Lecture

IAQS | INSTITUTE OF ACTUARIAL & QUANTITATIVE STUDIES

Class: MSc

Subject : Business Finance

Subject Code:

Chapter: Unit 4 Chapter 1

Chapter Name: Interpretation of accounts

Today's Agenda

1. Types of Ratios

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6. Liquidity ratio
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1 Types of Ratios

- Profitability Ratios
- Liquidity Ratios
- Efficiency Ratios
- Financial Structure Ratios (Share Info and Debt)

1.1 Sample Balance Sheet & Profit and Loss

Profit and Loss Statement (for a time period)	
Sales	100
(-) Cost of Goods Sold	60
Gross Profit □	**40**
(-) SG& A Exps	15
(-) Other Operating Exps	5
Operating Profit (EBIT) □ **BoD, Lenders, Crs**	**20**
(+/-) Finance Exps (Interest)	10
Profit before Tax □ **Govt**	**10**
(-) Tax	3
Profit After Tax attributable to Equity Shareholders □ **Shareholders**	**7**

Balance Sheet (As on Date)	
Assets	
Non-Current Assets (Tangible and Intangible)	
Current Assets (Stock / Inventory)	
Equity	
Share Cap	
Reserves	
Liabilities	
Non-Current Liabilities	
Current Liabilities	

2 Risk Associated with Loan Capital

- The higher the ratio of profits to interest payments, the more scope there is for profits to deteriorate before a company will default on its loan capital interest payments
- Shareholders will normally regard loan capital as a mixed blessing. It is a cheap source of finance for the company because it normally carries a relatively low risk for the lender. But it comes with its set of risks – Market risk and Credit risk.
- There are a number of ratios which can be used to measure the risks borne by the shareholders because of the company's borrowing policy.

2.1 Interest cover

The number of times that the company could pay its interest out of profit before tax and interest. The higher this multiple, the less likely that the company will run into difficulty.

$$\text{Interest cover} = \frac{\text{profit on ordinary activities before interest and taxation}}{\text{annual interest payments due on that issue of loan stock + all prior loan stock}}$$

2.2 Interest Priority Percentages

- Interest priority percentages show the slice of profit on ordinary activities before interest and tax which covers the annual interest payments due on each issue of loan capital
- For each issue of loan capital there will be a lower and upper interest priority percentile.
- % of PBIT being used to service the Interest payment for a particular debt instrument. **Calculated as a range.**
- This statistic is more relevant to lenders who has to decide whether the other loans that the company has taken out will affect the risk of a further investment.

2.2 Example: Interest Coverage Ratio

Non Current Liabilities	Amount (Rs.)	Interest	Int. Coverage Ratio	Interest Priority Percentages	
9% Debentures	150	13.5	12.96x	0% to 7.71%	1st 7.71%
12% Unsecured	100	12	175 / (13.5+12) = 6.86x	7.71% to 14.57%	2nd 6.86%
14% Subordinated Loans	50	7	5.38x	14.57% to 18.58%	3rd 4.01%
Debt and Interest	**300**	**Rs. 32.5**	***Profit = 5.38x of Interest Liability***		**18.58% of your Op Profit to your Debt Holders**
PBIT / EBIT (Op Profit) -- Assumed		**Rs. 175**	*Shareholders will get better returns as the Co is resorting to debt to finance their Ops*		

2.3 Asset Cover

- This amount will usually represent a conservative estimate of the amount of money available to meet the loan stockholders' demands for repayment if the company were to wind up.

$$\frac{\text{total assets less current liabilities less intangible assets}}{\text{total loan capital}}$$

- The assumption is that assets other than intangibles will be converted into cash at their book values, while intangible items are likely to be worthless on winding up. This is, of course, dependent on the nature of the business and its assets. A valuable brand name or patent might well be worth more than all of the company's other assets put together.
- Current liabilities are assumed to be repaid before the debtholders even though they may rank below the loan capital.
- The main limitation of asset cover is that the current value shown in the statements of financial position for assets might not reflect their realisable market value if the company is wound up. The going concern concept means that there is no particular need to carry assets at their market values.

2.4 Asset priority percentages

- Asset priority percentages show the slice of total assets less current liabilities less intangible assets which is available to cover the nominal value of each issue of loan capital.
- For each issue of loan capital there will be a lower and upper percentile.
- The lower percentile is calculated as the inverse of the cover figure for the previous highestranking issue. The upper percentile is calculated as the inverse of the cover figure for the issue of loan stock being considered.

