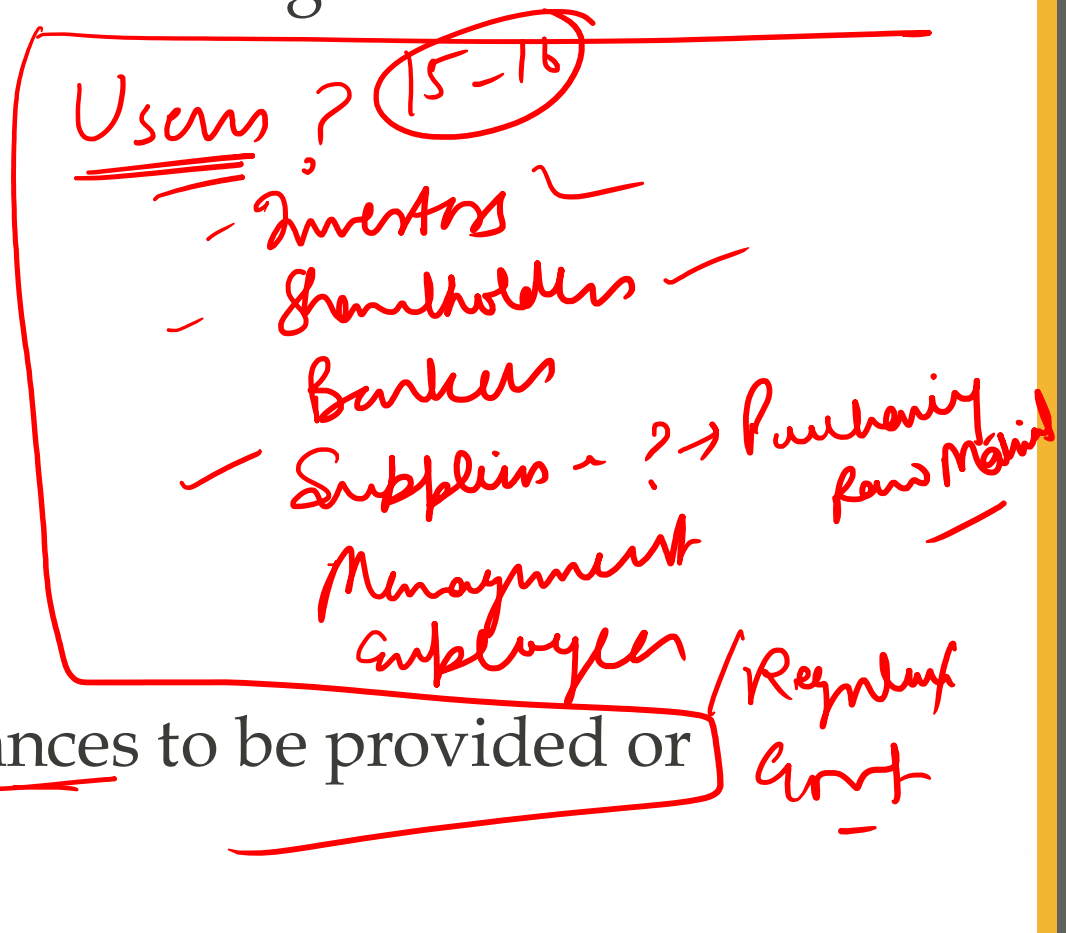
Ratio Analysis

- A ratio is defined as a relationship between two numbers.
- Ratio analysis of financial statement is another tool that helps identify changes in a company's financial situation.
- A single ratio is not sufficient to adequately judge the financial situation of the company. Several ratios must be analyzed together and compared with prior-year ratios, or even with other companies in the same industry. This comparative aspect of ratio analysis is extremely important in financial analysis.
- It is important to note that ratios are parameters and not precise or absolute measurements. Thus, ratios must be interpreted cautiously to avoid erroneous conclusions.

Importance of Ratio Analysis

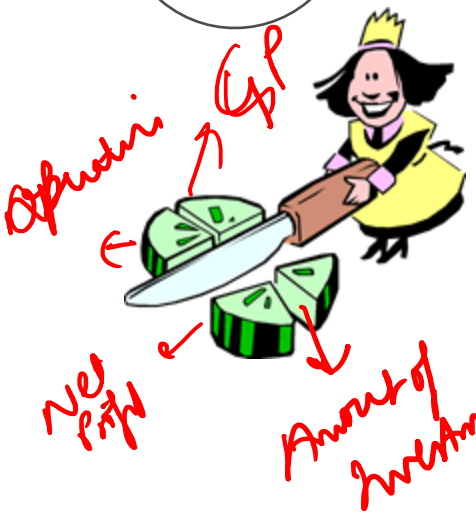
Enables the bankers or lenders to arrive at the following factors:

- Liquidity position
- Profitability
- Solvency
- Financial stability
- Quality of the management
- Safety and security of the loans and advances to be provided or already provided



