

Ex 4-1.1: Accounting Ratios

A ratio is the relationship between two or more variables. Accounting ratios are relationships between two or more items in the statement of accounts of a business. They are used extensively for inter-firm and inter-industry comparisons.

These ratios provide a link to the financial analysis of a company's past, present, and future data. Ratios of the past data provide a major link to the future forecasting of a company's finance. The absolute financial data provided in a company's financial statements does not provide a meaningful understanding of the company's performance unless it is related to some other relevant data.

For example: A \$100,000 net profit for a company in a year does not indicate the company's financial health, unless it is related to the company's investments or any other relevant data.

Accounting ratios can play a significant role in cost accounting, financial accounting, budgetary control, and auditing. These ratios are used extensively for:

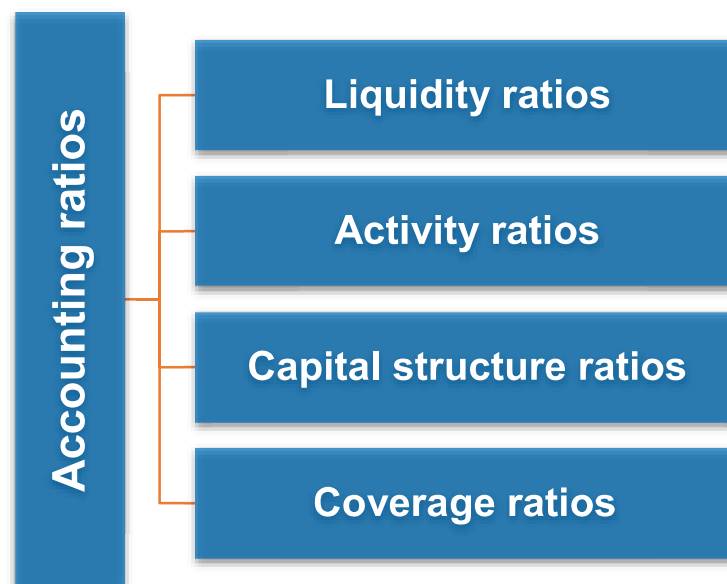
- Planning and budgeting
- As a guide to co-ordinate various functions and divisions. For example, these ratios are required for maintaining a balance between purchases and sales and for estimating working capital needed to materialize budgeted sales into action.

Accounting ratios are used to make decisions regarding buying or selling a company's shares. Investors rely on a number of ratios such as Price Earnings Ratio, Dividend Yield, and Earning Per Share, before considering whether to purchase or sell a company's shares.

Objectives of accounting ratios:

- Are the relationship of two financial variables
- Provide a link to the financial analysis of a company's past, present, and future data
- Have applications in cost accounting, financial accounting, budgetary control, and auditing
- Are used to make decisions regarding buying or selling a company's shares

Accounting ratios can be categorized into various types; the following are the main types:



Ex 4-1.2: Liquidity Ratio Introduction

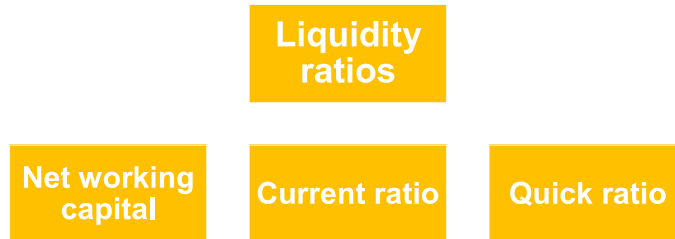
Liquidity ratios are used to determine a company's ability to meet its short-term debt obligations such as immediate loan repayment capability.

Investors often take a close look at liquidity ratios when performing a fundamental analysis on a firm. Since a company that is consistently having trouble meeting its short-term debt is at a higher risk of bankruptcy. Liquidity ratios are a good measure of whether a company will be able to comfortably continue in the business.

The most common liquidity ratios include:

- Net working capital
- Current ratio
- Quick ratio

The bank manager wants to check the liability ratios for Blueberry Café before granting the loan. Let's see how these three liquidity ratios are calculated for the company.



