

**BACHELOR OF BUSINESS ADMINISTRATION  
(FINANCIAL INVESTMENT ANALYSIS)**

# **CORPORATE ANALYSIS AND VALUATION**

**DISCIPLINE SPECIFIC ELECTIVE (DSE-2)  
SEMESTER - IV COURSE CREDIT -4**

**(FOR LIMITED CIRCULATION ONLY)**



**DEPARTMENT OF DISTANCE AND CONTINUING EDUCATION  
UNIVERSITY OF DELHI**

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CORPORATE ANALYSIS AND VALUATION

[FOR LIMITED CIRCULATION ONLY]

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# **UNIT - I**





# Analysis of Corporate Financial Statements

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## STRUCTURE

- 1.1** *Learning Objectives*
- 1.2** *Introduction*
- 1.3** *Techniques of Financial Statement Analysis*
- 1.4** *Ratio Analysis*
- 1.5** *DuPont Framework*
- 1.6** *Summary*
- 1.7** *Answers to In-Text Questions*
- 1.8** *Self-Assessment Questions*
- 1.9** *References*
- 1.10** *Suggested Readings*

### 1.1 Learning Objectives

- ◆ Comprehending various analytics techniques of Financial Statements.
- ◆ Understanding relevance of financial statement analysis.
- ◆ Learning Du Pont Framework of Financial Statement Analysis.

### 1.2 Introduction

In corporate business settings, the term “financial statements” refers to a collection of schedules and reports that an accountant creates for a company at the conclusion of a



given period of time. The accounting system's primary purpose is carried out by means of the financial statements of offering condensed data regarding the company's financial matters.

One balance sheet or position statement is included in these statements.

**The Income Statement or Profit and Loss Account:** The balance sheet is one of the key financial statements that lists the types and quantities of a business's assets on the one hand and its obligations and capital on the other. Put another way, a company's financial situation is displayed on its balance sheet at the conclusion of a specific time period, usually a year. In its most basic form, a balance sheet demonstrates how funds have been provided to the company's operations and how they are being used by the business. It can also be said the balance sheet states what it that the business owns and what is it that business owes to others.

**Profit and Loss Account or Income Statement:** A business's primary goal is to turn a profit, and this document—the Profit and Loss Account or Income Statement—shows how well it has done in achieving this goal. Profits are the main consideration for the Board of Directors when assessing a company's management, for shareholders or potential shareholders when deciding which investments to make, and for banks and other creditors when assessing a company's ability to repay debt. This is the reason the income statement, also known as the profit and loss statement, is viewed as the principal document and needs to be carefully examined by all parties involved. It shows the incomes & expenses for a specific period. P&L statement is prepared for a time period, i.e., monthly, quarterly, semi-annually or annually.

Publicly available financial records are the only source of details regarding the operations and dealings of a company that is open to the general public, investors, shareholders, creditors, and governments.

However, even though these statements have been accurately and impartially constructed, they do not by themselves make clear the relevance, significance, or relationship of the information they include. Financial statements must be attentively examined, objectively evaluated, and skillfully interpreted in order to achieve this goal. This makes it possible to anticipate future earnings potential, interest payment capacity, present and long-term debt maturities, and the likelihood of prudent financial and dividend policies.



According to Myers, the “financial statement analysis is largely a study of relationship among the various financial factors in business as disclosed by a single set of statements and a study of the trend of these factors as shown in a series of statements”.

Therefore, the term “analysis of financial statements” refers to the process of handling data in financial statements in a way that makes it possible to fully diagnose the profitability and financial status of the company in question.

Rearranging, comparing, and gauging the importance of operating and financial data are all steps in the financial statement analysis process. This kind of step aids in illuminating the relative importance and impact of data points about the time period and/or between two organizations.

After financial statements have been analyzed, interpretation is an attempt to draw reasonable conclusions about the state and direction of the company based on that study. As a result, it is thought that financial statement analysis and interpretation are complementary.

### 1.3 Techniques of Financial Statement Analysis

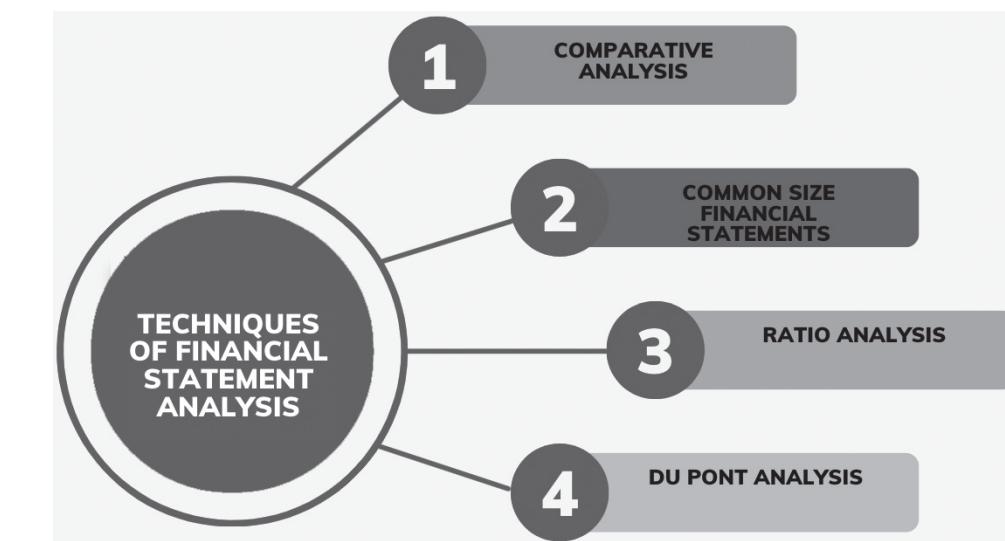
In order to assess whether the company’s financial condition, operating results, and financial progress are adequate or not, financial statements are analyzed through a study of relationships and trends. The links between the financial statement items of a single set of statements and the changes that have occurred in these items as shown in subsequent financial statements are determined or measured using the analytical tools or procedures described below. Any analytical method’s primary goal is to reduce or simplify the facts being examined into words that are easier to comprehend.

**1. Comparative Analysis**, also known as Horizontal Analysis is financial statement analysis used to identify trend in balance sheet and P&L statement’s line items over a number of accounting periods. The many components of the financial position included in comparative financial statements are presented in a time-based manner. The data for all the specified periods is provided in these statements to demonstrate:

- (a) The individual absolute money values of every item for each of the specified periods.



Notes

**Figure 1.1**

- (b) Changes in absolute data with respect to monetary values.  
(c) The percentages increase and decrease for each line item.

The analysis of trends and the direction of movement in the financial position and operating outcomes requires the use of such comparable statements.

Horizontal Analysis Formula =

$$\frac{\text{Amount in Current Year} - \text{Amount in Previous Year}}{\text{Amount in Previous Year}} \times 100$$

A specimen of comparative P&L statement of Bajaj Auto Ltd is given in following table.

Statement of Profit and Loss (Rs. in Crores)	FY 20	FY 21	FY 22	Percentage Change from FY 21 to FY 22	Percentage Change from FY 20 to FY 21
Revenue from contracts with customers	29111.54	27132.9	32135.98	18.44	-6.80
Other operating revenue	807.11	608.18	1008.73	65.86	-24.65

**ANALYSIS OF CORPORATE FINANCIAL STATEMENTS**



Notes

Statement of Profit and Loss (Rs. in Crores)	FY 20	FY 21	FY 22	Percentage Change from FY 21 to FY 22	Percentage Change from FY 20 to FY 21
Particulars	FY 20	FY 21	FY 22		
Revenue from operations	<b>29918.65</b>	<b>27741.08</b>	<b>33144.71</b>	19.48	-7.28
Other income	1524.57	1276.46	1284.14	0.60	-16.27
Total income	<b>31443.22</b>	<b>29017.54</b>	<b>34428.85</b>	18.65	-7.71
Expenses					
Cost of raw materials and components consumed	19484.62	18308.09	22169.88	21.09	-6.04
Purchase of traded goods	1586.67	1521.04	1971.98	29.65	-4.14
Changes in inventories of finished goods, work-in-progress and traded goods	-63.01	-219.48	187.96	-185.64	248.33
Excise duty					
COGS	21008.28	19609.65	24329.82	24.07	-6.66
Employee benefits expense	1390.81	1288.1	1362.79	5.80	-7.38
Finance costs	3.16	6.66	8.66	30.03	110.76
Depreciation and amortisation expense	246.43	259.37	269.76	4.01	5.25
Other expenses	2453.89	1930.92	2215.49	14.74	-21.31
Expenses, included in above items, capitalised	-29.97	-12.27	-13.31	8.48	-59.06
Total expenses	<b>25072.6</b>	<b>23082.43</b>	<b>28173.21</b>	<b>22.05</b>	<b>-7.94</b>

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Statement of Profit and Loss (Rs. in Crores)	FY 20	FY 21	FY 22	Percentage Change from FY 21 to FY 22	Percentage Change from FY 20 to FY 21
Particulars	FY 20	FY 21	FY 22		
Share of profits of associate	321.51	306.32	579.53	89.19	-4.72
Profit before exceptional items and tax	<b>6692.13</b>	<b>6241.43</b>	<b>6835.17</b>	9.51	-6.73
Exceptional items			-816.51		
Profit before tax	<b>6692.13</b>	<b>6241.43</b>	<b>7651.68</b>	22.59	-6.73
Tax expense					
Current tax	1547.26	1348.1	1667.11	23.66	-12.87
Deferred tax	-67.04	36.31	-181.3	-599.31	-154.16
Total tax expense	<b>1480.22</b>	<b>1384.41</b>	<b>1485.81</b>	7.32	-6.47
Profit after tax	5211.91	4857.02	6165.87	26.95	-6.81

**2. Common Size Analysis:** This is also known as Vertical analysis. Vertical analysis is needed to understand the fundamental reasons of changes across time. Financial statements of a common size are those where the reported amounts are expressed as percentages to a common base. In order to do this, the financial statements' elements are expressed as percentages or ratios to the sum of their parts, and a standard basis for comparison is offered. Every percentage indicates how each individual item relates to its corresponding total. It evaluates financial statements by expressing each line item as a percentage of a base amount for that period.

$$\text{Vertical Analysis Formula} = \frac{\text{Amount of Individual Item}}{\text{Amount of Base Item}} \times 100$$

- ◆ Common size balance sheet is prepared by presenting each item in balance sheet as a percentage of total balance sheet size (total asset value or total equity & liability value).



## ANALYSIS OF CORPORATE FINANCIAL STATEMENTS

- ◆ Common size income statement is prepared by presenting each item as a percentage of total revenue.

Notes

A specimen of Common size P&L statement of Bajaj Auto Ltd is given in the following table.

Statement of Profit and Loss (Rs. in Crores)	Particulars	FY 21	FY 22	Vertical	Vertical
				Analysis of FY 22	Analysis of FY 21
Revenue from contracts with customers		27132.9	32135.98		
Other operating revenue		608.18	1008.73		
Revenue from opera- tions		27741.08	33144.71		
Other income		1276.46	1284.14		
Total income		29017.54	34428.85	100	100.00
Expenses					
Cost of raw materials and components consumed		18308.09	22169.88	64.39	63.09
Purchase of traded goods		1521.04	1971.98	5.73	5.24
Changes in invento- ries of finished goods, work-in-progress and traded goods		-219.48	187.96	0.55	-0.76
Excise duty				0.00	0.00
COGS		19609.65	24329.82	70.67	67.58
Employee benefits ex- pense		1288.1	1362.79	3.96	4.44
Finance costs		6.66	8.66	0.03	0.02
Depreciation and amor- tisation expense		259.37	269.76	0.78	0.89
Other expenses		1930.92	2215.49	6.43	6.65



<b>Statement of Profit and Loss (Rs. in Crores)</b>	<b>FY 21</b>	<b>FY 22</b>	<b>Vertical Analysis of FY 22</b>	<b>Vertical Analysis of FY 21</b>
Expenses, included in above items, capitalised	–12.27	–13.31	–0.04	–0.04
Total expenses	23082.43	28173.21	81.83	79.55
Share of profits of as- sociate	306.32	579.53	1.68	1.06
Profit before exception- al items and tax	6241.43	6835.17	19.85	21.51
Exceptional items		–816.51		
Profit before tax	6241.43	7651.68	22.22	21.51
Tax expense				
Current tax	1348.1	1667.11	4.84	4.65
Deferred tax	36.31	–181.3	–0.53	0.13
Total tax expense	1384.41	1485.81	4.32	4.77
Profit after tax	4857.02	6165.87	17.91	16.74

### 3. Ratio Analysis

### 4. DuPont Analysis

## 1.4 Ratio Analysis

Financial ratio analysis involves using various ratios to evaluate a company's financial performance, health, and efficiency. It is widely used technique for assessing company's fundamentals. Broadly it conducts profitability analysis, asset utilisation efficiency analysis, short-term and long-term solvency analysis.

### 1.4.1 Profitability Analysis

The total measure of efficiency is called "profitability." An organization's general efficiency is determined by its input-output analysis.



Notes

Company is said to be more profitable if it is generating higher profits in the given capital resources. So the relevant profits are scaled to book value of equity and debt in the following ratios.

### **Return on Equity**

A financial statistic called return on equity (ROE) gauges how profitable and effectively a business makes money off of the equity held by its owners. Net income is divided by shareholders' equity, and the result is typically reported as a percentage:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Book Value of Equity}} \times 100$$

The numerator, i.e., income should be the amount belonging to equity shareholders after considering interest and tax expenses. In the denominator average of opening and closing balance of book value of equity can be taken for an estimate corresponding to a particular period. To gain a better understanding of a company's performance, it's critical to take into account the industry average and compare ROE numbers over time or with similar businesses.

### **Return on Capital**

Return on capital (ROC) is a financial metric that evaluates a company's efficiency in generating profits from the over all capital invested in the business. It takes into account all sources of capital, including both equity and debt.

$$\text{ROC} = \frac{\text{After Tax Operating Income}}{\text{Book Value of Equity} + \text{Book Value of Debt}} \times 100$$

After Tax Operating Income = EBIT (1-T)

After Tax Operating Income also known as Net Operating Income, are the earnings before considering interest expenses but after considering tax expenses to reflect the earnings belonging to both the equity and debt investors of the company.

Earnings are scaled to total capital which is computed as sum total of book value of equity and debt. Book value is taken in place of market value to reflect the actual amount invested in the operations of company. Average of opening and closing balance of book value of capital can be taken to compute the estimate corresponding to a particular period.



A higher return on invested capital (ROC) signifies improved efficiency and the possibility for larger returns for investors. It also shows that the company is making more money per unit of capital used. Businesses in the same industry can learn more about which ones are making better use of their capital to turn a profit by comparing their return on capital (ROC).

Further a company can be stated to be more profitable if it is generating higher profits given the scale at which it is operating and business it is doing. Profit Margin ratios scale the profits of the period to the revenue generated in the period. Following are some of the margin ratios that can be applied for analysis:

Ratio	Formula
Gross Profit Margin	$\frac{\text{Gross Profit}}{\text{Revenue}} \times 100$
Operating Profit Margin	$\frac{\text{EBIT}}{\text{Revenue}} \times 100$
EBITDA Margin	$\frac{\text{EBITDA}}{\text{Revenue}} \times 100$
Net Profit Margin	$\frac{\text{Net Profit (EAT)}}{\text{Revenue}} \times 100$

**Gross Profit Margin** assesses the ability of company to meet its direct cost of generating revenue. It states the unit economics of the company as higher gross margins mean higher profit per unit and low cost per unit for additional rupee of revenue. Higher gross margins for start-ups reflect the ability of start-up becoming more profitable once they scale up and leverage economies of scale.

**Operating Profit Margin** measures what is left after meeting the operating expenses. Companies with high fixed operating cost should see improvement in operating margins as they scale up.

**EBITDA Margins** is a measure of cash margins of the company as EBITDA i.e. Earning before interest tax depreciation and amortisation is proxy measure of cash earnings of the company. High EBITDA margins also indicate company's ability to service fixed financial obligations.

**Net Income Margin** measures company's ability to meet all its expenses. It reflects the margins earned by equity investors of the company on its revenue.



### 1.4.2 Liquidity Assessment

A company's profitability and financial position are determined by analyzing its financial statements. If a company can fulfill its obligations throughout the long and short terms, it is considered financially sound. As a result, the ratios that must be calculated in order to assess the financial situation are also referred to as solvency ratios, and the ratios that are calculated especially in order to determine short-term solvency are known as liquidity ratios.

A company should be able to pay all of its short-term commitments, such as current liabilities and provisions, in a short amount of time, usually within a year. Short-term funds are generated by current assets, which are those that the company can turn into cash in less than a year. In addition to providing enough money to pay current liabilities as they become due, current assets should also allow the company to continue operating on a daily basis. The ratios used to assess an organization's liquidity status or short-term solvency are covered in more detail below.

**Current Ratio:** It is also referred as the working capital ratio. It is computed by dividing current assets i.e. Assets that can be easily used to meet short-term obligations, by current liabilities and represents the ratio of total current assets to current liabilities.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liability}}$$

Company is required to strike a balance between inadequately liquid and excessively liquid. Company with high current ratio may be excessively invested in current assets and losing out on its potential to make higher returns.

**Quick Ratio:** The Quick Ratio is often referred to as the Acid Test Ratio or the Liquid Ratio. By comparing liquid assets (Assets that can be readily converted into cash without loss of value) to current liabilities, this ratio is computed. Assets that may be quickly and profitably turned into cash are referred to as liquid assets. Liquid assets are all current assets other than inventories and prepayments of expenses. One way to calculate the ratio is:

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory} - \text{Prepaid Expenses}}{\text{Current Liability}}$$



### 1.4.3 Solvency Ratio

Solvency ratios measure the long-term debt servicing capability of the company. It measures credit worthiness of the company and further indicates how well the company will be able to survive in the long run. It assists in assessing the financial risks of the company. Following ratios may be used to analyse the solvency position of a company:

**Debt-Equity Ratio:** The relationship between borrowed money and owners' capital in a company is called the debt-equity ratio, or external-internal equity ratio. The debt-to-equity ratio is used to evaluate the stability of the company's long-term financial policy. Debt refers to long-term loans from financial institutions, such as debentures. Equity refers to the money owned by a shareholder, including preference share capital, equity share capital, reserves minus loss, and imaginary assets such as initial costs. It is computed using the methods listed below:

$$\text{Debt-Equity Ratio} = \frac{\text{Long Term Debt}}{\text{Total Shareholders Funds}} \times 100$$

**Debt-to-Asset Ratio:** It is a financial metric that provides insight into the proportion of a company's assets financed by debt. It measures the percentage of a company's assets that are funded by creditors or lenders.

$$\text{Debt-to-Asset Ratio} = \frac{\text{Total Debt}}{\text{Total Asset}} \times 100$$

Where:

- ◆ Total Debt represents all liabilities owed by the company, including short-term and long-term debt obligations.
- ◆ Total Assets refers to all assets owned by the company, including tangible and intangible assets.

This ratio indicates the extent to which a company relies on debt to finance its assets. A higher debt-to-asset ratio suggests that a larger portion of the company's assets is funded by debt, potentially indicating higher financial risk and leverage but at the same time debt is cheaper source of funding thereby increasing return for owners. Conversely, a lower ratio indicates that a company has a smaller reliance on debt financing and may be considered less risky from a debt perspective. Comparing the debt-to-asset ratio across companies within the same industry or track-



ing changes in this ratio over time for a specific company can provide insights into its financial leverage and risk profile.

**Interest Coverage Ratio:** It is a financial metric used to assess a company's ability to pay its interest expenses on outstanding debt. It measures the company's capacity to cover the interest payments with its earnings before interest and taxes (EBIT).

The formula of Interest coverage ratio is:

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expenses}}$$

Where EBIT is operating profit of the company i.e. Earning Before Interest & Taxes.

A company's ability to pay interest on its debt from operational earnings is shown by its interest coverage ratio. A ratio greater than one means that the business makes enough money from operations to pay for its interest costs. Conversely, a lower percentage would indicate greater financial risk and possible difficulties in meeting interest payments.

#### 1.4.4 Efficiency Ratios

Efficiency ratios also known as Activity ratios are the ratios that are used to assess how well resources are being used. Efficiency Ratio measures the revenue payoff the company gets by reinvesting back into their businesses.

These ratios are also referred to as turnover ratios because they deal with the use of assets to generate income through turnover. As we've already seen, two factors affect the overall profitability of the business: (i) the rate of return on sales; and (ii) the rate of return on capital employed. An undertaking's operations will rotate more quickly and frequently the more efficient they are.

**Total Asset Turnover Ratio (TATR):** This measures the efficiency of utilisation of total assets for generating revenue computes as follows

$$\text{TATR} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

**Fixed Asset Turnover Ratio (FATR):** This measures the efficiency of utilisation of total fixed assets i.e. property, plant & equipment for generating revenue computes as follows:



$$FATR = \frac{\text{Net Sales}}{\text{Average Total Fixed Assets}}$$

One must be cautious while interpreting these ratios as increase (decrease) in FATR may not necessarily mean increased (deteriorated) efficiency. The reason behind increased FATR may be sudden decrease in fixed assets owing to divestment.

**Inventory Turnover Ratio (ITR):** It shows how quickly the company is able to turn around its inventory. It measures as to how many times a business sells and replaces inventory over a set period of time.

$$ITR = \frac{\text{Cost of Good Sold}}{\text{Average Inventory}}$$

ITR is also deployed in computing the number of days the inventory is held by the company.

$$\text{Average Inventory Holding Period} = \frac{360}{\text{Inventory Turnover Ratio}}$$

Longer the holding period as compared to industry, lower the efficiency of company's inventory management.

**Receivable Turnover Ratio (RTR):** The Receivable Turnover Ratio is a financial metric used to measure how efficiently a company manages its credit sales and collects payments from its customers. It's calculated by dividing the net credit sales by the average accounts receivable during a specific period. Here's the formula:

$$RTR = \frac{\text{Net Credit Sales}}{\text{Average Account Receivables}}$$

- ◆ **Net Credit Sales:** This includes sales made on credit terms after deducting returns, allowances, and discounts.
- ◆ **Average Accounts Receivable:** It's the average of the beginning and ending accounts receivable for the period analyzed.

A high receivable turnover ratio generally indicates that a company efficiently collects payments from its customers, while a low ratio may suggest inefficiency in collecting payments or a lenient credit policy.

The receivables turnover ratio is used to compute days receivables outstanding, i.e., average number of days account receivables remain unpaid.



$$\text{Days Sales Outstanding} = \frac{360}{\text{Receivables Turnover Ratio}}$$

### IN-TEXT QUESTIONS

1. When current ratio is 3:1 and if there is an equal decrease in current asset and current liability would result in
  - (a) No change in current assets
  - (b) Increase in current ratio
  - (c) Decrease in current ratio
  - (d) Current ratio will double
2. Which group of ratios assess efficiency with which assets are utilised.
 

(a) Liquidity Ratios	(b) Debt Ratio
(c) Turnover Ratios	(d) Profitability Ratios
3. Which group of ratios measures a firm's ability to meet long-term obligations?
 

(a) Liquidity Ratios	(b) Solvency Ratio
(c) Turnover Ratios	(d) Profitability Ratios
4. ABC's and XYZ's debt-to-total assets ratio is 0.6. What is its debt-to-equity ratio?
 

(a) 0.2	(b) 1.5	(c) 0.67	(d) 0.33
---------	---------	----------	----------
5. ROE may be determined by multiplying
 

(a) Equity multiplier, Net margin and inventory turnover ratio	(b) Average total asset turnover, Net margin and inventory turnover ratio
(c) Equity multiplier, gross margin and inventory turnover ratio	(d) Net Profit Margin, Total Asset turnover ratio and equity multiplier

### 1.5 DuPont Framework

DuPont analysis, named after the DuPont Corporation, is a method of breaking down and analyzing a company's return on equity (ROE) by



examining its profitability, efficiency, and leverage. DuPont analysis is a framework for analyzing fundamental performance originally popularized by the DuPont Corporation, now widely used to compare the operational efficiency of two similar firms. The formula was developed in 1914 by F. Donaldson Brown, an employee of the DuPont Corporation.

DuPont analysis is a useful technique used to decompose the different drivers of return on equity.

An investor can use analysis tools like this to compare the operational efficiency of two similar firms.

It dissects the ROE into three components:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Book Value of Equity}} \times 100$$

$$\text{ROE} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Shareholder's Equity}}$$

$$\text{ROE} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average Total Assets}} \times \frac{\text{Average Total Assets}}{\text{Book Value of Equity}}$$

$\text{ROE} = \text{Net Profit Margin} \times \text{Asset Turnover Ratio} \times \text{Financial Leverage}$

**Net Profit Margin:** This ratio measures how well a company controls its expenses relative to its sales. It's calculated by dividing net income by revenue. A higher net profit margin indicates better profitability.

**Asset Turnover Ratio:** This ratio reveals how effectively a company utilizes its assets to generate revenue. It's computed by dividing revenue by average total assets. A higher asset turnover ratio suggests better asset utilization.