2.4 Example: Asset Coverage Ratio

Non Current Liabilities	Amount (Rs.)	Interest	Asset Coverage Ratio	Asset Priority Percentages	
9% Debentures	***150***	13.5	1000/150 = 6.67x	0 to 14.9%	
12% Unsecured	100	12	1000/(150+100) = 4x	14.9% to 25%	
14% Subordinated Loans	50	7	1000/(150+100+50) = **3.3x**	25% to 30.3%	
Debt and Interest	**300**	**Rs. 32.5**			
PBIT / EBIT (Op Profit) -- Assumed		**Rs. 175**	*Assets are 3.3x than the debt that the Co holds.*		
Assets	**1000**				

3 Gearing Ratios

- Gearing refers to the relative proportions of long-term debt and equity finance in a company. High gearing means that the company has a high level of debt financing.

- Gearing ratios are of two types

1. Asset gearing
2. Income gearing

3.1 Asset Gearing

- Asset gearing is also known as 'capital gearing'.
- There are two commonly used definitions of asset gearing, either:

1. **Debt + *PS* / Equity; OR**
2. **Debt / Capital (Debt + Equity)**

- The term 'debt or borrowings' will usually include all forms of long-term loan capital. The term 'equity' in this definition means the book value of the ordinary shares i.e. 'capital and reserves'. It is normal to deduct the amount of any intangible assets.
- **The treatment of preference shares varies. Usually they are included as part of borrowings rather than as part of equity because they carry a fixed rate of dividend and because their holders are repaid before ordinary shareholders in the event of default.**
- The gearing ratio is important because increasing the proportion of debt in the company's long-term finance tends to accentuate any volatility in the underlying business. This would tend to increase the total risk for shareholders.

3.1 Asset Gearing

- An associated ratio used by financial analysts is the shareholders' equity ratio

$$\frac{\text{shareholders' equity} - \text{intangibles}}{\text{total assets} - \text{current liabilities} - \text{intangibles}}$$

- The higher this ratio, the stronger the financial position of the organisation. The lower the proportion, the more possibility of the organisation becoming over-dependent on outside providers of capital.

3.2 Income Gearing

$$\frac{\text{interest on borrowings}}{\text{profit on ordinary activities before interest and tax}}$$

- 'Interest on borrowings' will usually include all forms of interest payable on debt.
- The treatment of preference shares again varies. When they are included as part of 'interest on debt', they should be grossed up at the company's rate of corporation tax.

$$\frac{\text{interest on borrowings} + \dfrac{\text{preference dividends}}{(1 - \text{corporation tax rate})}}{\text{profit on ordinary activities before interest and tax}}$$

4 Ratios involving share information

1. **Earnings per Share (EPS) = PAT / No of Shares**

- The earnings per share (EPS) ratio is the amount of profit that has been earned for each ordinary share.
- It is customary to calculate this ratio by taking the net profit after taxation and, since it is concerned with the ordinary shareholders' position, it excludes any preference dividend.

Basic earnings per share

- This is calculated by dividing the net profit or loss for the period attributable to ordinary shareholders by the weighted average number of ordinary shares outstanding during the period.

- The net profit or loss attributable to ordinary shareholders is after taxation, minority interests, extraordinary items and preference dividends.

4 Ratios involving share information

Diluted earnings per share

- The basic EPS takes into account only those equity shares in issue that were outstanding during the period.
- However, a company may have entered into obligations that could dilute the EPS in the future. In such cases, the basic EPS should be adjusted for the effects of all dilutive potential ordinary shares.
- The calculation should be made on the assumption that any conversion rights or options had been exercised in full on the first day of the accounting period. (If the date of issue of the securities giving rise to the rights or options is later, a weighted average calculation should be performed.)

4 Ratios involving share information

2. Price earnings ratio

$$\text{price earnings ratio} = \frac{\text{market price of an ordinary share}}{\text{earnings per share}}$$

- The earnings per share figure used in this ratio can be historical or prospective.
- The market price of the share encapsulates everything that the market knows about the company.

- If the price earnings ratio is high then that would suggest that the company is relatively attractive when considered as a source of revenues. This might imply that the market believes:

1. that the company is a relatively low risk investment, or
2. earnings will grow rapidly in the future.

- If the P/E ratio of a share is high relative to other, similar companies (taking the above factors into account) it may mean that the share is overvalued.

4 Ratios involving share information

3. Dividend yield

$$\text{dividend yield} = \frac{\text{dividends per share}}{\text{market price of an ordinary share}}$$

- The dividend yield measures the amount of current income (dividends) an investor receives per unit of investment (the share price).

