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FINANCIAL MANAGEMENT

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MODULE 1: AN INTRODUCTION AND ANALYSIS OF FINANCIAL STATEMENT

Unit 1: Introduction to Finance

Finance: nature & scope, function, Financial Goal: Profit Maximization Versus wealth maximization; Finance decisions by the firms. Financial Functions, Financial Manager's Role, Risks-Return Tradeoff in Financial Management

Unit 2: Sources of Finance

Meaning, Nature and Significance of Business Finance, Basic concepts of Sources of Funds, Classification of Sources of Finance, Long term sources and short term sources.

Unit 3: Analysis of Financial Statement using Ratio Analysis

Financial Statements analysis- Analysis and interpretation of Financial Statements using the Ratio Analysis.

UNIT 1: INTRODUCTION TO FINANCE

STRUCTURE:

- 1.1 Introduction
- 1.2 Scope of Finance
 - 1.2.1 Real and Financial Assets; 1.2.2 Equity and Borrowed Funds
 - 1.2.3 Finance and Management Functions

1.3 Financial Functions

1.3.1 Investment Decision; 1.3.2 Financing Decision; 1.3.3 Dividend Decision;

1.4 Financial Manager's Role

1.4.1 Funds Rising;

1.4.2 Funds Allocation

1.4.3 Profit Planning;

1.4.4 Understanding Capital Markets

1.5 Financial Goal: Profit Maximization versus Wealth Maximization

1.5.2 Profit Maximization;

1.5.2 Arguments in favor of Profit Maximization

1.5.3 Limitations of Profit Maximization

1.5.4 Shareholders' Wealth Maximization (SWM)

1.5.5 Arguments in favor of Wealth Maximization

1.5.7 Criticisms of wealth maximization

1.5.8 Profit Maximization vs. Shareholder's Wealth Maximization

1.5.8 Stakeholder's Welfare Maximization

1.5.9 Maximization of Earnings per Share (EPS)

1.5.10 Maximization of Sales

1.5.11 Maximization of Market Share

1.6 Risks-Return Tradeoff in Financial Management

1.7 Unit Summery

1.8 Key Points

1.9 Check your Progress

1.10 Reference

OBJECTIVES:

- 1. Understand the role of finance in managing resources and its interaction with other management functions.
- 2. Recognize the evolving responsibilities of the finance manager and their position in the organizational hierarchy.
- 3. Comprehend the shareholder wealth maximization principle as a key criterion for effective financial decision-making.

1.1 INTRODUCTION

Financial management is the process of planning and controlling a company's financial resources. Initially considered part of economics until 1890, it has only recently become a separate field of study. Despite its independence, financial management still relies heavily on economic theories for its core concepts.

This subject is highly relevant to both academics and business professionals. Academics find it fascinating because it is still evolving, with unresolved debates and unanswered questions in certain areas. For practicing managers, financial management is essential because financial decisions are among the most important for a business. Understanding the principles and theories of financial management helps them make better, more informed decisions.

1.2 SCOPE OF FINANCE

Finance refers to the management of money and other financial resources. A firm's financial activities involve obtaining the necessary funds and utilizing them effectively to support its operations and achieve its goals. Firms engage in various activities such as producing goods, offering services, and selling them to generate profits. To support these operations, they need to secure capital to establish manufacturing capabilities or service facilities. The three core activities of a business are:

Production: Creating goods or delivering services.

Marketing: Promoting and selling those goods or services.

Finance: Acquiring and managing funds to enable production and marketing.

The finance function provides the capital required for production and marketing activities, which in turn generate the returns needed to justify the investments made.

1.2.1 Real and Financial Assets

A firm relies on real assets to conduct its operations. Real assets can be categorized as:

- 1. Tangible Real Assets: Physical assets like plants, machinery, offices, factories, furniture, and buildings.
- 2. Intangible Real Assets: Non-physical assets such as technical expertise, technological agreements, patents, and copyrights.

In addition to real assets, firms also utilize **financial assets**, or securities, which include instruments like shares, bonds, and debentures. These securities are issued in the **primary capital markets** to raise funds. Once issued, they are traded by investors in **secondary capital markets**, commonly referred to as stock exchanges. Financial assets also encompass obligations like leases and loans from banks, financial institutions, or other lenders.

In a lease agreement, the lessee pays the lessor an agreed rental amount in exchange for the right to use an asset over a specific period. The funds a firm invests in acquiring assets are referred to

as **capital expenditures** or **investments**. These investments are expected to generate returns, which the firm may reinvest or distribute to investors as dividends.

1.2.2 Equity and Borrowed Funds

A firm can raise two types of funds: equity funds and borrowed funds (also known as debt).

Equity Funds: A firm raises equity funds by issuing shares, which represent ownership in the company. Shareholders, or stockholders, are the legal owners of the firm, and they invest in shares with the expectation of earning a return on their investment. This return comes in the form of **dividends** and **capital gains**. Capital gains occur when shareholders sell their shares at a migher price than what they paid for them. There are two types of shareholders:

- 1. **Preference shareholders**: They receive a fixed dividend and have priority over ordinary shareholders in terms of dividend payment.
- 2. Ordinary shareholders: They receive dividends based on the board of directors' decisions, and the amount may vary each year. Dividends are not guaranteed and depend on the company's profits. Ordinary shareholders are often referred to as the "owners of residue," as they receive their dividend or return of capital only after all other obligations are met, particularly when the company is dissolved.

Dividends are paid from after-tax profits and are not tax-deductible for the company. In India, companies are required to pay a 12.5% tax on dividends.

A company can also raise equity by **retaining earnings** (profits that are not distributed as dividends). These retained earnings, also called internal equity, can be reinvested into the business or used to fund future operations. Alternatively, a company can issue **rights shares** to existing shareholders or make a **public issue** of shares to attract new investors and raise additional equity capital.

Borrowed Funds: These funds come from creditors or lenders, who are not owners of the company. Instead, they lend money to the firm for a fixed period at a specified interest rate. Lenders earn their return through the **interest** paid by the firm. This interest is a **legal obligation** and is considered a **cost of debt** to the firm. Importantly, interest payments are **tax-deductible**, which provides a **tax shield** for the company.

A firm can obtain borrowed funds from various sources, such as banks, financial institutions, or by issuing **bonds** or **debentures**. A bond or debenture is a financial instrument that acknowledges the amount of money lent to the company. It specifies the loan amount, the interest rate, and the maturity date. Bonds and debentures can also be traded in secondary capital markets.

1.2.3 Finance and Management Functions

Finance is closely connected with all other business functions, such as production and marketing. Almost every business activity involves the use of funds, either directly or indirectly. For example, hiring and promoting employees in the production department is primarily the responsibility of the production team, but it requires paying wages, salaries, and benefits, which involves finance. Similarly, purchasing or replacing machinery to increase production capacity affects the flow of funds. Marketing decisions, such as sales promotions and advertising, also require financial resources.

The lines between production, marketing, and finance are not always clear. It's hard to define exactly where production and marketing end and where the finance function begins. The finance function is crucial for providing the necessary funds for production and marketing activities, but it does not directly limit how the business operates. If a company is financially strained, it will focus more on financial considerations, shaping its production and marketing strategies around available funds. On the other hand, a company with abundant or stable funding can be more flexible in its production and marketing decisions, often designing financial policies that support those functions.

1.3 FINANCIAL FUNCTIONS

Although it can be challenging to separate the finance function from production, marketing, and other areas of a business, each function is easy to identify. The key financial functions are:

- 1. Financing Decision: Raising funds needed by the firm.
- 2. Investment Decision: Deciding how to invest those funds in assets.
- 3. **Dividend Decision**: Deciding how to distribute the returns generated by the assets to shareholders.

Another important decision is the **Liquidity Decision**, which involves managing the balance between cash inflows and outflows. This ensures the firm has enough cash to cover its short-term needs. The finance functions include:

- 1. Long-Term Investment Decision (Asset Mix)
- 2. Capital Structure or Financing Decision
- 3. Dividend Policy Decision
- 4. Short-Term Liquidity Management

These finance functions are carried out simultaneously and continuously as part of the company's regular operations. They do not follow a strict order and require careful planning, control, and execution. The goal of these financial decisions is to increase the value of the company's shares, benefiting shareholders. The financial manager should aim to maximize the market value of shares while making these decisions. This concept will be discussed in more detail later in the unit.

1.3.1 Investment Decision

A firm's investment decisions are about spending money on long-term assets that are expected to bring benefits (cash flows) in the future. These decisions are also called **capital budgeting decisions**. When making a capital budgeting decision, the firm decides how to allocate funds to investments that will generate returns over time. Two key parts of investment decisions are:

- 1. Evaluating the potential profitability of new investments.
- 2. Determining a cut-off rate to compare the expected return of new investments.

The future benefits of investments are hard to measure and uncertain, which introduces **risk**. Therefore, investment proposals should be evaluated based on both the **expected return** and the **risk** involved.

Capital budgeting also includes decisions about replacing old assets when they become less productive or no longer profitable, in addition to committing funds to new investments.

The **cut-off rate** (or required rate of return) for investments is generally considered to be the **opportunity cost of capital**, which is the return an investor could expect by investing in assets of similar risk. However, calculating the opportunity cost of capital can be challenging in practice, and decision makers should be aware of these difficulties when making investment choices.

1.3.2 Financing Decision

The **financing decision** is the second key responsibility of a financial manager. Essentially, they must decide when, where, and how to raise the necessary funds to support the company's investments. A major aspect of this decision is determining the right mix of **equity** (ownership capital) and **debt** (borrowed funds). This combination is known as the company's **capital structure**. The financial manager's goal is to find the best mix, or the **optimum capital structure**, which maximizes the market value of the company's shares. When a company does not use debt, the return to shareholders is directly tied to the company's overall return. However, using debt changes both the return and the risk for shareholders. Debt can increase the return on equity but also increases the risk. The impact of debt on shareholders' return, due to changes in profits, is called **financial leverage**. The goal is to balance return and risk effectively. When shareholders' return is maximized with an acceptable level of risk, the company's **market value per share** will also be maximized, making the capital structure optimal. Once the best mix of debt and equity is determined, the financial manager must raise the appropriate amount of funds from the best possible sources. In practice, the company must also consider other factors, such as maintaining control, flexibility, loan conditions, and legal issues when making capital structure decisions.

1.3.3 Dividend Decision

The **dividend decision** is the third key financial decision. The financial manager must decide whether the company should distribute all its profits as dividends, retain all of them, or distribute a portion and keep the rest. The portion of profits given as dividends is called the **dividend-payout ratio**, while the retained portion is known as the **retention ratio**. Similar to the debt policy, the dividend policy should be designed with the goal of maximizing the shareholders' value.

The **optimum dividend policy** is one that increases the market value of the company's shares. If shareholders have preferences regarding the firm's dividend policy, the financial manager must determine the best **dividend-payout ratio** to satisfy them. Typically, dividends are paid in cash, but the company may also issue **bonus shares**. Bonus shares are additional shares given to existing shareholders at no cost. In practice, the financial manager should carefully consider factors such as **dividend stability**, the use of **bonus shares**, and the option of paying **cash dividends**.

1.3.4 Liquidity Decision

Managing current assets is a crucial financial function because it impacts both the firm's profitability and liquidity. Efficient management of current assets is necessary to protect the firm from the risk of running out of cash (illiquidity). If a firm is too illiquid, it could face insolvency. There is a balance to be struck between **profitability** and **liquidity** when managing current assets. If a company doesn't invest enough in current assets, it risks becoming illiquid and facing financial difficulties. However, if too much money is tied up in current assets that aren't generating returns, the company loses profitability. Therefore, a financial manager must find a balance between having enough current assets to maintain liquidity and not holding too many idle assets that reduce profitability. To manage this trade-off effectively, the financial manager should have good techniques for managing current assets. They need to estimate the firm's needs for these assets and ensure that funds are available when required. In short, financial decisions are about acquiring, managing, and selling assets, which involve a continuous commitment of funds. These decisions have an impact on the firm's operations, including production and marketing, and affect the company's size, growth, profitability, risk, and overall value. As Ezra Solomon stated, "The function of financial management is to review and control decisions about committing or recommitting funds to new or ongoing uses." Therefore, financial management is closely tied to the company's overall strategy and operations, especially when decisions are made about acquiring or distributing assets.