Net Working Capital

Net working capital is more a measure of cash flow than a ratio. It is an indication of the short-term financial health of a business. It is computed as:

Current assets – Current liabilities

Let's calculate the net working capital for Blueberry Café.

Scenario: 01

The bank manager asked Sally to produce the last year's income statement. Sally produced her accounts and the following are the extracts from the accounts:

- Cash and bank balances = \$25,000
- Loans and advances = \$50,000
- Inventory = \$160,000
- Sundry debtors = \$120,000
- Current liabilities and provisions = \$150,000
- Short-term debt = \$90,000
- Current investments = \$10,000
- Long-term investments = \$20,000

Solution:

1. **Begin by calculating current assets.** Current assets are comprised of cash, marketable securities, accounts receivable, and current inventory. Add the total value of each of the above to arrive at the current assets.

$$\text{Current assets} + \text{Current investments} = \$355,000 + \$10,000 = \$365,000$$

2. **Calculate current liabilities.** Current liabilities include accounts payable, accrued expenses, notes payable, and the portion of long-term debt that is classified as current. Add all of these accounts to arrive at the current liabilities.

$$\text{Current liabilities} + \text{Short-term debt} = \$150,000 + \$90,000 = \$240,000$$

3. **Subtract the total of the current liabilities from the current assets.** The result will be the working capital. In other words, current assets minus current liabilities equals working capital.

$$\text{So, the net working capital for Blueberry Caf  = } (\$365,000 - \$240,000) = \$125,000$$

Current Ratio

- It measures the short-term liquidity of a firm, or the short-term debt paying capacity of an enterprise.
- Current ratio is calculated using the following formula:

$$\text{Current Ratio} = \text{Current assets} / \text{Current liabilities}$$

(Current assets are assets which can be converted into cash within a year, such as raw materials, cash and cash equivalents, short-term loans and advances, etc.)

- A current ratio of 2:1 is considered safe. It means that the company has enough cash to meet its obligations.
- However, if the company has blocked huge funds in obsolete inventory or unnecessary assets, then a ratio of 2:1 can also be called unsafe.
- A firm with higher ratio has better liquidity, which means that the firm is better equipped to meet its short-term obligations such as payment for raw materials, short-term loans, etc., resulting in an uninterrupted production line.
- Current ratio is also known as solvency ratio.

For Blueberry Caf , the current ratio can be calculated as:

$$\begin{aligned} \text{Current Ratio} &= (\text{Current assets} + \text{Current investments}) / (\text{Current liabilities} + \text{Short-term debt}) \\ &= (355,000 + 10,000) / (150,000 + 90,000) \\ &= 1.52 \end{aligned}$$

Quick Ratio

- Measures the liquidity position of a firm or the immediate loan repaying ability.
- It is also popularly known as acid **test ratio**.

(The term comes from the way gold miners would test whether their findings were real gold nuggets. Unlike other metals, gold does not corrode in acid; if the nugget didn't dissolve when submerged in acid, it was said to have passed the acid test. Similarly, if a company's financial statements pass the figurative acid test, this indicates its financial integrity.)

- Is calculated as **Quick assets / Quick liabilities**
 - **Quick assets** can be converted into cash very quickly. To obtain quick assets, items such as stock in trade is excluded from current assets since stock in trade cannot be quickly realized from the sources.

- **Quick liabilities** can be deduced by excluding items such as bank overdrafts from the current liabilities. Items such as bank overdrafts are excluded since the payment to banks can be delayed and must be repaid immediately.
- Is ideal if it equals 1:1. If the ratio falls as low as 0.5, that may be a cause for alarm.

For Blueberry Café:

$$\text{Quick assets} = (\text{Current assets} + \text{Current investments}) - \text{Inventory}$$

$$= (\$355,000 + \$10,000) - \$160,000 = \$205,000$$

$$\text{Quick liabilities} = \text{Current liabilities} + \text{Short-term debt}$$

$$= \$150,000 + \$90,000 = \$240,000$$

$$\text{So, Quick ratio} = \$205,000 / \$240,000 = 0.85$$

Exercise: 01

In the balance sheet of A1B2C3, the current assets and liabilities are as shown. Calculate the Net Working Capital, Current Ratio, and Quick Ratio for A1B2C3.