- A low dividend yield may mean that:

1. investors expect dividends to grow rapidly, or
2. the share is overvalued.

- The dividend yield cannot be interpreted as the expected return on a share because it shows only part of the return for an investor · it ignores any potential capital gain.

4 Ratios involving share information

4. Dividend cover

$$\text{dividend cover} = \frac{\text{earnings per share}}{\text{dividends per share}}$$

- Dividends are paid out of earnings.
- In the long run, a company will not be able to maintain dividends if they are not covered by earnings.
- In contrast, a company with a high level of dividend cover has more scope to increase dividends in the future. So, for a given dividend yield on a share, a high dividend cover figure suggests better value for money than a share with low dividend cover.

4 Ratios involving share information

5. EBITDA

- The statement of profit or loss shows how operating profit reflects revenue less the cost of sales, distribution costs, administrative expenses and other operating income.

- The operating profit plus finance income is sometimes referred to as earnings before interest and taxation (EBIT). The figure does, however, allow for depreciation and amortisation charges.

- Some analysts feel that these are not well measured in statements of profit or loss, since the amounts charged are based on subjective analysis and may therefore be seen as discretionary. They prefer to focus on earnings before interest, taxation, depreciation and amortisation (EBITDA). This is often referred to as 'cashflow from operations'.

4 Ratios involving share information

6. Net asset value per share

$$\frac{\text{ordinary shareholders' equity} - \text{intangible assets}}{\text{number of issued ordinary shares}}$$

- 'Ordinary shareholders' equity' means called up share capital, other reserves including share premium account and revaluation reserve and retained earnings.

- This shows the book value of the tangible assets backing each share, net of all liabilities to non-ordinary shareholders. It is approximately what the ordinary shareholders would receive for each share they hold if the company was immediately wound up (assuming the book values are reliable). The main problem with the ratio is that the book values in historical cost accounts do not necessarily reflect the true value of the assets.

5 Profitability Ratios

- Whether profitable
- Compare with previous years / targets for current year
- Compare with peer group (competitors)
- Understand profitability from each stakeholders perspective – Contributors of Capital · Shareholders and Lenders / Creditors

5.1 Return on capital employed

It is often referred to as the 'primary ratio' or 'return on investment'. It measures the relationship between the amount invested in the business and the returns generated for those investors.

$$\frac{\text{profit before tax and interest}}{\text{share capital + reserves + long-term debt}} \times 100$$

OR

$$\frac{\text{profit before tax}}{\text{share capital + reserves}} \times 100$$

The two main rules to obey are:

(i) if, and only if, an asset is included in the denominator, should the income it gives rise to be included in the numerator.

(ii) if a liability is deducted from the denominator the income paid to it should be deducted from the numerator.

5.1 Return on capital employed

The ratio can be used to indicate how efficiently managers of different firms are using the funds at their disposal. It is therefore useful when comparing companies for investment.

The ROCE can be broken down into two 'secondary' ratios:

(i) asset utilisation ratio:

$$\frac{\text{revenue (turnover)}}{\text{share capital + reserves + long-term debt}}$$

(i) profit margin (or return on sales ratio):

$$\frac{\text{profit before tax and interest}}{\text{revenue (turnover)}}$$

Question

The information provided below was obtained from Hopplo plc's financial statements for the year ended 31 March 2021.

Calculate the following ratios for the two accounting years:
(a) Return on Capital Employed (ROCE)
(b) Gross profit percentage

Hopplo plc

Statement of Profit or Loss
for the year ended 31 March

	2021	2020
	$000	$000
Revenue	22,427	19,502
Cost of sales	(7,177)	(7,411)
Gross profit	15,250	12,091
Distribution costs	(2,467)	(1,365)
Administrative expenses	(1,121)	(1,170)
Operating profit	11,662	9,556
Finance costs	(6,080)	(3,360)
Profit before tax	5,582	6,196
Income tax expense	(1,228)	(1,363)
Profit for the year	4,354	4,833

Question

Hopplo plc

Statement of Financial Position as at 31 March

	2021	2020
	$000	$000
ASSETS		
Non-current assets		
Property, plant and equipment	181,000	146,000
Current Assets		
Inventory	658	680
Trade receivables	1,869	1,625
Cash at bank	43	340
	2,570	2,645
Total assets	183,570	148,645
EQUITY AND LIABILITIES		
Equity		
Called-up share capital	70,000	70,000
Share premium account	20,000	20,000
Retained earnings	15,792	14,706
Total equity	105,792	104,706
Non-current liabilities		
Borrowings	76,000	42,000
Current liabilities		
Trade payables	598	618
Tax	1,180	1,321
	1,778	1,939
Total of equity and liabilities	183,570	148,645

Solution

	2021		2020	
ROCE	11,662/(105,792+76,000)=	6%	9,556/(104,706+42,000)=	7%
	Alternatively:			
	5,582/105,792=	5%	6,196/104,706=	6%
GP%	15,250/22,427 =	68%	12,091/19,502 =	62%

6 Liquidity Ratios

- Liquidity ratios are a measure of the ability of a company to pay off its short-term liabilities.
- Liquidity ratios determine how quickly a company can convert the assets and use them for meeting the dues that arise. The higher the ratio, the easier is the ability to clear the debts and avoid defaulting on payments.