1.4 FINANCIAL MANAGER'S ROLE

A **financial manager** is someone who is responsible for handling the finance functions of a company. In today's businesses, the financial manager holds a crucial position and is a key part of the top management team. Their role is becoming more important and complex as they deal with the challenges of managing the company's funds. In the past, the financial manager's job was more limited to tasks like keeping records, preparing reports, and raising funds when needed. They were

seen as a passive adviser. However, today, the financial manager plays an active role in shaping the company's future, especially in making decisions about how to allocate capital (funds). This means they have to think strategically and ensure that the company's funds are used efficiently. The financial manager's decisions have a significant impact on the company, affecting its size, profitability, growth, risk, and survival. These decisions ultimately influence the overall value of the company. Because of this, a financial manager must have a deep understanding of their responsibilities and be able to make informed, long-term decisions.

The role of the financial manager has evolved over the past few decades. Thirty years ago, they weren't as central to top management decision-making, but with the modern approach to financial management, their importance has grown significantly. Key functions of a financial manager:

- 1. Managing company funds efficiently.
- 2. Making decisions on capital allocation.
- 3. Ensuring the financial health and growth of the company.

1.4.1 Funds Rising

The traditional approach to financial management focused mainly on raising funds and limited the financial manager's role to this task. The financial manager was mainly needed during special events, like company promotions, reorganizations, expansions, or diversifications, when funds had to be raised. In their day-to-day work, their primary responsibility was to ensure the company had enough cash to meet its obligations. Finance textbooks, especially in the U.S. until the 1950s, mostly covered the methods and institutions for obtaining funds. These books also discussed specific events like mergers, reorganizations, and recapitalizations, which involved episodic financing. In India and other countries, the approach was similar, following the U.S. model. A key feature of the traditional view was the assumption that the financial manager did not deal with the decision of how to allocate funds within the company. Instead, their job was simply to raise the necessary funds, without being involved in how the money was spent. However, the traditional approach faced criticism, though it was more about how topics were treated rather than the core idea of finance. It was criticized for not addressing everyday financial problems that companies face. The approach mainly looked at things from the management's perspective, ignoring the broader issues of how funds should be allocated and managed. The traditional view lacked a solid framework for making financial decisions and put too much focus on raising funds while neglecting the real concerns of managing and allocating those funds effectively.

1.4.2 Funds Allocation

The **traditional approach** to financial management became outdated after the mid-1950s due to changes in the business environment. Factors such as rapid industrialization, technological advancements, increased competition, government intervention due to management failures,

population growth, and expanding markets created the need for more efficient and effective use of resources, including financial ones. The development of management skills and decision-making techniques made it possible to implement a system for optimizing resource allocation. As a result, the focus of financial management shifted. Instead of just raising funds for specific events, the new emphasis was on **efficiently using funds**. This shift led to a modern approach that is based on solid conceptual and analytical theories. Financial management became a crucial part of overall management. According to Ezra Solomon, the key issue in modern financial policy is the **wise use of funds**, carefully balancing the potential benefits of their use against the costs of acquiring them.

In modern enterprises, the primary function of financial management is to make decisions about how funds should be spent and to determine how much capital is needed for these expenditures. The financial manager's role now involves the **efficient allocation of funds**, a task that was always important but not given as much attention in the past. In this new role, the financial manager must address three key questions:

- 1. How large should the enterprise be, and how fast should it grow?
- 2. In what form should the company hold its assets?
- 3. How should the required funds be raised?

These questions correspond to the main areas of financial management: **investment (both short-term and long-term)**, **financing**, **and dividend decisions**. The modern financial manager must help make these decisions in a rational way, ensuring the firm's funds are used optimally. These decisions are crucial and require strong managerial skill.

As mentioned earlier, financial decisions impact all other business activities. The financial manager's responsibilities, beyond just raising money, now include determining the size and technology of the firm, setting growth targets, and shaping the company's profitability and risk by selecting the best mix of assets and financing.

1.4.3 Profit Planning

The role of the financial manager can also include **profit planning**. Profit planning involves making decisions about pricing, costs, production volume, and the choice of product lines. It is an important step in making investment and financing decisions more effective. A firm's **cost structure**, which is the balance between fixed and variable costs, plays a big role in its profitability. Fixed costs stay the same regardless of the volume of sales, while variable costs increase or decrease depending on how much is produced or sold. Because of fixed costs, a firm's profits can change more drastically than sales do. This fluctuation in profits based on changes in sales is called **operating leverage**. Profit planning helps the firm predict how changes in sales, costs, and volume will affect profits, and allows the firm to prepare action plans for dealing with unexpected changes.

1.4.4 Understanding Capital Markets

Capital markets connect investors (lenders) with firms (borrowers), so the financial manager must have a deep understanding of how these markets work. The manager needs to know how capital markets value securities, how risk is measured, and how to manage it when making investment and financing decisions. For instance, if a company uses too much debt to fund its growth, it might be seen as risky by investors, which could cause its share value to drop. On the other hand, if a profitable, growing company decides to pay out dividends, investors might not approve. They may prefer that the company reinvest its profits in profitable opportunities that could lead to higher capital gains in the future. Investments always involve balancing risk and return. Investors assess the decisions of the financial manager based on their actions in the capital markets.

1.5 FINANCIAL GOAL: PROFIT MAXIMIZATION VERSUS WEALTH MAXIMIZATION

In financial management, the term "objective" refers to the goal or guiding principle for making financial decisions. This objective acts as a standard to evaluate decisions related to areas such as capital budgeting, capital structure, dividend policy, and working capital management. It helps create a framework for making the best possible financial choices. The objective of financial management should align with the broader vision, mission, and goals of the organization. It forms the financial component of the company's overall objectives and ensures harmony with the larger organizational targets. By doing so, it sets the stage for achieving financial milestones that support corporate goals. The chief financial officer (CFO) or financial manager must clearly define the main financial management objective and communicate it effectively to the finance team. Below, we discuss some of the key objectives of financial management.

A firm's investment and financing decisions are constant and unavoidable. To make these decisions wisely, the firm needs a clear goal. In theory, it is widely accepted that the financial objective of a firm should be to maximize shareholders' wealth (SWM), which is reflected in the market value of the firm's shares. This section explains why maximizing shareholders' wealth is both logical in theory and practical in guiding financial decision-making effectively.

1.5.1 Profit Maximization

In the traditional view, profit maximization was seen as the primary goal of financial management. The main aim of a business is to earn profit, as most businesses operate primarily to achieve this objective. Profit serves as a measure of how efficiently a business is performing. Profit maximization means that all financial decisions are based on how much profit they generate or save for the firm. Projects or investments that do not yield profits would be rejected. If there are limited funds available, the business would prioritize and choose projects or investments that offer the highest profits.

1.5.2 Arguments in favor of Profit Maximization

Profit maximization as a financial management goal can be supported for the following reasons:

1. Primary Goal of Businesses: The primary objective of most businesses is to generate profits.

- 2. **Measure of Success**: Profit serves as an effective measure of a business's success and operational efficiency.
- 3. **Optimal Resource Utilization**: By focusing on maximizing profits, businesses ensure the efficient use of limited financial resources, directing them toward the most profitable opportunities.
- 4. **Economic Welfare**: Profit maximization can contribute to the overall economic welfare of society. When each part of society strives for maximum profitability, it can lead to greater economic well-being for society as a whole.

1.5.3 Limitations of Profit Maximization

The goal of profit maximization has faced strong criticism due to the following reasons:

- 1. Unclear Definition: The term "profit" is vague and can be interpreted in many ways. It could mean profit before or after tax, total profit, or additional (incremental) profit.
- 2. Ignores Time Value of Money: it does not take into account when the cash inflows are received. Profits earned at different times are treated the same, ignoring their varying value over time.
- 3. **Overlooks Risk**: It ignores the risk involved in achieving profits. There is no consideration of the possibility of not receiving expected cash inflows or receiving less than anticipated.
- 4. **Neglects Value Creation**: The main objective of a business should not just be earning profits but also creating long-term value for its owners.
- 5. **Dependent on Accounting Profits**: Profit maximization relies on accounting profits, which can be manipulated by altering accounting policies, making it less reliable.

1.5.4 Shareholders' Wealth Maximization (SWM)

In the modern era, the primary goal of financial management is **Shareholder Wealth Maximization**. This approach emphasizes cash flow generation and considers the timing of benefits, overcoming the limitations of the traditional **Profit Maximization** objective. Shareholders' wealth is determined by factors like the market value of shares, reserves, surplus, and accumulated profits. Among these, the **market value of shares** is the most significant component.

Market Capitalization, which represents the company's market value, is calculated as: Market Capitalization=Market Price per Share× Number of Shares. As the number of shares remains constant over a period, the finance manager's focus should be on increasing the market price per share. This ensures shareholders' wealth is maximized.

However, finance managers must strike a balance. Pursuing high-risk, high-return projects might temporarily increase share prices but can backfire if risks materialize, causing share prices to drop

significantly. Dissatisfied shareholders may sell their shares, further reducing the company's market value. Another term for shareholder wealth maximization is **Net Present worth Maximization** or **Value Maximization**. This objective focuses on enhancing the total value of investments made by shareholders. To achieve this, finance managers aim to maximize the value of projects undertaken by the firm. **Net Present Value (NPV)** is used to evaluate projects by calculating the difference between the present value of all expected cash inflows and the present value of all cash outflows over the project's lifespan.

1.5.5Arguments in favor of Wealth Maximization

- 1. Clear and Precise: Wealth maximization is based on cash flows, which are straightforward and easier to measure compared to profits. Cash inflows are seen as benefits, while cash outflows are considered costs.
- 2 **Time Value of Money**: It takes into account when cash flows occur, recognizing that money received today is more valuable than the same amount received in the future.
- 3 **Risk Consideration**: It considers the risks involved in generating cash flows, providing a more comprehensive view.
- 4 **Efficient Use of Funds**: Wealth maximization ensures that a company invests its resources in projects or activities that create the most value for shareholders.
- 5 **Benefit to Society**: By promoting efficient use of scarce resources, it supports economic welfare and benefits society as a whole.

1.5.6 Criticisms of wealth maximization:

- 1. **Hard to Apply Daily**: It's challenging to make wealth maximization the goal of financial management in the day-to-day operations of modern businesses.
- 2. **Conflicts and Agency Issues**: Focusing on wealth maximization can lead to conflicts between owners (shareholders) and managers, creating agency problems.
- 3. **Ignores Other Stakeholders**: Wealth maximization mainly focuses on shareholders and doesn't prioritize the welfare of other important stakeholders like employees, creditors, suppliers, customers, and distributors.
- 4. **Unreliable Share Prices**: It relies on maximizing the market value of a company's shares. However, share prices are influenced by many factors beyond the company's control, making them an unstable measure of success.
- 5. **Similar to Profit Maximization**: Some argue that wealth maximization is just another version of profit maximization, with little real difference.

1.5.7 Profit Maximization vs. Shareholder's Wealth Maximization

S. No.	Basis	Profit Maximization Wealth	
			Maximization

1	Meaning	Focuses on	Focuses on	
		increasing the	increasing the	
		profits of the	wealth of	
		business	shareholders or	
		organization.	owners.	
2	Vagueness	The objective is	The objective is	
		unclear and can be	r and can be clear and precise,	
		vague and	leaving no room for	
		ambiguous.	ambiguity.	
3	Criteria	Based on	Based on	
		maximizing	maximizing the	
		accounting profits.	market price per	
			share.	
4	Time Value of	Does not consider	Takes the time	
	Money	the time value of	value of money into	
		money.	account.	
5	Risk	Ignores the risks	Considers the	
		associated with cash	riskiness of cash	
		flows.	flows.	
6	Basis of	Based on	Based on cash	
	Computation	accounting profits.	flows.	
7	Acceptability	Not widely accepted	Widely accepted as	
		as an objective of	an objective of	
		financial	financial	
		management.	management.	
8	Imperfect Markets	Assumes perfect	Makes no such	
		competition and is	assumption and is	
		not applicable in	universally	
		imperfect markets.	applicable.	
9	Manipulation	Can be easily	Cannot be easily	
		manipulated by	manipulated.	
		changing		
		accounting policies.		