Financial Ratios

- Liquidity Ratios
- Profitability Ratios
- Turnover/Efficiency Ratios
- Solvency Ratios
- Valuation Ratios



Liquidity Ratios

Liquidity ratio analysis measure how liquid the company's assets are (how easily can the assets be converted into cash) as compared to its current liabilities. The common liquidity ratio are:

1. Current ratio analysis
2. Acid test (or quick asset) ratio analysis
3. Cash Ratio
4. Working Capital

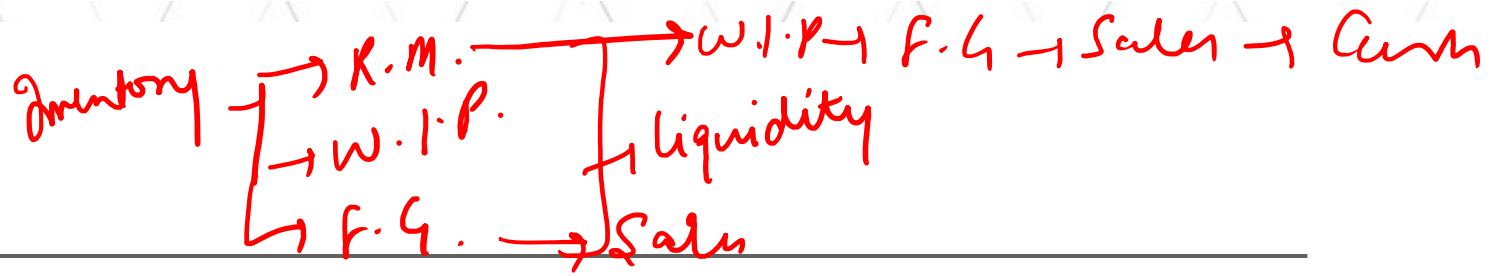
LIQUIDITY RATIOS		
Current Ratio	Current Asset/CurrentLiability	Liquidity Ratios examines firm's ability to pay off its short term obligation or current liability
Quick Ratio	Quick Asset/Current Liability	
Cash Ratio	(Cash+Bank+Cash Equivalents) / Current Liability	
Working Capital	Current Assets-Current Liabilities	

CURRENT RATIO ANALYSIS – COLGATE PALMOLIVE

विद्या परं दैवतम्
IIM
VISAKHAPATNAM

	Dec-07	Dec-08	Dec-09	Dec-10	Dec-11	Dec-12	Dec-13	Dec-14	Dec-15
Assets									
Current Assets									
Cash and cash equivalents	429	555	600	490	878	884	962	1,089	970
Receivables	1,681	1,592	1,626	1,610	1,675	1,668	1,636	1,552	1,427
Inventories	1,171	1,197	1,209	1,222	1,327	1,365	1,425	1,382	1,180
Other current assets	338	366	375	408	522	639	799	840	807
Total current assets	3,619	3,710	3,810	3,730	4,402	4,556	4,822	4,863	4,384
Liabilities and Shareholders' Equity									
Current Liabilities									
Notes and loans payable	156	107	35	48	34	54	13	16	4
Current portion of long-term debt	138	91	326	561	346	250	89	488	298
Accounts payable	1,067	1,061	1,172	1,165	1,244	1,290	1,343	1,231	1,110
Accrued income taxes	263	272	387	272	392	254	239	204	277
Other accruals	1,539	1,421	1,679	1,682	1,700	1,888	1,980	1,[illegible]	1,845
Total current liabilities	3,163	2,952	3,599	3,728	3,716	3,736	4,470	3,946	3,534
Solvency Ratios									
Current ratio	1.14x	1.26x	1.06x	1.00x	1.18x	1.22x	1.08x	1.23x	=K12/K28