6.1 Current ratio

- This ratio is used to assess whether the company will be able to pay its bills over the next few months.

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

- This ratio is used to assess whether the company will be able to pay its bills over the next few months. It provides a comparison of an estimate of the amount of money due to be received in the short term with an estimate of the amount of money to be paid.
- A low ratio might indicate that a company may have problems paying its creditors. An excessively high ratio may indicate that the management has too much money tied up in unproductive short-term assets.

6.2 Quick ratio

- This is another ratio aimed at looking at short-term liquidity. The quick ratio considers what would happen if all creditor and debtor accounts were settled immediately. It focuses on readily realisable cash.

$$\text{quick ratio} = \frac{\text{current assets} - \text{inventories}}{\text{current liabilities}}$$

- The quick ratio is also known as the acid test, or the liquidity ratio.

Question

The following figures have been extracted from the financial statements of Fratton, a manufacturing company.

Extracts from income statement for the year ended 31 August

	2015 *$000*	2016 *$000*	2017 *$000*
Revenue	800	900	1,000
Purchases	480	513	520
Cost of sales	476	506	515

Question

Extracts from statement of financial position for the year ended 31 August

	2015	2016	2017
	$000	*$000*	*$000*
Current assets			
Inventory	40	47	52
Trade receivables	67	86	105
Cash at Bank	16	8	2
	123	141	159
Current liabilities			
Trade payables	72	90	104
Tax	14	20	28
	86	110	132

Question

The following liquidity ratios have been calculated for the first two sets of figures:

	2015	2016
Current ratio	1.4 :1	1.3 :1
Quick ratio	1.0 :1	0.9 :1
Inventory turnover	31 days	34 days
Trade receivables turnover	31 days	35 days
Trade payables turnover	55 days	64 days

(i) Calculate the liquidity ratios for 2017.

Solution

Current ratio = 159/132 1.2:1

Quick ratio = (159 – 52)/132 0.8:1

Inventory turnover = 52/515*365 37 days

Trade receivables turnover = 105/1,000*365 38 days

Trade payables turnover = 104/520*365 73 days

7 Efficiency ratios

- The efficiency ratios are related to the liquidity ratios. They give an insight into the effectiveness of the company's management of the components of working capital (current assets less current liabilities).
- These ratios tend to be multiplied by 365 and so expressed as a period of time.

7.1 Inventory turnover period

$$\text{Inventory turnover period} = \frac{\text{inventories}}{\text{cost of sales}} \times 365$$

- This is an attempt to assess how much inventory the company holds in relation to the scale of the company's operations. The ratio attempts to show how long inventory is held for on average.
- An inventory turnover period that is less rapid than other companies in the same industry might indicate an inefficiently large inventory holding.

7.2 Trade receivables turnover period

$$\text{trade receivables turnover period} = \frac{\text{trade receivables}}{\text{credit sales}} \times 365$$

- This is a measure of the average length of time taken for trade receivables to settle their balance.
- It is desirable for this period to be as short as possible. It will be better for the company's cashflow if those owing the company money pay as quickly as possible.

7.3 Trade payables turnover period

$$\text{trade payables turnover period} = \frac{\text{trade payables}}{\text{credit purchases}} \times 365$$

- It can be difficult to calculate this ratio in the real world because companies do not disclose their purchases figure.