1.5.8 Stakeholder's Welfare Maximization

A stakeholder in a company refers to anyone who has an interest in the company, can influence its outcomes, or is affected by its activities. Stakeholders include shareholders, management, creditors, employees, employee unions, suppliers, distributors, consumers, consumer groups, government agencies, local communities, environmental groups, and society at large. Each group

is vital for the company's operations, and a finance manager cannot prioritize one group's interests while ignoring others. Since financial resources are limited, a finance manager cannot maximize benefits for all stakeholders. Even with unlimited resources, it would still be impossible because the interests of various stakeholders often conflict. For example:

- 1. Shareholders vs. Managers: Shareholders may want a higher portion of profits as dividends, while managers may prefer retaining more profits for future growth.
- 2. Creditors vs. Shareholders: Creditors may prefer the company to undertake low-risk projects to ensure repayment, whereas shareholders may favor high-risk projects for greater returns.
- 3. **Suppliers, Employees, and Customers**: Suppliers and employees may seek higher payments or salaries, increasing costs, while customers desire lower prices for products.

Despite these conflicts, stakeholder welfare maximization does not mean neglecting shareholders. A finance manager must aim to balance the minimum requirements of all stakeholders. The level to which stakeholder expectations are met depends on their influence on the business compared to other stakeholders. While shareholder wealth maximization remains the primary goal, financial management also considers the broader interests of all stakeholders. The objective is to preserve the overall well-being of all stakeholders rather than maximizing the welfare of only a few.

1.5.9 Maximization of Earnings Per Share (EPS)

Earnings per Share (EPS) is a financial measure that shows the amount of profit a company makes for each share of its stock. It is calculated by subtracting the dividend paid to preference shareholders from the net income after tax, and then dividing the result by the average number of outstanding equity shares. EPS = (Net Income after Tax – Dividend on Preference Shares) / Average Outstanding Equity Shares

In this approach, the finance manager focuses on actions that will increase EPS. Each investment or decision is evaluated based on whether it will increase EPS. Any actions that would decrease EPS are avoided. This means that all financial management decisions, such as capital budgeting, capital structure, dividend policies, and working capital management, are made with the goal of maximizing EPS. However, maximizing EPS does not necessarily mean maximizing the wealth of shareholders. These two objectives are different. EPS maximization does not take into account the time value of money or the risks involved with expected profits. Additionally, the market price of a company's share is not directly tied to EPS. While EPS can influence the market price, it is just one of many factors that affect a company's share price.

1.5.10 Maximization of Sales

To achieve this goal, the finance manager works to increase sales by lowering prices, adding extra features, improving product quality, launching aggressive advertising and sales campaigns, expanding distribution networks, and adding more intermediaries to reach a larger market. However, maximizing sales is not typically seen as the main goal of financial management. This is because increasing sales volume doesn't always lead to a proportional increase in profits, shareholder wealth, or the welfare of stakeholders. Simply boosting sales doesn't guarantee better financial outcomes for the company or its owners.

1.5.11 Maximization of Market Share

In this goal, the company aims to become the market leader by capturing the largest possible share of the market. The company strives to be number one in its industry, building a strong brand, reputation, and image that people recognize. To achieve this, the company uses aggressive strategies. However, similar to sales maximization, focusing solely on increasing market share is not considered the main objective of financial management. This is because there isn't always a direct link between a larger market share and increased shareholder wealth or business profitability. Simply having a bigger market share doesn't guarantee higher profits or better financial results.

1.6: RISK-RETURN TRADEOFF IN FINANCIAL MANAGEMENT

The risk-return tradeoff is a fundamental concept in financial management that highlights the relationship between the risk of an investment and the expected return. It states that higher potential returns are generally associated with higher levels of risk, while lower-risk investments typically yield lower returns. This tradeoff is central to making informed financial decisions.

Key Aspects of the Risk-Return Tradeoff:

- 1. **Risk**: Risk refers to the uncertainty associated with the potential outcomes of an investment. It can arise from various factors such as market volatility, economic changes, or company-specific events. Common types of risks include:
- 2. Market Risk: Fluctuations in the value of investments due to changes in market conditions.
- 3. Credit Risk: The possibility that a borrower may default on a financial obligation.
- 4. Liquidity Risk: Difficulty in converting an asset into cash without significant loss.

Return: Return is the gain or loss on an investment over a period, expressed as a percentage of the initial investment. It can take the form of capital gains, interest, or dividends, depending on the type of investment.

Tradeoff Relationship:

High Risk, High Return: Investments like equities, derivatives, or venture capital have high volatility but offer the potential for significant returns. **Low Risk, Low Return:** Instruments such as government bonds or savings accounts are safer but provide modest returns.

1.7 UNIT SUMMERY

- 1. The financial functions of a firm are grouped into three main areas: Investment Decision: Determining how much to invest in short-term and long-term assets. Financing Decision: Deciding how to raise the required funds. Dividend Decision: Deciding how much profit to return to shareholders as dividends.
- 2. When making financial decisions, the goal of the financial manager should be to increase the value of the shareholders' investment in the company. This the principle of Shareholders' Wealth Maximization (SWM).
- 3. Wealth Maximization is a better approach than Profit Maximization because: Wealth is clearly measured as Net Present Value (NPV). It considers the time value of money (a dollar today is worth more than a dollar tomorrow). It also accounts for risk, making it a more comprehensive measure of financial success.
- 4. The financial manager obtains funds from the capital markets. Therefore, they must understand how capital markets operate, how they allocate capital among competing firms, and how security prices are determined within these markets.
- 5. The treasurer is responsible for raising and managing the company's funds, while the controller ensures that these funds are used appropriately. In many companies in India, the chief financial officer (CFO) role is held by either a finance director or a vice-president of finance.

2.3 KEY POINTS

Capital structure, Debenture, Dividend decision Dividend payout, Earnings per share (EPS), 2.4 CHECK YOUR PROGRESS 1-mark questions:

1. What is the primary goal of financial management?

a)	То	maximiz	ze	profits	after	taxes
b)	То	ensure	;	steady	cash	flow
c) 👩	То	maximize	the	wealth	of	shareholders
d) 😤 re	educe the ager	cy problem				

Answer: c) to maximize the wealth of shareholders

2. What is the main role of a finance manager?

Managing relations a) customer b) funds capital Allocating efficiently raising and Monitoring employees' productivity c) d) setting dividend policies

Answer: b) Allocating funds efficiently and raising capital

3. What are the four main areas of financial decision-making?

Accounting, marketing, HR, and R&D a) b) liquidity decisions Investment, financing. dividend. and Profit maximization, debt management, equity management, taxation c) and d) Budgeting, forecasting, auditing, and reporting

Answer: b) Investment, financing, dividend, and liquidity decisions

4. Why is wealth maximization considered superior to profit maximization?

It risk but a) ignores focuses returns on b) It considers the time value of money and risk factors c) It eliminates uncertainty from financial decisions d) It ensures higher profits every year

Answer: b) It considers the time value of money and risk factors

2- Mark Questions:

- 1. Define real assets and financial assets.
- 2. What is the difference between equity and borrowed funds?
- 3. Mention any two financial functions.
- 4. What are the main financial decisions in financial management?
- 5. Define profit maximization.
- 6. What is shareholder wealth maximization (SWM)?
- 7. What do you understand by the term "risk-return tradeoff"?
- 8. Mention one argument in favor of profit maximization.
- 9. What is meant by stakeholder welfare maximization?
- 10. State two criticisms of wealth maximization.

5-Mark Questions

- 1. Explain the scope of finance with reference to real and financial assets.
- 2. Differentiate between the investment decision, financing decision, and dividend decision.

- 3. What is the role of a financial manager in funds rising and allocation?
- 4. Compare and contrast profit maximization and shareholder wealth maximization.
- 5. Write a short note on the criticisms of wealth maximization.
- 6. Explain the importance of understanding capital markets for a financial manager.
- 7. Discuss the risk-return tradeoff in financial management with an example.
- 8. What are the limitations of profit maximization as a financial goal?
- 9. Explain maximization of EPS and maximization of sales as financial goals.
- 10. How does financial management balance the interests of shareholders and other stakeholders?

10-Mark Questions:

- 1. Elaborate on the scope of finance, highlighting its relationship with management functions.
- 2. Discuss in detail the financial functions and the major financial decisions involved.
- 3. Explain the role of a financial manager with reference to profit planning and capital market understanding.
- 4. Compare and contrast the objectives of profit maximization and wealth maximization. Provide arguments in favor and limitations of both.
- 5. Analyze the criticisms of shareholder wealth maximization and propose how stakeholder welfare maximization addresses these issues.
- 6. Discuss the various financial goals (profit maximization, wealth maximization, EPS, sales, and market share) and their implications for an organization's strategy.
- 7. Explain the risk-return tradeoff in financial management and its impact on decisionmaking. Provide suitable examples.
- 8. Discuss how financial managers balance profit maximization and stakeholder welfare in the context of modern financial management.
- 9. Evaluate the importance of dividend decisions in financial management, connecting them to shareholders' wealth maximization.
- 10. Discuss the interplay between financial management functions and the broader corporate goals of risk management and market competitiveness.

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UNIT 2: SURCES OF FINANCE

UNIT STRUCTURE:

- 2.1 Introduction
- 2.2 Meaning, Nature and Significance of Business Finance
- 2.3 Classification of Sources of Finance
 - 2.3.1 Period basis
 - 2.3.2 Ownership basis
 - 2.3.3 Generation basis
- 2.4 Sources of Finance
 - 2.4.1 Retained earning
 - 2.4.2 Trade Credit
 - 2.4.3 Factoring
 - 2.4.4 Lease Financing
 - 2.4.5 Public Deposit
 - 2.4.6 Commercial Papers
 - 2.4.7 Issue of shares
 - 2.4.8 Debentures
 - 2.4.9 Commercial Banks
 - 2.4.10 Financial Institutions
- 2.5 Unit Summary
- 2.6 Keywords

2.7 Check Your Progress

2.8 Reference

OBJECTIVES:

After completing this chapter, you should be able to:

- 1. Understand the concept characteristics, and significance of business finance.
- 2. Distinguish between different types of business finance sources.
- 3. Assess the advantages and disadvantages of various financial sources.
- 4. Recognize international financial sources.
- 5. Analyze the factors influencing the selection of suitable financing options.

2.1 INTRODUCTION

This chapter provides a comprehensive overview of the numerous funding options available for both initiating and operating a business. It delves into the advantages and disadvantages associated with each source of finance, offering valuable insights into their suitability for different business needs. Additionally, the chapter emphasizes the critical factors that influence the decision-making process when selecting an appropriate source of funding.

For anyone planning to establish a business, understanding the various avenues for raising capital is essential. This knowledge helps in identifying which funding options align best with the business's objectives and financial requirements. Moreover, assessing the relative swengths and limitations of each source enables entrepreneurs to make strategic and informed choices, ensuring financial stability and growth. The chapter serves as a guide to help aspiring business owners navigate the complexities of business finance effectively.

2.2 PEANING, NATURE AND SIGNIFICANCE OF BUSINESS FINANCE

Business revolves around producing and distributing goods and services to meet the needs of society. To carry out these activities, businesses require money, making finance the lifeblood of any organization. The need for funds to conduct various operations is referred to as business finance. Without sufficient funding, a business cannot operate effectively.

While the initial capital contributed by an entrepreneur provides a starting point, it is often insufficient to cover all the financial needs of the business. As a result, business owners must explore additional sources of funding. A thorough evaluation of financial requirements and an understanding of available funding options are critical aspects of managing a business successfully.

The demand for funds arises as soon as an entrepreneur decides to establish a business. Immediate funding is often required for acquiring fixed assets like machinery, furniture, and other infrastructure. Additionally, funds are essential for daily operations, such as purchasing raw materials, paying employee salaries, and covering other routine expenses. As the business grows, the need for financial resources also increases.

Categories of Financial Needs

1. Fixed Capital Requirements

Businesses need funds to invest in fixed assets such as land, buildings, machinery, and furniture. These are long-term investments that remain tied up in the business for extended periods. The amount of fixed capital required depends on factors like the nature and size of the business. For instance, a manufacturing business typically requires more fixed capital than a trading enterprise. Similarly, larger businesses need higher fixed capital compared to smaller ones.

2. Working Capital Requirements

In addition to fixed assets, businesses require funds for daily operations, which is known as working capital. This includes maintaining current assets such as inventory, accounts receivable, and covering expenses like wages, rent, and taxes. The amount of working capital needed varies depending on the nature of the business. For example, a business selling goods on credit or with slower sales turnover needs more working capital than one dealing in cash transactions or with faster turnover rates.

As businesses grow and expand, their financial needs also evolve. They may require additional funds to upgrade technology to reduce costs, build inventory for peak seasons, pay off current debts, or expand operations. Relocating to a new site or scaling up production is other scenarios where substantial funds may be necessary. Thus, it is crucial for businesses to carefully assess their financial requirements and identify suitable funding sources to meet these diverse needs effectively.