**Financial Leverage:** It assesses the impact of debt and financial leverage on the return on equity. It's determined by dividing average total assets by average shareholders' equity. Higher financial leverage magnifies ROE but also increases the risk due to increased debt.

Breaking down ROE into these components helps identify which aspect(s) of the business are contributing most significantly to the overall return. For instance:

A company might have a high ROE due to an excellent net profit margin but a lower asset turnover.

Another company might have a high ROE because of high leverage, even if the profitability and asset turnover are moderate.



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This analysis is beneficial for understanding the key drivers behind a company's financial performance and can guide decision-making by highlighting areas where improvements or adjustments might be needed to enhance overall return on equity.

It's important to use this analysis in conjunction with other financial metrics and industry benchmarks to get a comprehensive view of a company's performance and financial health.

**For example:** Following information has been given for 2 competitors:

	ZZ Ltd		BB Ltd	
	Year 1	Year 2	Year 1	Year 2
Net Income	1000	1200	2100	2100
Revenue	10000	10000	17500	17500
Net Profit Margin	0.1	0.12	0.12	0.12
Average Total assets	5000	4800	8750	8750
Asset Turnover Ratio	2	2.08	2	2
Book Value of Equity	2000	2000	5000	3500
Financial Leverage	2.5	2.4	1.75	2.5
ROE	50%	60%	42%	60%

If Return on equity is studied in isolation it may be perceived that BB Ltd has improved its return at a higher but on decomposing ROE as per DuPont it can be observed that BB Ltd return growth is due to increase in financial leverage while for ZZ Ltd the growth is owing to higher income margins.

## 1.6 Summary

Financial statement analysis involves examining a company's financial statements to evaluate its financial performance, stability, and potential for future growth. Analysis includes profitability ratios to assess gross profit margin, operating profit margin, net profit margin, and earnings per share (EPS).

It indicates trends by analysing changes in revenue, expenses, and margins over time. It further includes evaluating the company's assets (current and fixed) and liabilities (current and long-term) by liquidity & solvency ratios like the current ratio and quick ratio, indicating short-term financial health. Efficiency Ratios are used to examine operational efficiency. Financial statement analysis also helps in benchmarking by comparing the company's financial metrics with industry averages or competitors'



performance. In the next chapter qualitative analysis of company by analysing other statement of Company's Annual Reports is elucidated. Financial statement analysis is vital for investors, creditors, and internal stakeholders to make informed decisions about investing, lending, or managing a company. It provides insights into a company's financial health, operational efficiency, and potential for future growth or risks.

### 1.7 Answers to In-Text Questions

- |                                  |  |
|----------------------------------|--|
| 1. (b) Increase in current ratio | 4. (b) 1.5   |
| 2. (c) Turnover Ratios           | 5. (d) Net Profit Margin, Total Asset turnover ratio and equity multiplier |
| 3. (b) Solvency ratio            |  |

### 1.8 Self-Assessment Questions

1. What will be the net profit margin if sales is Rs. 30 lakh, EBIT is Rs 5 lakh, interest is Rs. 100,000 and tax rate 10%?
2. Fetch financial statements of any public company and assess the financial health of the company by quantitative analysis.

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# Qualitative Analysis of Corporate Financial Statements

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## STRUCTURE

- 2.1 Learning Objectives
- 2.2 Introduction
- 2.3 Analysing the Chairman's Statement
- 2.4 Director's Report
- 2.5 Management Discussion & Analysis
- 2.6 Report on Corporate Governance
- 2.7 Auditors' Report
- 2.8 Summary
- 2.9 Answers to In-Text Questions
- 2.10 Self-Assessment Questions
- 2.11 References
- 2.12 Suggested Readings

### 2.1 Learning Objectives

- ◆ Recognize the importance of qualitative analysis in financial statement evaluation and understand its limitations compared to quantitative metrics.
- ◆ Navigate and interpret key reports such as the Chairman's Statement, Directors' Report, MD&A, Report on Corporate Governance, and Auditor's Report.



- ◆ Analyze the Chairman's Statement, understanding its purpose, significance, and key elements through practical case studies.
- ◆ Evaluate the Directors' Report by identifying critical components like financial performance, operational highlights, risk management, and CSR using qualitative analysis techniques.
- ◆ Interpret the MD&A, recognizing its role in providing context and insights into financial performance, strategic initiatives, and risk factors through case studies.
- ◆ Evaluate Corporate Governance effectiveness based on criteria like ethical practices, transparency, board independence, and risk management using case studies.
- ◆ Analyze the Auditor's Report, understanding its role, key elements, and significance in providing an independent assessment through practical case studies.
- ◆ Synthesize qualitative analysis findings to draw comprehensive conclusions about a company's financial health, emphasizing the interconnectedness of qualitative factors.

## 2.2 Introduction

In the intricate landscape of financial analysis, a company's true health goes beyond the confines of mere numbers. While quantitative metrics provide essential insights, a nuanced evaluation of qualitative factors is equally imperative. This chapter embarks on a transformative journey into the realm of qualitative analysis of corporate financial statements, where we unravel the intricate threads woven within financial data—threads that signify managerial decisions, ethical considerations, and strategic foresight.

Financial statements, often perceived as repositories of numerical data, are better understood as intricate tapestries reflecting a company's narrative. Through qualitative analysis, we aim to unveil the subtle, yet critical, aspects that contribute to the overall financial soundness of a company.

### 2.1 Unveiling the Significance

Why does qualitative analysis matter? Beyond the bottom line figures lies a narrative that encapsulates a company's vision, adaptability to



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change, and adherence to ethical standards. The qualitative dimensions of financial statements offer a holistic perspective, enabling stakeholders to make informed decisions and investors to navigate the complexities of the market with prudence.

In this section, we will delve into the significance of qualitative analysis, exploring how it enhances our understanding of a company's values, culture, and strategic direction.

## 2.2 Navigating Key Reports

This chapter serves as a guide through the examination of various reports integral to qualitative analysis. From the Chairman's Statement, a document outlining the company's strategic vision, to the Auditor's Report, providing an independent assessment, each report contributes a unique facet to the qualitative tapestry.

We will explore the distinctive role of each report, emphasizing how they collectively shape the qualitative narrative of a company's financial performance.

## 2.3 Beyond the Numbers

Understanding the intricacies of corporate governance, management discussions, and the contextualization of financial data is paramount. In this section, we delve into the qualitative factors that surround financial statements, shedding light on the transparency, ethics, and strategic considerations that influence a company's financial trajectory.

This exploration will illuminate the interconnectedness of these factors and their impact on shaping the qualitative landscape of financial statements.

## 2.4 Empowering Decision-Making

Armed with the insights gained from qualitative analysis, stakeholders can make well-informed decisions that extend beyond the immediate fiscal snapshot. By the end of this chapter, readers will possess the tools to discern the qualitative nuances within financial statements, equipping them to navigate the complexities of corporate finance with astuteness.

Join us on this exploration of the qualitative dimensions that transform financial statements from mere numbers into a comprehensive narrative of a company's journey, choices, and resilience. The chapters that follow will delve deeper into each aspect, unraveling the rich tapestry of qualitative analysis in corporate financial evaluation.



## 2.3 Analysing the Chairman's Statement

The Chairman's Statement within a company's annual report is a pivotal document that transcends the confines of financial figures, offering a narrative that shapes the perception of stakeholders. In this section, we will delve into the purpose, key elements, and explore a case study to understand how a Chairman's Statement can be dissected for valuable insights.

### 2.3.1 Purpose of the Chairman's Statement

The Chairman's Statement serves as the voice of the company's leadership, providing a strategic overview and contextualizing the financial performance. It acts as a bridge between the quantitative data presented in the financial statements and the qualitative aspects that define the company's journey.

### 2.3.2 Explanation of the Role and Significance

The Chairman's Statement is not merely a formality; it is a communication tool that allows the leadership to convey the company's vision, mission, and its commitment to stakeholders. By understanding the broader context, investors and analysts can gain valuable insights into the motivations driving key decisions and the overall health of the organization.

### 2.3.3 Key Elements to Examine

To conduct a thorough analysis of the Chairman's Statement, one must scrutinize specific elements that unveil crucial information about the company's trajectory. The following are key areas that warrant attention:

#### 2.3.3.1 Discussion on Strategic Initiatives

The Chairman's Statement often outlines the strategic initiatives undertaken by the company during the reporting period. Analyzing these initiatives provides a glimpse into the proactive measures taken to ensure growth, competitiveness, and sustainability.



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### 2.3.3.2 *Exploration of Challenges*

A candid acknowledgment of challenges within the Chairman's Statement is indicative of transparency. Understanding the obstacles faced by the company offers valuable context to the financial performance, allowing stakeholders to assess the management's ability to navigate adversity.

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### 2.3.3.3 *Insight into Future Plans*

The Chairman's Statement serves as a platform to articulate the company's future plans and aspirations. Whether it's expansion, innovation, or a shift in business focus, these insights provide stakeholders with a forward-looking perspective.

#### CASE STUDY

To illustrate the practical application of Chairman's Statement analysis, let's consider a hypothetical case study:

##### *Case Study: XYZ Corporation*

In the Chairman's Statement of XYZ Corporation, the Chairman, Mr. John Doe, highlights the company's commitment to sustainability. He discusses the implementation of eco-friendly practices in manufacturing and supply chain processes. By analyzing this, investors can infer the company's responsiveness to evolving market expectations and its proactive stance in mitigating environmental risks.

This case study exemplifies how a Chairman's Statement can be a treasure trove of information, offering a nuanced understanding of a company's ethos, decision-making, and strategic positioning.

## 2.4 Director's Report

The Directors' Report is a cornerstone document within a company's annual report, offering a detailed narrative that goes beyond financial figures. In this section, we will explore the purpose of the Directors' Report, identify critical components for analysis, and optionally, delve into a case study to demonstrate the application of qualitative analysis techniques.



### 2.4.1 *Understanding the Directors' Report*

The Directors' Report is a comprehensive document that provides an overview of the company's performance and operations. To grasp its significance, it's essential to understand the content and purpose of this report in the context of corporate financial analysis.

### 2.4.2 *Explanation of the Content and Purpose*

The Directors' Report serves as a channel through which the board of directors communicates with shareholders and stakeholders. Its primary objectives include presenting a transparent account of the company's activities, outlining its financial health, and providing insights into strategic decisions.

This report is not limited to financial data but extends to encompass operational highlights, corporate social responsibility (CSR) initiatives, and risk management strategies. Analyzing the Directors' Report allows stakeholders to gain a holistic understanding of the company's performance, strategies, and commitment to responsible business practices.

### 2.4.3 *Critical Components*

To conduct a comprehensive qualitative analysis of the Directors' Report, it is crucial to identify and discuss key components that offer valuable insights into the company's financial standing and management decisions.

### 2.4.4 *Identification and Discussion of Critical Components*

- ◆ **Financial Performance:** Evaluate the financial performance section, focusing on revenue, profitability, and any significant financial events during the reporting period.
- ◆ **Operational Highlights:** Explore the operational section for insights into key achievements, challenges faced, and the company's strategic focus.
- ◆ **Risk Management:** Scrutinize the risk management segment to understand how the company identifies, assesses, and mitigates risks. This provides valuable context for assessing the company's resilience.



- ◆ **Corporate Social Responsibility (CSR):** Examine the CSR initiatives to gauge the company's commitment to ethical business practices, sustainability, and community engagement.

### CASE STUDY

For a practical application of qualitative analysis techniques, consider the following hypothetical case study:

#### *Case Study: ABC Corporation*

In the Directors' Report of ABC Corporation, the board emphasizes the successful implementation of a risk mitigation strategy following a supply chain disruption. This not only demonstrates effective risk management but also showcases the board's strategic foresight and adaptability.

By delving into this case study, analysts and investors can apply qualitative analysis techniques to assess how the company's leadership navigates challenges, aligns with strategic goals, and upholds ethical considerations.

## 2.5 Management Discussion & Analysis

The Management Discussion and Analysis (MD&A) section of a company's annual report serves as a valuable narrative that provides context, interpretation, and insights into the financial performance. In this section, we will explore the role of MD&A, identify key areas of focus within this report, and optionally, delve into a case study to illustrate the application of qualitative analysis techniques.

### 2.5.1 Role of MD&A

Understanding the role of MD&A is paramount to unraveling the layers of information embedded within a company's financial statements. It offers a unique perspective into the thinking of the company's management and provides essential context for interpreting the financial data presented in the report.



### 2.5.2 *Insight into the Management Discussion and Analysis*

The MD&A is more than a mere commentary on the financials; it serves as a bridge between the quantitative data and the qualitative aspects that shape a company's financial health. It offers insights into the management's viewpoint, explaining the rationale behind financial performance, strategic decisions, and potential risks and opportunities.

### 2.5.3 *Key Areas of Focus*

To conduct a thorough qualitative analysis of MD&A, it is essential to identify and understand the key areas covered in this report that contribute to financial analysis.

### 2.5.4 *Identification of Key Areas*

- ◆ **Financial Outlook:** Delve into the management's perspective on the company's financial prospects. Assess how well the management understands the market conditions and its impact on future financial performance.
- ◆ **Operational Highlights:** Identify key operational achievements and challenges discussed in the MD&A. Understanding the operational context provides insights into the company's ability to execute its strategic plans.
- ◆ **Strategic Initiatives:** Analyze the management's discussion on strategic initiatives. Assess the alignment of these initiatives with the overall goals of the company.
- ◆ **Risk Factors:** Scrutinize the section on risk factors. Understand the management's perception of risks and how they plan to mitigate them.

#### CASE STUDY

For a practical application of qualitative analysis techniques, consider the following hypothetical case study:

##### *Case Study: XYZ Corporation*

In the MD&A section of XYZ Corporation's annual report, the management emphasizes its commitment to innovation and technological



advancement to drive future growth. This commitment is reinforced by a discussion on the successful implementation of a new product line during the reporting period.

By analyzing this case study, investors and analysts can apply qualitative analysis techniques to assess the alignment of the company's strategic initiatives with industry trends, customer demands, and the overall market landscape.

## 2.6 Report on Corporate Governance

The Report on Corporate Governance is a crucial aspect of a company's annual report, shedding light on the principles, policies, and practices that guide its decision-making processes. In this section, we will explore the importance of corporate governance, discuss how to evaluate its effectiveness, and optionally, examine a case study for practical insights.

### 2.6.1 *Importance of Corporate Governance*

Understanding the significance of corporate governance is essential for stakeholders seeking to grasp the foundation upon which a company's financial soundness rests.

### 2.6.2 *Discussion on the Relationship*

Corporate governance serves as the bedrock of an organization's structure, shaping its conduct, transparency, and accountability. The link between effective corporate governance and financial soundness is undeniable. Companies with robust governance structures tend to exhibit better risk management, ethical behavior, and long-term sustainability.

### 2.6.3 *Evaluating Corporate Governance*

To assess the effectiveness of corporate governance, stakeholders need to consider specific criteria and factors outlined in the corporate governance report.



#### 2.6.4 Criteria and Considerations

- ◆ **Ethical Practices:** Evaluate the commitment of the company to ethical conduct and integrity. A strong corporate governance framework instills trust among stakeholders.
- ◆ **Transparency:** Assess the level of transparency in financial reporting and decision-making processes. Transparent governance enhances the credibility of the company.
- ◆ **Board Independence:** Consider the independence of the board of directors. An independent board is better positioned to make impartial decisions in the interest of all stakeholders.
- ◆ **Risk Management:** Scrutinize the mechanisms in place for identifying, assessing, and mitigating risks. Effective governance includes robust risk management practices.

#### CASE STUDY

For a practical application of evaluating corporate governance, consider the following hypothetical case study:

##### *Case Study: ABC Corporation*

In ABC Corporation's corporate governance report, the board outlines measures taken to ensure diversity in its composition, including the appointment of independent directors from varied backgrounds. This commitment aligns with current best practices and reflects the board's dedication to fostering an inclusive and well-informed decision-making process.

By examining this case study, stakeholders can gain insights into how corporate governance practices contribute to the company's overall resilience and adaptability in a dynamic business environment.

#### 2.7 Auditor's Report

The Auditor's Report is a critical component of a company's annual report, providing an independent and objective assessment of the company's financial statements. In this section, we will explore the role of the



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Auditor's Report, identify key elements within the report, and optionally, delve into a case study to analyze its significance in assessing financial soundness.

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### **2.7.1 Role of the Auditor's Report**

Understanding the purpose and role of the Auditor's Report is fundamental for stakeholders seeking assurance and validation of a company's financial information.

### **2.7.2 Understanding the Purpose**

The Auditor's Report serves as a declaration by an independent auditor affirming the accuracy and fairness of the financial statements. It is a cornerstone in financial analysis, providing credibility to the reported financial data and offering stakeholders confidence in the company's financial integrity.

### **2.7.3 Key Elements**

To conduct a meaningful analysis of the Auditor's Report, it is imperative to identify and interpret key elements within the report.

### **2.7.4 Identification and Interpretation**

- ◆ **Auditor's Opinion:** The crux of the Auditor's Report is the expression of the auditor's opinion. Understanding whether the opinion is unqualified, qualified, adverse, or a disclaimer is essential in assessing the reliability of the financial statements.
- ◆ **Scope of Audit:** The report typically outlines the scope of the audit, detailing the procedures performed by the auditor. This provides insights into the depth and thoroughness of the examination.
- ◆ **Key Audit Matters:** Modern Auditor's Reports often highlight key audit matters. These are areas that required significant attention during the audit and are essential for stakeholders to understand potential areas of risk or complexity.



### CASE STUDY

For a practical application of analyzing an Auditor's Report, consider the following hypothetical case study:

#### *Case Study: XYZ Corporation*

In the Auditor's Report of XYZ Corporation, the auditor issues an unqualified opinion, signifying that the financial statements present a true and fair view. However, in the key audit matters section, the auditor emphasizes the valuation of intangible assets as a significant area of focus due to its subjectivity.

By examining this case study, stakeholders can assess the level of scrutiny applied by the auditor to critical financial elements, gaining insights into potential areas of risk and the overall financial soundness of the company.

### IN-TEXT QUESTIONS

1. Valuation is a skill set that is necessary only for
  - (a) Investment bankers who may want to assess the value of acquisitions or IPOs
  - (b) Management consultants who want to provide good corporate finance advice
  - (c) Investors who want to find cheap and expensive stocks
  - (d) All of above
2. What is the value of the firm usually based on?
  - (a) The value of debt and equity.
  - (b) The value of equity.
  - (c) The value of debt.
  - (d) The value of assets plus liabilities

### 2.8 Summary

As we draw the curtain on our exploration into the qualitative analysis of corporate financial statements, it becomes evident that beneath the



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surface of balance sheets and income statements lies a rich narrative that shapes the true health of a company. The key takeaways from our journey underscore the critical role of qualitative analysis in providing a comprehensive understanding of a company's financial landscape.

#### Key Takeaways:

- ◆ **Beyond Numbers:** Financial statements, while essential, offer only a glimpse into a company's performance. Qualitative analysis delves into the contextual details that breathe life into the numbers.
- ◆ **Strategic Insights:** The Chairman's Statement unravels the strategic vision of leadership, offering insights into initiatives, challenges, and future plans that influence the company's trajectory.
- ◆ **Operational Context:** The Directors' Report provides a holistic view, extending beyond financial performance to encompass operational highlights, risk management strategies, and corporate social responsibility initiatives.
- ◆ **Management's Perspective:** The Management Discussion and Analysis (MD&A) offers a unique window into the management's perspective, providing context for financial decisions, strategic initiatives, and the outlook for the future.
- ◆ **Governance Matters:** Corporate Governance is revealed as the backbone of financial soundness, fostering transparency, ethical practices, and effective risk management.
- ◆ **Independent Validation:** The Auditor's Report acts as an independent validation, instilling confidence in stakeholders by affirming the accuracy and fairness of financial statements.

**Emphasizing the Importance:** In the dynamic landscape of finance, where markets evolve and uncertainties persist, the need for a nuanced approach to financial analysis becomes paramount. Quantitative metrics, while essential, can be enhanced and contextualized through qualitative analysis. The narratives provided by reports such as the Chairman's Statement, Directors' Report, MD&A, Corporate Governance Report, and the Auditor's Report offer a comprehensive view, enabling stakeholders to make well-informed decisions.

In essence, qualitative analysis is the art of uncovering the untold stories within financial statements, enriching our understanding of a company's



choices, challenges, and resilience. As investors, analysts, and decision-makers, our ability to grasp this narrative empowers us to navigate the complexities of the financial landscape with insight and foresight.

As we navigate the ever-evolving world of finance, let the lessons learned from qualitative analysis guide us toward a deeper understanding of the companies we engage with, ensuring a more informed and insightful approach to financial decision-making.

## 2.9 Answers to In-Text Questions

1. (d) All of above
2. (a) The value of debt and equity.

## 2.10 Self-Assessment Questions

1. Why is qualitative analysis considered imperative in corporate financial evaluation, and how does it complement quantitative metrics?
2. What is the purpose of the Chairman's Statement, and how does it contribute to shaping stakeholders' perception of a company?
3. In the context of the Directors' Report, why is it essential to go beyond financial data and analyze components such as operational highlights, risk management, and CSR initiatives?
4. How does the Management Discussion and Analysis (MD&A) provide a unique perspective into a company's financial health, and what key areas should be focused on during qualitative analysis?
5. What role does corporate governance play in ensuring the financial soundness of a company, and how can stakeholders evaluate its effectiveness?
6. Why is the Auditor's Report considered a cornerstone in financial analysis, and what key elements within the report should be scrutinized for a comprehensive assessment?
7. How can insights gained from qualitative analysis empower stakeholders to make well-informed decisions that extend beyond immediate fiscal snapshots?



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8. In what ways does the interconnectedness of qualitative factors, such as transparency, ethics, and strategic considerations, shape the overall qualitative landscape of financial statements?
9. How can stakeholders use the information provided in the Chairman's Statement, Directors' Report, MD&A, Corporate Governance Report, and Auditor's Report collectively for a holistic understanding of a company's financial narrative?
10. Reflecting on the key takeaways from the exploration into qualitative analysis, how can an investor, analyst, or decision-maker apply these lessons to navigate the complexities of the financial landscape with insight and foresight?

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## **UNIT - II**





# Introduction to Valuation Techniques

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## STRUCTURE

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- 3.2 Introduction**
- 3.3 Balance Sheet-Based Valuation Methods**
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### 3.1 Learning Objectives

- ◆ Concept and importance of valuation.
- ◆ Purpose of valuation.
- ◆ Different approaches and methods of valuation.
- ◆ Biases, uncertainty and complexity in valuation process.



### 3.2 Introduction

In the world of business, valuation has become increasingly important. Since the emergence of many corporate organizational structures, particularly the company form, valuation has taken centre stage. Nowadays, valuation is necessary for everything—starting a business, growing it, merging with another company, winding it up, etc. A variety of commercial events, such as mergers and acquisitions, business sales, funding purchases, taxation, etc., are subject to valuation. It will be quite difficult for the key managerial staff to fulfil their professional responsibilities unless and until they are well familiar with the valuation procedures involved in the aforementioned business events. Furthermore, different business events need using distinct valuation methodologies.

The process of evaluating or determining the worth of certain assets, such as real or intangible, securities, liabilities, and a particular business as a going concern, as well as any listed or unlisted company, partnership, or sole proprietorship, is known as valuation. “Value” refers to an object’s material or monetary worth, which can be calculated using a medium of trade. Put otherwise, it is an evaluation that yields a statement of opinion instead of mathematical precision. The process of estimating a company’s current and prospective values is known as business valuation. Every aspect of a business is examined throughout the valuation process in order to establish the value of the company as well as the departments or units within it. Determining the business’s intrinsic worth is the primary objective of the valuation procedure.

Professional judgment, expertise, and a working knowledge of a wide range of elements are necessary for business appraisal. In addition to choosing and implementing the suitable valuation approach(es) and method(s), this also entails acknowledging the goal of the valuation, comprehending the industry, competitive, and economic aspects, and identifying the value drivers affecting the subject organization.

A business’s valuation can be utilized in a variety of contexts like:

- ◆ Acquiring or divesting a business.
- ◆ Acquisitions and mergers.
- ◆ Obtaining Financing.



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- ◆ Resolving legal conflicts.
- ◆ Organizing partnerships or estates.
- ◆ Assessment under the Wealth-tax Act and Gift Tax Act.
- ◆ Compensation to the shareholders by the government under a scheme of nationalization.

Notes

# Valuation Methods

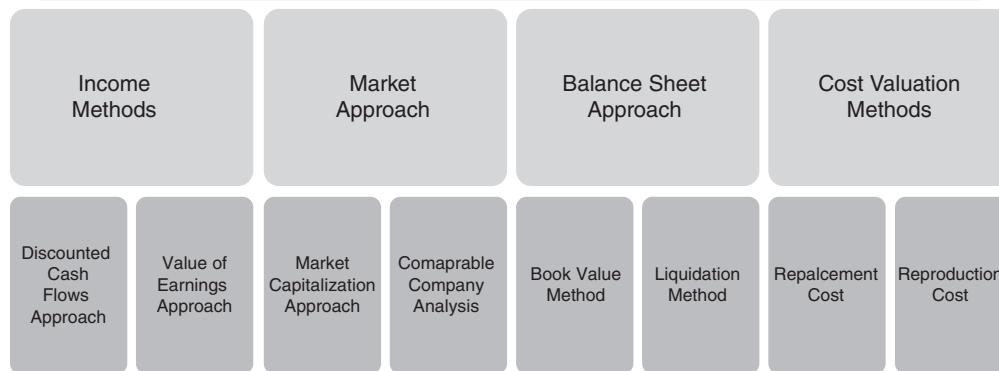


Figure 3.1: Valuation Methods

### *How to perform an effective valuation*



Figure 3.2: Principles of Effective Valuation



**Objective:** Objective must be properly and clearly mentioned.

**Holistic:** In addition to a company's assets and cash flows, the valuation should take the environment and other internal and external aspects into account.