Current Ratio= Current Assets / Current Liabilites



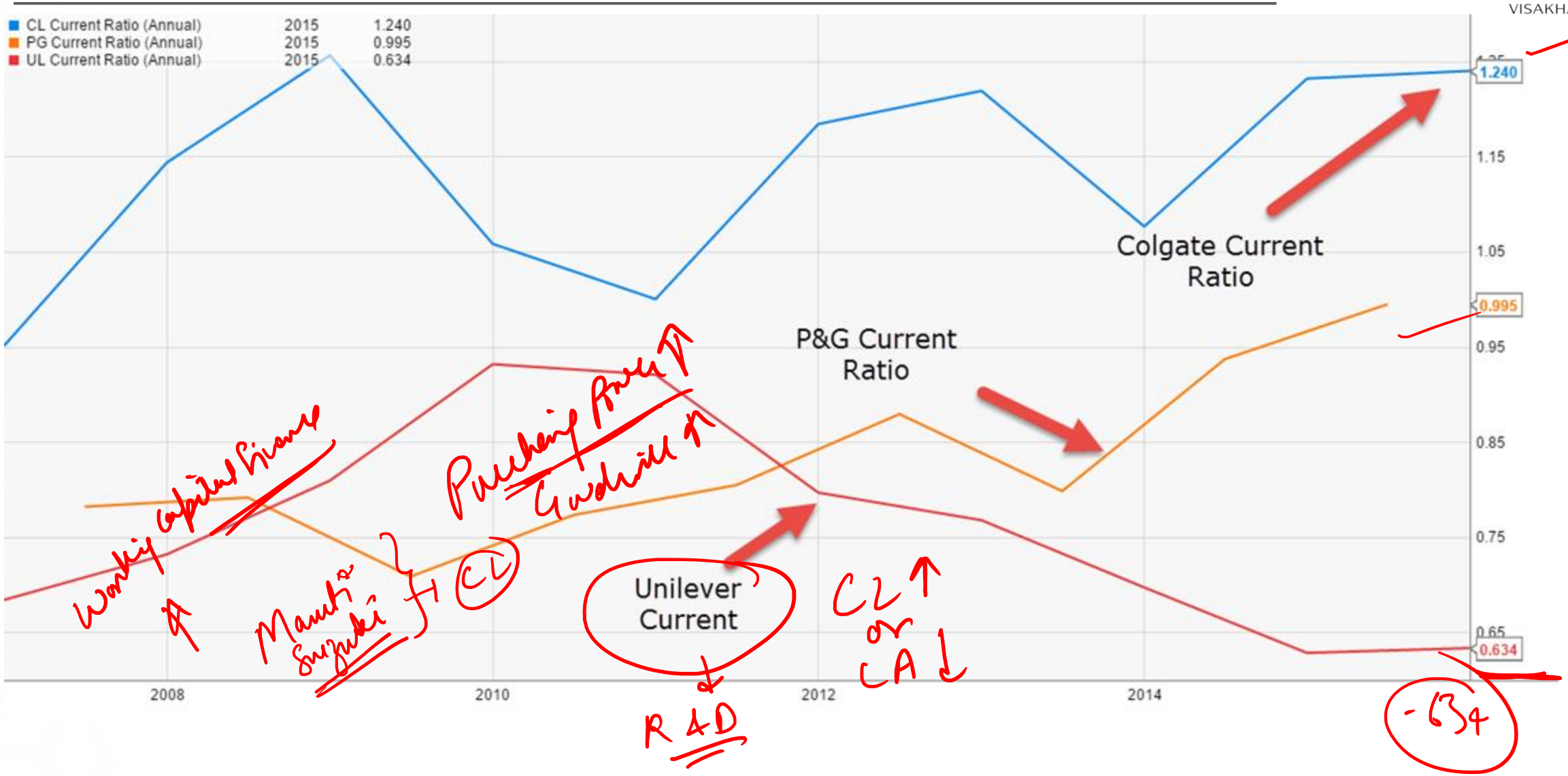
Colgate has maintained a healthy current ratio of greater than 1 in the past 10 years.

Current ratio of Colgate for 2015 was at 1.24x. This implies that current assets of Colgate are more than current liabilities of Colgate.

However, we still need to investigate on the quality and liquidity of Current Assets. We note that around 45% of current assets in 2015 consists of Inventories and Other Current Assets. This may affect the liquidity position of Colgate.

When investigating Colgate's inventory, we note that majority of the Inventory consists of Finished Goods (which is better in liquidity than raw materials supplies and work-in-progress).

Comparison of Current Ratio of Colgate's vs P&G vs Unilever



Competitive Comparison Data

Ticker	Company	Market Cap (M)	Current Ratio
UL	Unilever PLC	$ 155,510.39	0.81
XAMS:UNA	Unilever NV	$ 150,542.24	0.81
XPAR:OR	L'Oreal SA	$ 147,791.56	1.24
EL	The Estee Lauder Companies Inc	$ 66,356.58	1.69
CL	Colgate-Palmolive Co	$ 61,450.42	1.13
BOM:500696	Hindustan Unilever Ltd	$ 56,179.60	1.37
LSE:RB.	Reckitt Benckiser Group PLC	$ 52,845.19	0.59
KMB	Kimberly-Clark Corp	$ 48,168.75	0.81
XTER:HEN3	Henkel AG & Co KGaA	$ 42,512.42	1.02
TSE:4452	Kao Corp	$ 35,398.23	1.86

WHAT IS QUICK RATIO?

- Sometimes current assets may contain huge amounts of inventory, prepaid expenses etc. This may skew the current ratio interpretations as these are not very liquid.

- To address this issue, if we consider the only most liquid assets like Cash and Cash equivalents and Receivables, then it should provide us with a better picture on the coverage of short term obligations.

- This ratio is know as Quick Ratio or the Acid Test.