2.3 CLASSIFICATION OF SOURCES OF FINANCE

For proprietorships and partnerships, funds can be obtained from personal resources or through borrowings from banks, friends, or other sources. In contrast, companies have access to a broader range of financing options. The classification of funding sources is based on different criteria, such as the duration of financing, the origin of funds, and the ownership of funds. These categories are briefly explained below, along with an overview of the available sources.

2.3.1 Period Basis

Sources of funds can be classified into three categories based on the duration for which the funds are required: long-term, medium-term, and short-term sources.

1. Long-Term Sources:

These sources provide funds for a period exceeding five years and are typically used to meet the long-term financial needs of a business. Common examples include shares, debentures, long-term borrowings, and loans from financial institutions. Such funds are generally utilized for acquiring fixed assets like machinery, equipment, and plant.

2. Medium-Term Sources:

When funds are needed for duration of more than one year but less than five years, mediumterm financing is suitable. Examples of these sources include loans from commercial banks, public deposits, lease financing, and loans from financial institutions.

3. Short-Term Sources:

Short-term funds are required for periods not exceeding one year. Examples include trade credit, loans from commercial banks, and commercial papers. These funds are primarily used for financing current assets such as inventories and accounts receivable. Short-term financing is particularly crucial for businesses with seasonal operations that need to build inventories in anticipation of sales during peak seasons. Additionally, manufacturers and wholesalers with significant portions of their assets tied up in inventories or receivables often rely on short-term funds to manage their immediate financial needs effectively.

2.3.2 Ownership basis

Sources of funds can be divided into two main categories: owner's funds and borrowed funds.

1. Owner's Funds

These are funds contributed by the owners of the business, whether they are sole proprietors, partners, or shareholders in a company. In addition to the initial capital, this category includes profits that are reinvested into the business. Owner's funds are invested in the business for an extended period and do not require repayment during its operational life. This capital forms the foundation of ownership and grants the owners control over the management of the enterprise. Common sources of owner's funds include the issuance of equity shares and retained earnings.

2. Borrowed Funds:

Borrowed funds refer to capital raised through loans or credit from external sources. These funds are obtained from sources such as commercial bank loans, financial institution loans,

public deposits, trade credit, and the issuance of debentures. Borrowed funds are provided for a specific duration under agreed terms and must be repaid once the term expires. Borrowers are required to pay a fixed rate of interest on these funds, regardless of the business's profitability. This can sometimes impose a significant financial burden, particularly during periods of low earnings or losses. In most cases, borrowed funds are secured against the assets of the business.

2.3.3 Generation basis

Sources of funds can also be classified based on whether they come from within the business or from external parties.

1. Internal Sources of Funds:

These are funds generated from within the business itself. For example, a business can raise internal funds by quickly collecting money owed by customers, selling off extra inventory, or reinvesting its profits. However, internal sources are typically limited and may not be sufficient to meet all the financial needs of the business.

2. External Sources of Funds:

External sources refer to funds obtained from outside the organization, such as from suppliers, banks, financial institutions, or investors. Businesses often turn to external sources when they need large amounts of money. However, these funds can be more expensive compared to internal sources. Additionally, businesses may need to provide collateral, like mortgaging their assets, to secure external financing. Common examples of external funding include issuing debentures, borrowing from banks or financial institutions, and accepting public deposits.

2.4 SOURCES OF FINANCE

A business has access to various funding sources, each with its own unique features. It is essential to understand these characteristics thoroughly to select the most suitable option. However, there is no universally ideal source of funds that fits every organization. The choice of a funding source depends on factors such as the specific need, purpose, cost, and associated risks. For instance, if a business needs funds to meet fixed capital requirements, long-term financing may be appropriate, which can be obtained through either owner's equity or borrowed funds. On the other hand, if the funds are needed for day-to-day operations, shortterm sources might be more suitable. The following sections provide an overview of various funding options, along with their respective benefits and drawbacks.

2.4.1 Retained earning

Companies often choose not to distribute all their profits as dividends to shareholders. Instead, a portion of the net earnings is retained within the business for future use, a practice referred to as retained earnings. This represents an internal source of financing, also known as self-financing or "ploughing back of profits." The amount available for retention depends on factors such as net profits, the company's dividend policy, and its age.

Advantages of Retained Earnings

- 1. Retained earnings provide a permanent source of funds for the business.
- 2. This method does not involve direct costs like interest, dividends, or flotation expenses.
- 3. Since the funds are internally generated, the business enjoys greater flexibility and operational freedom.
- 4. It strengthens the company's ability to handle unexpected losses.
- 5. Retained earnings can enhance the market value of a company's equity shares.

Limitations of Retained Earnings

- 1. Excessive retention of profits may frustrate shareholders due to lower dividend payouts.
- 2. It is an uncertain source of funding as business profits can fluctuate.
- 3. Many companies fail to recognize the opportunity cost of retained earnings, which can lead to inefficient use of these funds.

2.4.2 Trade Credit

Trade credit refers to an arrangement where one trader allows another to buy goods or services on credit, deferring payment to a later date. This type of credit helps businesses purchase supplies without immediate cash payment and is recorded as "accounts payable" or "sundry creditors" in the buyer's books. Trade credit is a popular source of short-term financing for businesses and is usually extended to customers with good financial standing and a solid reputation.

The amount and duration of trade credit depend on factors such as the buyer's reputation, the seller's financial condition, the volume of purchases, payment history, and market competition. Terms of trade credit can vary between industries, businesses, and even individual customers. Sellers may also offer different credit terms to different buyers.

Advantages of Trade Credit

- 1. Trade credit is a simple and ongoing source of funds for businesses.
- 2. Sellers are often willing to extend credit if the buyer's financial reliability is wellestablished.
- 3. It helps boost sales by enabling buyers to purchase goods on credit.
- 4. Businesses can use trade credit to finance additional inventory needed for expected increases in sales.
- 5. Trade credit does not require the firm to pledge any assets as security.

Disadvantages of Trade Credit

- 1. Easy access to trade credit can tempt businesses to over-purchase, increasing financial risks.
- 2. The amount of funds that can be raised through trade credit is limited.
- 3. Trade credit is often more expensive than other financing options, making it a costly source of funds.

2.4.3 Pactoring

Factoring is a financial service where a company, called a "factor," provides several services, including:

1. Discounting and Debt Collection:

The factor purchases the client's receivables (money owed from the sale of goods or services) at a discounted rate. The factor then takes on the responsibility of credit control, collecting payments from the buyers, and providing protection against bad debts.

Recourse Factoring: The client is not protected against bad debts, meaning they bear the risk if customers fail to pay.

Non-Recourse Factoring: The factor assumes the risk of bad debts and pays the client the full invoice amount even if the customer defaults.

2. Creditworthiness Information:

Factors also assess the creditworthiness of potential customers, helping businesses avoid working with clients who have poor payment records. In addition, factors may offer financial or marketing advice.

The factor charges a fee for these services. Factoring became prominent in India during the early 1990s, driven by the Reserve Bank of India (RBI). Organizations like SBI Factors, Canbank Factors, Punjab National Bank, and several non-banking finance companies provide factoring services.

Advantages of Factoring

1. Factoring is more cost-effective than other financing options, such as bank loans.

- 2. It ensures faster cash flow, enabling businesses to promptly meet their financial obligations.
- 3. Factoring provides a steady cash inflow from credit sales, offering financial security to the firm.
- 4. It does not require pledging assets as collateral.
- 5. By handling credit control and debt collection, the factor allows the business to focus on other operations.

Disadvantages of Factoring

- 1. Factoring can be expensive, especially when there are many small invoices.
- 2. The advance funding provided by the factor often comes with higher interest rates compared to standard loans.
- 3. Customers may feel uneasy dealing with a third-party factor, affecting relationships.

2.4.4 Lease Financing

Lease financing is an agreement where the owner of an asset (the lessor) allows another party (the lessee) to use the asset for a specific period in exchange for regular payments known as lease rentals. Essentially, it is a form of renting an asset. The lease contract outlines the terms and conditions of the arrangement. Once the lease period ends, the asset is returned to the lessor.

This type of financing is commonly used for acquiring assets like computers and electronic equipment that quickly become outdated due to rapid technological advancements. When considering leasing, it is essential to compare the cost of leasing the asset to the cost of purchasing it outright.

Advantages of Lease Financing

- 1. The lessee can access the asset with a smaller upfront investment.
- 2. The documentation process is straightforward, making it easier to arrange.
- 3. Lease payments are tax-deductible, reducing taxable profits.
- 4. Leasing provides funds without the lessee needing to give up ownership or control of the business.
- 5. Leasing does not impact the company's ability to raise debt.
- 6. The lessor assumes the risk of the asset becoming outdated, offering the lessee flexibility to upgrade or replace it.

Disadvantages of Lease Financing

1. Lease agreements may restrict how the lessee uses the asset, such as prohibiting modifications.

- 2. If the lease is not renewed, it can disrupt regular business operations.
- 3. If the lessee terminates the lease early due to the asset being unsuitable, it may result in significant financial obligations.
- 4. The lessee does not gain ownership of the asset and, therefore, misses out on its residual value.

2.4.5 Public Deposit

Public deposits are funds that organizations collect directly from the public. These deposits typically offer a higher interest rate than what banks provide. Individuals interested in contributing can fill out a prescribed form and the organization issues a deposit receipt as proof of the transaction. Public deposits are suitable for meeting both short-term and medium-term financial needs. This form of financing benefits both parties: depositors receive better interest rates compared to bank deposits, while companies incur lower costs than borrowing from banks. Companies usually accept public deposits for up to three years, and the process is regulated by the Reserve Bank of India (RBI).

Advantages of Public Deposits

- 1. The process of obtaining public deposits is straightforward and lacks the restrictive conditions commonly found in loan agreements.
- 2. The cost of raising funds through public deposits is generally lower than borrowing from banks or financial institutions.
- 3. Public deposits do not place a lien on the company's assets, allowing these assets to be used as collateral for other loans.
- 4. Since depositors do not hold voting rights, the company's management and control remain unaffected.

Disadvantages of Public Deposits

- 1. Newly established companies often struggle to attract funds through public deposits.
- 2. It is an unpredictable source of funding, as the public may not respond favorably when the company requires funds urgently.
- 3. Raising large amounts through public deposits can be challenging and time-consuming.

2.4.6 Commercial Papers

Commercial Paper is an unsecured financial instrument in the form of a promissory note used in the money market. Introduced in India in 1990, it was designed to help highly rated companies diversify their short-term borrowing options and provide investors with an additional financial instrument. Later, primary dealers and all-India financial institutions were also allowed to issue CP to meet their short-term funding needs.

Investors in CP can include individuals, banks, corporate entities (registered or incorporated in India), unincorporated bodies. Non-Resident Indians (NRIs), and Foreign Institutional Investors (FIIs). CPs can have a tenure ranging from a minimum of 7 days to a maximum of 1 year from the date of issuance. They are issued in denominations of \gtrless 5 lakh or multiples thereof. Importantly, the maturity date must fall within the period for which the issuer's credit rating remains valid.

Advantages of Commercial Paper

- 1. No Collateral Required: CP is issued without any security and lacks restrictive terms, making it a straightforward option.
- 2. **High Liquidity**: As CPs is freely transferable, they are easy to trade and highly liquid.
- 3. **Cost-Effective**: CPs generally offer a lower cost of borrowing compared to commercial bank loans, making them a cheaper option.
- 4. Flexible Source of Funds: CP provides a continuous stream of funding as firms can adjust the maturity period to suit their needs. Additionally, maturing CP can be replaced with newly issued CP.
- 5. **Investment Opportunity**: Companies with surplus funds can invest in CP to earn better returns.

Disadvantages of Commercial Paper

- 1. **Restricted Eligibility**: Only firms with strong credit ratings and sound financial positions can issue CP, limiting its availability to newer or less stable companies.
- 2. Limited Amounts: The amount that can be raised depends on the surplus liquidity in the market at a given time, restricting its utility.
- 3. **Inflexibility during Financial Trouble**: Since CP is an impersonal financing tool, firms unable to redeem their CP due to financial difficulties cannot negotiate extensions or adjustments to its maturity.

2.4.7 Issue of shares

Equity shares are a key source of long-term funding for companies. They represent ownership in a company, and the funds raised through their issue are referred to as ownership capital or owner's funds. Equity shares are essential for establishing a company. Shareholders of equity shares, known as equity shareholders, do not receive a fixed dividend but instead share in the profits based on the company's earnings.