**Justifiable:** Based on the facts presented, the person reading the valuation should be able to draw the same conclusions as the one performing the appraisal.

**Simplistic:** Valuation must be performed in a similar and prudent manner.

#### ***Sources of Information Required for Valuation***

- ◆ The company's annual reports and audited accounts, or the firm that is being valued.
- ◆ Future prospects reports, operational outcomes, cash flows, strategies for acquisition and disposal, internal company plan documents, board discussion papers, and documents reviewed following senior management conversations.
- ◆ Pertinent industry statistics and economic data.
- ◆ Statistics about the stock market.
- ◆ Information that is accessible to the public, such as news releases and media reports.
- ◆ Trade publications, polls, and similar materials.

### **3.3 Balance Sheet-Based Valuation Methods**

#### **3.3.1 Book Value Method**

The approach which states the equity value of a company as stated in its financial statements is called as book value. A company's book value is estimated by deducting any outstanding liabilities from the total value of its assets. This figure is commonly compared to the company's market capitalization. Generally, book value is expressed per share and is calculated by dividing total shareholder equity by the quantity of outstanding common stock shares. A company's book value provides a fair and accurate representation of its worth, which is why it is important



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for valuation purposes. It is not usually a subjective figure because it is established based on historical company data.

The book value methodology is useful for informing people about a company and identifying stock at reasonable prices because it provides an accurate measure of value. The largest flaw in the book value approach, though, is that it cannot accurately determine the value of intangible assets.

$\text{Book Value} = \text{Total Assets} - \text{Total Liabilities}$

$\text{Share Capital} + \text{Retained Earnings} = (\text{Current Assets} + \text{Non-Current Assets}) - (\text{Current Liabilities} + \text{Non-current Liabilities})$

### 3.3.2 *Liquidation Method*

As a valuation method, liquidation value is the most cautious. When a company's assets are sold, its value is referred to as its liquidation value. In other words, the amount of money that is expected to be received after an asset is sold and its debts are settled is referred to as the liquidation value. A per-share basis is frequently used to express this value. Liquidation value indicates whether a firm should be liquidated or not. The firm should be liquidated if the liquidation value exceeds the market price of the stock. The estimation of liquidation value does not take into account intangible assets such as goodwill, intellectual property, and brands. Real estate, fixtures, plant and machinery, and inventory that belong to the company are all estimated to have a liquidation value.

The difference between the value of some tangible assets and obligations is known as liquidation. Let's take an example where business A has \$550,000 in liabilities. Assume furthermore that the assets listed on the balance sheet have a book value of \$1 million, a salvage value of \$50,000, and an estimated value of \$750,000, or 75 cents on the dollar, from the sale of all the assets at auction. Liabilities are deducted from the auction value to arrive at the liquidation value, which is equal to \$750,000 minus \$550,000, or \$200,000.

## 3.4 Income Statements-Based Valuation Methods

The foundation of all income statement approach techniques is the idea that an enterprise's current worth is contingent upon the potential future



value that an investor may derive from acquiring all or a portion of the company. These methods are based on income statement statistics. This method includes the following:

### 3.4.1 *Value of Earnings*

As per this approach, value of an enterprise is obtained by multiplying annual net income by the ratio, called as Price Earnings Ratio.

$$\text{Valuation} = \text{Net Income} \times \text{Price Earnings Ratio}$$

#### IN-TEXT QUESTIONS

1. Valuation is required for
  - (a) Mergers
  - (b) Acquisitions
  - (c) Selling the business
  - (d) All of these
2. Book value method comes under which approach?
  - (a) Income Statement approach
  - (b) Balance Sheet approach
  - (c) Market approach
  - (d) None of these

### 3.4.2 *Discounted Cash Flow Method*

Discounted cash flow method is an intrinsic value method. Under this method, with the help of the weighted average cost of capital (WACC), an analyst can forecast a company's unlevered free cash flow in the future and discount it back to the present time period.

Discounted cash flow (DCF) valuation is a financial model which assesses the value of an investment by projecting future cash flows. The foundation of a DCF model is the notion that an organization's worth is established by its capacity to produce future cash flows for its shareholders.

A DCF valuation, for instance, is used in investment banking to assess the value of proposed acquisitions and mergers. DCF valuation also has



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applications in the private equity and real estate industries. Typical applications of the DCF approach includes the following:

- ◆ To evaluate a whole company.
- ◆ Valuing a project or investment made by a business.
- ◆ To determine a bond's worth.
- ◆ To assess a company's share value.
- ◆ Valuing a property that generates income.
- ◆ To evaluate the advantages of a cost-cutting program at a business.
- ◆ To assign a value on anything that generates or affects cash flow.

### 3.4.2.1 How Can a Discounted Flow of Cash Be Estimated?

The idea that INR 10 today is worth more than INR 10 in a year is a fundamental one in finance. This idea, known as the “time value of money,” serves as the basis for DCF analysis. For accurate analysis, projected future cash flows need to be discounted to their present value.

When performing a DCF valuation, the discount rate, the cash flows, and the number of periods are the three primary factors to take into account. The discounted cash flow formula is as follows:

$$DCF = CF_1/(1 + r)^1 + CF_2/(1 + r)^2 + \dots + CF_n/(1 + r)^n$$

$CF_1$  = Initial Period Cash Flow

$CF_2$  = The second period's cash flow

$CF_n$  = Cash flow for the course of “n”

n = The total number of time periods

r is the discount rate.

**The Cash Flow (CF):** Any form of earnings or dividends is considered cash flow. These cash flows may come from asset sales proceeds as well as income from the sale of goods or services.

**The Number (n) of Periods:** The number of periods equals the anticipated number of years for which cash flows will occur. Since ten years is the average lifespan of a company, this is frequently the number of periods. Nevertheless, this time frame may vary based on the organization.

**Rate of Discounting (r):** The present value of future costs is adjusted by the discount rate. The discount rate usually refers to the business's



cost of capital, or the amount of profit required to cover operating expenses. The weighted average cost of capital (WACC), which includes the interest rate and any dividends or loans made to shareholders, usually constitutes this cost.

- ◆ **Example:** Assume you are a business owner who wants to begin a significant project. Since the weighted average cost of capital (WACC) for your company is 8%, you are considering discount rate at 8%. The project will take five years to complete, and your company will need to invest INR 15 lakh as initial investment. The project's cash flows are:

Year 1: INR 1,00,000

Year 2: INR 2,00,000

Year 3: INR 5,00,000

Year 4: INR 5,00,000

Year 5: INR 7,00,000

Using the discount rate, the discounted value of future cash flows is as follows:

Year	Future Cash Flow	Discounted Cash Flow
1	1,00,000	92,590
2	2,00,000	1,71,460
3	5,00,000	3,96,900
4	5,00,000	3,67,500
5	7,00,000	

**Decision Making Rule:** Investors must compare the initial investment to the total of the discounted cash flows over the project's lifetime to decide if it is an investment that is worthwhile.

In the above example, the initial investment cost is deducted from the total of the discounted cash flows to determine the net present value. Since the net present value is greater than the initial investment, the project has generated more money and hence the project is worth investing.

**Major advantages or benefits associated with this approach includes:**

- ◆ **Examines Long-Term Values:** It evaluates an investment's or project's profits over the span of its whole economic life and takes time value of money into account.



- ◆ **Provides Objective Comparison:** By using DCF analysis, one may evaluate various business models or investment opportunities to determine an impartial and consistent valuation for each.
- ◆ **Determines Internal Rate of Return:** Discounted cash flow analysis is a useful tool for businesses to determine an investment's internal rate of return (IRR), which enables them to evaluate and contrast various investments.

**Major disadvantages or challenges associated with this approach includes:**

- ◆ **Choosing the Correct Technique to Estimate Future Earnings:** As if the technique employed to forecast future earnings provides incorrect amount, it would ultimately lead to lower-than-expected profits being earned.
- ◆ **Estimating Appropriate Capitalization Rate:** The capitalization rate must be taken into account when determining the investor's market features, estimated growth factor for the business, and risk tolerance. As such, the buyer must be well informed about the targeted ROI and acceptable risks. For example, if an investor does not know the target rate, he may overlook a better investment opportunity or overpay for one.
- ◆ **Does Not Take into Account Competitor Valuations:** Discounted cash flow has the benefit of not having to take competitors' values into account, but it can also have drawbacks. In the end, DCF may yield valuations that are far away from the true worth of rival businesses or comparable assets. This could imply that the other business values are incorrect, but it could also imply that the discounted cash flow analysis has imperfections since it ignores market realities.

## FREE CASH FLOW CONCEPT

Free cash flow is the amount of cash flow (net of taxes) that a business generates after capital expenditures, changes in operating assets and liabilities, and non-cash expenses are deducted. Compared to EBITDA, EBIT, and Net Income, which exclude significant capital expenditures and changes in cash because of shifting operating assets and liabilities, free cash flow is a more accurate measure. Furthermore, non-cash expenses are included in measurements like EBIT and Net Income, which further distorts the actual cash flow of a company.



## FREE CASH FLOW TO EQUITY (FCFE)

The amount of cash that remains available to a company's equity stockholders following the payment of all debt, expenses, and reinvestment is known as free cash flow to equity.

$$\text{FCFE} = \text{Cash from operations} - \text{Capex} + \text{Net debt issued}$$

To ascertain a company's value, one can use the FCFE indicator. When a company does not pay a dividend, this valuation technique has grown in favour as an alternative to the dividend discount model (DDM).

Using free cash flow to equity (FCFE) analysis, one can ascertain if dividend payments and stock repurchases are funded by equity or by another source of funding. If FCFE is less than the cost of repurchasing shares and the dividend, the business is financing itself through debt, existing capital, or the issuance of new securities.

The value of equity is computed as follows using the Gordon Growth Model and the FCFE:

$$\text{Value} = \text{FCEF}/(r - g)$$

Where; Value = Value of equity

FCEF = Free Cash Flow to Equity

r = Cost of equity of firm

g = Growth rate in FCEF

## 3.5 Market Approach-Based Valuation Models

### 3.5.1 EV/EBIDTA Multiple Method (Comparable Company Analysis)

The “price-to-EBIDTA multiple” is also known as “Comparable Companies Multiple Method”. The ratio of enterprise value, or the value of capital employed, to EBITDA is known as the EBITDA multiple. The distinction between this approach and the earnings capitalization method is that to determine the enterprise value, the company’s EBITDA must be capitalized. The valuer should bear in mind that the EBITDA multiple does not account for variations in depreciation schedules or the amount of debt financing that a company may have taken on in comparison to



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another when evaluating the EV/EBITDA Multiple of comparable companies. The enterprise multiple takes into account a company's debt and cash levels in addition to its stock price and relates that value to the firm's cash profitability.

The formula for calculating the EV/EBIDTA multiple is:

$$\text{EV/EBIDTA Multiple} = \text{Enterprise/EBITDA}$$

Enterprise Value = Market Capitalization + Value of Debt – (Cash and Cash Equivalents)

EBIDTA = EBIT + Depreciation + Amortization

For instance, Wal-Mart Inc.'s enterprise value was \$445.77 billion for the fiscal year 2022, resulting in an EBITDA/EV multiple of 7.08% (0.07077) based on the company's \$31.55 billion EBITDA.

Identifying suitable comparable companies is one of the main disadvantages of this valuation method for the appraiser. Based on comparable attributes such as industry categorization, size, revenue, growth rate, profitability, location, assets, and workforce, companies are selected. This serves as a major challenge.

### 3.5.2 Market Capitalization Method

The market value of an equity in a firm is referred to as market capitalization. The value of a firm as established by the stock market is known as its market capitalization. It is the total market value of all shares that are still in circulation. In general, businesses with larger market caps are considered to be less risky than those with smaller ones.

Market capitalization shows how big a company is. It is a crucial analytical tool, particularly when comparing businesses. As market cap must be assessed in relation to all other financial metrics, it is common practice to utilize it as a baseline for study. For instance, one business can have made twice as much money as every other business in the sector. However, one could argue that the company is underperforming if its market capitalization is four times larger. It is computed by multiplying the number of outstanding shares of a corporation by the share price.

Market Capitalization = Outstanding Shares × Market Price



- ◆ **Example:** A corporation with 100 million outstanding shares and a \$20 per share price, for instance, would have a \$2 billion market capitalization.

In general, the stock market divides equities into a number of categories according to market capitalization:

- ◆ **Big Cap:** Firms valued at more than \$10 billion on the market are categorized as large-cap stocks. Apple, Microsoft, IBM, Facebook, etc. are a few examples.
- ◆ **Mid Cap:** Businesses with a market capitalization between \$1 billion and \$10 billion. Growth-oriented stocks make up a larger portion of mid-cap equities, which are generally more volatile than large-cap stocks.
- ◆ **Small Cap:** Businesses classified as small cap have a market valuation of between \$250 million and \$1 billion. Due to the company's growing stage, these are high-risk and high-return investments. A sizable portion of businesses fall into the small-cap group.

### 3.6 Cost Valuation Methods

The rationale of the principle of substitution forms the foundation of the cost approach. The idea is that prudent buyers won't spend more for an investment property than they would for a comparable alternative that offers comparable usefulness.

#### 3.6.1 Reproduction Cost Method

Reproduction cost is the estimated cost, at current prices, of building an exact replica of the subject asset with the same materials, building standards, design, and workmanship quality while also including all of the deficiencies, excesses, and obsolescence of the original.

#### 3.6.2 Replacement Cost Method

The price to replace an existing property as of a certain date with a new one of comparable utility is known as replacement cost.



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A wise investor would not choose to duplicate an existing property and add features that are unnecessary, superfluous, or out-of-date for obvious reasons; therefore, the replacement cost has greater significance when it comes to the principle of substitution.

The cost approach has the benefit of being a very sound capital appraisal technique that is backed by the operating environment and actual market costs. Because the tangible property's worth has been clearly distinguished from all other assets, it offers a definite value for that property. Intangible assets can be indirectly evaluated when the cost approach is used in conjunction with the income approach. The enterprise value determined by the income technique is deducted from the tangible values determined by the cost approach, leaving the intangible asset value as the remaining amount.

The cost approach's disadvantages include the need for a large amount of reliable information. It necessitates computing labour, equipment, and material costs.

### 3.7 Which Method is the Best?

There are numerous approaches of valuing different types of firms, thus there isn't one approach that works for all of them. There isn't a single ideal method among all of the appraisal techniques. Based on a range of variables, including interest rates, the state of the economy, and industry valuation standards, each has pros and cons of its own.

#### Pros and Cons of Balance Approach Models:

- ◆ It is easy to calculate and understand.
- ◆ It represents a fair and accurate picture of a company's worth.
- ◆ The valuation estimate is computed using historical company data and hence not subjective in nature.
- ◆ It does not consider the company's intangible assets, like its brand name or customer base.

#### Pros and Cons of Income Approach Models:

- ◆ Fast-growing companies are an excellent fit for the income approach to business valuation.



- ◆ The income approach is a highly thorough method of assessment.
- ◆ The income approach to valuation works best for companies with consistent profits.
- ◆ The company's present value can be estimated with the aid of the income approach to valuation.
- ◆ The income approach to business valuation is not appropriate for startups or newer companies because they lack historical information, as some of its valuation models use historical data to determine the business value.
- ◆ Numerous estimates and presumptions are used in the income approach to business valuation. As you forecast farther into the future, the likelihood of making more mistakes increases.
- ◆ This method of valuation is not only highly intricate, but it is also unsuitable for businesses that are expanding quickly and inconsistently.

#### Pros and Cons of Market Approach Models:

- ◆ The primary benefit of the market approach is the availability of publicly available data for doing comparison amongst transactions. For instance, information about shares that are traded publicly is easily accessible.
- ◆ As no assumptions are made, the results are fairly accurate.
- ◆ The market method to business valuation is easy to understand and requires few computations.
- ◆ Without easily accessible data on similar transactions, estimating the value of the company is extremely difficult.
- ◆ Determining which transactions or businesses are comparable is another challenging task.
- ◆ When compared to other methods of valuation, this approach to corporate valuation is not as flexible.

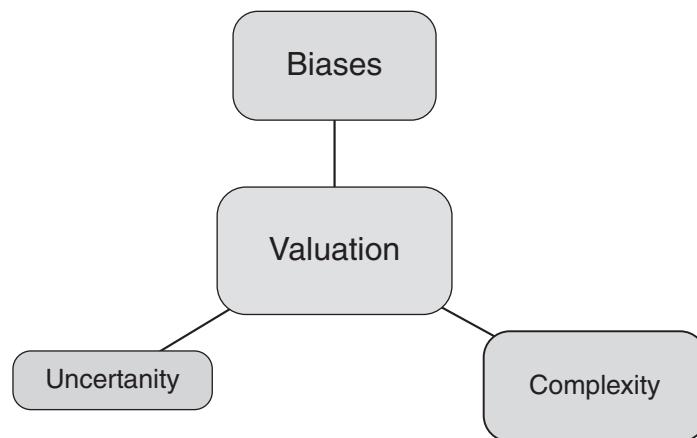
### 3.8 Bias/Uncertainty and Complexity in Valuation

#### Bias in Valuation

A blank canvas is hardly ever where we begin to value a firm. Too frequently, our opinions of a company are established before we begin



Notes

**Figure 3.3**

entering the data into the models we employ, and it should come as no surprise that our conclusions frequently reflect our prejudices. We will first address the causes of bias in valuation before analysing the ways in which bias appears in the majority of appraisals. We will conclude by talking about the best ways to reduce, or at least address, valuation prejudice.

The companies we select to value are the first to exhibit valuation bias. Most of the time, these decisions are not made at random, and the way we make them might begin to establish prejudice. Perhaps we've read positive or negative news about the company in the newspaper, or we've heard from a specialist that its valuation was either too high or too low. As a result, we have an idea about the company we are going to value from the outset. When we gather the data necessary to determine the firm's value, we contribute more prejudice. The management comments on performance are included in the annual report and other financial documents together with the accounting figures, which are frequently presented in the most favourable light.

### **Uncertainty in Valuation**

The process of valuing a firm involves a certain amount of uncertainty, especially when determining the initial value and when it changes over time as new information becomes available to influence the valuation. These can include information unique to the company being appraised, a broader overview of the industry the company works in, or even broad



market data (such as interest rate and economic data). There are several reasons why our value estimations could be off, and we can divide them into three categories.

- (a) **Estimation Uncertainty:** Even with flawless information sources, we still need to transform unprocessed data into inputs for models. Errors in estimating arise from any errors or misjudgements we make during this process.
- (b) **Uncertainty Unique to a Firm:** The course of action we foresee for a company may turn out to be utterly incorrect. The company may perform significantly better or worse than we anticipated, and the ensuing cash flows and earnings will diverge greatly from our projections.
- (c) **Macroeconomic Uncertainty:** The macroeconomic environment is subject to unforeseen change, even in cases where a corporation grows just as anticipated. The economy may perform significantly better or worse than anticipated, and interest rates may rise or fall. Value will be impacted by these macroeconomic shifts.

### ***Complexity in Valuation***

A pair of developments have led to an increasing complexity of valuation. On the one hand, over the past few decades, computers and calculators have significantly increased in power and accessibility. Tasks that used to take us days to complete before computers can now be completed in minutes thanks to technology. Conversely, information is more widely available and simpler to use. Thousands of companies' complete historical data is available for download, and we can utilize it anyway we see fit. There is a price for the complexity, though. As the complexity and information requirements of models increase, there are evident costs that we must bear.

1. **Information Overload:** Better assessments are not necessarily the result of having more information. In fact, when presented with a plethora of contradicting data, analysts may feel overwhelmed and make bad input decisions. The fact that analysts frequently work under time pressure when valuing firms exacerbates the issue. Users frequently show little interest in models that require dozens of inputs in order to value a single company, trash in, trash out



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applies to a model, meaning that its output is only as good as the inputs it receives.

Notes

2. **Black Box Syndrome:** When models grow too complex for analysts to understand, they lose their ability to see inside of them. The black box of the model receives inputs and outputs a value.

### 3.9 Summary

- ◆ A crucial topic that is utilized in many contexts, including mergers and acquisitions, amalgamations, acquisitions, dispute settlement, etc., is valuation.
- ◆ Corporate valuation's primary goals are to support an arbitrator in resolving a disagreement between parties and to help a buyer or seller determine the appropriate purchase price.
- ◆ The four types of Business Valuation Approaches are Income approach, Market Approach & Balance Sheet Approach, Cost Approach.
- ◆ The anticipated earnings of the company are essentially divided by the "capitalization rate" under the capitalization approach.
- ◆ The foundation of the income business valuation approach is the notion of pricing future benefits at present value.

### 3.10 Answers to In-Text Questions

1. (d) All of these
2. (b) Balance Sheet Approach

### 3.11 Self-Assessment Questions

1. What is valuation used for, and how does it affect value estimates?
2. Give instances and discuss the areas in which valuation can be applied.
3. Using an example, discuss the sources of data used to estimate a firm's valuation.



### 3.12 References

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- ◆ S. Jaykishan (2014). Overview of Business Valuations. Retrieved from [www.sjaykishan.com/wp-content/uploads/2014/.../Overview-of-business-Valuation.pdf](http://www.sjaykishan.com/wp-content/uploads/2014/.../Overview-of-business-Valuation.pdf)
- ◆ <https://www.icci.edu/media/webmodules/PRACTICE%20QUESTIONS%20VALUATIONS%20&%20BUSINESS%20MODELLING.pdf>

### 3.13 Suggested Readings

- ◆ Valuation: Measuring and Managing the Value of Companies by McKinsey & Company.
- ◆ The Little Book of Valuation: How to Value a Company, Pick a Stock and Profit by Aswath Damodaran.
- ◆ Study Material for Educational Course – Asset class: Securities or Financial Assets, Registered Valuers Organisation (A wholly owned subsidiary of ICSI and registered with IBBI).
- ◆ Valuation by Registered Valuers under Companies Act, 2013 & Insolvency & Bankruptcy Code, 2016 by CA Kamal Garg, Published by Bharat Law House Pvt. Ltd.
- ◆ Principles and Practice of Valuation by D. N. Banerjee, Published by ELH, Calcutta.



# Cash Flow Forecasting

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## STRUCTURE

- 4.1 *Learning Objectives*
- 4.2 *Introduction*
- 4.3 *Methods of Cash Forecasting*
- 4.4 *Cash Forecasting Model Steps*
- 4.5 *Managing Uncertainty in Cash Flow Forecasting*
- 4.6 *Building Cash Flow Forecast Using Direct Method*
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- 4.8 *Summary*
- 4.9 *Answers to In-Text Questions*
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### 4.1 Learning Objectives

- ◆ Understand the importance of income/cash forecasting in corporate finance.
- ◆ Understanding different techniques of income forecasting.
- ◆ Methodology to perform income/cash forecast.
- ◆ Methodology to manage uncertainty in cash forecast.
- ◆ Managing uncertainty in Cash Flow Forecasting.



## 4.2 Introduction

Predicting the expected inflow and outflow of cash from a business is similar to a captain determining the direction of the tides to guide their ship. Cash flow forecasts are a vital tool for successfully navigating a company's future because they give executives significant insight into anticipated changes in the company's cash position. Big, international corporations allocate entire divisions to cash management, which includes forecasting cash flow.

### What is Cash Flow?

The sources and uses of a company's cash are measured by cash flow. The money received from a customer as payment for goods and services is referred to as "cash in" or a source of cash. "Cash out" refers to the process by which a business uses its own funds to pay its own bills, like a warehouse utility bill. A business has positive cash flow when its total cash inflow exceeds its total cash outflow. However, a company that has negative cash flow is one in which there is more money leaving the company than coming in. While this situation may be manageable in the short term, it can become troublesome over time.

One of a company's primary financial statements, the statement of cash flows, lists the total amount of money coming in and going out for a given time period. On the other hand, cash flow forecasting projects future cash flows and balances by contemplating ahead. This procedure entails projecting the amount of money that will come into and out of a company over a given future period of time. A company must forecast its cash flow in order to avoid running out of money, but this is a difficult task because it can be difficult to predict future revenue and expenses with any degree of accuracy.

Businesses can estimate their future cash balances with the aid of cash flow forecasting. While medium-term forecasting usually looks out to the end of the current fiscal cycle or a rolling 12 months, long-term forecasting looks out more than a year. Short-term cash forecasting focuses on the next 30 to 60 days.

### Advantages of Cash Forecasting

- ◆ Assist companies in identifying times of reduced cash flow and possible bankruptcy.