- The rule of thumb for a healthy acid test index is 1.0.

$$QR = \frac{QA}{CL}$$

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Stock} - \text{Prepaid Expenses}}{\text{Current Liabilities}}$$

Liquidity Ratios

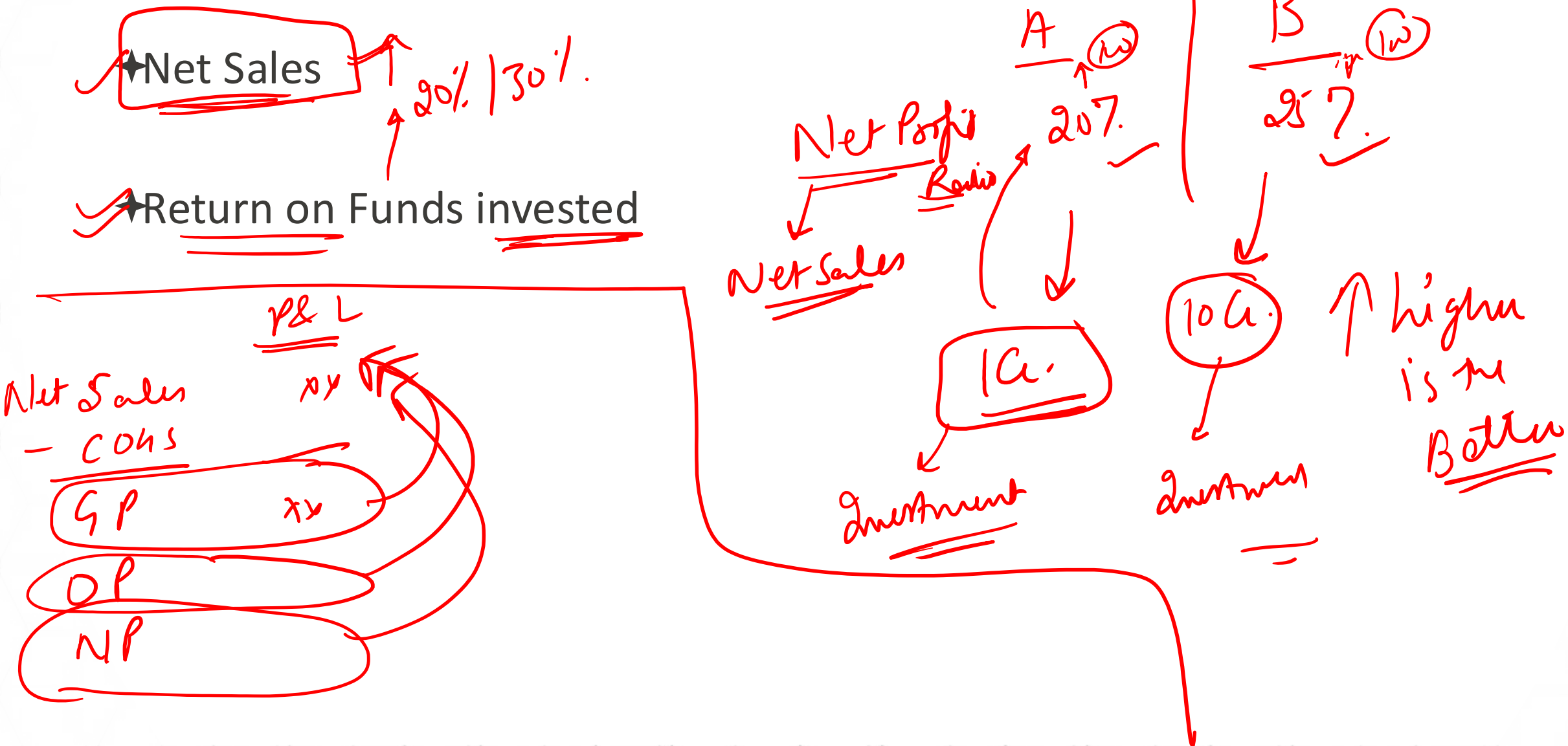
3. Cash Ratio = $\frac{\text{Cash + Cash Equivalents}}{\text{Current liabilities – B.O}}$

4. Working Capital = Current Assets – Current Liabilities

Working Capital (Current Ratio) = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

2. Profitability Ratios

- Net Sales
- Return on Funds invested



1. GROSS PROFIT MARGIN?

Gross profit ratio (GP ratio) is a profitability ratio that shows the relationship between gross profit and total net sales revenue.

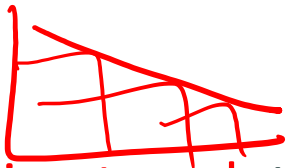
Gross Profit Margin Formula = (Sales – Costs of Goods Sold)/Net Sales

= Gross Profit / Net Sales

- Gross Margin can vary drastically between industries. For example, digital products sold online will have extremely high Gross Margin as compared to a company that sells Laptop.

- Gross margin is extremely useful when we look at the historical trends in the margins.

- If the Gross Margins has increased historically, then it could be either because of price increase or control of direct costs.