Equity shareholders are called "residual owners" because they are entitled to the remaining income and assets after settling all other claims. They bear the risks and enjoy the rewards of ownership. Their liability, however, is limited to the amount they have invested. Moreover, equity shareholders have voting rights, allowing them to participate in the management of the company.

Advantages of Equity Shares

- 1. **Appeal to Risk-Taking Investors**: Equity shares are suitable for investors willing to take on risks for potentially higher returns.
- 2. No Dividend Obligation: Companies are not obligated to pay dividends, reducing financial pressure.
- 3. **Permanent Capital**: Equity capital is repaid only during the company's liquidation, offering long-term stability. It also provides a safety net for creditors in case of winding up.
- 4. Enhanced Creditworthiness: Equity capital boosts the company's credibility and attracts potential lenders.
- 5. Asset Flexibility: Funds can be raised without creating any charge on the company's assets, leaving them available for future borrowing needs.
- 6. **Democratic Management**: Equity shareholders have voting rights, ensuring a democratic approach to management decisions.

Disadvantages of Equity Shares

- 1. Uncertainty for Income-Seeking Investors: Investors looking for regular income may avoid equity shares due to fluctuating returns.
- 2. **Higher Cost**: Kaising funds through equity shares is generally more expensive compared to other sources.
- 3. **Dilution of Ownership**: Issuing additional equity shares can reduce the voting power and earnings per share for existing shareholders.
- 4. **Complex Procedures**: Issuing equity shares involves extensive formalities and procedural delays, making the process time-consuming.

2.4.8 Debentures

Debentures are a significant tool for raising long-term debt capital. When a company issues debentures, it acknowledges borrowing a specific sum of money with a promise to repay it at a future date. Debenture holders, therefore, are creditors of the company and are entitled to receive a fixed rate of interest at regular intervals, typically every six months or annually. Before issuing debentures to the public, the company must obtain a credit rating from agencies like CRISIL (Credit Rating and Information Services of India Ltd.) to assess its track record, profitability, debt repayment ability, creditworthiness, and associated risks. Various types of debentures can be issued, including **Zero Interest Debentures (ZID)**, which do not carry an explicit interest rate. For these, the investor's return is the difference between the debenture's face value and its purchase price.

Advantages of Debentures

- 1. Fixed Income for Investors: Debentures are ideal for those seeking a steady income with low risk.
- 2. No Profit Sharing: Since debentures are fixed-charge instruments, they do not share in the company's profits.
- 3. **Stable Financial Environment**: Issuing debentures is suitable when the company has consistent sales and earnings.
- 4. **No Dilution of Control**: Debenture holders do not have voting rights, so equity shareholders retain management control.
- 5. **Cost Efficiency**: Financing through debentures is relatively cheaper than equity or preference shares, as interest payments on debentures are tax-deductible.

Disadvantages of Debentures

- 1. **Fixed Financial Obligation**: Debentures impose a constant financial burden on the company's earnings, which can be risky during periods of fluctuating income.
- 2. **Repayment Obligation**: For redeemable debentures, the company must repay the principal on the specified date, even during financial hardships.
- 3. **Reduced Borrowing Capacity**: Issuing debentures utilizes a portion of the company's borrowing limit, leaving less room for raising additional funds through debt in the future.

2.4.9 Commercial Banks

Commercial banks play a crucial role in providing funds for various business needs and timeframes. They offer loans to businesses of all sizes through options like cash credit, overdrafts, term loans, bill discounting, and issuing letters of credit. The interest rates depend on factors such as the company's profile and overall market interest rates. Loan repayment can be done either in full or through installments.

Although banks have started offering longer-term loans, they are generally considered a short- to medium-term financing option. Businesses often need to provide security or pledge assets to get a loan approved.

Advantages of Bank Loans

- 1. Quick Access to Funds: Banks offer timely financial support to businesses when needed.
- 2. Confidentiality: Business details shared with the bank are kept private, ensuring secrecy.
- 3. **Simpler Process**: Unlike issuing shares or bonds, taking a bank loan does not require extensive formalities like prospectuses or underwriting.

4. Flexibility: Businesses can adjust loan amounts based on their needs and repay early if funds are no longer required.

Disadvantages of Bank Loans

- 1. **Short-Term Nature**: Bank loans are typically for short periods, and extending or renewing them can be challenging.
- 2. **Detailed Scrutiny**: Banks thoroughly assess the company's financial situation and often require collateral or guarantees, making the process more complex.
- 3. **Restrictive Conditions**: Banks may impose terms that restrict business operations, such as limiting the sale of assets pledged as security, which can disrupt normal business activities.

2.4.10 Financial Institutions

The government has established various financial institutions across the country to provide funding to business organizations. These institutions, created by both central and state governments, offer long- and medium-term capital in the form of owned or loan capital, complementing traditional financial sources like commercial banks. Often referred to as "development banks," these institutions are dedicated to promoting industrial growth. Along with financing, they also conduct market surveys and offer technical and managerial support to entrepreneurs. This funding source is ideal for businesses seeking substantial, long-term funds for expansion, reorganization, or modernization.

Advantages of Financial Institutions

- 1. **Long-Term Funding**: These institutions offer long-term financing, which commercial banks typically do not provide.
- 2. Advisory Support: Alongside financial aid, they provide valuable financial, managerial, and technical guidance to businesses.
- 3. Enhanced Credibility: Borrowing from financial institutions boosts a company's reputation in the capital market, making it easier to secure funds from other sources.
- 4. Flexible Repayment: Loans can be repaid in manageable installments, reducing financial strain on the business.
- 5. **Support During Economic Downturns**: Funds are available even during challenging periods, such as economic depressions, when other financing options may be inaccessible.

Disadvantages of Financial Institutions

1. **Stringent Loan Criteria**: Financial institutions have strict loan approval processes with lengthy formalities, making the procedure time-consuming and costly.

- 2. **Restrictions on Borrowing Firms**: Borrowers may face limitations, such as restrictions on dividend payouts.
- 3. Loss of Autonomy: Financial institutions may appoint their representatives to the company's Board of Directors, limiting the decision-making powers of the management.

2.4.11International Financing

Apart from domestic sources, businesses can also raise funds internationally. With the global expansion of economies and businesses, Indian companies now have access to funds from international capital markets. Some of the key international sources of finance include:

1. Commercial Banks:

Banks worldwide provide foreign currency loans to businesses for various purposes. These loans are crucial for financing international business activities. For example, Standard Chartered Bank has been a major provider of foreign currency loans to Indian companies.

2. International Agencies and Development Banks:

Several international organizations provide loans and grants to support business development and trade. These agencies focus on promoting economic growth in underdeveloped regions and funding various global projects. Prominent institutions include the International Finance Corporation (IFC), EXIM Bank, and the Asian Development Bank (ADB).

3. International Capital Markets:

Large companies, especially multinational corporations, often raise significant funds both in their local currency and foreign currencies. They use various financial instruments such as:

4. Global Depository Receipts (GDRs):

These are receipts issued by a depository bank in exchange for a company's local shares. GDRs are traded on foreign stock exchanges and are denominated in US dollars. They can be converted into the underlying shares, and though they don't carry voting rights, holders receive dividends and capital gains. Indian companies like Infosys, Wipro, and ICICI have raised funds using GDRs.

5. American Depository Receipts (ADRs):

These are similar to GDRs but are specifically for the US market. ADRs can only be issued to American investors and are traded on US stock exchanges.

6. Indian Depository Receipts (IDRs):

An IDR allows foreign companies to raise funds in the Indian market. The foreign company deposits shares with an Indian custodian, and in return, the custodian issues IDRs to Indian investors. IDRs provide the benefits of the underlying shares, such as dividends and bonuses. For example, Standard Chartered was the first company to issue IDRs in India.

7. Foreign Currency Convertible Bonds (FCCBs):

These are bonds issued in foreign currency that can be converted into equity or depository receipts after a specific time period. FCCBs offer a lower interest rate compared to non-convertible bonds, and investors have the option to convert the bonds into equity at a predetermined price or exchange rate. These bonds are listed and traded on foreign stock exchanges.

This variety of international financing options allows businesses to diversify their funding sources, enabling them to access capital from global markets.

2.4.12 Factors Affecting the Choice of the Source of Funds

Businesses need different types of funds for various purposes, such as short-term or long-term needs, and for fixed or fluctuating expenses. As each source of funds has its own advantages and limitations, it's often best for businesses to use a mix of sources rather than relying on just one. Several factors influence the choice of these sources:

- 1. **Cost**: The cost of obtaining funds and the cost of using them should both be considered when deciding the best source of finance for the business.
- 2. **Financial Strength and Stability**: A business's ability to repay borrowed money and interest is key. If a company's earnings are unstable, it should be cautious when choosing sources with fixed costs, like preference shares or debentures, as they could add financial pressure.
- 3. Form of Organisation and Legal Status: The structure of the business impacts its financing options. For example, a partnership cannot issue equity shares, but a company can.
- 4. **Purpose and Time Period**: The purpose and duration for which funds are needed should be considered. Short-term needs can be met with loans that have lower interest rates, such as trade credit. For long-term needs, shares and debentures are more suitable. Matching the source with the purpose is important; for example, a business expansion plan should not be financed with a short-term loan.
- 5. **Risk Profile**: Businesses need to evaluate the risk associated with each funding source. For instance, equity shares involve less risk since they don't need to be repaid unless the

company is dissolved, and dividends are paid only if the company is profitable. On the other hand, loans require repayment of both principal and interest, regardless of profit or loss.

- 6. **Control**: The choice of funding can impact the control owners have over the business. Issuing equity shares can reduce control, as shareholders have voting rights. Similarly, borrowing from financial institutions may come with conditions that affect control, such as taking control of assets or imposing restrictions.
- 7. Effect on Creditworthiness: Using certain funding sources can affect a company's creditworthiness. For example, issuing secured debentures may make unsecured creditors less willing to lend to the company, thus lowering its credit rating.
- 8. Flexibility and Ease: Some funding sources are easier to access than others. For instance, loans from banks may involve lengthy processes and strict conditions, which might discourage a business if other options are more flexible and readily available.
- 9. Tax Benefits: Some sources of funds offer tax advantages. For example, interest paid on loans and debentures is tax-deductible, while dividends on preference shares are not. This could make loans and debentures more attractive for companies looking to reduce their tax burden.

2.5 SUMMERY

Meaning and Importance of Business Finance: Business finance refers to the money needed by a business to start and run its operations. Every business needs funds for different purposes: buying fixed assets (called fixed capital), managing daily activities (working capital), and supporting growth and expansion plans.

Classification of Sources of Funds: There are different ways to classify the sources of funds for a business:

1. By Time Period:

Long-term sources: Funds needed for more than 5 years.

Medium-term sources: Funds needed for more than a year but less than 5 years.

Short-term sources: Funds needed for up to one year.

2. By Ownership:

Owner's funds: Money provided by the owners of the business.

Borrowed funds: Money borrowed from others, like loans from banks or other institutions.

3. By Source of Generation:

- a. **Internal sources**: Funds generated within the business, such as profits that are reinvested.
- b. **External sources**: Funds raised from outside the business, such as loans from banks or investments from shareholders.

Sources of Business Finance: Businesses can raise funds from various sources, including:

Retained Earnings: This is the portion of the company's profit that is kept in the business rather than paid out as dividends. It is used for growth and expansion.

Trade Credit: This is credit given by suppliers to businesses to purchase goods or services, allowing them to pay later. It's especially useful for small and new businesses.

Factoring: Factoring is when a business sells its receivables (amounts owed by customers) to a financial company (factor) to get immediate cash. The factor then takes care of debt collection. There are two types of factoring: recourse and non-recourse.

Lease Financing: In lease financing, a business rents an asset (like machinery or property) from its owner, paying regular rent for using it for a specified period.

Public Deposits: Businesses can raise funds by inviting the public to deposit their savings with the company, offering higher interest rates than banks.

Commercial Paper (CP): A short-term, unsecured loan issued by companies to raise money. It usually has a maturity of 90 to 364 days and is typically issued by companies with strong credit ratings.

Issue of Equity Shares: By issuing equity shares, a company raises money by selling ownership stakes to investors. Shareholders may benefit from high returns during good times but also take on more risk.

Issue of Debentures: Debentures are debt instruments that companies use to raise funds. They offer fixed interest and are typically used by companies with stable earnings.

Commercial Banks: Banks provide loans for short and medium terms. The interest rate depends on the borrowing company's profile and general interest rates in the economy.