## CASH FLOW FORECASTING

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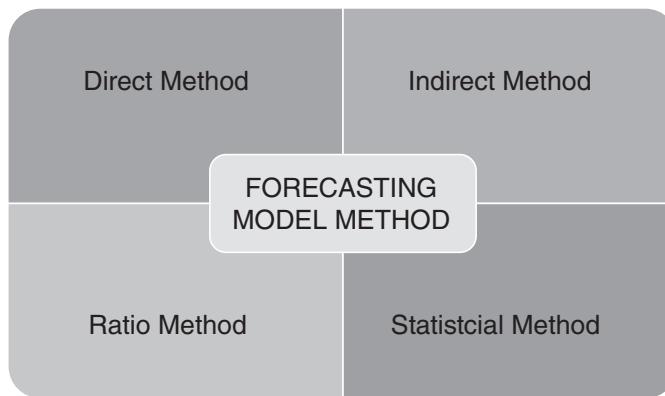
- ◆ Determine when business might need to draw from additional funding sources, like a line of credit.
- ◆ Permit businesses to get loans because many lenders need forecasts at the time of application.
- ◆ Decrease the possibility of failing to pay suppliers and staff, which helps maintain the smooth operation of the company.
- ◆ Give company executives the awareness of when they can afford to pay with cash for hiring, expansion, business investments, and wage increases.
- ◆ Recognize ahead of time when extra cash might be available to increase returns.
- ◆ Assist in maximizing working capital borrowing to prevent paying too much in interest.
- ◆ Aid in the management of foreign exchange risks for multinational corporations.
- ◆ Permit businesses to obtain more funding from prospective backers who evaluate a company's financial standing based on cash flow projections.

### Drawbacks of Cash/Income Forecasting

- ◆ When using the direct method of forecasting, all of the necessary data must be meticulously captured and organized.
- ◆ Possibilities of inaccuracies/errors in the underlying projected balance sheets and income statements when applying the indirect approach.
- ◆ Unannounced modifications to sales strategies that lengthen the terms of customer payments.
- ◆ Modifications to accounts receivable practices that lengthen or shorten the days' sales outstanding (DSO) period, which measures how long it typically takes a business to get paid by its clients.

### 4.3 Methods of Cash Forecasting

Methods of Cash Forecasting are as follows:



**Figure 4.1: Forecasting Model Methods**

- ◆ **Direct Forecasting Method:** This method involves simply determining an item's worth based on professional guidance gathered from multiple corporate sources or just obvious instinct. It is also known as the “back of the envelope” approach at times. Numerous businesses, both large and small, use this strategy but not very often.
- ◆ **Indirect Method:** A common technique for formalized, external cash flow forecasting is the indirect method. Rather than focusing on short-term cash requirements, indirect forecasting helps guide long-term strategy by providing a high-level view of expected cash flow. It is based on anticipated balance sheets and income statements that are created with typical projection techniques. By taking into account projected non-cash items, the indirect method reconciles a projected cash balance and a projected net income on a predicted income statement. Data from the projected balance sheets, including adjustments to assets and liabilities, are used in this reconciliation.
- ◆ **Statistical Methods:** This includes time-series models like trend projection, least squares models, econometric models, exponential methods etc.
- ◆ **Ratio Method:** This method uses the fixed relationship or ratio as the basis, either between a single component and another or to the total forecast. In this category, the percentage of Sales Method is extremely popular. This accounting-based forecasting method makes the assumption that the business's operations pattern will largely remain similar from year to year. As a result, forecast variables' future



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performance can be predicted using the fixed historical relationship between two variables. Other factors are related to sales, which is the firm's most important variable. Following section explains the percentage of sales method.

**Percentage of Sales Method:** The first stage in using this method is to identify the income statement and balance sheet items that are directly impacted by sales. The majority of the items in the income statement are anticipated to change in response to sales. For instance, as sales rise, so do selling costs and the cost of goods sold. The same holds true for administrative costs. It should be noted at this point that some of these costs might be fixed. Since only a portion of these costs—which fluctuate depending on sales—are to be used for forecasting under this methodology, the data will need to be adjusted.

Similarly, items on the balance sheet that are anticipated to change in response to sales must be kept apart from those that don't. Cash, inventory, and receivables are examples of current assets that typically rise with rising sales and fall with falling sales. It is not anticipated that other assets, such as fixed assets, will alter in response to changes in sales. However, if the company is operating at maximum capacity, then increasing capacity would only allow for a rise in fixed assets. This implies that a company operating at maximum capacity can anticipate an increase in both current and fixed assets in tandem with higher sales.

Not every item on the liability side of the balance sheet represents a current liability that the company needs for funding. This implies that they do not rise in tandem with a rise in sales. However, account payables often fluctuate in relation to sales. A rise in sales could lead to more material being bought on credit, which would raise the quantity of account payables.

After identification of all items which tend to fluctuate, the next step is to express the items that tend to fluctuate in sales as a percentage of total sales.

### Choice of Technique

In the previous section, a number of methods for predicting cash flows, including both inflows and outflows, which can help management with their responsibility for overseeing the company's liquidity was discussed. The next and obvious question is, which method should be used?



There is no answer for this question. This is because generalization in this regard is not possible because the strategies covered above may not be appropriate for every company. It may be argued that it is always preferable to use a combination of approaches rather than relying solely on one technique, depending on the specific requirements. However, all of this time needs to be tailored to the business's forecasting needs. It has been noted that the following variables typically affect the cash forecasting technique that businesses choose:

- ◆ The type of business conducted by the company and the level of control over cash inflows and outflows.
- ◆ The period of forecasting.
- ◆ The extent to which managers value and accept complex and advanced management techniques.
- ◆ Required level of accuracy.
- ◆ Costs associated with development and operations.

#### 4.4 Cash Forecasting Model Steps

**Step 1: Determination of Forecasting Objective:** Identifying the business goal that a cash flow forecast should support is the first step in ensuring that the forecast provides you with useful business insights. It is observed that the following goals are the ones for which organizations most frequently utilize cash forecasts:

- ◆ **Short-Term Liquidity Planning:** Managing the daily cash flow to make sure your company can pay its short-term debts is known as short-term liquidity planning.
- ◆ **Interest and Debt Reduction:** It is important to ensure that the company has sufficient funds on hand to pay back any loans or debt that it has taken on.
- ◆ **Liquidity Risk Management:** It is the process of gaining insight into possible future liquidity problems so that one can take more time to resolve them.
- ◆ **Growth Planning:** Ensuring the business has enough working capital on hand to fund activities that will help grow revenues in the future.



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**Step 2: Choosing the Correct Forecasting Period:** After determining the objective of performing the cash forecast, the next step is to determine the time duration for doing forecast.

Information accessibility and forecast duration are typically trade-offs. It follows that a forecast is likely to be less precise or detailed based on how far into the future it looks. The precision and dependability of forecast can therefore be significantly impacted by selecting the appropriate reporting period. The following forecast periods can be used depending on the forecast objective:

- ◆ **Short-Term:** Short-term forecasts usually include a daily breakdown of cash payments and receipts and are projected two to four weeks ahead of time. It makes sense that short-term projections work best for short-term liquidity planning, where day-to-day detail is crucial to guaranteeing a company can pay its debts.
- ◆ **Medium-Term:** Usually spanning two to six months, medium-term forecasts are very helpful for managing liquidity risk, reducing interest and debt, and providing visibility into crucial dates.
- ◆ **Long-Term:** These forecasts usually project six to twelve months into the future and serve as the foundation for yearly budgeting procedures. They're also a crucial tool for estimating the amount of money needed for capital projects and long-term growth strategies.
- ◆ **Mixed-Term:** Often used for managing liquidity risk, mixed-period forecasts combine the other three periods i.e. short-term, medium-term and long-term. A mixed period forecast, for instance, might offer weekly projections for the first three months and then monthly forecasts for the following six months.

**Step 3: Gather the Data Required for Cash Flow Projections:** This requires accurate information on opening cash balance, cash inflows, cash outflows for the desired forecasting time period.

- ◆ Determine which data are available and required to finish the forecast.
- ◆ Determine which data sources are the best.
- ◆ Sort the data according to completeness and accuracy.
- ◆ Decide on the forecast's duration.
- ◆ Choose the forecast creation method.



- ◆ Daily oversight of the system.
  - ◆ Examine and label the output of the forecast.

**Step 4: Choosing the Appropriate Reporting Framework:** For management's quick understanding, purposeful analysis, and evaluation, the forecast data should be laid out in an organized manner. Such an arrangement for presenting cash flow forecast can be obtained by proforma financial statements. A proforma statement, also known as a projected statement, shows the current estimate for taxes, costs, profits, and sales, among other financial factors. The following proforma financial statements are typically used by financial managers to analyse and evaluate the company's liquidity for the capital or budgetary periods:

- ◆ Proforma balance sheet
  - ◆ Proforma fund flow statement
  - ◆ Proforma cash flow statement

## IN-TEXT QUESTIONS



## 4.5 Managing Uncertainty in Cash Flow Forecasting

Businesses can identify and control the uncertainty related to variations in cash flow in several ways.

- 1. Sensitivity Analysis:** Sensitivity analysis looks at how changes in cash flow variables affect cash balance. Finding the most vulnerable cash flow variables that will put cash management in a challenging situation is the goal of the analysis.



2. **Scenario Analysis:** In this method, cash flows are anticipated based on multiple hypotheses, and the amount of cash required in different situations is estimated. To manage cash, the company chooses a scenario based on its capacity for taking on risk.
3. **Simulation Analysis:** This method is an advancement of scenario analysis. In scenario analysis, the cash forecast is produced by the computer after the user specifies potential outcomes. The computer can create different scenarios in simulation by using random numbers.
4. **Holding a Stock of Extra Cash or Near-Cash Asset:** This is the most simple approach to regulate the ambiguity of cash flow forecasting.
5. **Usage of Interest Rate Derivatives:** Interest-rate derivatives, such as interest rate futures and interest rate options, are helpful in managing this portion of risk if the ambiguity in the flow of funds is a result of predicted changes in the interest rate that affects interest income or interest payments.

## 4.6 Building Cash Flow Forecast Using Direct Method

1. Establish the forecast's duration, such as 30, 60, 90, or 180 days.
2. Divide the forecast into more manageable timeframes, such as weekly, monthly, or daily, depending on how a business operates. While shorter time frames might result in more precise cash flow estimates, a manual process will probably be longer and laborious.
3. Determine anticipated cash inflows from both sales to customers and non-sales sources, such as interest income, tax refunds, owner contributions, asset sales, and loan proceeds.
4. Based on when they are expected to be received, plot the cash receipts from each of the identified cash inflows in each of the periods identified in step 2.
5. Determine the anticipated outflow of cash, which should include payments for all operating costs, like payroll and inventory, as well as nonoperating expenses, like rent, loan payments, and tax obligations.



6. Based on when they are expected to be released, plot the cash payments from each of the identified cash outflows in each of the periods identified in step 2.
7. To find the net cash flow for each daily, weekly, or monthly period, subtract the outflows from the inflows in that period. By doing this, a corporate can find out which days, weeks, or months it is expected to generate extra revenue or experience a shortfall.
8. The total positive or negative cash flow for the entire forecast period is displayed by adding the net cash flows from each period. To determine the projected closing cash balance at the conclusion of the forecast period, this sum is added to the opening cash balance at the start of the period.

**Table 4.1: Cash Forecast Statement for the Month of August 20XX**  
*ABC Ltd*

	Projected Week 1	Projected Week 2	Projected Week 3	Projected Week 4	Total Projected
Opening Cash Balance					
Cash Inflows					
Cash Sales					
Credit Sales Collections					
Bank Interest					
Asset Sale					
Miscellaneous					
Total Cash Inflows					
	Projected Week 1	Projected Week 2	Projected Week 3	Projected Week 4	Total Projected
Cash Outflow					
Payroll					
Electricity Charges					



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	Projected Week 1	Projected Week 2	Projected Week 3	Projected Week 4	Total Projected
Inventory Purchases					
Tax Payments					
Loan Payment					
Miscellaneous					
Total Cash Outflows					
Net Cash Flow					

### IN-TEXT QUESTIONS

4. Forecasts are usually classified by time horizon into three categories.
  - (a) Short-range, medium-range, and long-range
  - (b) Finance/accounting, marketing, and operations
  - (c) Strategic, tactical, and operational
  - (d) Exponential smoothing, regression, and time series
5. Which of the following is **not** a step in the forecasting process?
  - (a) Determine the use of the forecast
  - (b) Reading historical data
  - (c) Determine the time horizon
  - (d) Select a forecasting model(s)

### 4.7 Tax Effects on Forecasting

Understanding tax expenditure and its effects is becoming more important as corporations realize they have little hope of controlling their tax and budgetary policies without evaluating tax expenditures. Tax expenditures are often determined by analysing the subsidies or incentives that governments have established through different tax code regulations for the corporations. Tax expenditures can take many different forms, including



tax deferrals, exemptions, credits, allowances, and rate relief. Effect of tax structure on income must be taken on priority by the firms to accurately forecast their income as tax payments reduce the cash inflows.

Tax analysis and forecasting of revenues are of utmost significance to corporations in ensuring stability in tax and expenditure policies. To augment timely and effective analysis of the revenue aspects of the operations, corporations have increasingly turned towards in-depth analysis of tax matters.

### 4.8 Summary

- ◆ To project future cash balances, cash flow forecasting projects how much money will come into and go out of the company.
- ◆ When forecasting cash flows, management must choose the time horizon, the important variables to forecast, as well as their components and sub-components, the forecasting technique, and the format in which to report the forecasted data.
- ◆ There are four different kinds of forecasting methods available: Statistical methods, ratio analysis, and direct estimation and indirect estimation.

### 4.9 Answers to In-Text Questions

- |                     |  |
|---------------------|--|
| 1. (a) True         | 4. (a) Short-range, medium-range, and long-range |
| 2. (d) All of these | 5. (b) Reading historical data                   |
| 3. (c) 30-60 days   |  |

### 4.10 Self-Assessment Questions

1. What are the advantages of income forecasting?
2. Is there any method to manage uncertainty associated with income forecasting?
3. Enumerate the steps to build a forecast model.
4. State the different forecast periods.



## CASH FLOW FORECASTING

5. State the different objectives for performing income forecasting.
6. Explain Percentage of Sales Method of income forecast.

Notes

## 4.11 References

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- ◆ <https://corporatefinanceinstitute.com/course/fpa-rolling-12-month-cash-flow-forecast-course/>

## 4.12 Suggested Readings

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- ◆ Frederick C. Scherr. Modern Working Capital Management: Text and Cases, Prentice Hall, Englewood Cliffs, NJ.
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## **UNIT - III**





# DCF Valuation: Discount Rates & Beta

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## STRUCTURE

- 5.1 Learning Objectives**
- 5.2 Introduction to Discount Rates**
- 5.3 Estimating Cost of Debt**
- 5.4 Estimating Cost of Preferred Stock**
- 5.5 Estimating Cost of Equity**
- 5.6 Inputs to CAPM**
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### 5.1 Learning Objectives

- ◆ Understanding the concept and importance of discount rates.
- ◆ Understanding the cost of debt and cost of equity capital.
- ◆ Learning Beta, Levered Beta and Unlevered Beta.
- ◆ Learning Weighted Average Cost of Capital.



## 5.2 Introduction to Discount Rates

The discount rate is often referred to as the cost of capital or rate of return that an investor expects to receive to justify the investment. The concept of discount rate considers time value of money thus adjusts the value of future value of money to reflect the current value. Discount rates also recognizes the fact that money has the potential to earn returns over time, and therefore, a discount rate can be applied to know the opportunity cost of tying up capital. The discount rate also incorporates the risk associated with an investment. A high-risk investment usually has a higher discount rate indicating the uncertainty and the additional return required by investors for additional risk. Whereas, lower-risk investments have lower discount rates. The discount rate can be computed independently for all the sources of funds as well jointly in the form of Weighted Average Cost of Capital (WACC) representing the overall cost of capital of the firm. Discount rates enable comparability between different investment opportunities or businesses; thus, choosing an appropriate discount rate is a critical aspect of valuation, and it often involves assessing the risk profile of the investment being evaluated. It's important to note that the discount rate is a driver of valuation results as it is one of the key inputs of Discounted Cash Flow (DCF) analysis a widely used method for valuation of the business or businesses. Due to the relevance of discount rates in financial analysis, it becomes necessary to understand: How are discount rates estimated? The following sections discuss the computation of discount rates of various sources of capital.

## 5.3 Estimating Cost of Debt

### 5.3.1 Cost of Debt

Debt refers to an obligation or financial liability that one party owes to another. It is essentially a borrowing arrangement where one party, borrows money or resources from another party with the promise of repayment under specific terms and conditions. It is also one of the safest forms of investments as debt holders represent the first claim on the company's assets. Cost of Debt is defined as the return expected



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by potential investors of debt. An advantage associated with debt is tax deductibility i.e. interest payable on debt is tax deductible providing company with tax benefits as interest payments reduces the company's tax liability. This tax shield reduces effective cost of debt. Thus, companies tend to calculate after-tax cost of debt which is also termed as "post tax cost of debt".

After-tax cost of debt = Pre-tax cost of debt  $(1 - \text{tax rate})$

### Which tax rate to use?

While valuation investors are faced with a choice between marginal tax rate and effective tax rate (ETR). Effective tax rate measure's income tax expense of a company as a percentage of its income before tax. It is a key metric used to assess the overall tax efficiency of a business. The ETR provides a more precise picture of a company's tax burden compared to the statutory tax rate, as it considers various factors such as deductions, credits, and other tax planning strategies. Effective tax rate can be calculated as:

$$\text{Effective Tax Rate} = \frac{\text{Taxes Paid}}{\text{Taxable Income}}$$

Whereas, the income tax rate which is applicable to each income bracket or slab is called as marginal tax rate. In a progressive tax system; there are usually multiple tax brackets, each with its own marginal tax rate. As income increases, it may cross the threshold into a higher tax bracket, leading to a higher marginal tax rate on the additional income. Purpose of marginal tax rate is to tax individuals based on their earnings, which means that those who earn more are taxed heavily as compared to those who earn a lesser amount. While forecasting it is better to make use of the marginal tax rate as effective tax rate is just proportion of taxes paid over income earned whereas marginal tax rate reflects the income slab in which company falls. Although marginal tax rate understate after-tax operating income in initial years, but later on it becomes exact to a greater extent.

### ***Illustration 5.1: Estimating Cost of Debt***

In 2022, Disney had a pre-tax cost of debt of 4.25% with a marginal tax rate of 35%. Calculate post-tax cost of debt.



$$\begin{aligned}\text{Post-tax cost of debt } (K_d) &= \text{Pre-tax cost of debt} \times (1 - \text{tax rate}) \\ &= 4.25\% \times (1 - 0.35) \\ &= 2.76\%\end{aligned}$$

#### 5.4 Estimating Cost of Preferred Stock

While equity and debt are the most prominently used sources of capital another source of funds often employed by companies is preferred stock. Preferred stock has characteristics of both debt and equity. Preferred stock often comes with a fixed dividend rate, expressed as a percentage of the par value of the stock. Such stockholders are entitled to receive the fixed rate of dividend before common stockholders. Preferred stockholders usually do not carry voting rights in corporate decisions although in some cases they might carry limited voting rights specifically voting on the issues that directly have an effect on their interests. Thus, preferred stock is often issued by companies as a way to raise capital without diluting the voting control of existing shareholders. Investors, on the other hand, may find the preferred stock attractive for its stable dividend payments and priority given during liquidation.

Preferred stock is viewed as perpetual and its cost is computed as:

$$\text{Cost of Preference Shares } (K_p) = \frac{\text{Preferred Dividend per Share}}{\text{Market Price of Preference Share}}$$

This approach of calculating the cost of preferred stock assumes that the dividend is constant and preferred stock has no special features.

#### Illustration 5.2: Estimating Cost of Preferred Stock

ABC Ltd. issues preferred stock with an annual dividend of Rs. 5 per share, and the net proceeds from the issuance are Rs. 90 per share. The cost of preferred stock would be calculated as:

$$\text{Cost of Preferred Stock } (K_p) = \frac{5}{90} \times 100 = 5.55\%$$

#### 5.5 Estimating Cost of Equity

The cost of equity is an essential element for the valuation of company it not only enables the ascertainment of value of equity but also value



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firm. Cost of equity can be determined either by Capital Asset Pricing Model (CAPM) or by Arbitrage Pricing Model (APM) which is an improvement of CAPM. In early 1960s, William F. Sharpe, John Lintner, and Jan Mossin developed CAPM that establishes a relationship between systematic risk and the expected return of an investment. Since then, CAPM is regarded as a standard tool used in determination of the required rate of return of an equity investment. CAPM is based on certain assumptions, including rational investors, efficient markets, no transaction cost, no access to private information and a linear relationship between an investment's returns and the market returns. It is held that due to underlying assumptions, CAPM provides a useful framework for estimating the expected return on an investment based on its systematic risk. It remains widely used method in investment analysis, for determination of the cost of equity capital.

The CAPM model can be presented as follows:

$$K_e = R_f + \beta_i (R_m - R_f)$$

where

$K_e$  = Cost of equity

$R_f$  = Risk-free rate

$\beta_i$  = Beta of the investment  $i$

$R_m$  = Expected return on the market portfolio

Almost a decade later, i.e., in 1970 Stephen Ross propounded an alternative method i.e. Arbitrage Pricing Model (APM) for estimating the cost of equity. APM is used to estimate the expected return of an asset based on multiple factors that influence its risk and return. APM doesn't rely on the systematic risk (beta) as the sole factor affecting an asset's return, unlike CAPM. Instead, it considers a broader set of factors. APM is a multi-factor model that assumes that an asset's return is influenced by multiple factors. These factors can be economic variables, market indicators, or any other relevant variables that affect the performance of the asset. APM is built on the assumption that investors will quickly exploit any arbitrage opportunities that arise. If an asset is priced incorrectly based on the factors in the model, investors will engage in arbitrage to bring the asset's price in line with its expected value.



APM assumes a linear relationship between the expected return of an asset and the various factors affecting its return. The model is expressed mathematically as follows:

$$E_{R_i} = R_f + \beta_{i1}F_1 + \beta_{i2}F_2 + \dots + \beta_{ik}F_k + \varepsilon_i$$

Where,

$E_{R_i}$  = Expected return on the asset

$R_f$  = Risk-free rate

$F_1, F_2, \dots, F_k$  = Factors influencing the asset's return

$\beta_{i1}, \beta_{i2}, \dots, \beta_{ik}$  = Beta of each factor (Factor loadings)

$\varepsilon_i$  = Random error term

While APM offers a more flexible framework than CAPM, it has its own set of limitations. It assumes that factors are independently and identically distributed, which may not always be the case. The model also relies on the identification of relevant factors, which can be challenging.

It has been observed that CAPM is a more widely used method of estimating cost of equity than APM as CAPM is a simpler model compared to APM. It requires fewer input variables, mainly the risk-free rate, the market return, and the beta of the asset. This simplicity makes it more accessible for practical applications and easier to implement in financial analysis. Estimating CAPM parameters, especially beta, is generally easier than estimating the factor loadings in APM as beta for CAPM is readily available. CAPM has gained widespread acceptance in the financial industry and regulatory environments. While both CAPM and APM make certain assumptions, CAPM's assumptions are often perceived as more aligned with the realities of financial markets. CAPM has also shown reasonable predictive power in estimating expected returns, especially in markets where its assumptions are more likely to hold true due to which CAPM has been in continued use from past so many decades.

#### **Illustration 5.3: Estimating Cost of Equity through CAPM**

TruMobil has beta of 0.8, risk-free rate currently prevailing in the market is 5.1% and market risk premium is 4%. Estimate the cost of Equity of ExxonMobil using CAPM.



Cost of Equity as per CAPM can be computed as:

$$\begin{aligned} K_e &= R_f + \beta_i (R_m - R_f) \\ &= 5.1\% + 0.8 (4\%) = 8.3\% \end{aligned}$$

## 5.6 Inputs to CAPM

CAPM uses three inputs i.e. Risk-free rate, Beta and Risk Premium to estimate cost of equity. Due to the widespread use of CAPM in valuation of companies it becomes essential to understand each of the inputs in detail. We hereby discuss each element of CAPM:

### 5.6.1 Risk-Free Rate

Risk-free asset is one whose returns are known with certainty, i.e., there is no default risk and uncertainty about rate of reinvestment. There is no deviation in actual return and expected return of such assets, thus, rate of return earned on risk-free assets is regarded as risk-free rate. The risk-free rate is often associated with government securities. Short-term government bonds and long-term government bonds are frequently used as proxies for risk-free rates as these securities are considered to have negligible default risk due to the backing of the government. The yield on these securities is influenced by macro-economic factors such as inflation expectations and economic conditions. It's important to note that while government securities are commonly considered as risk-free, they are not entirely without risk. There is always some level of uncertainty which includes interest-rate risk and inflation risk. However, these risks are typically minimal compared to other investments, due to which rate of return on government securities is used as the nearest approximation of the risk-free rate in financial modelling and analysis. While estimating cost of equity through CAPM, risk-free rate shall be determined according to the duration of security i.e. duration of risk-free security must match with duration of the cash flows from investment i.e. if the cash flows are spread over a long periods, risk-free rates used should be of long term assets and similarly if cash flows are spread over shorter time period, risk-free rates should be of short terms asset.