	A	B
1	A1B2C3	
2		
3	Balance Sheet	
4		\$
5	Cash	50,000
6	Accounts receivable	30,000
7	Marketable securities	5,000
8	Inventory	30,000
9	Current assets	115,000
10		
11	Accounts payable	20,000
12	Accrued expense	15,000
13	Notes payable	3,000
14	Long-term debt current portion	7,000
15	Current liabilities	45,000

Solution:

Net Working Capital (Current assets - Current liabilities)	70,000
Current Ratio (Current asset / Current liabilities)	2.56
Quick Ratio [(Current assets - Inventory) / Current liabilities]	1.89

Ex 4-1.3: Activity Ratios

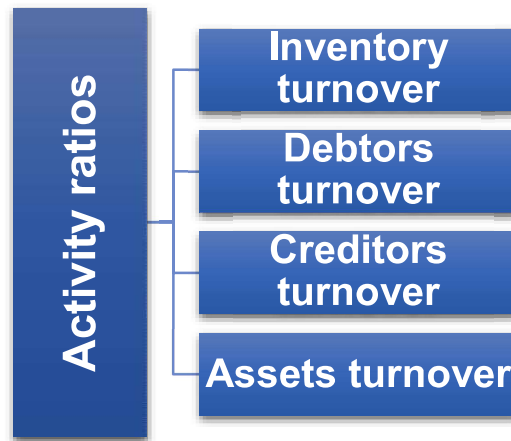
Activity ratios are used to measure the relative efficiency of a firm based on its use of its assets and other resources at its disposal. These ratios are important in determining whether a company's management is doing a good enough job of generating revenues, cash, etc., from its resources.

These ratios are generally calculated on the basis of sales and are expressed as integers rather than as a percentage.

Activity ratios are also popularly known as turnover ratios. The higher the turnover ratio, the better is the profitability and use of capitals and resources by the management of a business. Activity ratios should be calculated separately for each type of asset, such as inventory, raw materials, work in progress, etc.

Activity ratios:

- Help to measure the efficiency in handling assets and other resources of a business
- Are generally calculated based on the company's sales
- Are expressed as integers rather than percentage
- Are also known as turnover ratios



Inventory Turnover

This ratio is used to show how many times a company's inventory is sold and replaced over a period. The days in the period can then be divided by the inventory turnover formula to calculate the days it takes to sell the inventory on hand or "inventory turnover days."

- Inventory turnover is also known as stock velocity.

Inventory Turnover

= Sales / Inventory
= Cost of goods sold / Average inventory
A low turnover ratio = Poor sales
A high turnover ratio = Strong sales or ineffective buying

Inventory turnover ratio = Sales / Inventory

OR

Cost of goods sold / Average inventory

Although the first formula is more frequently used, cost of goods sold (COGS) may be substituted because sales are recorded at market value, while inventory is usually recorded at cost. Also, average inventory may be used instead of the ending inventory level to minimize seasonal factors.

This ratio should be compared against industry averages. A low turnover implies poor sales and, therefore, excess inventory. A high ratio implies either strong sales or ineffective buying. High inventory levels are unhealthy because they represent an investment with a rate of return of zero. It also opens the company up to trouble when prices begin to fall.

Exercise: 02

Net sales = \$1,065,000

Cost of goods sold = \$805,000

Net credit sales = \$450,000

Average inventory = \$149,000

Debtors = \$120,000

Average assets = \$750,000

Creditors = \$100,000

Credit purchase = \$405,000

Solution:

Cost of goods sold / Average inventory
= \$805,000 / \$149,000
= 5.40

Debtors/Receivables Turnover Ratio

It is an accounting measure used to quantify a firm's effectiveness in extending credit as well as collecting debt. The debtors turnover ratio measures how efficiently a firm uses its assets.

Debtors turnover ratio = Net credit sales / Average accounts receivable

Note: Some companies' reports will only show sales. This can affect the ratio depending on the size of cash sales.

For Blueberry Café, the debtors turnover ratio can be calculated as:

Debtors turnover ratio = Net credit sales / Average trade debtors
= \$450,000 / \$120,000
= 3.75 times

The debtors turnover ratio indicates the number of times the debtors are turned over a year. The higher the value of debtors turnover, the more efficient is the management of debtors or the more liquid the debtors are, i.e., the management is efficient in collection of the sales proceeds. Similarly, low debtors turnover ratio implies inefficient management of debtors or less liquid debtors.