Financial Institutions: Government-established financial institutions, also known as development banks, provide large funds for business growth, modernization, and expansion. These are useful when substantial capital is needed.

2.6 KEY TERMS

Finance, Working Capital, Owned capital, Borrowed capital, Long term sources, Factoring, ADRs, Fixed capital, Short term sources, GDRs

2.7 CHECK YOUR PROGRESS

1- Mark Questions

1.	What	is	business		finar	nce	р	rimarily		require	d	for?
	a)		Buyi	ng				fixed				assets
	b)		Managi	ng			(daily			op	erations
	c)		Expan	ding				the			1	business
	d)		All		C	of			the			above
	Answer:	d) All o	f the above									
2.	Which	of the	following	is	NOT	a	classif	ication	of	sources	of	funds?
	a)				By						ov	vnership
	b)				By						prot	fitability
	c)		By					time				period
	d)		By		sourc	ce		o	f		ge	neration
	Answer	b) By pi	ofitability									
3.	Which	of th	ese provid	es	funds	foi	a	period	ey	sceeding	5	years?
	a)				Short-	term						sources
	b)				Mediun	n-ter	m				sources	
	c)				Long-	term						sources
	d)				Tr	ade						credit
	Answer	c) Long	-term sources	3								
4.	Internal		sources			of		f	unds			include:
	a)				Retain	ned						earnings
	b)				Ba	ank						loans
	c)				Pub	lic						deposits
	d)		Issu	ıe				of				shares
	Answer:	a) Retai	ned earnings									
5.	Borrowe	d		fu	nds			re	fer			to:
	a)	Prof	ĩts	reii	nvested		i	n	1	the	1	business
	b)	Funds	raise	d	fro	m	1	loans		or	bor	rowings
	c)		Money		pro	ovide	ed		by			owners
	d)		None		-	of			the			above
	Answer: b) Funds raised from loans or borrowings											

Answer: b) Funds raised from loans of borrowings
6. Which financial service involves selling receivables to get immediate cash?
a) Lease financing

	b)								Factoring
	c)			Trade					credit
	d)		Retained						earnings
	Answe	r: b) Factoring							
7.	Public			depos	sits				offer:
	a)	Lower	intere	st	rates		thar	ı	banks
	b)]	Flexible		repayment				terms
	c)	Higher	intere	st	rates		thai	1	banks
	d)	No		returns		to			depositors
	Answe	r: c) Higher inter	rest rates than	banks					
8.	What	are	Global	Dep	ository	Rec	ceipts		(GDRs)?
	a)	Debt	instruments	i	issued	in		the	USA
	b) Re	ceints represer	nting shares	of a	company	traded	in	foreign	markets

c) Instruments traded only in India d) Loans provided banks by international Answer: b) Receipts representing shares of a company traded in foreign markets American Depository Receipts (ADRs) 9. are: a) Issued to citizens of any country b) Financial instruments traded only Indian markets in c) Similar to GDRs but issued in the USA d) Equity shares of Indian companies Answer: c) Similar to GDRs but issued in the USA 10. Which international financial instrument links debt equity? to a) Retained earnings

b) Foreign Currency Convertible Bonds (FCCBs) c) Trade credit d) Preference shares

Answer: b) Foreign Currency Convertible Bonds (FCCBs)

2-MARK QUESTIONS

- 1. Define business finance.
- 2. What is the nature of business finance?
- 3. Name the three classifications of sources of finance.
- 4. What is retained earning?
- 5. Define trade credit.
- 6. What is factoring in business finance?
- 7. What is lease financing?
- 8. What is significance of public deposits as a source of finance?
- 9. Define commercial paper.
- 10. Name two financial institutions that provide business finance.

5- Marks Questions:

- 1. Define business finance. Why is it important for businesses to have funds?
- 2. What are the sources of long-term finance and short-term finance? List them.
- 3. How do internal sources of funds differ from external sources? Explain.
- 4. What special privileges are given to preference shareholders? Discuss.
- 5. Identify three special financial institutions and describe their objectives.
- 6. How are GDRs different from ADRs? Explain with examples.

10-Mark Questions

- 1. Explain the meaning, nature, and significance of business finance.
- 2. Discuss the classification of sources of finance on a period, ownership, and generation basis.
- 3. Elaborate on retained earnings, trade credit, and factoring as sources of business finance.
- 4. Explain lease financing and its importance as a source of finance.
- 5. Describe public deposits and commercial papers as sources of business finance with examples.
- 6. Discuss the role of equity shares and debentures in raising business finance.
- 7. Analyze the role of commercial banks in providing finance to businesses.
- 8. Explain the contribution of financial institutions in business finance with examples.
- 9. Compare and contrast retained earnings and trade credit as sources of finance.
- 10. Evaluate the advantages and limitations of various sources of finance for businesses.

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UNIT 3: ANALYSIS OF FINANCIAL STATEMENT USING RATIO ANALYSIS

STRUCTURE:

4.3 Introduction

- 4.4 Meaning of Ratio Analysis
 - 3.2.10bjectives of Ratio Analysis

3.2.2Advantages and Uses of Ratio Analysis

3.13Limitations of Ratio Analysis

- 4.5 Classification of Ratio Analysis on the basis of Financial Statements
- 4.6 Classification of Ratios based on users requirements
- 4.7 Summery
- 4.8 Check Your Progress
- 4.9 Reference

OBJECTIVES:

After studying this unit, you should be able to Understand

- 1. The role of ratio analysis as a principal tool of financial analysis.
- How to assess the relationships between various items in a firm's financial statements using ratios.
- 3. To develop the ability to interpret financial statements effectively through the use of ratios.
- 4. To recognize the importance of interpreting ratios to evaluate the financial strengths and weaknesses of a firm.
- 5. To gain insights into the precautions and guidelines necessary while interpreting various financial ratios.

3.1 INTRODUCTION

This unit delves into **Ratio Analysis**, a vital tool in financial analysis used to evaluate the performance and financial health of an organization. It begins with an introduction to the meaning and objectives of ratio analysis, emphasizing its importance in providing insights for decision-making. The unit explores the **advantages and uses** of ratio analysis while also addressing its **limitations** to offer a balanced understanding. It further classifies ratios based on **financial statements** and **user requirements**, tailoring their application to various stakeholders. Additionally, the unit introduces **Common Size Statements** and **Comparative Analysis**, which complement ratio analysis by enabling trend evaluation and benchmarking. These concepts equip learners with the analytical tools required to interpret financial data effectively and support strategic planning.



Financial ratios are calculated by dividing one figure by another and are typically presented as percentages (%). They allow business owners to explore connections between seemingly unrelated financial elements, aiding in decision-making processes. Simple to compute, user-friendly, and easily comprehensible even to non-specialists, financial ratios provide unique and valuable insights that are otherwise unavailable. While ratios serve as tools to enhance judgment, they cannot substitute experience or management skills. Instead, they complement good management by enhancing its effectiveness.

The concept of ratio analysis enables the comparison of virtually any financial metrics, helping businesses identify areas for improvement. Small business owners and managers can focus on a limited set of key ratios tailored to their specific needs, such as the scale of operations, business age, current phase in the business cycle, or the information sought. In essence, "different ratios address different challenges," as some highlight trends, progress, or decline within the business.

However, it is important to note that ratio analysis is not an end goal but a tool for deeper insight into the financial strengths and weaknesses of an organization's position.

3.2.1 Objectives of Ratio Analysis

- 1. Assess Short-term Liquidity: To check if the business can meet its short-term debts as they become due.
- 2. Evaluate Long-term Solvency: To determine if the business can regularly pay interest and repay its loans on time.
- 3. Measure Operating Efficiency: To see how effectively the business is using its resources to generate revenue.
- Analyze Profitability: To understand how much profit the business earns from its operations and investments.
- 5. **Compare within the Business (Intra-firm)**: To evaluate the financial performance of the business over time, identify strong and weak areas, and take corrective steps.
- 6. Compare with Other Businesses (Inter-firm): To compare the financial position and performance of the business with others in the same industry, identify strengths and weaknesses, and make improvements where needed.

3.2.2 Advantages and Uses of Ratio Analysis

1. Assessing Liquidity (Short-term Solvency):

Liquidity ratios like the Current Ratio and Quick Ratio help determine if the business can meet its short-term obligations on time, which is useful for creditors like banks and suppliers.

12 Evaluating Long-term Solvency:

Solvency ratios, such as the Debt-to-Equity Ratio, allow long-term creditors and investors to check if the business can pay regular interest and repay loans when due.

13 Measuring Operational Efficiency

Ratios like Working Capital Turnover, Inventory Turnover, and Debtors Turnover show how effectively the business uses its resources to generate revenue.

14 Analyzing Profitability:

- - -

Ratios such as Gross Profit, Net Profit, and Return on Investment help measure how well the business generates profits. These insights guide current investors on holding, selling, or buying shares and help potential investors decide on investing.

15 Internal Performance Comparison:

By comparing ratios from different time periods, businesses can track their performance over time, identify problem areas, and make improvements.

16 External Comparison with Other Companies:

Comparing a company's ratios with those of competitors helps understand its standing in the market and identify strengths or weaknesses.

17 Industry Benchmarking:

Comparing the company's ratios to industry standards helps evaluate its position within the industry, highlighting areas for improvement and strengths to leverage.

3.2.3 Limitations of Ratio Analysis

1. Ignores Non-Financial Factors

Ratio analysis focuses only on numbers and doesn't consider qualitative aspects. For example, a customer might seem financially sound based on their statements, but their intent or reliability to repay loans may be questionable.

2. Doesn't Adjust for Price Changes:

Ratios can be misleading if inflation or price changes aren't factored in. For example, **fixed** Asset Turnover Ratio might show a positive picture unless the assets are valued at current replacement costs.

3. Subject to Personal Judgment:

Accountants often have to make subjective choices, such as selecting methods for depreciation (e.g., straight-line vs. written-down) or inventory valuation (e.g., FIFO vs. LIFO). These decisions can introduce personal bias, affecting the ratios derived from the financial statements.

4. Historical Nature:

Ratios are based on past data from financial statements, which may not always reflect the current or future financial condition unless projected financial data is used.

5. Indicates Problems but Doesn't Solve Them:

Ratios only highlight potential issues, much like symptoms in the human body. The management must investigate the underlying causes to address the issues.

6. Overlooks Context Behind Numbers:

Ratios don't account for specific circumstances affecting the figures. For instance, a low Quick Ratio for a dry fruit merchant just before a festival might reflect inventory buildup for upcoming sales, not a poor financial position.

7. Accuracy Depends on Financial Records: Ratios are only as reliable as the data they are based on. If accounts are inaccurate, such as an overvalued closing inventory, profitability and financial health may appear better than they actually are.

3.3 CLASSIFICATION OF ATIOS ON THE BASIS OF FINANCIAL STATEMENTS

Income Statement	Gross Profit Ratio, Operating Profit Ratio, Net Profit
Ratios	Ratio
Position Statement	These Ratios are calculated based on based on balance
Ratios	sheet items.

	Example: Current Ratio, Quick Ratio, Debt Equity					
	Ratio					
Composite Ratios	These ratios are calculated based on the items of					
	Balance sheet and Income statement.					
	Example-Inventory Turnover Ratio, Debtors Turnover					
	Ratio, Creditors Turnover Ratio, Return on Investment					

3.4 CLASSIFICATION OF RATIOS BASED ON USER REQUIREMENTS

Ratios can be categorized to meet the needs of different users such as short-term creditors, long-term creditors, management, and investors. The four main types of ratios are:

A. Liquidity Ratios

Liquidity ratios assess the ability of a business to meet its short-term liabilities as they fall due. These ratios provide insights into the enterprise's short-term financial health.

Types of Liquidity Ratios

1. Current Ratio

The Current Ratio compares a company's Current Assets to its Current Liabilities, indicating its ability to cover short-term obligations. The primary goal of the Current Ratio is to measure the business's capacity to meet short-term liabilities when they become due. It also evaluates the margin of safety for short-term creditors.

Components of Current Ratio

There are two components of Current Ratio

a. Current Assets

Current assets are resources that are either already in cash or can be easily converted into cash within the operating cycle or within 12 months from the balance sheet date. The classification of an asset as current or non-current depends on the purpose for which it is held.

Examples of Current Assets

a. Current Investments

Investments with a maturity period of more than 3 months but not exceeding 1 year from the date of purchase.