- However, if the Gross margins show a declining trend, then it may be because of increased competitiveness and therefore resulting in decreased sales price.

Operating Profit Margin (Operating ability)

Operating profit or Earnings Before Interest and Taxes (EBIT) margin measures the rate of profit on sales after operating expenses. Operating income can be thought of as the "bottom line" from operations.

Operating Profit Margin = operating profit/ Net Sales

or

EBIT Margin = EBIT/Net Sales

	A	B
Oprtn	20%	22%

Net Profit Margin
(Operating & Financial ability)

विद्या परं दैवतम्
IIM
VISAKHAPATNAM

Net Profit Margin Formula = Net Income / Net Sales

Net Profit Margin Ratio indicates the proportion of sales revenue that translates into net profit. For example, a net profit margin of 35% means that every Rs.100 sale contributes Rs. 35 towards the net profits of the business.

Shareholders/owners

Measuring the trend of NP margin over several periods in comparison to industry benchmarks is crucial for identifying performance gaps that could be overcome to improve the profitability of business in the future.

PROFITABILITY MARGIN ANALYSIS

Below is the Top 20 companies in the Technology sector with Market Capitalization of more than $25 billion.

S. no	Symbol	Name	Market Cap ($mn)	Gross Profit Margin (Annual)	Operating Margin (Annual)	Profit Margin (Annual)
1	AAPL	Apple	596,099.3	39.1%	27.8%	21.2%
2	ACN	Accenture	81,77	29.5%	13.8%	11.8%
3	ADBE	Adobe Systems	52,2 .8	84.5%	18.8%	13.1%
4	AMAT	Applied Materials	3 ,458.9	41.7%	19.9%	15.9%
5	ASML	ASML Holding	44,140.3	46.1%	24.9%	22.1%
6	ATVI	Activision Blizzard	27,597.4	66.0%	28.3%	19.1%
7	AVGO	Broadcom	70,228.0	52.1%	23.9%	20.0%
8	BIDU	Baidu	57,046.0	58.6%	17.6%	50.7%
9	CRM	Salesforce.com	51,367.7	75.2%	1.7%	-0.7%
10	CSCO	Cisco Systems	1 044.5	62.9%	25.7%	21.8%
11	CTSH	Cognizant Tech Solns	32,31	40.1%	17.3%	13.1%
12	FB	Facebook	345,690.9	84.0%	34.7%	20.6%
13	GOOG	Alphabet	524,979.3	62.4%	25.8%	21.8%
14	HNHPF	Hon Hai Precision	44,534.9	7.2%	3.7%	3.3%
15	HPE	Hewlett Packard	38,684.5	29.2%	8.3%	6.3%
16	HPQ	HP	25,971.1	18.7%	7.4%	5.2%
17	HTHIF	Hitachi	25,686.1	25.7%	6.3%	1.7%
18	HTHIY	Hitachi	26,410.3	25.7%	6.3%	1.7%
19	IBM	IBM	155,122.4	49.8%	19.2%	16.1%
20	INFY	Infosys	33,210.5	37.4%	25.0%	21.6%
			Average	46.8%	17.8%	15.3%

विद्या परं दैवतम्
IIM
VISAKHAPATNAM

- Facebook and Adobe has the highest gross Margin in this peer group. This is primarily due the fact that they don't sell tangible products (no raw material as they are into software/internet where direct costs are less).

- Though Apple has a Gross Margin which is way low in comparison to Facebook. This is because they have a higher direct cost (including the manufacturing, raw material and direct labor costs).

- However, Apple does really well at the Operating level (~27.8%) and Profit Margin Levels (21.2%)

Coffee Break!