Consider the example of a company that allows 30 days credit to its customers. The company's debtors turnover period ($= 365 / \text{Debtors turnover ratio}$) is 45. This is a concern to the management and the collection machinery has to be geared up accordingly.

High debtors turnover ratio = Greater efficiency of the management

Low debtors turnover ratio = Inefficient management of debtors or less liquid debtors

Creditors Turnover Ratio

This ratio is a measure of the average credit period enjoyed by a business.

Creditors turnover can be calculated as:

Credit purchase / Average accounts payable.

(Average accounts payable = Creditors + Bills payable)

The ratio can vary with the firm. However, when the creditors turnover ratio is either too high or too low, it indicates the management's inefficiency.

If the ratio is too high, it means that the creditors are not paid on time, while a very low ratio means that the business is not taking full advantage of the credit period allowed by its creditors.

The creditors turnover ratio for Blueberry Café can be calculated as:

$$\begin{aligned} & \text{Credit purchase / Average creditors} \\ & = \$405,000 / \$100,000 \\ & = 4.05 \text{ times} \end{aligned}$$

Assets Turnover Ratios

The amount of sales generated for every dollar's worth of assets. It is calculated by dividing sales in dollars by assets in dollars. It is a measure of the efficiency of a business in managing and utilizing its assets.

This ratio is more useful for growth companies to check if, in fact, they are growing revenue in proportion to sales.

For example, let's compare two companies within a single industry. Suppose company A made two sales this year and company B made one sale, but expects to have a contract for 10 sales the following year due to spending a large amount in research and development this year on a new product. Of course, company A's expected sales next year is unknown, but it is possible that company B may still be a more profitable investment, assuming it maintains its short-term solvency.

Asset turnover can be calculated as:

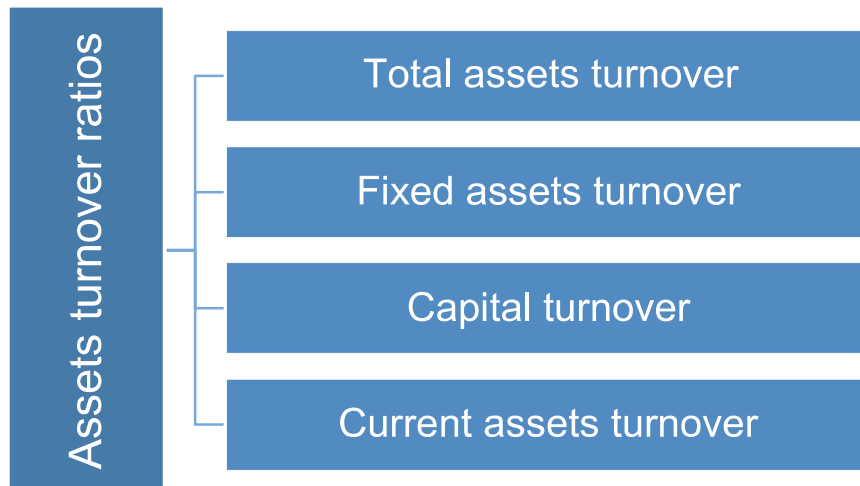
Cost of goods sold / Assets

The asset turnover for Blueberry Café can be calculated as:

= Cost of goods sold / Total assets

= \$805,000 / \$750,000

= 1.07 times



Exerise-02

The data of a X2Y2 Trading Co. is given as shown. Calculate the debtors and creditors turnover ratios for the company.