Question

Jute is an actuarial consultancy that has three departments: Pensions, Insurance and Risk. The following figures have been prepared for the year ended 31 March 2016

Statements of Profit or Loss
For the year ended 31 March 2016

	Pensions £000	*Insurance* £000	*Risk* £000	*TOTAL* £000
Fees	11,000	9,000	3,600	23,600
Salaries	(7,700)	(5,400)	(1,440)	(14,540)
Depreciation – computers	(667)	(467)	(200)	(1,334)
Depreciation – premises	(36)	(36)	(18)	(90)
Other expenses	(104)	(104)	(52)	(260)
Interest	(288)	(288)	(144)	(720)
Profit	2,205	2,705	1,746	6,656

Question

Statements of financial position
As at 31 March 2016

	Pensions £000	*Insurance £000*	*Risk £000*	*TOTAL £000*
Non-current assets				
Office	1,800	1,800	900	4,500
Computers	2,000	1,400	600	4,000
	3,800	3,200	1,500	8,500
Current assets				
Unbilled hours	1,467	1,725	480	3,672
Trade receivables	642	675	150	1,467
Bank	250	175	65	490
	2,359	2,575	695	5,629
Total assets	6,159	5,775	2,195	14,129
Equity				
Share capital	800	800	400	2,000
Retained earnings	3,061	2,863	848	6,772
	3,861	3,663	1,248	8,772
Non-current liabilities				
Mortgage on office	1,600	1,600	800	4,000
Current liabilities				
Accrued salaries	642	450	120	1,212
Other creditors	56	62	27	145
	698	512	147	1,357
Total of equity + liabilities	6,159	5,775	2,195	14,129

Question

All staff time is billed to clients. Members of staff update a daily electronic timesheet. Their employment costs for that day are charged to the client or clients for whom they were working that day. Jute's directors invoice clients for the time charged to their accounts as and when they deem appropriate. The invoices are charged at cost plus a markup to cover other expenses and profit.
Staff time is the only expense which is charged directly to contracts. All other expenses are treated as overheads. The company is based in a large office block which it owns. Pensions and Insurance each occupy 40% of the floor space and Risk occupies 20%. Share capital and long term loans are apportioned to the departments on the basis of these proportions.
Jute's shares are all owned by the company's founders, all of whom are directors. The directors are concerned about the profit statement and statement of financial position for the following reasons:

- Risk's revenue and profit were much smaller than those of the other departments. Jute's directors are concerned that the Risk department could be undermining the profitability of the company as a whole.
- Despite making substantial profits, Jute has very little cash available from which to pay dividends or even to meet short term commitments. The company has not been investing heavily in new fixed assets and has not made any loan repayments.

Question

(i) Compare the profitability of Risk with that of the other departments, explaining whether it is less profitable than the other two, and supporting your answers with relevant ratios.

(i) Calculate:
(a) the average length of time taken for staff costs to be charged to a client.
(b) the average length of time taken by clients to settle their invoices.

(iii) Assess why Jute appears to have run into liquidity problems. [4]

(iv) Suggest how Jute's liquidity problems might be overcome.

Solution

(i) Ratios

	Pensions	Insurance	Risk
ROCE	2205/(3861+1600) = 40%	2705/(3663+1600) = 51%	1746/(1248+800) = 85%
Fees/salaries	11,000/7700 = 143%	9000/5400 = 167%	3600/1440 = 250%
Net profit %	2205/11000 = 20%	2705/9000 = 30%	1746/3600 = 49%

While Risk is the smallest department, it could be argued that it is the most profitable.

The department's return on capital employed is greater than either of the other two.
This means that the department produces more profit for every £ invested than the others.
(The very high ROCEs is not surprising given the nature of this business, which is not really capital intensive.)

Solution

The margin on the Risk department's salaries is also higher. Risk can charge £250 fees for every £100 of salaries. This means that the company can actually make more profit from work done in this department than in either of the other two.

The Risk department also has a higher net profit percentage, which suggests that overheads are not disproportionately high.

If anything, Jute should consider expanding Risk to take advantage of the higher margins and returns which can be obtained from this type of work.

It should also be noted that all three departments are being charged with significant centralised costs that would still be borne even if the departments ceased to operate. That strengthens the business case for retaining all of them.

Solution

(ii) (a) The average time taken to convert salaries into fees is essentially the inventory turnover ratio:
3,672/14,540 × 365 = 92 days

(b) Average time taken for customers to settle bills:
1,467/23,600 × 365 = 23 days

(iii) The company's quick ratio is (5,629 – 3,672)/1,357 = 1.44:1 which appears to be reasonably healthy. It has, however, got a month's salary outstanding and relatively little cash with which to pay it. This means that the company could find it difficult to continue trading.

The main problem is that the company has two steady drains on cash: salaries and loan interest. Income is much more erratic, being dependent on invoicing clients for work done.

Solution

(iv) Invoices are settled very quickly after being presented to customers.
The most important means by which the company could improve its cash flows is by speeding up the invoicing process.
This could mean scheduling work so that projects can be completed so that invoices can be raised.
Contracts with new clients should also be negotiated on the basis that work can be invoiced at regular periods.