Let's Have a Break, We'll Come Back After 15 Minutes

Return on Fund Invested

- Investment/Capital employed
- Equity
- Assets
- Earnings per Share

Capital Structure

Dividend →

Equity share Cap + Reserves & surplus + Pref. Shareholders + Debt/loan

10L + 5L + 5L + 10L

Equity shareholders' fund = 15L

Total shareholders' fund = 20L

Total Investment = 30 Lakhs

Capital Employed = 30 Lakhs

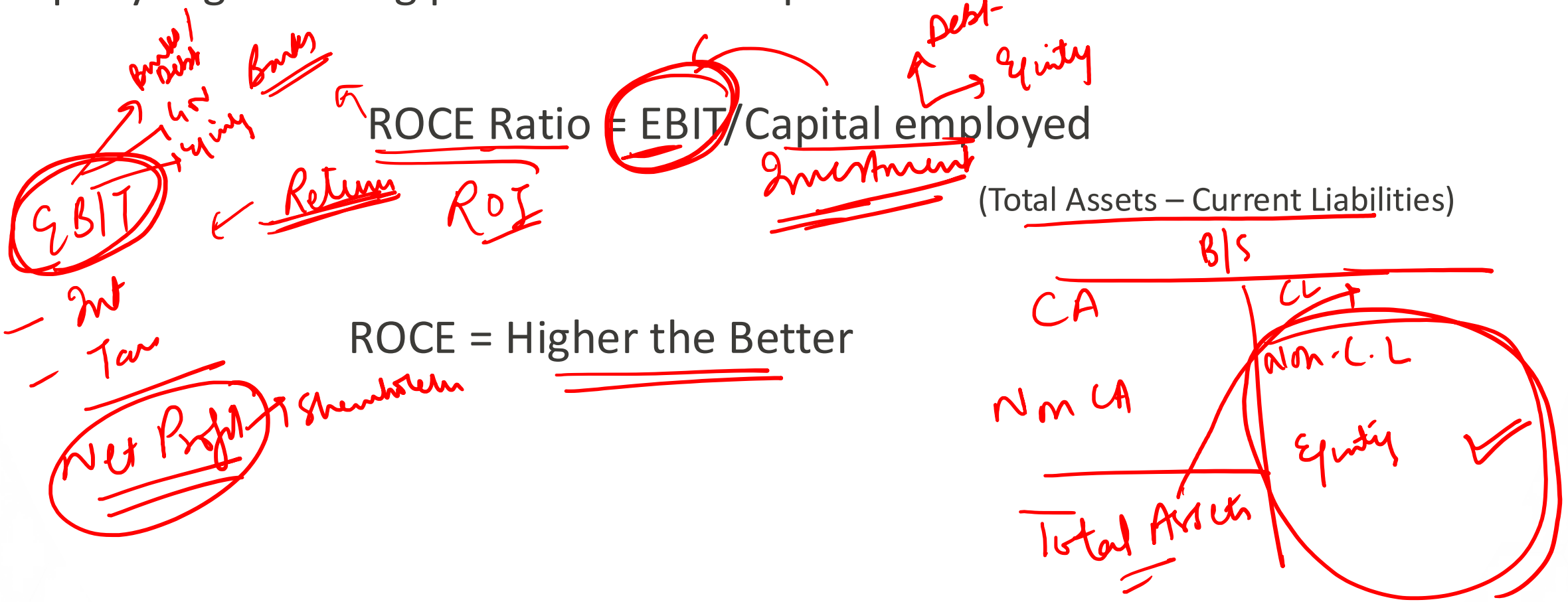
RETURN ON CAPITAL EMPLOYED/INVESTMENT

Company's ability to utilize its capital employed (Debt & Equity) in the business. In other words, the ratio can help to understand how well a company is generating profits from its capital.

ROCE Ratio = EBIT/Capital employed

(Total Assets – Current Liabilities)

ROCE = Higher the Better



- ROCE can be especially useful when comparing the performance of companies in capital-intensive sectors, such as telecoms. This is because unlike other fundamentals such as return on equity (ROE), which only analyzes profitability related to a company's shareholders' equity, ROCE considers debt and equity. This can help neutralize financial performance analysis for companies with significant debt.

RETURN ON CAPITAL EMPLOYED – BEVERAGES – SOFT DRINKS

Below is the list of top companies in Beverages in Soft Drinks Sector along with its Market Capitalization and ROCE

S. No	Name	Market Cap ($ mn)	ROCE
1	Coca-Cola	193,590	14.33%
2	PepsiCo	167,435	18.83%
3	Monster Beverage	29,129	24.54%
4	Dr Pepper Snapple Group	17,143	17.85%
5	National Beverage	4,156	45.17%
6	Embotelladora Andina	3,840	16.38%
7	Cott	1,972	2.48%

RETURN ON CAPITAL EMPLOYED – GLOBAL BANKS

Below is the list of top Global banks with their Market Cap and ROCE

S. No	Name	Market Cap ($ mn)	ROCE
1	JPMorgan Chase	306,181	2.30%
2	Wells Fargo	269,355	2.23%
3	Bank of America	233,173	1.76%
4	Citigroup	175,906	2.02%
5	HSBC Holdings	176,434	0.85%
6	Banco Santander	96,098	2.71%
7	The Toronto-Dominion Bank	90,327	1.56%
8	Mitsubishi UFJ Financial	87,563	0.68%
9	Westpac Banking	77,362	3.41%
10	ING Groep	65,857	4.16%
11	UBS Group	59,426	1.29%
12	Sumitomo Mitsui Financial	53,934	1.19%

ROCE – Energy Sector

Below list contains the Market Cap and ROCE of the top Energy Companies.