### **Risk-Free Rate in Absence of Default-Free Entity**

Risk-free rate is based on assumption that governments either do not fail or default in payments, however, these assumptions do not hold true for emerging market economies as there is an inherent risk of default in such countries. Also many countries do not issue local currency denominated long-term bonds. In such scenario, estimates of risk-free rate shall be made as follows:

1. Choose the safest and largest firm in the economy and make use of the rate of interest they pay on their long-term bonds in home currency. However, risk-free rate obtained in such a manner will be lower than the corporate borrowing rate.
2. Long-term forward contracts which are dollar-denominated and are against the local currency can be used to estimate risk-free rate.
3. Risk-free rate can also be arrived by adjusting the local currency borrowing rate by the estimated default spread on a bond.

### **Illustration 5.4: Estimating Risk-Free Rate**

Venezuela faced debt default in 2017. The country struggled with a severe economic crisis marked by hyperinflation, economic mismanagement, and a decline in oil production, which is a significant source of revenue for the country. Due to such circumstances, rate of return on government bonds cannot be considered as a proxy for a risk-free rate. Thus, returns earned on government bonds need to be adjusted as follows to arrive at risk-free rate:

Risk-Free Rate = Rate of Return on government bonds – Default spread  
As of 2023, Venezuela's 10Y Government bond yield is 46.582% and its default spread as per Moody's rating (C-rated bonds) is 17.52%.

Risk-free rate of Venezuela can be estimated as:

$$\begin{aligned}\text{Venezuela's Risk-free rate} &= \text{Venezuela government bond rate} \\ &\quad - \text{Default spread} \\ &= 46.582\% - 17.52\% = 29.062\%\end{aligned}$$

### **5.6.2 Risk Premium**

Risk premium is another significant input required while making estimations through CAPM. Risk premium is defined as an additional return expected



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by investors for repositioning their money from risk-free investment to a risky investment. Risk premium is thus an excess return expected for taking risk over and above risk-free investment. Risk premium is also a function of risk aversion of an investor, one who is risk-averse demands larger risk premium as compared to the investor who has a natural tendency being a risk-taker. Each investor in the market has a different assessment of risk premium depending upon risk aversion behaviour of investor as well as riskiness of an investment.

### ***Estimating Risk Premiums***

Estimating the risk premium is a crucial aspect of financial analysis and investment decision-making process. Here are some common methods used to estimate risk premium:

- 1. Historical Method:** Historical method of computing premium is the most common approach. In CAPM, historical premiums are computed as an average of difference between returns of stock and returns of risk-free investment. For instance, Calculate the historical average return on a broad market index (such as the S&P 500) over a specified period and subtract the risk-free rate (usually the yield on government bonds) over the same period. This provides a historical estimate of the equity risk premium.
- 2. Survey Method:** Under this method, analysts and financial institutions often conduct surveys to gather opinions on expected future market returns. These surveys may include questions about expected risk premiums for different asset classes. As per this method, risk premium is weighted average of the premiums demanded by individual investors. It is clearly impossible to estimate survey all investors in the market thus, most surveys focus either on large market participants or portfolio managers to get an estimate of expected premiums.
- 3. Implied Method:** Another alternative method to compute risk premium is implied method. This method is widely used in absence of historical return, commonly in case of Small private firms or newly listed firms. Under this method, expected return on equity can be obtained from the constant growth model of dividends. The value of return so obtained is subtracted from the risk-free rate to obtain implied equity risk premium.



$$\text{Value of stock} = \frac{\text{Expected dividends in next period}}{\text{Required return on equity} - \text{Expected growth rate in dividends}}$$

### **Illustration 5.5: Estimating Risk-Premium**

Current price of Tata Steel Ltd is Rs. 130, the expected yield on the stock for next period is 2.86% and the expected growth rate in long-term is 10.9%. Compute the risk premium of an investor.

*Solution:*

Rate of return on equity of Tata Steels can be obtained as:

$$\text{Value of stock} = \frac{\text{Expected dividends in next period}}{\text{Required return on equity} - \text{Expected growth rate in dividends}}$$

Substituting values,

$$130 = \frac{130(0.0286)}{r - 0.109}$$

$$r = 13.76\%$$

If current prevailing risk-free rate is 7%, then risk premium can be obtained as:

$$\begin{aligned}\text{Risk Premium} &= r - R_f \\ &= 13.76\% - 7\% = 6.76\%\end{aligned}$$

### **5.6.3 Beta**

The next input required for estimating cost of equity through CAPM is beta. Beta is a measure of a stock's sensitivity to the market movements. In the CAPM, beta of an asset has to be estimated in relation to market portfolio. Whereas in APM, beta has to be measured relative to each factor. Common methods to estimate beta are discussed below:

#### **Historical Market Beta**

Beta is an important component of CAPM, as it inculcates un-diversifiable risk in the model. Historical beta examines stock's volatility reflected in past price data with respect to the price data of market portfolio. Being based on past data historical beta tends to be backward looking due to which stock's future risk is not accurately reflected especially if there have been considerable shift in the market conditions. Historical beta also



depends on the time frame chosen for analysis. Thus, careful consideration shall be given to time frame chosen for the purpose of computation of historical beta.

Historical Beta can be calculated as:

$$\text{Historical Beta} = \frac{\text{Covariance(Stock Returns, Market Returns)}}{\text{Variance(Market Returns)}}$$
$$\frac{\text{Cov}(r_i, r_m)}{\text{Var}(r_m)}$$

$\text{Cov}$  = Covariance between return of asset and return of market

$\text{Var}$  = Variance of market returns

$R_i$  = Return on asset  $i$

$R_m$  = Return on market portfolio

Another method of computing beta through historical data is regression method. Regression equation can be set up between return of stock and return of market portfolio. Beta estimated through regression is more dynamic as it takes into account the entire time series of historical data, capturing time variations and trends among the stock and the market. Although it is the most widely used method of estimating beta like any other method it also suffers from limitations. Major limitation of this method is that it assumes constant and linear relationship between stock and market portfolio which may not be the case always. Over the years, regression beta is stated to be as most sophisticated and dynamic method of estimation.

The regression equation for estimating beta can be set up as:

$$R_i = \alpha + \beta R_m + \epsilon$$

$R_i$  = Return on stock

$R_m$  = Return on market portfolio

$\alpha$  = Intercept term

$\beta$  = Slope of coefficient, representing the stock's beta

$\epsilon$  = Error term

A beta of more than 1 indicates that stock is more volatile than market, while a beta less than 1 suggests lower volatility compared to the market. A beta of 1 implies that the movement in stock is in line with the market.



## Bottom-up Beta

This method contrasts with the more traditional top-down beta, which relies on industry averages or sector benchmarks. Bottom-up beta is particularly useful when a company's operations are diverse, making it challenging to find an industry or sector that accurately represents its risk characteristics. Bottom-up beta involves a thorough examination of the specific business activities and risk factors associated with a particular company thus making it superior from regression beta. Bottom-up beta is calculated from unlevered beta which is free from the effect of financial leverage.

Bottom-up beta can be obtained in three steps:

- 1. Identify Comparable Companies:** Select a group of comparable companies in the same industry or sector. These companies should have similar business operations and market exposures.
- 2. Collect Financial Data:** After identifying comparables, next step is to collect financial data for the target company as well as for the selected comparables. Key financial metrics are obtained which include: return on equity, volatility of earnings, financial leverage and market capitalization.
- 3. Obtain Beta:** After identifying the comparables and estimating their financials next step is to obtain the beta of the target as well as comparable companies which can be obtained through historical Method or Regression of historical returns.
- 4. Calculate Unlevered Beta:** Obtain average of the financial data as well as beta of the comparables. Upon obtaining averages of financial metrics and beta, unlevered beta of industry is calculated by removing the effect of financial leverage through following formula.

Use the following formula to calculate the unlevered beta:

$$\beta_u = \frac{\beta_l}{1 + (1 - \text{tax rate}) \times \frac{\text{Debt}}{\text{Equity}}}$$

$\beta_u$  = Unlevered Beta

$\beta_l$  = Leverage Beta

Above, unlevered beta is free from financial leverage. However, the effect of operating leverage can also be removed making it a



Notes

business beta which is free from both financial as well as operating leverage. This is done as follow:

$$\text{Business Beta} = \frac{\beta_u}{1 + (\text{Fixed Cost} / \text{Variable Cost})}$$

The biggest problem with calculating business beta is informational. It is challenging to acquire information about fixed costs and variable costs of individual firms. Thus, in the process of valuation it is assumed that the operating leverage of firms within a business are similar and compute only unlevered beta which is free from financial leverage.

- 5. Calculate Bottom-up Beta:** Once the unlevered beta of industry is obtained levered bottom-up beta of company is calculated as follows:

Levered Bottom-Up Beta = Unlevered beta  $(1 + (1 - t) (\text{Debt}/\text{Equity}))$

Unlevered beta = Average unlevered beta of industry

Debt/Equity = Debt-Equity ratio of specific business or businesses

#### **Illustration 5.6: Estimating Bottom-up Beta**

Nutri-blend is a food processing firm in order to estimate its unlevered beta we look at publicly traded companies in the same domain with market capitalization less than \$500 million. The average debt-to-equity ratio for these firms is 2:3, average regression beta across these stocks is 0.81, and marginal tax rate is 35%. If Debt-Equity ratio of Nutri-blend is 3:7 compute its beta using Bottom-up beta approach.

*Solution:*

$$\begin{aligned}\text{Unlevered beta for food processing firms} &= \frac{\beta_l}{1 + (1 - \text{tax rate}) \times \frac{\text{Debt}}{\text{Equity}}} \\ &= \frac{0.81}{1 + (1 - 0.35) \times \frac{2}{3}} = 0.56\end{aligned}$$

$$\begin{aligned}\text{Levered beta of nutri-blend} &= \text{Unlevered beta} \times (1 + (1 - \text{tax rate}) \frac{\text{Debt}}{\text{Equity}}) \\ &= 0.56 \times (1 + (1 - 0.35) \frac{3}{7}) = 0.71\end{aligned}$$



### Adjusted Beta

Historical beta or Regression beta is regarded as unadjusted beta. As beta has tendency to adjust towards 1 in long run, a higher beta drift to 1 and lower beta move towards 1. Thus, Blume's adjustment method is employed to adjust beta so that it is closer to the expected future beta.

Blume's formula is described as follows:

$$\beta_{\text{adjusted}} = \frac{2}{3} \times \beta_{\text{Estimated}} + \frac{1}{3} \times 1$$

The Blume's adjusted beta is computed during forecasting. Thus, it is also called forecasted beta.

### Instability of Beta

Beta values can change over time due to change in company's risk profile, change in market conditions, natural calamities or situation like pandemic can cause changes in the value of beta. This tendency of beta to change is regarded as instability of beta. Instability in beta values is caused by the several key factors which are discussed below:

- 1. Sensitivity to Historical Data:** Beta is calculated on the basis of historical price data of stock and market. The use of historical data makes beta sensitive to the time period chosen for the estimation. Different time frames may give different beta values, leading to potential instability.
- 2. Change in Business Conditions:** A company can change its business model, management strategy, positioning strategy which causes change in company's risk profile as well. Any change in the risk profile of the company leads to instability in beta values.
- 3. Change in Market Conditions:** Business cycle is one of the key factors leading to instability in beta. During the periods of economic uncertainty or financial market volatility, beta values may become more erratic as stock prices respond to changing macroeconomic factors.
- 4. Adjustments in Capital Structure:** Any change in capital structure of the company impacts its beta. If company increases its debt, stockholders tend to increase the required cost of capital as increase in financial leverage increases the risk exposure of equity holders.



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- 5. Economic Events and Shocks:** Unexpected geo-political shocks, unforeseen economic events, or any industry-specific developments can cause changes in a company's risk profile, ultimately leading to beta instability. Investors need to be aware of both internal and external factors that might influence beta.
  - 6. Influence of Short-Term Factors:** Stability of beta can also be influenced by short-term movements in the markets. Such as result of elections or passing of any new regulation may lead to short-term changes in beta values.

Instability of beta can be challenging for investors who rely on beta as a measure of risk. Thus, investors must emphasize the context of beta values and understand the factors influencing them. Instability is an inherent characteristic of beta therefore investors or analyst must accompany beta values with fundamental analysis providing a broader and a holistic view of company's performance. Instability of beta makes it important to regularly reassess the risk measures and use sound judgment while interpreting beta values for the purpose of computing intrinsic value of stock.

## IN-TEXT QUESTIONS

1. Due to the presence of tax shield, cost of debt is calculated on \_\_\_\_\_.
    - (a) Post-tax basis
    - (b) Pre-tax basis
    - (c) Risk free rate of return basis
    - (d) None of the above
  2. Unlevered beta removes the impact of \_\_\_\_\_.
    - (a) Financial leverage
    - (b) Operating leverage
    - (c) Combined leverage
    - (d) All of them
  3. The cost of capital for a firm can \_\_\_\_\_.
    - (a) Rate of return required on total assets of firm
    - (b) Internal rate of return
    - (c) Vary inversely with the cost of equity
    - (d) None of the above



## 5.7 Weighted Average Cost of Capital

The Weighted Average Cost of Capital (WACC) is a financial metric that represents the average rate of return a company is expected to pay to all its security holders. It is a crucial concept in corporate finance and is used to discount the future cash flows of firm during the valuation of a company or its projects. The formula for calculating WACC is as follows:

$$WACC(K_o) = (K_e W_1) + (k_d \times (1 - \text{Tax Rate}) \times W_2) + K_p \times W_3$$

Where:

$K_o$  = Weighted average cost of capital

$K_e$  = Cost of equity

$K_d$  = Cost of debt

$K_p$  = Cost of preferred stock

$W_1$  = Proportion of equity in capital structure

$W_2$  = Proportion of debt in capital structure

$W_3$  = Proportion of preference share capital in capital structure

While calculating WACC analysts have to assign weights to each source of capital. Choice of weights in calculating the Weighted Average Cost of Capital (WACC) is a critical decision. While assigning weights analysts are faced with choice between market value weights and book value weights out of which an appropriate and careful selection shall be made as both approaches have their merits, and the decision depends on the context and the specific characteristics of the company. Here's a closer look at each of the choice:

**1. Market Value Weights:** The market value weights are based on total market value of the company's capital sources. Market value weights reflect current market conditions and the true economic value of the company's securities. Such weights are appropriate for companies with fluctuating stock prices and debt values. Market values can be volatile and subject to short-term fluctuations. Obtaining accurate market values for debt may be challenging, especially for private companies. Thus, market value weights are generally preferred when estimating WACC for publicly traded companies.



**2. Book Value Weights:** The book value weights are based on book value of the company's capital source. Book value weights are simpler to calculate and are less subject to market fluctuations. However, these weights may not accurately reflect the current economic value of the company's securities which can lead to mispricing when market and book values diverge significantly. Book value weights are commonly used for private companies or when market values are not readily available or are deemed unreliable.

A careful consideration shall be made while assigning weights to ascertain WACC.

#### ***Illustration 5.7: Estimating Weighted Average Cost of Capital***

Titan Eyewear is an eyewear company with a well-established reputation. The pre-tax cost of debt is 4.17% based on bond ratings and cost of equity is 7.56% estimated on the basis of CAPM. Debt-Equity ratio of Titan is 17.6% based on the market value weights. Estimate WACC of Titan if tax rate is 35%.

*Solution:*

$$\begin{aligned}WACC(K_o) &= (K_e W_1) + (k_d \times (1 - \text{Tax Rate}) \times W_2) \\&= 7.56\% \times 0.824 + 4.71\% (1 - 0.35)(0.176) \\&= 6.23\% + 0.54\% = 6.77\%\end{aligned}$$

#### **5.8 Summary**

Discount rates are an important input of DCF analysis thus making it necessary to understand the concept and estimation of discount rates. In this chapter, a detailed explanation is given regarding computation of cost of debt, cost of preferred stock and equity along with WACC. This chapter, also enables to enhance the understanding about inputs of CAPM such risk-free rate, risk premium and beta. This chapter creates an understanding regarding discount rates computations for the purpose of valuation of the business or businesses.



### 5.9 Answers to In-Text Questions

- |                           |                                  |
|---------------------------|----------------------------------|
| 1. (b) After-tax basis    | 3. (a) Is the return required on |
| 2. (a) Financial Leverage | the total assets of a firm       |

### 5.10 Self-Assessment Questions

1. Calculate the post-tax cost of debt for the HOMFIY Ltd., a provider of home appliances, assuming that the coupon rate set on its debt is 10% and its tax rate is 40%.
2. ThriveMyway is a leading travel company having a debt equity ratio of 4:1. Its pre-tax cost of debt is 8% and cost of equity is 12%. Marginal tax rate applicable to company is 35%. Estimate post-tax weighted average cost of capital of ThriveMyway.
3. Savoury Eats is a food processing company, with beta of 1.2 as in 2022 with no outstanding debt. Estimate the cost of equity for Savoury Eats if the Treasury bond rate is 6.4% and risk premium is 5%.

### 5.11 References

- ◆ Damodaran, A. Damodaran on Valuation, Security Analysis for Investment and Corporate Finance (2nd ed.). Wiley India Pvt. Ltd.
- ◆ K. G., CA, & Sehrawat, N. K. Handbook on Valuation - Concept & Cases. New Delhi, Bharat Law House Pvt. Ltd, ISBN: 978-93-5139-497-6.

### 5.12 Suggested Readings

- ◆ Damodaran. Investment Valuation, Tools and Techniques for Determining the Value of any Asset (3rd ed), Wiley India Pvt. Ltd.
- ◆ Damodaran. Corporate Finance (2000), Theory and Practical. (2nd ed), Wiley India Pvt. Ltd.
- ◆ K. G., CA, & Sehrawat, N. K. Handbook on Valuation - Concept & Cases. New Delhi, Bharat Law House Pvt. Ltd, ISBN: 978-93-5139-497-6.



# DCF Valuation

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## STRUCTURE

- 6.1 Learning Objectives**
- 6.2 Introduction to Discounted Cash Flow Analysis**
- 6.3 Dividend Discount Model**
- 6.4 Free Cash Flows to Equity Model**
- 6.5 Free Cash Flows to Firm (FCFF) Model**
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- 6.9 References**
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### 6.1 Learning Objectives

- ◆ Understanding the concept of Discounted Cash Flow Valuation.
- ◆ Understanding the Dividend Discount Model of Valuation.
- ◆ Understanding the Valuation through Free Cash Flows to Equity.
- ◆ Understanding the Valuation through Free Cash Flows to Firm.

### 6.2 Introduction to Discounted Cash Flow Analysis

Every investment decision requires determination of fair value of a stock or a company being considered for investment. Intrinsic value is innate worth of an investment. It can also be defined as bundle of benefits that are expected upon investment. Intrinsic value



of a stock can deviate from the price paid for it as price for a stock is based on the market demand and supply whereas value is measured by the factors fundamental to the company, industry as well economy. Firms are said to be undervalued if price is less than the value and are considered overvalued if price is more than the intrinsic value. Investors have a preference to invest in undervalued firms as they promise the future gains whereas overvalued firms have a probability of loss as price has a tendency to approach intrinsic value in long run. To estimate the true value of stock the most widely used method is Discounted Cash Flow (DCF) analysis.

DCF is a valuation technique whereby, expected future cash flows are discounted to arrive at their present value. DCF is a systematic and comprehensive approach to evaluate the financial adequacy of an investment. DCF begins by estimating freely available future cash flows to firm or to equity holders. Cash flows thus obtained are then discounted at an appropriate discount rate to estimate the present value of a stock or firm. By calculating the present value of each investment opportunity, DCF enables investors to compare them and rationally assess the assets' attractiveness. Through DCF, investors can evaluate as of which investment is providing more risk-adjusted return as compared to the price being paid for it. Several models have been developed under DCF analysis to obtain the present value of future cash flows. The choice of the specific DCF model is based on the structure of cash flows being analysed and the characteristics of the investment made. Next section onwards, we will be discussing models of DCF analysis.

### 6.3 Dividend Discount Model

The Dividend Discount Model (DDM) is an estimation technique used to determine a stock's intrinsic value by discounting expected dividend payments at the cost of equity. This model is applicable for companies having history of regular dividend payments and is also expected to continue same in future. The basic idea is that intrinsic value of stock is reflected through present value of expected dividends. Dividend discount model has several variations to it based on the growth rate of the dividend. Variations to dividend discount models are discussed below:



### 6.3.1 Zero Growth Model

In this model, it is assumed that company is paying same amounts of dividends forever i.e. there is no growth in dividends till the life of a company. In such a case, value of equity can be ascertained as:

$$P_0 = \frac{D_1}{K_e}$$

Where,

$P_0$  = Value per share

$K_e$  = Cost of equity

$D_1$  = Dividend expected at the end of year 1

### 6.3.2 Constant Growth in Dividends

Constant growth model is also known as Gordon growth model as it has been propounded by Myron Gordon in 1956. As per this model, dividends are expected to have a constant growth rate and cost of equity is more than the growth rate of the company. In this model, dividends are growing but at a fixed annual percentage. Here, an estimate of a stock's value is made as follows:

$$P_0 = \frac{D_1}{K_e - g}$$

$P_0$  = Value per share

$K_e$  = Cost of Equity

$D_1$  = Expected Dividend at the end of year 1

$g$  = Growth rate of dividends

#### Illustration 6.1: Estimating Cost of Equity through DDM

In 2023, Eco-park Ltd. announced a \$1.36 dividend on its \$3.06 earnings per share (EPS). It is assumed that the firm will always have a 12% return on equity. Assuming the firm's beta to be 0.8. The current prevailing risk-free rate is 4.5%, with a risk premium of 4%. Assume that the stock was valued at \$150 per share at the beginning of 2023.

*Solution:*

$$\text{Payout Ratio} = \frac{\text{DPS}}{\text{EPS}} = \frac{1.36}{3.06} = 44.44\%$$



Retention Ratio = 1 – Payout Ratio

$$\text{Retention Ratio} = 1 - 0.4444 = 55.56\%$$

$$\begin{aligned}\text{Expected growth rate in EPS} &= \text{Return on Equity} \times \text{Retention Ratio} \\ &= 12\% \times 0.5556 = 6.66\%\end{aligned}$$

$$\begin{aligned}\text{Cost of Equity} &= \text{Risk-free Rate} + \text{Beta} \times \text{Risk Premium} \\ &= 4.5\% + 0.8 \times 4\% = 7.7\%\end{aligned}$$

$$\text{Value of Equity per share} = \frac{D_1}{k_e - g} = \frac{1.36 (1+0.0666)}{0.077 - 0.0666} = 139.47.$$

Early in 2023, the stock was trading for \$150, but the value per share determined by the dividend discount model is approximately \$140. Consequently, it can be said that the stock is currently overpriced.

### 6.3.3 Variable Growth Rate Model

A valuation technique used to determine the intrinsic value of a stock where dividend growth is anticipated to occur at varying rates is the variable growth rate model of dividends. For example, in the initial years growth rate of company can be 8% per annum and then for subsequent 3 years growth rate can increase to 10% p.a. and thereafter company may stabilise and attain a constant growth rate of may be 15% p.a. for an infinite period. Since the variable growth model is more adaptable than the constant growth model with businesses that have different dividend growth rates, thus the variable growth rate model is being used in such situation.

Market value of equity under variable growth rate can be computed as:

$$P_0 = \sum_{i=1}^5 \frac{D_0 (1+g_1)^i}{(1+K_e)^i} + \sum_{i=6}^{10} \frac{D_5 (1+g_2)^{i-5}}{(1+K_e)^i} + \dots + \sum_{i=11}^{\infty} \frac{D_{10} (1+g_3)^{i-10}}{(1+K_e)^i}$$

Where,

$P_0$  = Value per share

$K_e$  = Cost of equity

$D_0$  = Current year dividends

$D_5$  = Dividends expected at the end of 5<sup>th</sup> year

$D_{10}$  = Dividend expected at the end of 10<sup>th</sup> year

$g_1, g_2, g_3$  = Growth rate of dividends in different periods


**Illustration 6.2: Valuing a Firm with Two-Stage DDM**

One of the top investment banks is Vanguard Finance. At present, the bank's payout ratio stands at 10.07%, while its return on equity (ROE) is 17.49%. For the first five years, the bank maintains a high growth rate, with a 5.5% risk-free rate, a 5% risk premium, and a beta of 1.2. After five years, the bank's beta becomes 1. With a steady growth rate of 5% for an indefinite period, the bank also stabilizes and maintains ROE at 13% following a period of rapid expansion. Estimate the equity value of Vanguard Finance if the company's current Earnings per Share (EPS) is 12.05. You should also mention whether the share is currently trading at \$128.