	A	B
1	X2Y2 Trading Co.	
2		
3	Items	Amount (in \$)
4		
5	Total sales	5,500,000
6	Cash sales	2,500,000
7	Total purchases	3,000,000
8	Cash purchases	1,000,000
9	Accounts receivables - Opening	400,000
10	Accounts receivables - Closing	250,000
11	Notes receivable - Opening	150,000
12	Notes receivable - Closing	200,000
13	Accounts payables - Opening	100,000
14	Accounts payables - Closing	150,000
15	Notes payable - Opening	80,000
16	Notes payable - Closing	100,000

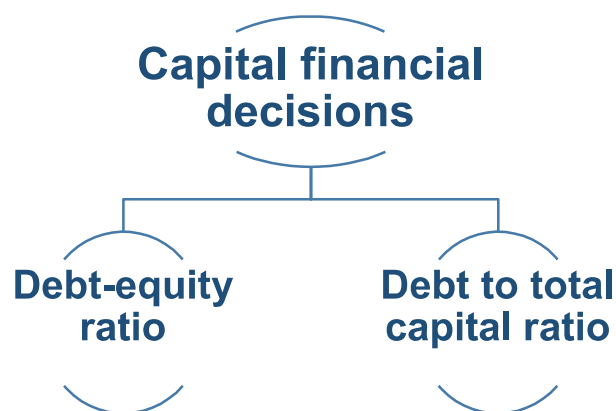
Solution:

Solutions2	
Total sales	5,500,000
Cash sales	2,500,000
Credit sales	3,000,000
Total purchase	3,000,000
Cash purchase	1,000,000
Credit purchase	2,000,000
Average trade receivables	
Accounts receivables - Opening	400,000
Accounts receivables - Closing	250,000
Notes receivable - Opening	150,000
Notes receivable - Closing	200,000
Trade receivables	1,000,000
Average trade receivables	500,000
Accounts payables - Opening	100,000
Accounts payables - Closing	150,000
Notes payable - Opening	80,000
Notes payable - Closing	100,000
Trade payables	430,000
Average trade payables	215,000
Debtors turnover ratio	
Credit sales / Average receivables	6 times
Creditors turnover ratio	
Credit purchase / Average payables	9.3 times

Ex 4-1.4: Capital Structure Ratios

Capital structure analysis is the most useful in financial management as it helps in analyzing the capital structure of a company. It helps the management in taking complex decisions regarding the capital structuring of a company. For example, if the return on investment is comparatively high and the preference dividend rate and debenture interest rate are comparatively low, financing the business by accepting fixed interest bearing securities becomes preferable to the management, as it enables them to distribute the equity dividend at a higher rate.

This method of enhancing the rate of equity dividend is called 'Trading on equity'.



Debt-Equity Ratio

It indicates the relative proportions of debt and equity in financing the assets of a firm.

A measure of a company's financial leverage calculated by dividing its total liabilities by stockholders' equity. It indicates what proportion of equity and debt the company is using to finance its assets.

Debt-equity ratio is calculated as: Total liabilities / Shareholders' equity

Note: Sometimes, the calculation uses only interest-bearing, long-term debt instead of total liabilities.

A high debt-equity ratio generally means that a company has been aggressive in financing its growth with debt. This can result in volatile earnings as a result of the additional interest expense.

The debt-equity ratio also depends on the industry in which the company operates. For example, capital-intensive industries such as auto manufacturing tend to have a debt-equity ratio above 2, while personal computer companies have a debt-equity of under 0.5.

Scenario: 2

Shareholder's equity:

Share Capital Rs. 1,25,000

Reserves Rs. 3,80,000

Total Debt:

Long-term Debt Rs. 1,90,000

Short-term Debt Rs. 90,000

Liabilities:

Current Liabilities & Provisions Rs. 1,50,000

Let's calculate the debt-equity ratio for Blueberry Café:

$$\begin{aligned}\text{Total liabilities} &= \text{Current liabilities and provisions} + \text{Long-term debts} + \text{Short-term debts} \\ &= \$150,000 + \$190,000 + \$90,000 \\ &= \$430,000\end{aligned}$$

$$\begin{aligned}\text{Debt-equity ratio} &= \text{Total liabilities} / \text{Shareholder's equity} \\ &= \$430,000 / \$505,000 \\ &= 0.85\end{aligned}$$

Debt to Total Capital Ratio

The debt to total capital ratio indicates what proportion of the permanent capital of a firm consists of debt.

It is, in fact, a measurement of a company's financial leverage, calculated as the company's debt divided by its total capital. Debt includes all short-term and long-term obligations. Total capital includes the company's debt and shareholders' equity, which includes common stock, preferred stock, minority interest, and net debt.