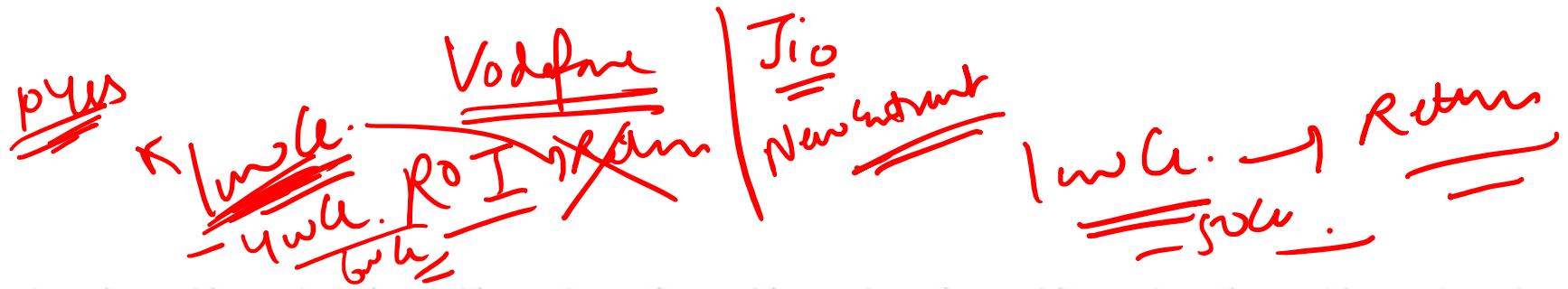
S. No	Name	Market Cap ($ mn)	ROCE
1	ConocoPhillips	56,152	-5.01%
2	EOG Resources	50,245	-4.85%
3	CNOOC	48,880	-0.22%
4	Occidental Petroleum	45,416	-1.99%
5	Canadian Natural	33,711	-1.21%
6	Pioneer Natural Resources	26,878	-5.26%
7	Anadarko Petroleum	25,837	-6.97%
8	Apache	18,185	-5.71%
9	Concho Resources	17,303	-18.24%
10	Devon Energy	16,554	-13.17%
11	Hess	13,826	-12.15%
12	Noble Energy	12,822	-6.89%

LIMITATIONS OF RETURN ON CAPITAL EMPLOYED (ROCE)

There are a couple of disadvantages of ROCE.

First, you can't depend on ROCE alone because you need to calculate other profitability ratios to get the whole picture. Moreover, ROCE is calculated on EBIT and not on Net Income which can turn out to be a great disadvantage.

Second, ROCE seems to favor older companies. Because older companies are able to depreciate their assets (return against book value) more than newer companies, and as a result, for older companies, ROCE becomes better.



Return on Equity

Return on equity (ROE) is the amount of net income returned as a percentage of shareholders' equity. Return on equity (also known as "return on net worth" [RONW]) measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

Return on Equity = Net Income/Total Shareholder's fund

= EAT/Equity and Preference Shareholders' fund

Return on Assets

Return on assets (ROA) is a financial ratio that shows the percentage of profit a company earns in relation to its overall resources.

Return on Assets = Net Income/ Average Total Assets

- In simple terms, we can say that increase in the Return on Total Assets means better use of assets to generate returns for the firm and decrease in the Return on Total Assets means that the firm has a room for improvement – maybe the firm needs to reduce few expenses or to replace few old assets that are eating out the profits of the company.

For industries which are asset intensive won't generate that much income compared to the industries which are not asset intensive. For example, if we take into account an auto industry, to produce auto and as a result of that, profits; the industry first needs to invest a lot in the assets. Thus, in case of auto industry, the ROA won't be that higher.

However, in case of services companies where investments in Assets is minimal, then the ROA will be pretty high.

Earnings Per Share (EPS)

$$Earnings\ per\ Share = \frac{(Net\ Income - Preferred\ Dividend)}{Weighted\ Average\ Number\ of\ Shares\ Outstanding}$$

Every investor invests into a company's stock mainly for two reasons –

Firstly, the investors invest in a company's stock because they expect a handsome dividend from the company.

Secondly, the investors may see a great growth potential of the company in near future. If the company grows, the share price will also rise and that will only help investors in ensuring a great return on their investments.

Hit Technology Inc. has the following information –

The net income for the year end 2017 – $450,000

The preferred dividends paid in 2017 – $30,000

At the beginning of the year 2017, the common shares outstanding were 50,000 shares. In the middle of the year, Hit Technology Inc. issued another 40,000 common shares.

Equity Shares

$50,000 \times \frac{12}{12} = 50,000$

$40,000 \times \frac{6}{12} = 20,000$

$70,000$

$EPS = \frac{450,000 - 30,000}{\text{weighted Avg ?}} \quad (420,000)$

Turnover/Activity Ratio/Efficiency Ratios

- Inventory Turnover Ratio

- Accounts Receivables/ Debtors Turnover Ratio
  - Average collection turnover ratio

- Accounts Payables/Creditors Turnover Ratio
  - Average Payment turnover ratio

Activity/Turnover Ratios

1. **Inventory Turnover Ratio (ITR):** It dictates how fast a company replaces a current batch of inventories and transforms the inventories into sales.

$$\text{Inventory Turnover Ratio Formula} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventories}}$$

Sales → Cost + Profit

Cost

(ITR) Times = 6 times = 2 months

Accounts Receivables Turnover Ratio

- This ratio is a measure that computes that how easily a company can convert its receivables into cash

Collection Period (days)

$= \frac{365}{DTR \mid A/R\ TR}$

Receivables Turnover Ratio Formula $=$ $\frac{\text{Net Credit Sales}}{\text{Average Accounts Receivables}}$

A/R Turn Ratio = Times

DTR / A/R TR — 6 times — $\frac{365}{6} = 61$ days

10 times ↑ — $\frac{365}{10} = 36.5$ days

- A higher Accounts receivables turnover is healthy for a company. It denotes that the time interval between the credit sales and the receipt of money is lower. And that means the firm is quite efficient in collecting the accounts receivables.