*Solution:*

Value of Vanguard Finance can be estimated using two stage dividend discount model:

$$\text{Expected growth in Earning per share} = \text{Return on Equity} \times \text{Retention Ratio} = 17.49\% \times (1 - 0.1007) = 15.72\%$$

$$\text{Stable period payout ratio} = 1 - \frac{g}{\text{ROE}} = 1 - \frac{0.05}{0.13} = 61.54\%$$

$$\text{Cost of Equity in high growth phase} = 5.5\% + 1.2(5\%) = 11.5\%$$

$$\text{Cost of Equity in stable growth phase} = 5.5\% + 1(5\%) = 10.5\%$$

Estimating present value of dividends for first 5 years:

Year	EPS	DPS	PV @11.5%
1	13.94	1.40	1.25
2	16.14	1.63	1.31
3	18.67	1.88	1.36
4	21.60	2.17	1.40
5	25.00	2.52	1.46
<b>Sum</b>			<b>6.78</b>

Estimating terminal price during stable growth phase:

$$\text{Terminal price} = \frac{D_6}{Ke,st - gn}$$

$$\text{Expected EPS}_6 = \$12.05 \times (1 + 0.1572)^5 \times 1.05 = \$26.26$$

$$\text{Expected DPS}_6 = \text{EPS}_6 \times \text{Stable period payout ratio} = \$26.26 \times 0.6154 = \$16.16$$



$$\text{Terminal Price} = \frac{\text{Dividends}_6}{Ke, st - g} = \frac{\$16.16}{0.105 - 0.05} = \$293.81$$

$$\text{Present Value of Terminal Price} = \frac{\$293.81}{(1.115)^5} = \$170.49$$

Value of Equity = Present Value of Dividends + Present Value of Terminal Price = \$6.78 + \$170.49 = \$177.27

Currently, Vanguard Finance is trading at \$128, thus it can be stated that company is significantly undervalued.

## 6.4 Free Cash Flow to Equity Model

Free Cash Flow to Equity (FCFE) is a financial measure indicative of the cash yielded by a company which is available to be distributed to its equity shareholders. FCFE is an amount remaining after meeting operating expenses, reinvestments and other financial obligations. This model is just a modification of dividend discount model where expected dividends are substituted with free cash flows available for stockholders including stock buybacks.

Under FCFE model of valuation, the present value of the expected future FCFE is computed, taking into account the appropriate discount rates that accommodate time value of money into it. FCFE model yield more realistic estimates of value of equity as it is based on cash flows rather than dividends. Under FCFE model, valuation is not bound by managerial judgements. There is no constrained to non-negative values as free cash flows can be negative. Although, estimating FCFE is complicated as the elements of FCFE are difficult to assess. To create better understanding, section below gives details of each element of FCFE model:

### 6.4.1 Inputs to FCFE Model

Free cash flows to equity (FCFE) is a key metric used for valuation of company's stock.

Free Cash Flows to Equity (FCFE) can be measured as:

$$\begin{aligned} \mathbf{FCFE} &= \text{Net Income} - (\text{Capital Expenditures} - \text{Depreciation}) \\ &- \text{Changes in Net Working Capital} + \text{Net Debt} - \text{Preference Dividend} \end{aligned}$$



Where:

**Net Income** is company's profit after tax.

**Capital Expenditures (CapEx)** is the capital expenditure incurred on acquiring property, plant and equipment.

**Net Debt** is new debt issued minus the cash paid for repaying existing debts. It reflects the company's financing activities.

The resulting FCFE represents the cash that is available for distribution to equity shareholders through dividends, share buybacks, or other forms of equity payments. To estimate the potential free cash flows analysts need to estimate the growth rate of these cash flows. This expected growth rate of FCFE can be estimated as:

Expected growth in FCFE = Equity reinvestment rate × Non-cash ROE

Where:

**Equity reinvestment rate** is the rate or proportion of earnings reinvested into the company to generate additional value to shareholders. The equity reinvestment rate is crucial for investors and analysts as it is indicative of company's profitable growth generated through retained earnings. A higher reinvestment rate suggests that the company can generate more value by reinvesting profits into new projects, acquisitions, or other opportunities. Conversely, a lower reinvestment rate may indicate that the company is not efficiently deploying its retained earnings to generate significant returns. This rate can be computed as:

$$\text{Equity reinvestment rate} = \frac{\text{Net Capex} + \text{Change in Working Capital} - \text{Net Debt}}{\text{Net Income}}$$

**Non-cash ROE** is a modification of traditional return on equity computed by excluding certain non-cash items from the calculation. As in FCFE model, no excess cash is left thus return is to be measured on non-cash basis.

Non-cash ROE can be computed as:

**Non-cash ROE** =

$$\frac{\text{Net Income} - \text{After tax income from cash and marketable securities}}{\text{Book value of equity} - \text{Cash and marketable securities}}$$

Once the potential free cash flows available to equity holders calculated they are then discounted at rate of return expected by stockholders (refer to chapter 5 for discount rates estimation).



### 6.4.2 Variations to FCFE Model

FCFE model has several variations depending on its assumptions about growth and reinvestment needs. Further, this section examines versions of FCFE model.

#### Constant Growth FCFE Model

The constant growth FCFE model is a valuation tool that assesses intrinsic value of a company's equity based on its potential free cash flows that will be accessible to equity stockholders. This model assumes that free cash flows to equity are expected to grow at a constant rate for an indefinite period similar to constant Gordon growth model, which is commonly used for valuing dividend-paying stocks.

The formula for the constant growth FCFE model is as follows:

$$P_0 = \frac{FCFE_1}{K_e - g}$$

Where:

$P_0$  = Current market value of stock

$K_e$  = Cost of equity

$g$  = Growth rate

$FCFE_1$  = FCFE expected at the end of year 1

#### Illustration 6.3: Estimating Value of Equity: Constant Growth Model

In 2023, Radiant Home Goods, a manufacturer of household products, announced a dividend of \$1.50 per share on its \$3.00 earnings per share. The company recorded \$320 million in depreciation and \$450 million in capital expenditures in the same year. There are presently 120 million outstanding shares of the company at the market price of \$50 per share. Considerably less working capital is required, which is negligible. The company's earnings are predicted to grow at a rate of 5% annually in a steady state of growth. The stock has a 4.5% risk premium and a beta of 1.2. The market's current risk-free rate is 5.25%. Determine the value per share by using the FCFE Model.



*Solution:*

Value of share as per FCFE can be estimated as:

$$P_0 = \frac{FCFE_1}{K_e - g}$$

FCFE for valuation of company can be computed as:

FCFE = Net Income – (Capital Expenditures – Depreciation) – Changes in Net Working Capital + Net Debt Issued – Preference Dividend

EPS = \$3.00

Capex per share = \$450/120 = \$3.75

Depreciation per share = \$320/120 = \$2.67

FCFE = 3.00 – (3.75 – 2.67) = \$1.92 per share

$FCFE_1 = FCFE \times (1 + g) = 1.92 \times (1.05) = \$2.02$

$K_e$  = Risk free rate + Beta × (Risk Premium)

$$= 0.0525 + (1.2 \times 0.045) = 10.65\%$$

Stable growth rate (g) = 5%

Substituting Values in formula value of equity can be obtained as:

$$P_0 = \frac{2.02}{0.1065 - 0.05} = \$35.75$$

Currently company is trading at a share price of \$50. Based on constant growth model of FCFE it can be stated that company is highly overvalued as true value of share obtained as per valuation is \$ 35.75.

### Two-Stage FCFE Model

The goal of the two-stage FCFE model is to assign a value to a company that is predicted to grow at varying rates over time. In general, businesses grow faster at first, then as they mature, they stabilize and continue to grow at a steady rate indefinitely. Different growth rates in free cash flows to equity over two separate periods are recognized by this model. Compared to the constant growth FCFE model, this approach is more adaptable because real-world companies typically experience fluctuations in their growth rates. As a result, this model usually works better during the valuation process. The formula for value of Equity in two-stage FCFE model is:



Notes

Value of Equity = PV of FCFE during high growth period + PV of terminal price

$$= \sum_{t=1}^{t=n} \frac{FCFE_t}{(1+K_e)^t} + \frac{P_n}{(1+K_e)^n}$$

Where,

$FCFE_t$  = Free cash flows to equity in year  $t$

$P_n$  = Terminal Value at end of extraordinary growth period

$K_e$  = Cost of equity in high growth phase

The terminal value of equity can be measured as:

$$P_n = \frac{FCFE_{n+1}}{r - g_n}$$

Where,

$r$  = Cost of Equity in Stable growth phase

$g_n$  = Stable growth rate

#### **Illustration 6.4: Estimating Value of Equity in Two-Stage Model**

Seralab Inc. produced chemicals used for cleaning and sanitizing purpose. It reported earnings per share of \$2.00 in 2019 with projected growth rate of 12% on EPS from 2020 to 2022 after which company stabilised and attained a growth rate of 6% for an indefinite period of time. In 2019, company reported capital expenditure per share of \$2.10, and depreciation of \$1.15 per share. Capital expenditure as well as depreciation are anticipated to increase at the same rate as EPS from 2020 to 2022 and are assumed to equalize each other after 2022. Revenues reported for the year 2019 are \$1200 million which are expected to increase the rate of 6% per annum for the period between 2020 and 2022, and at the rate of 5% after that. Working capital requirements are 5% of revenues. The stock is expected to have a beta of 1.1 with risk premium of 4%. Prevailing risk-free rate in the market is 4.50%. Currently company has \$70 million shares outstanding trading at a current market price of \$18. Estimate the value of stock using two-stage FCFE model.

*Solution:*

Above problem has two growth rates; thus we will employ two-stage FCFE Model.



FCFE for base year, i.e., 2019 can be calculated as:

$\text{FCFE} = \text{EPS} - (\text{Capex per share} - \text{Depreciation per share}) - \text{change in working capital}$

$\text{Cost of Equity } (K_e) = \text{Risk free rate} + \text{Beta} \times (\text{Risk Premium})$

$$= 4.5\% + (1.1 \times 4\%) = 8.9\%$$

Particulars	2019	2020	2021	2022	2023
Earning per share (EPS)	2	2.24	2.51	2.81	2.98
Capex per share	2.10	2.35	2.63	2.95	3.13
Depreciation per share	1.5	1.68	1.88	2.11	2.23
Revenue	1200	1272	1348	1429	1501
Working Capital (as % of revenues)	60	64.	67	72	75
WC per share	0.86	0.91	0.96	1.03	1.07
FCFE (EPS- (Capex-depreciations) – Change in working capital)		0.66	0.8	0.94	1.01
Cost of Equity	8.9%	8.9%	8.9%	8.9%	8.9%
<b>PV of FCFE</b>		0.61	0.67	0.73	

The terminal value of equity can be measured as:

$$P_n = \frac{\text{FCFE}_{n+1}}{r - g_n}$$

Where,

$$\text{Terminal Value} = \frac{1.01}{0.089 - 0.06} = \$34.82$$

$$\text{PV of Terminal Value} = \frac{34.82}{(1 + 0.089)^3} = \$26.96$$

$\text{Value of Equity} = \text{PV of FCFE during high growth period} + \text{PV of terminal price}$

$$= \sum_{t=1}^{t=n} \frac{\text{FCFE}_t}{(1 + K_e)^t} + \frac{P_n}{(1 + K_e)^n}$$



Value of Equity = \$2.01 + \$26.96 = \$28.97

Current market price of stock is \$18 whereas the intrinsic value obtained is \$28.97 which means company is currently undervalued.

### IN-TEXT QUESTIONS

- 1.** DCF analysis calculates the present values of
  - (a) Potential Cash Flows
  - (b) Historical Cash Flows
  - (c) Both (a) and (b)
  - (d) None of the above
- 2.** The rate of discount used in FCFE model is
  - (a) Cost of Equity
  - (b) Cost of Debt
  - (c) Weighted Average Cost of Capital
  - (d) All of them
- 3.** Which of the following is not a Dividend Discount Model?
  - (a) Zero Growth Model
  - (b) Constant Growth Model
  - (c) Varying Growth Model
  - (d) None of the above
- 4.** Terminal Value in DCF analysis represents value of investment \_\_\_\_\_.
  - (a) At end of high growth period
  - (b) At the beginning of high growth period
  - (c) In perpetuity
  - (d) In high growth period
- 5.** DCF analysis is most commonly used for:
  - (a) Long-term investment decisions
  - (b) Short-term investment decisions
  - (c) For risk-management purpose
  - (d) For tax saving decisions

**IN-TEXT QUESTIONS**

6. FCFF are discounted at
- (a) Cost of Equity      (b) Cost of Debt  
(c) Cost of Capital      (d) Both (a) and (c)

## 6.5 Free Cash Flows to Firm (FCFF) Model

Free Cash Flow to the Firm (FCFF) is an important financial technique that assesses a company's capability to generate cash flows after meeting its operating expenses and capital expenditures. FCFF is a key input in valuation of firm. FCFF shed light on company's financial stability, capability to reward investors and pursue growth opportunities. The advantage of using FCFF model is that valuation is not bound by managerial judgements. There is no constraint to non-negative values as free cash flows can be negative, although estimating FCFF is complicated as the elements of FCFF are difficult to estimate. To create better understanding, the section below gives details of each element of FCFE model.

### 6.5.1 Inputs to FCFF Model

One among the key inputs required for estimating value of firm through this model is FCFF.

Free cash flows to firm can be estimated as:

$FCFF = EBIT \times (1 - t) - (\text{Capital Expenditures} - \text{Depreciation}) - \text{Change}$   
in non-cash working capital

Where:

**EBIT** is company's Earnings before interest and tax i.e. operating profit of the company.

**t** represents corporate tax rate.

**Capital Expenditures** are those expenses incurred to acquire, maintain, or upgrade physical assets.

**Change in non-cash working capital** represents changes in working capital excluding cash.



After estimating current year's FCFF next step is to estimate potential free cash flows available to firm which are discounted at overall cost of capital, i.e., WACC. To estimate the potential free cash flows analysts need to estimate the growth rate of FCF which can be estimated as follows:

$$\text{Expected growth in FCFF} = \text{Reinvestment rate} \times \text{Return on Capital}$$

Where,

**Reinvestment Rate** is a rate at which a company can reinvest its earnings back into the business to generate additional value to firm. It is a measure of the return that firm can expect on the retained earnings of a company when they are re-invested. Reinvestment rate is essential for investors and analysts to assess a company's ability to generate profitable growth from its retained earnings. A higher reinvestment rate suggests that the company can generate more value by reinvesting profits into new projects, acquisitions, or other opportunities. Conversely, a lower reinvestment rate indicates that the company is not efficiently deploying its retained earnings to generate significant returns. Reinvestment rate can be computed as:

$$\text{Reinvestment Rate} = \frac{\text{Net Capex} + \text{Change in Working Capital}}{\text{Net Income}}$$

**Return on Capital (ROC)** is a financial measure that assesses the efficiency and effectiveness of a company in generating profits from its capital. It is often used to assess how well a company utilizes its capital to generate returns for its investors. Return on capital can be calculated as:

$$\text{ROC} = \frac{\text{Net operating profit after tax}}{\text{Total Capital Employed}}$$

Once the potential free cash flows available to firm are computed they are then discounted at overall cost of capital, i.e., WACC (refer to chapter 5 for discount rates) of company.

### 6.5.2 Variations to FCFF Model

FCFF model has several variations depending on its assumptions about growth and reinvestment needs. In this section, we examine versions of FCFF model.



### Constant Growth FCFF Model

The constant growth FCFF model is a valuation tool that assesses intrinsic value of a company's equity based on its potential free cash flows that will be accessible to company for reinvestment. This model assumes that free cash flows to firm are expected to grow at a constant rate for an indefinite period similar to constant Gordon growth model, which is commonly used for valuing dividend-paying stocks.

The formula for the constant growth FCFF model is as follows:

$$\text{Value of Firm} = \frac{\text{FCFF}_1}{K_o - g}$$

Where,

$\text{FCFF}_1$  = Expected FCFF of next year

$g$  = Constant growth rate of free cash flows to firm

$K_o$  = Overall cost of capital

### **Illustration 6.5: Estimating Value of Firm: Constant Growth Model**

Nintendo Ltd a gaming company reported operating income of \$99.55 billion and an after-tax return on capital of 8.54% based on capital invested in beginning of 2023. Over the past years, firm had a reinvestment rate of 5%. The company currently has a bottom-up beta of 1.2, risk-free rate of 2% and market risk premium of 4%. Nintendo has a cash and marketable securities of \$717.6 billion. At the time of valuation, the stock was trading \$11,500 (142 million shares outstanding). If the company falls under the tax rate of 33%. Estimate the value of Nintendo also comment if the firm is undervalued or overvalued.

*Solution:*

$$\begin{aligned}\text{Expected growth rate} &= \text{Reinvestment Rate} \times \text{Return on Capital} \\ &= 0.05 \times 8.54\% = 0.427\%\end{aligned}$$

$$\begin{aligned}\text{FCFF}_1 &= \text{EBIT} (1 - t) (1 + g) \times (1 - \text{Reinvestment rate}) \\ &= 99.55 (1 - 0.333) (1 + 0.00427) (1 - 0.05) = \$63.63 \text{ billion}\end{aligned}$$

$$\begin{aligned}\text{Cost of Equity } (K_e) &= \text{Risk-free rate} + \text{Beta} \times \text{Risk Premium} \\ &= 2\% + 1.20 (4\%) = 6.80\%\end{aligned}$$



$$\text{Value of Firm} = \frac{63.63}{0.068 - 0.00427} = \$998.48 \text{ billion}$$

$$\begin{aligned}\text{Value of Equity} &= \text{Value of firm} + \text{Cash and Marketable securities} \\ &= \$998.48 + \$717.6 = \$1716.24\end{aligned}$$

Value per share as per current valuation = 12086.19

Current trading Price = \$11,500

As per valuation, it can be stated that currently company is undervalued.

### Two-Stage FCFF Model

The two-stage FCFF model is applied to value a firm whose growth rate initially increases as at an increasing rate and then is likely to stabilise for an indefinite period. This model recognizes different growth rates of FCFF over two distinct periods. This approach is more suitable for companies with varying growth rates.

The formula for value of Firm in Two-stage FCFF model is:

Value of Equity = PV of FCFF during high growth period + PV of terminal price

$$= \sum_{t=1}^{t=n} \frac{\text{FCFF}_t}{(1+K_o)^t} + \frac{\text{FCFF}_{n+1}}{\frac{\text{WACC} - g_n}{(1+K_o)^n}}$$

Where,

$\text{FCFF}_t$  = Free cash flows to Firm in year  $t$

$\text{FCFF}_{n+1}$  = Free Cash Flows to firm at end of extraordinary growth period

$K_o$  = WACC in high growth phase

$g_n$  = Growth rate after terminal year

FCFF model yields more realistic estimates of value of firm as it is based on the free cash flows available to firm rather than dividend which are a measure of income distributed to stockholders. Another advantage of using FCFF model is that valuation is not bound by managerial judgements. However, estimating FCFF is complicated as the elements of FCFF are difficult to estimate.


**Illustration 6.6: Estimating Value of Equity in Two-Stage Model**

In 2018, a Greek cement company Heracles General reported its operating income of 231.8 million Euros, with an effective tax rate of 25%. By the end of 2017, after-tax return on capital was 19%. In 2018, company reported net capital expenditure of 50 million Euros and an increase in non-cash working capital of 54 million Euros. Company has a beta of 0.93, risk free rate of 3.5% and risk premium of 4.6%. Pre-tax cost of cement company for next 5 years is 4.17%. Debt Equity ratio of company is 17.6% and cost of capital is 6.78%. After 5 years, growth rate in operating income will drop to 3.41% and return on capital will equalise cost of capital. If beta becomes 1 in stable period estimate the value of company.

*Solution:*

Value of firm on the basis of free cash flows can be estimated as:

Estimation of Inputs during high growth phase of first 5 years:

$$\text{Reinvestment Rate} = \frac{\text{Net Capex} + \text{Change in Working Capital}}{\text{EBIT} (1-t)}$$

$$= \frac{50 + 54}{231.8(1 - 0.25)} = 59.82\%$$

$$\begin{aligned}\text{Expected growth rate} &= \text{Reinvestment Rate} \times \text{Return on Capital} \\ &= 0.5982 \times 19\% = 11.36\%\end{aligned}$$

$$\begin{aligned}\text{Cost of Equity } (K_e) &= \text{Risk free rate} + \text{Beta} (\text{Risk Premium}) \\ &= 3.5\% + 0.93 (4.6\%) = 7.78\%\end{aligned}$$

$$\begin{aligned}WACC(K_o) &= (K_e W_1) + (K_d \times (1 - \text{Tax Rate}) \times W_2) \\ &= 7.78\% (0.824) + 4.17\% (1 - 0.25) \times (0.176) = 6.96\%\end{aligned}$$

Estimation of Inputs during stable phase:

$$\text{Cost of Equity} = 3.5\% + 1 (4.6\%) = 8.1\%$$

$$\text{Cost of Debt} = 4.17\% (1 - 0.25) = 3.13\%$$

$$\text{Cost of Capital} = 8.1\% (0.824) + 3.13\% (0.176) = 7.22\%$$

$$\begin{aligned}\text{Reinvestment rate in stable growth phase} &= \frac{g}{\text{ROC}} \\ &= \frac{3.41\%}{7.22\%} = 47.22\%\end{aligned}$$



Estimating FCF and their present Value:

Particulars	Current year	1	2	3	4	5
Reinvestment Rate		59.82%	59.82%	59.82%	59.82%	59.82%
EBIT (1 – t)	173.85	193.60	215.59	240.08	267.35	297.72
- Net Capex	50	55.68	62.00	69.04	76.88	85.61
- Change in working capital	54	60.13	66.96	74.56	83.03	92.46
FCFF	69.85	77.79	86.63	96.48	107.44	119.65
Cost of Capital		6.96%	6.96%	6.96%	6.96%	6.96%
Present Value of FCFF		72.73	75.72	78.84	82.08	85.47

Estimating terminal value:

$$\begin{aligned} \text{FCFF of 6th year} &= \text{EBIT}_6 (1 - t) (1 - \text{Reinvestment Rate}) \\ &= 297.72(1 + 0.0341)(1 - 0.25)(1 - 0.4722) \\ &= 121.87 \text{ million Euros} \end{aligned}$$

$$\text{Terminal value at end of year 5} = \frac{121.87}{0.0722 - 0.0341} = 3,198.68 \text{ million Euros}$$

$$\text{PV of terminal value} = \frac{3198.68}{(1+0.0722)^5} = 2257.31$$

$$\begin{aligned} \text{Value of Firm} &= \text{PV of FCFF} + \text{PV of terminal Value} = 394.84 + 2257.31 \\ &= 2652.15 \text{ million Euros.} \end{aligned}$$

## 6.6 Summary

The proceeding chapter enables to develop an understanding about the different models of valuation of companies based on dividends and free cash flows. Basic difference between dividend discount model and free cash flow model is definition of cash flows – dividend discount model uses cash flows that are distributed to equity holder i.e. potential dividends on stock whereas free cash flows model expands the definition of cash flows and includes cash flows available to firm. Both the models have



sub-variations depending on growth rates. Though estimating dividends is easier than estimating free cash flows as FCFF/FCFE are complicated to obtain but provide a better approximation of intrinsic value as it considers factors related to operations of firm. Thus, giving a true perspective of value of firm.

### 6.7 Answers to In-Text Questions

- |   |                             |
|---|-----------------------------|
| 1. (a) Potential cash flows             | 5. (a) Long-term investment |
| 2. (a) Cost of equity                   | 6. (c) Cost of Capital      |
| 3. (d) None of the above                |                             |
| 4. (a) At the end of high growth period |                             |

### 6.8 Self-Assessment Questions

1. In 2022, Ameri Steels Corporation declared dividends per share of \$4.56 which are expected to grow the rate of 4.5% for an indefinite period. The stock of Ameri Steels has a beta of 1.10, with risk-premium of 5.5%. Currently prevailing risk-free rate in the market is 6.25%.
  - (a) Estimate the value of stock, using constant growth model of dividends.
  - (b) If the stock is currently trading at \$120 per share, compute expected growth rate of dividends.
2. In 2023, Timber & Clark, a producer of household product reported earnings per share of \$4.20 on which it decided to declare dividends per share of \$1.60. The firm reported depreciation of \$215 million in 2023 and capital expenditures of \$375 million. 150 million of the shares outstanding are currently trading at \$50. Proportion of capex to depreciation remains constant in long run. The working capital needs of the company are insignificant. Timber & Clark had debt outstanding of \$2.6 billion, and planned to continue its current financing mix of debt and equity in future as well. The company was operating in steady state with annual earnings expected to grow



6% a year. The beta of the stock was 1.02. (The Treasury bond rate was 5.25%, and the risk premium was 4.5%).)

- (a) Calculate the value per share, using the appropriate dividend discount model.
- (b) Calculate the value per share, using the FCFE model as well.

3. One of the largest companies manufacturing defence objects in the UK, LEED Corporation declared EBITDA of \$1,300 million in the year 2023, before interest expenses and depreciation charges of \$200 million each. In 2023, Capital expenses amounted to \$460 million, and working capital accounted for 6% of revenues (which were \$12,500 million). Current market value of a company is \$3.1 billion and book value of debt outstanding is \$4.068 billion, generating a pre-tax interest rate of 7%. Company has 60 million shares outstanding, trading at \$65 per share, and the most up-to-date beta of the stock was 1. The company's tax rate was 35%. (The Treasury bond rate was 6%, and the risk premium was 5%). The firm's revenues, earnings, capital expenditures and depreciation are expected to grow at 8.5% per annum from year 2024 to 2028, after which the growth rate was expected to drop to 4%. In the steady growth period, capital expenditures are expected to be 120% of depreciation. During the stable period pre-tax cost falls to 6.5%. With the given information:

- (a) Compute the value of the equity in the firm along with the value per share.
- (b) Compute the value of the firm.