Debt to total capital ratio = Debt / (Shareholders' equity + Debt)

A debt to total capital ratio of 1:2 is considered safe.

Let's calculate the debt to total capital ratio for Blueberry Café:

Debt / (Shareholder's equity + Debt)

= \$430,000 / (\$505,000 + \$430,000)

= \$430,000 / \$935,000

= 1:2.17

Exercise: 03

Q1:

M1N2 Inc. has applied for a loan. The lender needs to compute the debt-equity ratio as part of the long-term solvency test of the company. The Liabilities and Stockholders' Equity section of the company's balance sheet is shown. Calculate the debt-equity ratio of M1N2 Inc., on behalf of the lender.

M1N2 Inc.	
Liabilities and Stockholders' Equity	
Current liabilities	
Accounts payable	2,900
Accrued payables	450
Short-term notes payable	150
Total current liabilities	3,500
Long-Term Liabilities	
6% Bonds payable	3,750
Total liabilities	7,250
Stockholders' equity	
Preferred stock, \$100, 6%	1,000
Common stock, \$12 par	3,000
Additional paid-in capital	500
Total paid-in capital	4,500
Retained earnings	4,000
Total stockholders' equity	8,500
Total liabilities and stockholders' equity	15,750

Solution:

Current liabilities	
Accounts payable	2,900
Accrued payables	450
Short-term notes payable	150
Total current liabilities	3,500
Long-term liabilities	
6% Bonds payable	3,750
Total liabilities	7,250
Stockholders' equity	
Preferred stock, \$100, 6%	1,000
Common stock, \$12 par	3,000
Additional paid-in capital	500
Total paid-in capital	4,500
Retained earnings	4,000
Total stockholders' equity	8,500
Debt equity ratio (Total liabilities / Stockholders' equity)	0.85

Q2:

For capital-intensive industries such as auto manufacturing, which one of the following ratios is considered as an ideal debt-equity ratio?

1. More than 1
2. Less than 1
3. Less than 2
4. More than 2

Solution: More than 2

Ex 4-1.5: Coverage Ratios

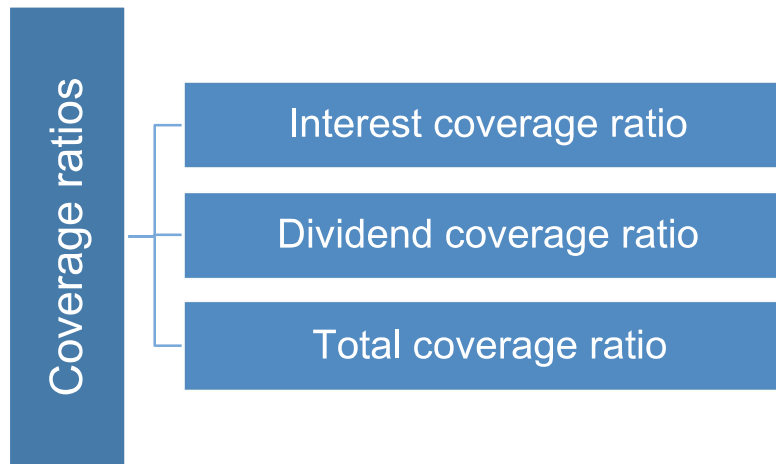
Coverage ratios are a set of measures for a company's ability to meet its financial obligations. In broad terms, the higher the coverage ratio, the better the ability of the enterprise to fulfil its obligations to its lenders.

The trend of coverage ratios over time is also studied by analysts and investors to ascertain the change in a company's financial position. Common coverage ratios include the interest coverage ratio, dividend coverage ratio, and the total coverage ratio.

For example, the interest coverage ratio measures the ability of a company to pay the interest expense on its debt. An energy producer may have an interest coverage ratio of 5, while a utility may have a coverage ratio of 4. This does not automatically imply that the energy producer is more solvent than the utility, since the energy producer may have greater volatility in its earnings and cash flows than the utility, due to fluctuations in oil and gas prices. In addition, if the energy company's peers have an average interest coverage ratio of 7, while the utility's peers have an average coverage ratio of 3, the utility may actually be in better shape than the energy producer, especially in relation to their respective peers.