- On the other hand, a lower Accounts receivables turnover is not good enough for a company. It indicates that the time interval between the credit sales and the receipt of money is higher. And as a result, there's always a risk of not receiving the due amount.

- When an investor looks at the Accounts receivables turnover, he/she needs to know how efficient the firm is in collecting the due amount. If there's any risk in delaying or not receiving the payment, it may directly affect the cash flow of the company.

AVERAGE COLLECTION PERIOD

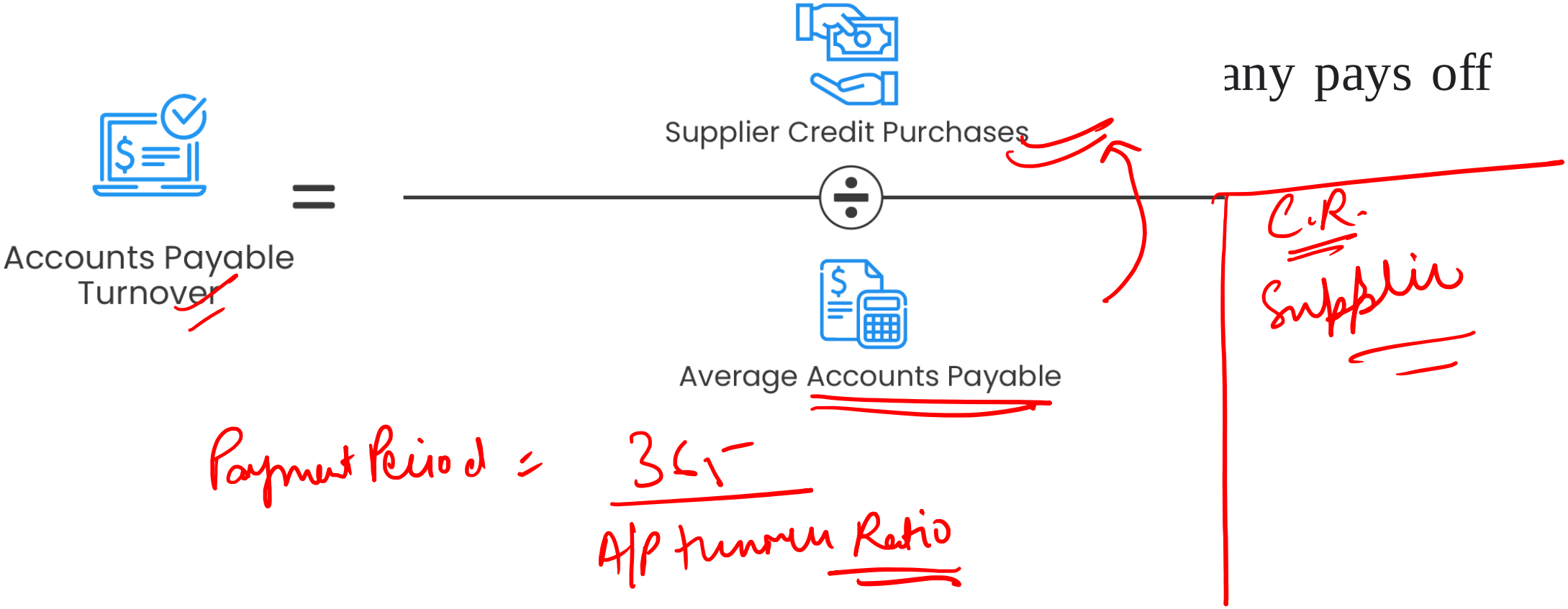
- The collection period is the time between the credit sales are made and the cash is received.

$$\text{Payable Turnover Ratio} = \frac{\text{Credit Purchases}}{\text{Average Accounts Payables}}$$

Accounts Payable Turnover Ratio

- The **accounts payable turnover ratio** is a short-term liquidity measure used to quantify the rate at which a company pays off its suppliers.

- **Acco** any pays off its **ac**



C.R. Supplier

Payment Period = 365 / A/P turnover Ratio

Average Payment period

- The payment period is the time between the credit purchases are made and the cash is paid.

$$\text{Average Payment Period} = \frac{365}{\text{Accounts Payable turnover ratio}}$$