## 6.9 References

- ◆ Damodaran, A. *Damodaran on Valuation, Security Analysis for Investment and Corporate Finance* (2nd ed.). Wiley India Pvt. Ltd.
- ◆ K. G., CA, & Sehrawat, N. K. *Handbook on Valuation - Concept & Cases*. New Delhi, Bharat Law House Pvt. Ltd, ISBN: 978-93-5139-497-6.



## 6.10 Suggested Readings

- ◆ Damodaran, Investment Valuation, Tools and Techniques for Determining the Value of Any Asset (3rd ed), Wiley India Pvt. Ltd.
- ◆ Damodaran. Corporate Finance (2000), Theory and Practical (2nd ed), Wiley India Pvt. Ltd.
- ◆ K. G., CA, & Sehrawat, N. K. Handbook on Valuation - Concept & Cases. New Delhi, Bharat Law House Pvt. Ltd, ISBN: 978-93-5139-497-6.





## **UNIT - IV**





# Relative Valuation

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## STRUCTURE

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- 7.2 *Introduction*
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### 7.1 Learning Objectives

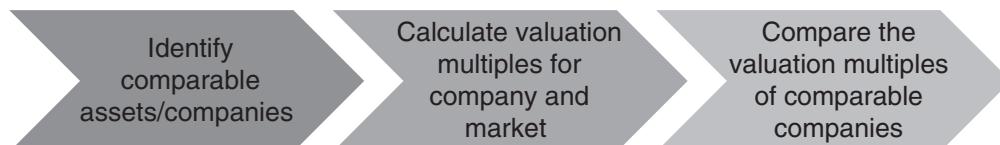
- ◆ To develop fundamental understanding of relative valuation framework.
- ◆ To learn about various relative valuation models and the usage of multiples in valuation.
- ◆ To estimate valuation multiples using regression analysis.
- ◆ To examine the impact of interest rates and inflation on company valuation.



## 7.2 Introduction

**Valuation** is an analysis of the worth of an asset, investment or firm. To place a value on a company, a financial analyst looks at the management, capital structure, prospects, and market value of its assets, along with various other aspects. It helps determine whether the asset or company is undervalued or overvalued by the market. Based on valuation, a firm may decide whether to bring investors, plan to sell the business (a part or whole), purchase a company, exit a partner, etc. Valuation may be absolute or relative. **Absolute valuation** finds out the actual or intrinsic value of an asset or investment based on dividends, cash flows, and the growth rate of a single company. The Discounted Cash Flow (DCF) is the most widely used and common absolute or intrinsic valuation technique based on the Net Present Value (NPV) of a company's future cash flows. Though it incorporates detailed information about the company's business, it does not extend the analysis by looking at other companies' or competitors' performance.

Meanwhile, **relative valuation** finds the worth of a company using multiples of earnings, book value, revenue, and cash flows, by comparing it with those of other companies. Comparable company and precedent transaction analysis are the two common relative valuation techniques. Comparable companies or **comps** value firms in relation to publicly traded companies with similar businesses. In contrast, precedent transactions or **precedents** value a company by examining the history of merger and acquisition transactions where the entire company was bought or sold.



**Figure 7.1: Steps in Relative Valuation**

Relative valuation is a comparison of the value of an asset with the value assessed by the market for similar or comparable assets. The relative valuation aims to value the companies based on how similar the market currently prices them. In relative valuation, the prices of the assets (a group of comparable/identical firms) are standardized using multiples of



earnings, book values or sales. Relative valuation is also known as business valuation or comparable valuation. The price-to-earnings (P/E) ratio is a popular multiple often used to measure a stock's relative worth. The relative valuation involves the ***identification of comparable assets (usually companies)*** and ***obtaining their market values, estimating price multiples based on the market values, and comparing these valuation multiples.*** Comparable firms are not necessarily in the same sector/industry; they can be comparable even if they are in very different businesses but have the same risk, growth, cash flow or other fundamental characteristics. Relative valuation helps assess a business's worth and provides a better apple-to-apple comparison across potential investments for investors. It is calculated with fewer assumptions, is simple and quickest way to understand for businesses and clients, and is indicative of the current scenario of the market in comparison to the discounted cash flow technique. To know the value of a business, various multiples are calculated using company's important financial information and comparing them with that of similar companies.

*Clicking on the link [https://youtu.be/\\_ext-x12VrQ?feature=shared](https://youtu.be/_ext-x12VrQ?feature=shared) would provide a brief overview of the concept of relative valuation.*

### 7.3 Relative Valuation Multiples

In order to compare the values of identical firms in the market, values are standardised relative to the firm's earnings, book value, revenues, or other financial characteristics. They are then called multiples. Multiples normalise the market values. They are financial measurement tools that evaluate the worth of a business and compare its value with other businesses. They are usually expressed in one financial metric as a ratio of another to make companies more comparable. Multiples identify disparities between a company's performance and that of its competitors. They help identify which companies are strategically placed in the market, creating more value than other players in the industry. Businesses are often valued using two types of multiples, broadly classified into enterprise value multiples and equity value multiples.

In any multiple, a meaningful relationship must exist between the numerator and denominator. For instance, enterprise value multiples are computed using denominator relevant to stakeholders (both stock and



debt) because enterprise value is equity value plus net debt. Therefore, the relevant denominator will be calculated before interest, preference dividend and minority interest. On the contrary, equity value multiples often use denominators relevant to equity stakeholders only. So, the relevant denominator will be calculated after interest, preference dividend and minority interest. While multiples like EV/Net Income and Market Capitalisation/EBITDA are meaningless multiples failing to establish a meaningful relationship between the numerator and denominator, with a better understanding of this association one can invent any multiple to provide perspective on valuation and financial performance of a business.

### 7.3.1 *Enterprise Value (EV) Multiples*

Enterprise value is market capitalisation plus debt minus cash. Enterprise value multiples are more suitable in assessing a merger and acquisition transaction as they eliminate the effect of debt financing. These multiples minimize the difference between the accounting policies of the comparable companies. The following are some common enterprise value multiples:

- ◆ **EV/EBITDA:** A commonly used ratio compares a company's enterprise value (EV) to its earnings before interest, tax, depreciation and amortisation (EBITDA). It tells investors how many times EBITDA they need to pay to acquire the business. EV/EBITDA usually varies from 6x to 18x. This multiple is used to determine the multiple at which the company is currently trading, compare the valuation of different businesses, negotiate the acquisition of a business, and calculate the target price for a company. This is the most preferred multiple while performing valuation of capital-intensive businesses.
- ◆ **EV/EBIT:** A ratio compares a company's enterprise value to earnings before interest and taxes while incorporating depreciation and amortisation. EV/EBIT usually varies from 10x to 25x. A high ratio indicates that a company's stock is overvalued, while a low ratio indicates that the company's stock is undervalued. Moreover, a low EV/EBIT indicates a more financially stable and secure company; however, the ratio provides a better picture of the company's financial state and actual worth when used with other ratios. While EV/EBIT is a widely used multiple, it may not be appropriate for companies which are capital intensive in Nature and thus have high Depreciation & Amortization.



- ◆ **EV/Sales:** EV/Sales multiple is obtained by dividing the company's enterprise value by annual revenue. It is commonly used in companies, usually early-stage and high-growth companies, whose operating cost exceeds revenues. This multiple is useful when EBITDA is negative or almost zero to value a business. EV/Sales ratio usually varies from 1x to 3x. A low EV/Sales indicates that a company is undervalued and may be an attractive investment for investors. Using EV/Sales multiple is the most appropriate option while valuing companies with negative net Income, EBITDA and cash flows.
- ◆ **EV/UFCF:** Unlevered Free Cash Flow (UFCF) is a cash flow available to all equity and debt holders after all the operating expenses, capital expenditures, and investments in working capital are made. EV/UFCF indicates how much investors are willing to pay for the company for each rupee of UFCF it generates. A high EV/UFCF ratio indicates that a more significant premium is attached to the rupee of UFCF generated by the company.

### 7.3.2 *Equity Value Multiples*

Equity value is equity value minus net debt. Investors often use equity value multiples for equity valuation. The following are some common equity value multiples:

- ◆ **Price/EPS (P/E):** P/E is the most commonly used valuation metric, which is the ratio of the market price of the stock to earnings per share. P/E usually varies from 15x to 30x. Companies growing faster typically have higher P/E ratios, which indicates that investors are willing to pay a higher price for the company's share due to higher growth expectations.
- ◆ **Price/Book Value per Share (P/B):** P/B is expressed as the ratio of market price per share to book value per share. The P/B ratio usually assesses the value of companies in manufacturing or real estate industries. The book value represents the net asset value of a company, which is the difference between assets and liabilities.
- ◆ **P/E/Growth (PEG Ratio):** The price-earnings to growth (PEG) ratio is P/E divided by the expected EPS growth rate. It goes beyond the P/E ratio and factors in future growth earnings potential to value



a company's price. In other words, it values a company's share by considering its market price, earnings and future growth prospects. The PEG ratio usually varies from 0.5x to 3x. It facilitates comparison between companies at different stages of life cycles. The ratio indicates that any company that is expected to grow its revenues, earnings and cash flows at a high rate is more valuable than a company with fewer growth prospects.

- ◆ **Dividend Yield:** It is the annual dividend per share divided by the stock's market price per share. This multiple is more suitable for comparison between companies operating in similar industries. A low or high dividend yield depends on the industry and the company's business life cycle. Fast-growing companies may reinvest in the business and report low yields, whereas mature companies may report high yields due to a lack of high growth opportunities.

**Table 7.1: Relative Valuation Multiples**

Multiple	Formula
EV/EBITDA	$\frac{\text{Enterprise Value}}{\text{Earnings Before Interest, Taxes, Depreciation and Amortisation}}$
EV/EBIT	$\frac{\text{Enterprise Value}}{\text{Earnings Before Interest and Taxes}}$
EV/Sales	$\frac{\text{Enterprise Value}}{\text{Sales}}$
EV/UFCF	$\frac{\text{Enterprise Value}}{\text{Unlevered Free Cash Flows}}$
P/E	$\frac{\text{Market Price Per Share}}{\text{Earnings Per Share}}$
P/B	$\frac{\text{Market Price Per Share}}{\text{Book Value Per Share}}$
PEG	$\frac{\text{Price/EPS}}{\text{Earnings Per Share Growth}}$
Dividend Yield	$\frac{\text{Annual Dividend Per Share}}{\text{Market Price Per Share}}$



Enterprise value multiples facilitate direct comparison of different firms, irrespective of their capital structure, whereas equity value multiples are influenced more by leverage and less by accounting differences in the comparable companies. Precisely, Valuation multiples are influenced by various factors like market scenario, industry growth prospects, company size and profitability, and competitive dynamics of an industry. The multiples discussed above are commonly used valuation multiples. All these ratios provide a different perspective on a company's value and financial performance. Choosing the correct multiple depends on the purpose of the analysis, the nature of the industry and the business. For instance, a revenue multiple might be relevant in the retail industry, the P/B ratio might be helpful in financial services, and the PEG ratio might be significant in the technology sector.

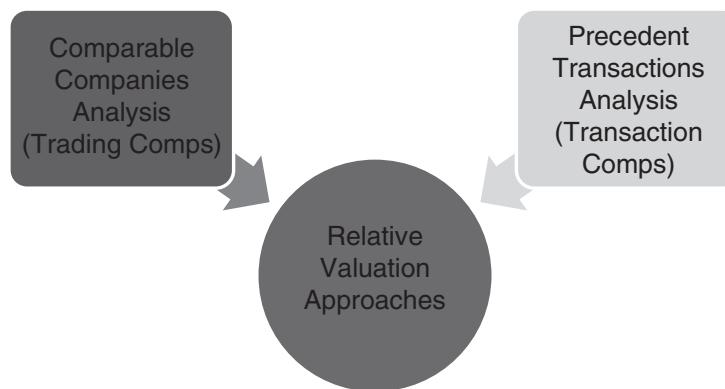
### IN-TEXT QUESTIONS

1. Relative valuation involves
  - (a) Valuing the companies based on market valuation of similar companies
  - (b) Calculation of present value of expected future cash flow
  - (c) Historical costs based valuation
  - (d) Calculation of cost of capital
2. P/E ratio is
  - (a) Price/EPS divided by earnings per share growth
  - (b) Market value per share divided by book value per share
  - (c) Market value per share divided by earnings per share
  - (d) Enterprise value divided by sales
3. For a capital-intensive company, EV/EBITDA is always
  - (a) Higher than EV/EBIT.
  - (b) Lower than EV/EBIT
  - (c) Equal to EV/EBIT
  - (d) Higher, lower or equal to EV/EBIT



## 7.4 Relative Valuation Models/Approaches

Relative valuation approaches are used to value a business by comparing it to other businesses based on certain financial metrics. A business can be valued using comparable companies analysis or precedent transaction analysis.



**Figure 7.2: Valuation Methods**

### 7.4.1 Comparable Companies Analysis

**Comparable Companies Analysis or Trading Comps** is commonly used to value companies by comparing them to publicly traded companies having similar operating businesses. A multiple, like market price per share to earnings per share (P/E precisely), may be used to find the target company's worth in relation to comparable publicly traded companies. Under comparable companies analysis, a target company's operating metrics and valuation multiples are compared with those of public comparables within the comparables universe. Comparable companies analysis is applicable in mergers and acquisitions, restructuring, IPOs and follow-on offerings, etc.

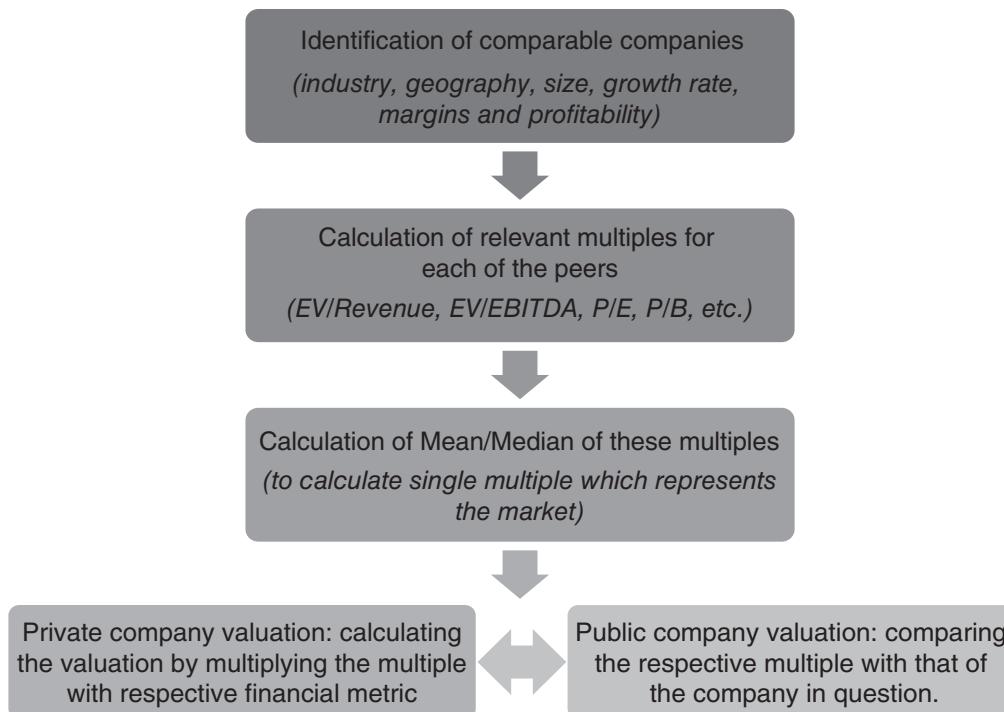
Comparable companies analysis involves valuing private companies or securities and identifying if a public company is undervalued, overvalued or correctly valued compared to the market. In the case of the valuation of private companies or securities, there is little to no information available related to the price or nature of the company. The most relevant information available is related to the last valuation, which is either too



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old or lacks applicability. In such a scenario, trading comps are an easy and reliable approach to relative valuation. In the case of the valuation of public companies with respect to the market, the comparable companies approach helps in understanding and comparing the valuation multiples of the target company to that of its peers.



**Figure 7.3: Steps in Performing Comparable Companies Analysis**

Company Name	Market Data			Financial Data				Valuation			
	Price (\$/share)	Market Cap (\$M)	TEV (\$M)	Sales (\$M)	EBITDA (\$M)	EBIT (\$M)	Earnings (\$M)	EV/Sales x	EV/EBITDA x	EV/EBIT x	P/E x
The Coca-Cola Company	38.14	168,041	185,122	46,854	13,104	11,127	7,381	4.0x	14.1x	16.6x	22.8x
Pepsico, Inc.	81.37	123,883	143,824	66,415	12,344	9,878	5,618	2.2x	11.7x	14.6x	22.1x
Dr Pepper Snapple Group, Inc.	52.31	10,326	12,764	5,997	1,319	1,103	620	2.1x	9.7x	11.6x	16.7x
Monster Beverage Corporation	69.62	11,618	11,004	2,246	606	584	357	4.9x	18.1x	18.9x	32.5x
National Beverage Corp.	20.81	964	968	645	78	66	41	1.5x	12.5x	14.6x	23.5x
Average								2.9x	13.2x	15.3x	23.8x
Median								2.2x	12.5x	14.6x	22.8x

**Figure 7.4: Comparable Companies Analysis Example**

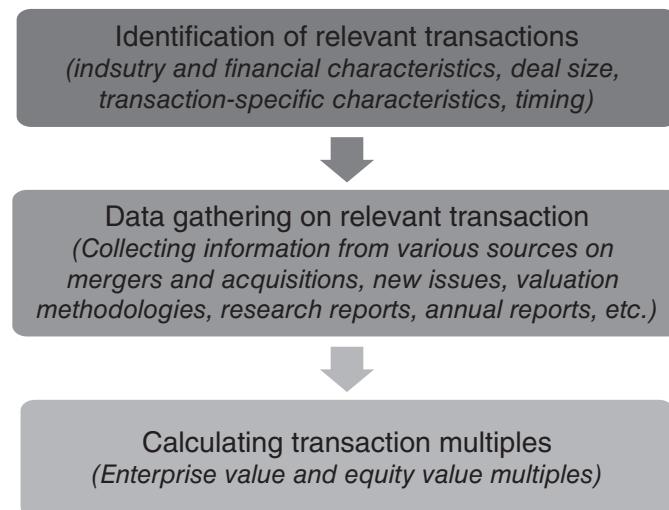
(Source: <https://corporatefinanceinstitute.com/resources/valuation/comparable-company-analysis/>)



### 7.4.2 Precedent Transaction Analysis

Usage of comparable companies analysis is relatively easy; however, at times, it is difficult to find comparable public companies where the target company operates in a niche sector. Moreover, the valuation under comparable companies analysis does not consider any premiums paid. Precedent transaction analysis overcomes such challenges and assists in understanding multiples and premiums paid in a specific industry. It also helps in understanding how buyers/sellers assess private market valuations.

**Precedent Transaction Analysis or Precedents** involves valuation of companies by looking at the historical merger and acquisitions transactions where the entire companies were bought or sold. Such transactions indicate how much an investor was willing to pay for purchasing the entire business of the company. Though precedents are useful in valuing a business, however such information may not always be easy to find and it quickly becomes out of date. Under precedent transaction analysis, the value of a company is estimated by analysing the price paid by different acquirers of similar companies under similar circumstances. Precedents also provide information on the premium paid in previous acquisitions to gain control of the target, called control premium. Because of this, transaction multiples are usually higher in the case of precedents than trading comps.



**Figure 7.5: Steps in Performing Precedent Transactions Analysis**



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Date	Target	Value (\$M)	Buyers	Valuation		
				EV/Sales	EV/EBITDA	EV/EBIT
01/24/2017	Current Ltd	2,350	Average Limited	1.9x	9.4x	11.2x
04/19/2016	Recent Inc	6,500	Bohemeth Industires	1.4x	8.0x	12.6x
04/19/2014	Past Co	2,150	Other Group	1.3x	8.7x	12.1x
11/07/2014	Historical LLP	450	Junior Enterprises	2.3x	11.1x	13.6x
11/01/2012	Old Group	325	Minature Company	5.1x	18.8x	21.5x
10/07/2011	Dated Enterprises	150	Micro Partners	2.1x	9.3x	13.2x
Average				2.3x	10.9x	14.0x
Median				2.0x	9.4x	12.9x

**Figure 7.6: Precedent Transactions Analysis Example**

(Source: <https://corporatefinanceinstitute.com/resources/valuation/precedent-transaction-analysis/>)

To conclude, while comparable company analysis uses current market values to calculate the target company's valuation, precedent transaction analysis relies on historical sale prices of similar companies to estimate the same value. In other words, comparable company analysis looks at how the market values a company right now, and precedent transaction analysis looks at how the companies were valued in the past when they were bought and sold. So, eventually, both approaches estimate the value of a company in relation to a comparable group of peers. However, they use different benchmarks (current versus historical prices).

Lastly, comparable company analysis is more suitable in technology, retail and financial service industries, where detailed financial information, transparent reporting and accounting practices are available. On the other hand, precedent transaction analysis is relevant in industries like healthcare, technology, and finance, which often experience multiple mergers and acquisitions, and where companies do not rely on public market valuation and a significant number of transactions happen privately.

### IN-TEXT QUESTIONS

4. In comparable company analysis, valuation is based on
  - (a) Historical merger and acquisitions transactions
  - (b) Comparison between target company's operating metrics and valuation multiples with those of public companies.



- (c) Investor's willingness to pay for purchasing the entire business
  - (d) Premium paid in previous acquisitions
5. In precedent transaction analysis, valuation is based on
- (a) Historical merger and acquisitions transactions
  - (b) Comparison between target company's operating metrics and valuation multiples with those of public companies
  - (c) Present value of expected future cash flows
  - (d) Share price of a comparable public company

## 7.5 Relative Valuation: Benefits vs. Pitfalls

In relative valuation, multiples analysis is effective only when performed accurately. Poorly performed multiples analysis can lead to misleading conclusions. Relative valuation is widely used in most equity research reports and acquisition valuations. Relative valuation is often based on multiples, and analysis is performed with far fewer assumptions and more quickly compared to DCF analysis. It is easy to calculate, simple to interpret and understand, and can be presented effectively to clients and customers. Relative valuation presents the current market scenario and yield values that approximate the market price.

However, relative valuation also provides inconsistent estimates of value as it ignores variables like risk, growth or cash flow potential. Multiples calculated under relative valuation may be too high when the market overvalues comparable firms and too low when the market undervalues comparable companies. Also, a lack of transparency regarding underlying assumptions makes relative valuations vulnerable to manipulation. Furthermore, the companies across a peer set may use different underlying financial metrics definitions. For example, while some peers may include non-recurring expenses as part of EBITDA calculation, others may calculate EBITDA after adjusting for such expenses. Even adopting different accounting standards/policies may render valuation multiple ineffective.



## 7.6 Estimating Multiples Using Regression

When using relative valuation, the fundamental step is identifying a set of peers as close as possible to the target company. However, no matter how comprehensive the peer identification process is, it is impossible to find identical companies. Further, the peer set may have some variances in terms of business profiles, and thus, the mean/median of the multiples may not give the best estimate. This is further complicated in case there are very few comparable companies. In such a scenario, regression can be helpful, and it is easy to arrive at the appropriate valuation multiple.

While using regression to estimate the valuation multiple, relevant financial metrics directly impacting the valuation must be used. To predict the valuation multiple of the target company, regression is performed on valuation multiples and financial metrics of the peers.

The use of regression in estimating valuation multiples can be understood with the help of the following illustration. Suppose, while valuing a Private company, Alpha Limited, the analyst identified 15 peer companies based on the industry, geography, size and business profile. Given that the companies had different EV/EBITDA multiples and different EBITDA margins, the analyst Analysed the regression between the two variables. The regression equation is given below:

$$\frac{EV}{EBITDA} = 40.361 \times \text{EBITDA Margin} + 5.654 \quad (1)$$

Using the above information, find out the appropriate EV/EBITDA multiple for Alpha Limited, given that its EBITDA margin is 20%. Also, calculate the estimated Enterprise value of Alpha Limited if the company's EBITDA is Rs. 12 crores.

Putting value of EBITDA margin as 20% in Equation (1),

$$\frac{EV}{EBITDA} = 40.361 \times (0.2) + 5.654$$

Therefore,

$$\frac{EV}{EBITDA} = 13.8 \quad (2)$$

Also, putting value of EBITDA as Rs. 12 crores in the above Equation (2),



$$\frac{EV}{Rs. 12 \text{ crores}} = 13.8$$

EV = Rs. 165.4 crores

Therefore, the estimated Enterprise value of Alpha Limited is Rs. 165.4 crores.