Includes raw materials, work-in-progress, finished goods, stores, spares, and loose tools.

c. Trade Receivables

Includes amounts such as bills receivable that are expected to be collected within 12 months.

d. Cash and Cash Equivalents

Includes cash in hand, bank balances, cheques/drafts, and short-term investments maturing within 3 months.

e. Short-term Loans and Advance

Loans and advances expected to be received within 12 months, such as advance tax payments.

f. Other Current Assets

Includes items like prepaid expenses, accrued income, and advance tax payments.

Calculation of Current assets

- a. Current Assets= Current Investments+ Inventories+ Trade Receivables +Cash and Cash Equivalents + Short-term Loans and Advances + Other Current Assets
- b. Current Assets= Current Liabilities + Working Capital Working Capital = Current Assets- Current Liabilities
- c. Current Assets=Total Assets-Non Current Assets

b. Current Liabilities

Current liabilities are obligations expected to be settled within the operating cycle or within 12 months from the balance sheet date.

Examples of Current Liabilities

1. Short-term Borrowings

These include loans repayable on demand or within 12 months and deposits or advances that need to be repaid within the same period.

2. Trade Payables

Includes amounts owed for goods or services, such as trade payables and bills payable that are due within 12 months.

3. Other Current Liabilities includes:

Bank overdrafts, unpaid dividends, Matured but unpaid deposits or debentures, Current portion of long-term borrowings due within 12 months, Accrued interest (whether due or not) on borrowings, Calls-in-advance, Outstanding expenses, Taxes payable, Income received in advance

4. Short-term Provisions

Includes provisions for items like: Taxes payable, proposed dividends, Employee benefits due within 12 months

Calculation of Current Liabilities:

(a) Current Liabilities= Short-Term Borrowings+ Trade Payables + Other Current Liabilities + Short-Term Provisions (b) Current Liabilities= Current Assets - Working Capital

(c) Current Liabilities= Total Debts (Whether Long-term or Short-term) - Non-Current Liabilities

Computation of Current Ratio

Current ratio is computed by dividing the Current Assets by the Current Liabilities. It is expressed as follows-

Current Ratio= Current Assets Current Liabilities

Interpretation of Current Ratio

The Current Ratio shows how many rupees of current assets are available to cover each rupee of current liabilities. A higher ratio indicates a greater safety margin for short-term creditors, while a lower ratio suggests higher risk.

Traditionally, a Current Ratio of **2:1** is considered ideal. This means if the ratio is **2 or higher**, the firm is considered financially stable and capable of meeting its short-term liabilities. However, if the ratio is below **2**, it may indicate potential difficulties in paying off current obligations. The

reasoning behind the 2:1 rule is that even if the value of current assets decreases by half, the firm can still meet its short-term debts.

An excessively high Current Ratio might suggest over-investment in current assets, leading to idle funds and reduced profitability, as idle funds generate no returns. Conversely, a very low Current Ratio could mean insufficient investment in current assets, leading to poor liquidity and potential solvency risks. Generally, higher liquidity often results in lower profitability, and vice versa.

Illustration 1:

Particulars	Amount (₹)	Particulars	Amount (₹)	
Trade Payables	70,000	Inventories	95,000	
Advance tax	4,000	Trade receivables	3,40,000	
Short term borrowings	10,000	Current investments	10,000	
Accrued income	2,000	Provision for Doubtful Debts	30,000	
Other current liabilities	20,000	Cash & Cash Equivalents	10,000	
Short term provisions	1,20,000	Short term loans and Advances	4,000	
Prepaid Expenses	5,000			

From the following information, calculate Current Ratio

Solution:

Calculation of Current assets and Current Liabilities

Current Assets	Amount (Rs)	Particulars	Amount (Rs)
Current		Short Term	
investments	10,000	Borrowings	10,000
		Trade	
Inventories	95,000	Payables	70,000
		Other Current	
Trade Receivables	3,10,000	Liabilities	20,000

Cash and Cash Equivalents	10,000	Short Term Provisions	1,20,000
Short term loans and			
Advances	4,000		
Other Currrent			
Assets (
4,000+2,000+5,000)	11,000		
	4,40,000		2,20,000

Current Ratio= Current Assets Current Liabilities

$$=\frac{4,40,000}{2,20,000}=2:1$$

2. Quick Ratio / Liquid Ratio / Acid Test Ratio

Quick Ratio establishes the relationship between Quick Assets and Current Liabilities. The purpose of this ratio is to assess the firm's ability to meet its short-term obligations as they fall due, without relying on the sale or realization of inventories

Components of Quick Ratio

a. Quick Assets

Quick Assets are those current assets that 25 be converted into cash immediately or within a short time frame without a loss in value.

Examples of Quick Assets:

a. Current Investments:

Investments with a maturity period of more than 3 months but not exceeding 1 year from the date of acquisition.

b. Trade Receivables:

Includes trade receivables and bills receivables collectible within 12 months.

c. Cash and Cash Equivalents:

Includes bank balances, cheques or drafts on hand, cash balances, and investments maturing within 3 months.

d. Short-term Loans and Advances

Includes loans and advances receivable within 12 months, such as advance tax payments.

Calculation of Quick Assets

- a) Quick Assets Current Investments + Trade Receivables + Cash and Cash Equivalents + Short-term Loans and Advances
- b) Quick Assets Current Assets-Inventories-Other Current Assets

b. Current Liabilities:

Current Liabilities refer to those liabilities which are expected to be settled within Operating Cycle or 12 months from the date of Balance Sheet.

Examples of Current liabilities

1. Short-Term Borrowings

e.g. Loans repayable on demand or within 12 months, Deposits/ Advances repayable within 12 months

2. Trade Payables

e.g. Trade Payables, Bills Payables to be settled within 12 months

3. Other Current Liabilities

e.g. Bank Overdraft, Unpaid Dividend, Unpaid matured Deposits, Unpaid matured Debentures, That portion of Long-term Borrowings repayable within 12 months, Interest accrued (whether due or not) on borrowings, Calls-in-Advance, Outstanding Expenses, Tax Payable, Incomes received-in-advance]

4. Short-Term Provisions

e.g. Provision for Tax, Proposed Dividend, Provision for Employee Benefits to be settled within 12 months

Calculation of Current Liabilities

a) Current Liabilities = Short-Term Borrowings + Trade Payables + Other Current Liabilities + Short-Term Provisions

- b) Current Liabilities = Current Assets-Working Capital
- c) Current Liabilities = (Quick Assets+ Inventories+ Other Current Assets)-Working Capital
- d) Current Liabilities= Total Debts-Non-Current Liabilities
- e) Current Ratio= Current Assets/Current Ratio

Computation of Quick Ratio

The Quick stio is calculated by dividing Guick Assets by Current Liabilities. It is typically expressed as a pure ratio, such as 1:1. The formula for Quick Ratio is as follows:

Quick Ratio = Quick Assets ÷ Current Liabilities

Interpretation of Quick Ratio

The Quick Ratio represents the amount of quick assets available for each rupee of current liability. Traditionally, a ratio of 1:1 is considered satisfactory. However, this benchmark should not be applied blindly.

A firm with aquick ratio higher than 1 may still struggle to meet its short-term obligations if its quick assets include doubtful or slow paying debtors. Conversely, a firm with a quick ratio below 1 could still meet its obligations on time if it has highly efficient inventory management.

3. Absolute Cash/Liquidity Ratio

The Absolute Cash/Liquidity Ratio shows the connection between an organizations's Cash and Marketable Securities and its Current Liabilities. The main purpose of this ratio is to check how well a business can quickly pay off its short-term debts without depending on the sale of inventory or collection from trade receivables.

Components of Absolute Cash/Liquidity Ratio

This ratio consists of two main components:

- 1. Cash and Marketable Securities
- 2. Current Liabilities

Calculation of Absolute Cash/Liquidity Ratio

The Absolute Cash/Liquidity Ratio is calculated by dividing Cash and Marketable Securities by Current Liabilities. It is typically represented as a simple ratio, such as 1:1.

The formula for this ratio is:

Absolute Cash/ Liquidity Ratio= $\frac{Cash and Marketability Securities}{Current Liabilities}$

Interpretation of Absolute Cash/Liquidity Ratio

This ratio shows how much Cash and Marketable Securities are available for every rupee of Current Liabilities. A very high ratio means the company has strong liquidity, but it might affect profitability. This is because idle cash doesn't earn returns, and marketable securities usually provide lower returns compared to the company's operating profit margin.

Illustration 2: From the following information calculate Absolute Cash/Liquidity Ratio-

Particulars	Amount (Rs)	Particulars	Amount (Rs)
Current Investment	1,00000	Short term borrowings	1,10,000
Inventories	4,00000	Trade payables	
Trade receivables	3,50,000	Other current	3,70,000
Cash and cash	2,00000	huometes	
equivalents			20,000

Solution: Absolute Cash/Liquidity Ratio= Cash + Marketable Securities/Current Liabilities

= (2, 00000+1, 00000)/5, 00000=0.6

4. Meaning of Internal Interval Measure Ratio

The Internal Interval Measure Ratio shows the relationship between Quick Assets and the Average Daily Operating Expenses of a business. The purpose of this ratio is to determine how many days, on average; the quick assets can cover daily operating expenses.

Components of Internal Interval Measure Ratio

The two main components of this ratio are:

- 1. Quick Assets: These are Current Assets excluding Stock and Prepaid Expenses.
- 2. Average Daily Operating Expenses: Calculated as:

Cost of Goods Sold + Other Operating Expenses – Non cash operating cost (eg: Depreciation)/No. or days in a year

Calculation of Internal Interval Measure Ratio

⁵⁸ This ratio is calculated by dividing Quick Assets by Average Daily Operating Expenses. It is typically expressed in terms of the number of days, weeks, or months. The formula is:

Internal Interval Measure Ratio=Quick Assets / Average Daily Operating

Illustration 1: From the following information calculate Internal Interval Measure Ratio-

Current	1,00,00	Cost of goods sold	8,00,00
Investment	0		0
Inventories	4,00,00	Other operating	50,000
	0	Expenses	
		Depreciation	1,20,00
			0
Trade receivables	3,50,00	Provision for	50,000
	0	Doubtful debts	
Cash and cash	2,00,00		
equivalents	0		

Solution: Quick Assets (3, 50,000-50,000) +2, 00,000+₹1, 00,000 = 6, 00,000

Average Daily Operating Expenses (8, 00,000+ 50,000-1, 20,000)/365= 2,000

Internal Interval Measure Ratio= Quick Assets/Average Daily Operating Expenses

= 6,00,000/2,000 = 300 days

B. Solvency Ratio

Long-term creditors focus on the company's ability to stay financially stable in the long term because their funds are tied up for extended periods (over one year). Long-term solvency refers to the company's capacity to meet its long-term financial obligations as they become due. Creditors providing long-term loans are primarily concerned with:

- 1. Safety of Principal: Ensuring the loan amount remains secure throughout the loan period.
- 2. Timely Loan Servicing: This includes: Paying interest on the loan regularly, repaying the loan through scheduled installments.

For example, if a company takes a loan of $\gtrless 1$ crore at 12% interest for 5 years, repayable in 60 EMIs of $\gtrless 2$, 10,000, the lender will want to ensure:

- a. The ₹1 crore principal is secure for the full 5-year term.
- b. The EMIs of \gtrless 2, 10,000 are paid on time each month.

Solvency ratios evaluate a company's long-term financial health. They assess whether the business can consistently pay interest and repay the principal amount either at maturity or through scheduled installments on time.

Types of Solvency Ratio

Category	Ratios
Capital Structure Ratios	1. Debt-Equity Ratio
	2. Debt to Total Assets Ratio
	3. Proprietary Ratio
	4. Capital Gearing Ratio
	5. Equity Ratio
Coverage Ratios	6. Interest Coverage Ratio
	7. Preference Dividend Coverage Ratio
	8. Debt Service Coverage Ratio
	9. Fixed Charges Coverage Ratio

1. Debt Equity Ratio

The Debt-Equity Ratio shows the relationship between a company's Debt (Non-Current Liabilities) and Equity (Shareholders' Funds). The main purpose of calculating the Debt-Equity Ratio is to assess the company's long-term financial stability. It measures whether the company can:

- 1. Pay interest on its debt regularly.
- 2. Repay the principal amount at maturity or in scheduled installments.

Components of Debt-Equity Ratio

The ratio has two key components:

1. **Debt**: This refers to Non-Current Liabilities, such as: Long-term borrowings (e.g., Debentures, Bonds, and Term Loans from Banks or Financial Institutions), Long-term provisions.