Coverage ratios Objectives:

- Indicate a company's ability to meet its financial obligations
- Help to ascertain the change in a company's financial position



Interest Coverage Ratio

The interest coverage ratio is used to determine how easily a company can pay its outstanding debts. When planning internally, this is an important ratio. It allows the planners or stakeholders to determine whether the funds that will be needed will earn an appropriate return (either on an external or internal basis).

The lower the ratio, the more the company is burdened by debt expense. When a company's interest coverage ratio is 1.5 or lower, its ability to meet interest expenses may be questionable. An interest coverage ratio below 1 indicates the company is not generating sufficient revenues to satisfy interest expenses.

It also gives you a picture of how far a company's earnings would have to fall before it was in danger of defaulting on its debt and is therefore a good gauge of its short-term health.

Interest coverage ratio = Earnings before interest and taxes (EBIT) / Interest expense

Scenario: 3

EBIT = \$170,000

Interest = \$35,000

Total fixed charges = \$50,000

Solution:

$$\begin{aligned} \text{Interest coverage ratio} &= \text{EBIT} / \text{Interest expense} \\ &= \$170,000 / \$35,000 \\ &= 4.86 \end{aligned}$$

Dividend Coverage Ratio

Dividend coverage ratio indicates the ability of a company to pay on its declared dividends. If the dividend coverage ratio is sufficiently high, it means that the company has enough liquidity to meet its dividend obligations.

Generally speaking, a ratio of 2 or higher is considered safe—in the sense that the company can well afford the dividend. However, any value below 1.5 is risky.

If the ratio is under 1, the company is using its retained earnings from a previous year to pay this year's dividend.

Typically, the period covered is one year. The investor can, of course, compute it for a longer or shorter time period.

For Blueberry Café, the bank manager does not calculate the dividend coverage ratio because the café has been in business only for the last one year and is yet to declare any dividends.

It is calculated as EPS divided by the dividend per share.

So, if a company has earnings per share of \$10.00 and it pays out a dividend of \$2.00, the dividend cover is 5.0.

Note that the dividend cover is the reciprocal of the dividend payout ratio, which is calculated as DPS / EPS .

Total Coverage Ratio

Total coverage ratio indicates the overall ability of a company to pay on liabilities. If the total coverage ratio is sufficiently high, it means that the company has enough liquidity to meet all its obligations.

Total coverage ratio = $EBIT / \text{Total fixed charges}$

Total fixed charges are known in advance and the amount is also fixed for a particular period, such as EMIs on bank loans, statutory payments such as company fees, payments to preference shareholders and debenture holders, etc.

For Blueberry Café, the total coverage ratio can be calculated as:

$$\begin{aligned} & EBIT / \text{Total charges} \\ & = \$170,000 / \$50,000 \\ & = 3.4 \end{aligned}$$

Exercise: 04

John, a shareholder of CDE Plc., wants to know whether he will receive the dividends that the company has declared. Help John find out the dividend cover for CDE Plc. Details related to the company's financial statements for the year ended 31 December 2012 are available as shown.

CDE Plc.	
Information Obtained from the Financial Statements	
	(in million \$)
Net profit	220
Dividend declared on ordinary shares	50
Dividend paid on redeemable preference shares	30
Dividend paid on irredeemable preference shares	20

Solution:

Dividend paid to ordinary shareholders	200
Dividend cover	4

Hint: Dividend paid to ordinary shareholders = Net profit – Dividend paid on irredeemable pref. shares

Summary

In this chapter, you learned that:

- Financial ratios play an important role in analyzing financial data and forming important corporate decisions.
- Liquidity ratios are of the following types:
 - Net working capital
 - Current ratio
 - Quick ratio
- Important turnover or activity ratios are:
 - Inventory turnover
 - Debtors turnover
 - Creditors turnover
 - Assets turnover
- Capital structure ratios are frequently used by the management to take complex capital structuring decisions.
- Capital structure ratios are of the following types:
 - Debt-equity ratio
 - Debt to total capital ratio
- Coverage ratios indicate a company's ability to meet its financial obligations.
- Coverage ratios can be of the following types:
 - Interest coverage ratio
 - Dividend coverage ratio
 - Total coverage ratio