## 7.7 Valuation of Brands and Intellectual Capital

A brand is often a collection of intangible values consumers perceive, which they attribute to a name, symbol or design to identify and differentiate a product or service. It is a combination of physical, functional and emotional attributes. Brand is acknowledged as one of the most valuable assets of a company as it generates value for the customers and owners (businesses). Building and maintaining a brand involves significant expenses (like advertising and promotion). Businesses can charge a premium and generate volume and growth for their products merely based on a solid brand. Furthermore, a brand may enable a business to increase its market share, turnover and profitability. Hence, it becomes imperative to carry out a brand valuation.

Brand valuation quantifies the financial worth of a business's intangible assets. Intellectual property is a significant aspect of brand valuation, including patents, copyrights, trademarks and trade secrets. Intellectual property valuation involves assessing its uniqueness/originality, market demand, legal protection and future earnings potential. For brand and intellectual property valuation, *a company may rely on three approaches: income, market, and cost*. The income approach calculates the present value by discounting future estimated economic benefits or cash flows for the associated time and risk. The market approach uses market-based indicators like selling, buying, franchising or licensing to value a brand. Meanwhile, under the cost approach, brand valuation is based on the historical cost of creating the brand and the estimated cost and time required to create an equivalent or replacement brand.

Intellectual capital refers to the company's collective knowledge and resources based on which it derives some economic benefits. Human capital (skill, education and experience of the workforce), relational capital (valuable relationship of the company with its stakeholders), and



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structural capital (culture, processes, databases, intellectual property, hierarchy, etc.) are three different types of intellectual capital.

A company's financial statement may not reflect these aspects of intellectual capital, which add significant value to its business. Therefore, to measure the intellectual capital of a business, one may use market value to book value (MV/BV), balance scorecard, and Skandia navigator. MV/BV shows the company's value beyond its financial strength. The balanced scorecard method estimates the value created from the viewpoint of financial, customer, and internal processes and growth. Skandia Navigator estimates value based on various components like development, human, financial, customer, etc.

The metrics used for brand valuation include brand equity, brand recognition, brand loyalty and revenue generated directly attributable to the brand. At the same time, metrics used for intellectual capital valuation include uniqueness, quality and number of patents and copyrights, skill, knowledge and workforce experience, company's ability to innovate, systems and processes within the organisation.

Intangible assets like brand and intellectual capital can be valued based on the capital invested (advertisement expenditure in case of brand name), discounted cash flow valuation (DCF) or relative valuation analysis. When intangible assets (like copyrights, trademarks, licenses, franchises, and professional practices) independently generate cash flows, the discounted cash flow valuation approach can be used effectively. For example, DCF is applicable in the following cases: valuation of a copyright of a book published by John Wiley, McDonald's franchise considering the brand name value associated with and product/service expertise provided by the company, and valuation based on personal components in case of a specialised doctor or a highly rated restaurant.

On the other hand, when intangible assets (like brand names, quality and morale of the workforce, corporate reputation, and technological expertise) do not generate cash flows independently to the firm, using relative valuation is more appropriate. Relative valuation helps isolate the effect of intangible assets from the company's returns. It compares how the market values the firm (with intangibles like the brand name) with how



it values similar firms (without intangibles). The difference between the two is attributed to the intangible asset.

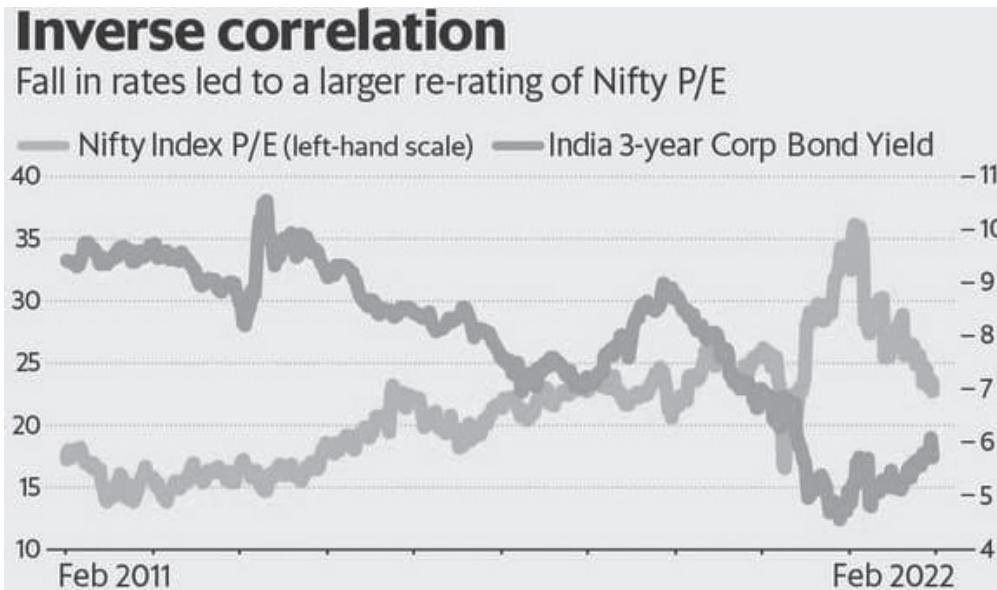
Relative valuation involves carrying out the actual valuation of the company that possesses the brand or the intellectual Capital ( $V_{\text{branded}}$ ) and comparing that to the valuation implied by using valuation multiples of companies that do not possess the brand ( $V_{\text{generic}}$ ). The difference in these two values i.e.  $V_{\text{branded}} - V_{\text{generic}}$ , is the implied value of the brand or the intellectual capital. For example, let us assume that the valuation of a branded toy manufacturer is Rs. 100 crores, and the last reported annual EBITDA is Rs. 10 crores. Further, while Analysing the valuations of generic toy Manufacturers, we arrived at an EV/ EBITDA multiple of 8.5x. In this case, the estimated valuation of the brand “Branded Toys” shall be  $100 - 8.5 \times 10$ , i.e. Rs. 15 crores.

The methodology may not be as applicable in the following cases: First, when the company possesses more than one brand or intellectual capital as it will not be easy to attribute the valuation premium to a particular brand. Second, there are no pure ‘generic’ peers i.e. the peers’ valuation includes the value of their respective brands.

## 7.8 Interest Rates and Company Valuation

Lower interest rates lower the cost of borrowing for businesses and consumers. Whereas rising interest rates can impact the valuation of a business via discounted cash flow and cost of capital. Interest rate is the input for determining the capitalisation rate in valuing a business. For instance, if the interest rate increases by 2%, the 18% discount rate becomes 20%, which lowers the business valuation under the discounted cash flow method.

With rising interest rates, the cost of borrowing increases, and further, the cost of equity also increases, as it now has to compete with other assets with lower risk profiles, e.g. government bonds promising higher rates of return. Thus, the overall cost of capital for the companies also increases. Given that the future cash flows are discounted using WACC, the present value of cash flows and the company’s valuation decreases.



**Figure 7.7: Impact of Rising Interest Rates on Equity Valuations**

(Source: <https://www.livemint.com/money/personal-finance/impact-of-rise-in-interest-rates-on-equity-valuations-11645376722956.html>)

Figure 7.7 shows the inverse relationship between corporate bond yield and the Nifty P/E ratio from 2011 to 2022. It demonstrates that while the 3-year corporate bond yield (interest rate proxy) decreased from 9% in October 2018 to 5.7% as of February 2022, the Nifty P/E ratio (equity valuation proxy) went up from 20 in October 2018 to 23 as of February 2022. In other words, a 4.3% fall in the bond yield resulted in a significant expansion in the P/E multiple. Therefore, when interest rates rise, equities de-rate in valuations and vice-versa. However, rising interest rates have historically coincided with rising equity markets during solid growth periods. On the contrary, when growth is slow and inflation is rising, rising interest rates hurt equity markets.

## 7.9 Impact of Inflation on Company Valuation

The valuation of an asset or company is based on the expected future cash flows and the risk associated with them. Often, the assets or companies expected to generate higher cash flows with lower risk are considered



worth more than those expected to generate lower cash flows with higher risk. Among other things, inflation significantly drives an asset's expected future cash flows. Therefore, every valuation approach must consider the impact of inflation on the estimated value of an asset. Since inflation is unstable and continuously rising across economies, it is a cause of concern for most analysts.

Broadly discounted cash flow and relative valuation are widely used techniques among other approaches. Rising inflation impacts all these valuation techniques in different ways. As the discounted cash flow valuation method values an asset based on the present value of expected future cash flows, future inflation expectation will be more relevant than past inflation. In this method, expected inflation will likely impact the expected future cash flows and the discount rate used to calculate their present value.

The company's future cash flows are projected based on revenues and costs. High inflation will increase these revenues and costs over time, too inconsistently. Therefore, due consideration should be given to issues such as long-term pricing contracts (where prices are fixed or updated as per some index), "cost-plus" pricing which have increased more or less than the general rate of inflation, price-elasticity of demand where rising inflation lowers consumer's purchasing power thereby reducing the demand. Furthermore, high inflation also affects the discount rate by increasing the time value of money and the risk associated with the asset's value.

Since relative valuation is based on comparable assets, high inflation makes it more challenging to identify suitable comparable companies. Because the markets these comparable companies cater to might be experiencing significantly different inflation rates than that experienced by the target company. Generally, valuation based on past acquisition transactions of comparable companies incorporates inflation expectations. In a high-inflation environment, adjusting these past prices to account for any unexpected inflation since the transaction date becomes more challenging.

Lastly, valuation methods that rely on the historical value of assets become less suitable due to high inflation, as costs paid in the past do not resemble the current costs to replace the same assets.



## 7.10 Reconciling Relative and Discounted Cash Flow Valuation

While discounted cash flow valuation finds the value of an asset based on its cash flow, growth and risk characteristics, relative valuation finds the value of an asset based on how the market values or prices similar assets currently. Usually, discounted cash flow valuation is an integral part of classroom/academic discussions, however in reality relative valuation is used to value most of the assets. Discounted cash flow valuation always searches intrinsic value, whereas relative valuation puts trust in the average valuation provided by the markets.

Given that the two valuation frameworks, i.e., discounted cash flow and relative valuation, have different underlying assumptions regarding markets, the valuations arrived at using the approaches are invariably different. Relative valuation provides a valuation of the company assuming that the market values the overall peer set correctly. However, it is highly dependent on the timing of the valuation exercise as well as the choice of peer set. In comparison, discounted cash flow valuation presumes that the market may be incorrect while valuing companies, more so over a short period. Thus, it relies on the parameters intrinsic to the company.

However, the discounted cash flow technique is highly sensitive to a number of assumptions, and even minor errors in estimates may result in large differences. Therefore, it is possible to get two contradictory results from the two approaches. For example, while relative valuation may indicate that the company is overvalued, discounted cash flow may indicate that it is undervalued.

To conclude, discounted cash flow provides an intrinsic value based on future cash flows, while relative valuation offers a comparative value based on market multiples and the performance of similar companies. Both methods have their strengths and weaknesses, and using them together can provide a more comprehensive view of a company's valuation.

### IN-TEXT QUESTIONS

6. Rising interest rates would \_\_\_\_\_ a company's cost of borrowing.
- |                     |                       |
|---------------------|-----------------------|
| (a) Decrease        | (b) Increase          |
| (c) Remain the same | (d) Become irrelevant |

**7. In high inflation environment:**

- (a) Identifying suitable comparable companies is more challenging
- (b) Cost-based valuation methods are more suitable for valuation
- (c) The time value of money and the risk associated with the asset's value decreases
- (d) There is consistent increase in revenues and costs

**8. As compared to DCF, the valuation arrived from relative valuation is:**

- (a) Always higher
- (b) Always equal
- (c) Always lower
- (d) May be higher, lower or equal

**CASE STUDY**

While performing valuation analysis of a private company – Alpha Gold Ltd., a financial analyst collects following information on the Peer set of 15 companies. He has been tasked with finding the Enterprise value as well as the Equity value of the company using comparable companies analysis.

He has already collected following financial data for Alpha Gold Ltd.

In Rs. Crores	FY 2023	FY 2024 E
Net Sales	125	140
EBITDA	22.5	32
EBITDA Margin %	18%	23%
Net Income	5.625	7

Further, the current values of total Debt, Cash and Cash Equivalents are Rs. 50 crores and Rs. 20 crores respectively

	EV/Net Sales	EV/EBITDA	P/E
	FY 2023	FY 2023	FY 2023
Company 1	1.36x	9.7x	21.9x
Company 2	0.56x	8.3x	17.5x



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	EV/Net Sales	EV/EBITDA	P/E
	FY 2023	FY 2023	FY 2023
Company 3	2.08x	10.3x	29.2x
Company 4	1.38x	9.2x	26.3x
Company 5	0.70x	9.3x	30.3x
Company 6	2.21x	11.1x	39.3x
Company 7	1.55x	9.7x	21.6x
Company 8	1.82x	10.7x	33.6x
Company 9	1.29x	10.4x	42.8x
Company 10	1.60x	10.7x	40.0x
Company 11	2.01x	11.7x	42.1x
Company 12	2.81x	11.3x	34.1x
Company 13	3.51x	11.7x	36.5x
Company 14	0.99x	10.4x	44.6x
Company 15	1.77x	9.8x	31.1x

Using the information provided, he tries to answer following questions –

1. Which of the companies among the peer-set has highest EV/EBITDA? Does this company have the highest EV/Net Sales and Highest P/E as well?
2. Estimate the Enterprise Value and Equity Value of Alpha Gold using median of EV/EBITDA.
3. Examine and compare the results if the analyst uses data only for first 10 companies.
4. Calculate the Equity Value of the company using Median P/E and compare that to the value computed in Question 2.

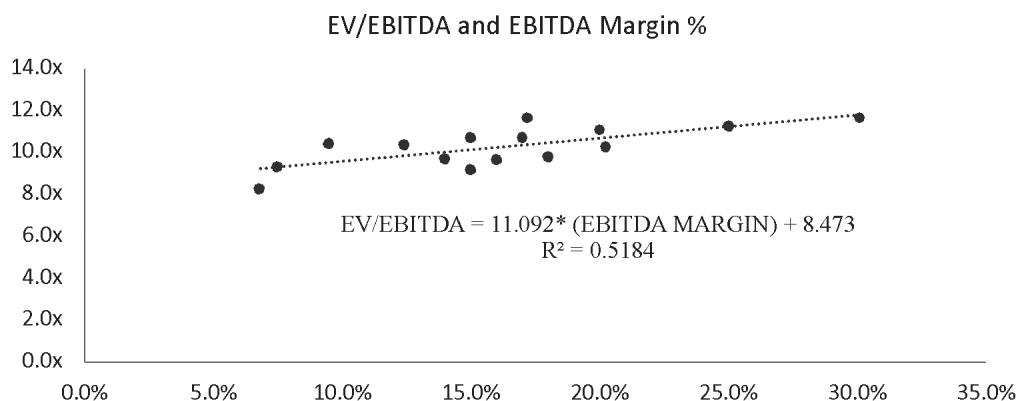
Further to the analysis, The analyst also includes data on EBITDA Margin % and Forecasted EV/EBITDA for next year as presented in the table below and tries to answer some more questions-

5. Examine if using median of Forward EV/EBITDA multiple results in a higher valuation for Alpha Gold Ltd.
6. Calculate the valuation of the company using Mean Forward EV/EBITDA multiple and compare it with valuation using Median multiple. Examine the reason for difference in valuations using the two.



	EBITDA Margin %		EV/EBITDA	
	FY 2023	FY 2024 E	FY 2023	FY 2024 E
Company 1	14.0%	13.5%	9.7x	9.6x
Company 2	6.8%	8.3%	8.3x	6.1x
Company 3	20.2%	21.0%	10.3x	8.5x
Company 4	15.0%	11.0%	9.2x	12.2x
Company 5	7.5%	3.0%	9.3x	21.6x
Company 6	20.0%	23.0%	11.1x	7.6x
Company 7	16.0%	18.0%	9.7x	7.7x
Company 8	17.0%	23.0%	10.7x	7.3x
Company 9	12.4%	18.0%	10.4x	6.1x
Company 10	15.0%	15.6%	10.7x	8.7x
Company 11	17.2%	17.3%	11.7x	10.4x
Company 12	25.0%	26.8%	11.3x	8.6x
Company 13	30.1%	31.0%	11.7x	11.0x
Company 14	9.5%	11.4%	10.4x	7.7x
Company 15	18.0%	19.0%	9.8x	8.2x

The Analyst also plots historical EV/EBITDA multiple and Historical EBITDA margin on a scatter plot and analyses the Regression among the two variables. Using the regression equation presented below, he tries to estimate the Enterprise Value of Alpha Gold Ltd.



Based on the analysis his answers to questions are:

1. Company 13 has highest EV/EBITDA, While the company also has highest EV/ Net Sales, it does not have highest P/E among the Peer-set



2. Enterprise Value = Rs. 233.6 crores, Equity Value = Rs. 203.6 crores
3. Enterprise value = Rs. 224.7 crores, Equity Value = Rs. 194.7 crores
4. Equity Value using mean P/E = Rs. 189.2 crores; this value is lower than the value computed using EV/EBITDA
5. Yes, the Enterprise Value calculated using Forward multiple is Rs. 270.9 crores and hence higher than that calculated using Historical multiple
6. Using Mean of Forward EV/EBITDA the estimated Enterprise value is Rs. 301.6 crores. The difference can be attributed to presence of an Outlier (Company 5) w.r.t. forward EBITDA Multiples in the data set
7. Estimated Enterprise Value using Regression Analysis is Rs. 235.6 crores

## 7.11 Summary

- ◆ Relative valuation finds the worth of a company using multiples of earnings, book value, revenue, and cash flows, by comparing it with those of other companies.
- ◆ Businesses are often valued using two types of multiples, broadly classified into enterprise value multiples and equity value multiples.
- ◆ A business can be valued using comparable companies analysis or precedent transaction analysis.
- ◆ Comparable companies analysis or trading comps is commonly used to value companies by comparing them to publicly traded companies having similar operating businesses
- ◆ Precedent transaction analysis or precedents involves valuation of companies by looking at the historical merger and acquisitions transactions where the entire companies were bought or sold.
- ◆ In relative valuation, multiples analysis is effective only when performed accurately. Poorly performed multiples analysis can lead to misleading conclusions.
- ◆ Relative valuation is often based on multiples, and analysis is performed with far fewer assumptions and more quickly compared to DCF analysis.



- ◆ Brand valuation quantifies the financial worth of a business's intangible assets. Intellectual property is a significant aspect of brand valuation, including patents, copyrights, trademarks and trade secrets.
- ◆ Inflation significantly drives an asset's expected future cash flows. Therefore, every valuation approach must consider the impact of inflation on the estimated value of an asset.
- ◆ While discounted cash flow valuation finds the value of an asset based on its cash flow, growth and risk characteristics, relative valuation finds the value of an asset based on how the market values or prices similar assets currently.

### 7.12 Answers to In-Text Questions

1. (a) Valuing the companies based on market valuation of similar companies.
2. (c) Market value per share divided by earnings per share
3. (b) Lower than EBIT
4. (a) Comparison between target company's operating metrics and valuation multiples with those of public companies.
5. (b) Historical merger and acquisitions transactions
6. (b) Increase
7. (a) Identifying suitable comparable companies is more challenging
8. (d) May be higher, lower or equal

### 7.13 Self-Assessment Questions

1. How does the estimated valuation of a company change by using
  - (a) Different multiples
  - (b) Different valuation approaches.
2. What is relative valuation? Describe the limitations and drawbacks of using the relative valuation method.
3. Does the choice of multiple depend upon the industry of the target company?



4. What factors should be considered while calculating the valuation of intangible assets (brand and intellectual capital)?
5. How do interest rates and inflation rates affect the valuation of a business?
6. Discuss the relative valuation approaches. Compare relative valuation with DCF.

## 7.14 References

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# Glossary

**Absolute Valuation:** The actual or intrinsic value of an asset or investment based on dividends, cash flows, and the growth rate of a single company.

**Arbitrage Pricing Model (APM):** APM is a multifactor model used to estimate expected return of equity.

**Assets:** Resources owned by a company (e.g., cash, inventory, property).

**Auditor's Report:** A critical component of an annual report where an independent auditor provides an objective assessment of the company's financial statements, affirming their accuracy and fairness.

**Brand Valuation:** It quantifies the financial worth of a business's intangible assets.

**Brand:** A collection of intangible values consumers perceive, which they attribute to a name, symbol or design to identify and differentiate a product or service.

**CAPEX:** Expenditure incurred for property, plant and equipment.

**Capital Asset Pricing Model (CAPM):** CAPM is another and most used method of estimating expected return on equity through risk-free rate, Beta and CAPM.

**Cash Flow:** A cash forecast is a projection of the flow and withdrawal of cash over a specific time frame.

**Chairman's Statement:** A pivotal document in an annual report where the company's leadership communicates its strategic vision, decisions, and commitment to stakeholders.

**Comparable Assets/Companies:** Comparable universe - firms with similar business profile, size and geography as that of the target.

**Contextualization:** The process of placing numerical data within a broader context, providing a deeper understanding of its significance.

**Corporate Governance:** The principles, policies, and practices that guide a company's decision-making processes, ensuring transparency, ethics, and accountability.

**Cost of Goods Sold (COGS):** Direct costs associated with producing goods or services sold.

**DCF:** Discounted Cash Flow Analysis.

**DDM:** Dividend Discount Model.

**Directors' Report:** comprehensive document in an annual report where the board of directors communicates with shareholders, covering financial performance, operational highlights, CSR initiatives, and risk management.



**Discounted Cash Flow:** Value of an asset based on its cash flow, growth, and risk characteristics.

**EBIT:** Earnings before interest and taxes.

**Equity:** Residual interest in the company's assets after deducting liabilities.

**FCFE:** Free cash flows to equity.

**Financial Statements:** Documents presenting a company's financial performance, including the balance sheet, income statement, and cash flow statement.

**Forecasting:** A statement of events likely to occur.

**Gross Profit:** Revenue minus COGS.

**Holistic Perspective:** An all-encompassing view that considers both quantitative and qualitative aspects for a comprehensive understanding.

**Inflation:** It is the rate of increase in prices over a given period of time.

**Intellectual Capital:** Company's collective knowledge and resources based on which it derives some economic benefits.

**Interest Rate:** It is the expected risk-free rate of return.

**Key Audit Matters:** Specific areas highlighted in an Auditor's Report that required significant attention during the audit, providing insights into potential risks or complexities.

**Levered Beta:** Beta reflects the impact of financial leverage of company.

**Liabilities:** Financial obligations or debts owed by the company.

**Management Discussion and Analysis (MD&A):** A section in an annual report offering insights into the management's perspective, providing context for financial decisions, strategic initiatives, and future outlook.

**Multiple:** Financial measurement tool to evaluate the worth of a business and compare with other businesses. Usually expressed in one financial metric as a ratio of another to make companies more comparable.

**Narrative:** The comprehensive story or account encapsulated within financial statements, illustrating a company's journey, decisions, and resilience.

**Net Income/Profit:** Final profit after deducting all expenses, interest, and taxes.

**Non-Cash Working Capital:** Working capital of firm excluding cash.



## GLOSSARY

Notes

**Operating Expenses:** Costs incurred in running the business (e.g., salaries, rent, utilities).

**Operating Income/EBIT (Earnings Before Interest and Taxes):** Income after deducting operating expenses but before interest and taxes.

**Percent of sales method:** A method for developing the projected statements that expresses various items as a percentage of projected sales.

**Precedents:** Valuation of companies by looking at the historical merger and acquisition transactions where the entire companies were bought or sold.

**Proforma Statements:** Projected financial statements that show the most recent estimates for costs, sales, and other financial variables.

**Qualitative Analysis:** An evaluative approach that goes beyond numerical data, focusing on non-quantifiable aspects such as management decisions, ethical considerations, and strategic planning to assess a company's financial health.

**Quantitative Metrics:** Numerical data and metrics used for financial analysis, such as revenue, profitability, and financial ratios.

**Regression:** A statistical method to establish a significant relationship between dependent and independent variables.

**Relative Valuation:** The worth of a company using multiples of earnings, book value, revenue, and cash flows, by comparing it with those of other companies.

**Revenue/Sales:** Income generated from business operations.

**Risk-Free Rate:** Rate of return on those assets whose expected return is equal to actual returns.

**Simulation:** A technique for researching how changes in cash flow variables affect cash balance.

**Stakeholders:** Individuals or groups with an interest or investment in a company, such as investors, employees, customers, and the community.

**Strategic Initiatives:** Planned actions and measures taken by a company to achieve specific goals and enhance its competitive position.

**Trading Comps:** Value companies by comparing them to publicly traded companies having similar operating businesses.



Notes

## CORPORATE ANALYSIS AND VALUATION

**Transparency:** The degree to which a company provides clear, accurate, and easily understandable information, fostering trust among stakeholders.

**Unlevered Beta:** Beta which is free from the effect of financial leverage.

**Unqualified Opinion:** A positive statement by an auditor, indicating that the financial statements present a true and fair view.

**Valuation:** An analysis of the worth of an asset, investment or firm.

**Weighted Average Cost of Capital (WACC):** Overall cost of capital of firm.

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