Debt can be calculated in different ways:

Debt = Long-term Borrowings + Long-term Provisions

Debt = Total Debt - Current Liabilities

Debt = **Capital Employed** - **Equity** (Where Capital Employed = Equity + Debt)

2. Equity: This represents funds provided by shareholders (both equity and preference).

Equity can also be calculated using various methods:

Equity = Equity Share Capital + Preference Share Capital + Reserves & Surplus

Equity = Non-Current Assets + Current Assets - Current Liabilities - Non-Current Liabilities

Equity = Non-Current Assets + Working Capital - Non-Current Liabilities

Equity = Capital Employed - Non-Current Liabilities

Equity = Total Assets - Total Debt

Computation of Debt Equity Ratio

The Debt-Equity Ratio is calculated by dividing the total Debt by the total Equity. It is typically represented as a simple ratio, such as 2:1. Mathematically, it can be expressed as:

Debt-Equity Ratio = Debt ÷ Equity

Interpretation of Debt-Equity Ratio

The Debt-Equity Ratio measures the safety margin for long-term creditors. It shows how much equity is used compared to debt in financing the business. A lower ratio indicates more equity than debt, providing a higher safety margin for creditors since equity acts as a cushion for repayment. On the other hand, a higher ratio means greater reliance on debt, which increases risk for creditors.

Typically, a Debt-Equity Ratio of 2:1 (debt being twice the equity) is considered ideal. The ratio's impact can be explained as follows:

A. Low Debt-Equity Ratio

Implications for Creditors:

1. Provides a greater margin of safety, as the business relies more on equity than debt.

Implications for the Firm:

- 1. Easier to manage debt payments.
- 2. Less pressure and interference from creditors in decision-making.
- 3. Easier to secure additional loans if needed.
- 4. Limited benefit from "trading on equity" (leveraging debt for higher returns) when the firm's returns are higher than interest costs.

B. High Debt-Equity Ratio

Implications for Creditors:

1. Increases risk, as debt is significantly higher than equity.

Implications for the Firm:

- 1. Debt payments become difficult during tough business conditions.
- 2. Creditors may exert more pressure and influence on management decisions.
- 3. Raising additional loans becomes challenging.
- 4. Higher potential gains from "trading on equity" if returns exceed the cost of borrowing.

Illustration No.1: From the following information calculate Debt equity Ratio-

Equity share			
capital (10	1,50,00	Tangible	9,00,00
each)	0	Fixed Assets	0
8%			
Preference	1,00,00	Intangible	1,50,00
share capital	0	fixed Assets	0
Reserve and	1,50,00	Noncurrent	
Surplus	0	Investments	50,000
15% long			
term	8,00,00	Current	5,00,00
borrowing	0	Assets	0
Current	4,00,00		
liabilities	0		

Solution:

Debt = Long-term Borrowings = 8, 00,000

Equity = Equity Share Capital + Pref. Share Capital + Reserves & Surplus

1, 50,000+1, 00,000+1, 50,000=4, 00,000

Or

Equity = Non-Current Assets + Current Assets - Current Liabilities - Non Current Liabilities

(9, 00,000+1, 50,000+50,000) + 5, 00,000-4, 00.000-8, 00,000=4, 00,000

Debt Equity Ratio= Long term Debts/Shareholder's fund

8,00000/4,00000 = 2:1

2. Debt to Total Assets Ratio

The Debt to Total Assets Ratio shows the relationship between a company's debt and its total assets. This ratio measures how much of a company's total assets are financed through debt. It helps assess the safety margin for long-term debt providers by showing the extent to which debt is supported by assets.

The ratio has two main components:

1. **Debt:** Refers to non-current liabilities, which are obligations expected to be settled after 12 months. Examples include long-term borrowings like debentures, bonds, loans from banks, financial institutions, long-term provisions, and advances.

Debt can be calculated in different ways:

Debt = Long-term Borrowings + Long-term Provisions

Debt = Total Debt - Current Liabilities

Debt = Capital Employed - Equity

2. **Total Assets:** Represents all assets, including non-current and current assets. Total Assets can also be calculated in different ways:

Total Assets = Non-Current Assets + Current Assets

Total Assets = Equity Share Capital + Preference Share Capital + Reserves & Surplus + Non-Current Liabilities + Current Liabilities

Total Assets = Shareholders' Funds + Non-Current Liabilities + Current Liabilities

Total Assets = Capital Employed + Current Liabilities

Computation

The Debt to Total Assets Ratio is calculated by dividing a company's total debt by its total assets. It is expressed as a simple ratio, such as 2:1. The formula is:

Debt to Total Assets Ratio = Debt ÷ Total Assets

Interpretation of Debt to Total Assets Ratio

The Debt to Total Assets Ratio highlights the safety margin available to long-term creditors. A high ratio indicates that the company relies more on debt to finance its assets, which increases risk for creditors. Conversely, a low ratio means the company is using more equity, providing a greater safety margin for creditors as equity is considered a cushion for repayment.

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Particulars	Amount (₹)
Equity Share Capital (₹10 each)	1,50,000
18% Preference Share Capital	1,00,000
Reserves & Surplus	1,50,000
15% Long-term Borrowings	8,00,000
Current Liabilities	4,00000
Tangible Fixed Assets	9,00,000
Non-Current Investments	50,000
Current Assets	5,00,000
Intangible fixed Assets	1,50,000

Solution:

Debt	=Long-term	Borrowings	=	8,	00000
Total Asse	ets = Non-Current Assets	+ Current Assets			

(9, 00,000+1, 50,000+50,000)+5, 00000 = 16, 00,000

Or. Total Assets Quity Share Capital + Pref. Share Capital + Reserves & Surplus + Non-Current Liabilities + Current Liabilities

1,50,000 + 1,00,000 + 1,50,000 + 8,00,000 + 4,00,000 = 16,00,000

Debt to Total Assets Ratio= Debt/ Total Assets = 8, 00000/16, 00000 = 1:2

3. Proprietary Ratio

The **Proprietary Ratio** represents the relationship between the proprietors' funds (or shareholders' funds) and the total assets of a business. The primary aim of calculating the proprietary ratio is to determine the proportion of total assets financed by the proprietors' funds. This ratio indicates the financial stability and solvency of a business.

Components of the Proprietary Ratio

The proprietary ratio consists of two main components:

- 1. **Proprietors' Funds (or Shareholders' Funds)** These represent the funds owned by all shareholders, including equity and preference shareholders. Proprietors' funds can be calculated in various ways:
- a. Proprietors' Funds=Equity Share Capital+ Heference Share Capital + Reserves and Surplus
- b. Proprietors' Funds=Non Current Assets +Current Assets-(Current Liabilities +Non-Current Liabilities)
- c. Proprietors' Funds=Capital Employed-Non-Current Liabilities
- d. Proprietors' Funds=Non-Current Assets +Working Capital-Non-Current Liabilities
- e. Proprietors' Funds=Total Assets-Total Debts

2. Total Assets

This refers to all the assets owned by the business, including both non-current and current assets. Total assets can be calculated in several ways:

- a. Total Assets=Non-Current Assets + Current Assets
- b. Total Assets=Equity Share Capital +Preference Share Capital Reserves and Surplus +Non-Current Liabilities+ Current Liabilities
- c. Total Assets=Shareholders' Funds+ Non Current Liabilities + Current Liabilities
- d. Total Assets=Capital Employed +Current Liabilities
- e. Total Assets=Shareholders' Funds +Total Debts

Computation Proprietary Ratio

The **Proprietary Ratio** is calculated by dividing the proprietors' funds by the total assets. It is typically expressed as a simple ratio, such as 1:4. The formula for the proprietary ratio is:

Proprietary Ratio $=\frac{Propritors' Fund}{Total Assets}$

Interpretation of Proprietary Ratio

The proprietary ratio highlights the extent to which the assets of a business are financed through proprietors' funds.

A high proprietary ratio indicates a strong financial position, with a larger safety margin for creditors. It also suggests that the enterprise relies less on borrowed funds, meaning it does not fully capitalize on trading on equity.

A **low proprietary ratio** signals a higher level of risk for creditors, as the business depends more on external financing. However, it also implies that the enterprise is leveraging borrowed funds to potentially enhance returns through trading on equity.

4. Capital Gearing Ratio

The **Capital Gearing Ratio** represents the relationship between funds with fixed financial obligations and the equity shareholders' funds. The purpose of calculating this ratio is to assess the proportion of funds requiring fixed financial payments relative to the equity shareholders' funds.

Components of Capital Gearing Ratio

The ratio consists of two primary components:

1. Funds with Fixed Financial Obligations

These include financial instruments and borrowings that involve fixed payment commitments, such as Debentures, Bonds, and Loans from financial institutions Preference share capital

2. Equity Shareholders' Funds

This refers to the funds belonging to equity shareholders, calculated as:

Equity Shareholders' Funds=Equity Share Capital Reserves and Surplus-Fictitious Assets

Computation of Capital Gearing Ratio

The **Capital Gearing Ratio** is determined by dividing the funds with fixed financial obligations by the equity shareholders' funds. It is expressed as a simple ratio, such as 3:1. The formula is:

Capital Gearing Ratio= $\frac{Fund \ bearing \ fixed \ financial \ payments}{Equity \ shareholder \ sfund}$

Interpretation of Capital Gearing Ratio The capital gearing ratio reflects the margin of safety available to providers of funds with fixed financial obligations.

A high capital gearing ratio indicates greater reliance on funds with fixed financial payments (such as loans or preference shares) compared to equity. This implies a lower safety margin for providers of fixed-payment funds, as equity acts as their cushion. Conversely, a low capital gearing ratio signifies greater reliance on equity, which provides a higher safety margin for fixed-payment fund providers.

If the ratio is **less than 1**, the company is considered **lowly geared**, meaning equity forms a larger **portion of the** capital structure. If the ratio is **greater than 1**, the company is deemed **highly geared**, meaning it relies more on fixed-payment funds.

The capital gearing ratio also highlights the level of risk associated with meeting fixed financial obligations and the potential for trading on equity. The implications of being highly geared or lowly geared are as follows:

Basis of Comparison	Highly Geared	Lowly Geared	
	Company	Company	
Risk	High	Low	
Opportunity for Trading	High	Low	
on Equity			
Equity Shareholders'	- Increases significantly	- Increases moderately if	
Gain	if ROI > Interest & Pref.	ROI > Interest & Pref.	
	Dividend rate	Dividend rate	
	- Decreases significantly	- Decreases moderately	
	if ROI < Interest & Pref.	if ROI < Interest & Pref.	
	Dividend rate	Dividend rate	

A business should maintain a **balanced gearing ratio**, avoiding extremes of very high or very low gearing. To determine whether the ratio is satisfactory, it should be compared against:

- 1. The company's historical ratios.
- 2. Ratios of other similar companies in the same industry.

3. The industry average.

5. Equity Ratio

The **Equity Ratio** expresses the relationship between shareholders' funds and capital employed in a business. The primary purpose of calculating the equity ratio is to determine the proportion of shareholders' funds in the total capital employed by the business.

Components of Equity Ratio

The equity ratio has two main components:

1. Shareholders' Funds

This refers to the total funds contributed by both equity and preference shareholders. Shareholders' funds can be calculated using various methods:

- a. Shareholders' Funds=Equity Share Capital Preference Share Capital Reserves and Surplus
- b. Shareholders' Funds= Non-Current Assets + Current Assets Current Liabilities Non-Current Liabilities
- c. Shareholders' Funds = Capital Employed-Non-Current Liabilities
- d. Shareholders' Funds = Non-Current Assets + Working Capital-Non-Current Liabilities
- e. Shareholders' Funds Total Assets Total Debts

2. Capital Employed

This represents the total long-term funds provided by both long-term creditors and shareholders. It includes non-current liabilities and shareholders' funds. Capital employed be calculated as follows:

- a. Capital Employed = ((Equity Share Capital + Pref. Share Capital + Reserves & Surplus)]+ Non-Current Liabilities.
- b. Capital Employed= Shareholders' Funds + Non-Current Liabilities
- c. Capital Employed= Non-Current Assets (Excluding Non-Trade Investments) + Current Assets-Current Liabilities
- Capital Employed= Non-Current Assets (Excluding Non-Trade Investments) + Working Capital
- e. Capital Employed = Total Assets (Excluding Non-Trade Investments) Current Liabilities

Computation of Equity Ratio

The Equity Ratio is calculated by dividing the shareholders' funds by the capital employed. It is commonly expressed as a simple ratio, such as 2:1. The formula for this ratio is:

Equity Ratio= <u>Shareholder'sfund</u> Capital Employed

Interpretation of Equity Ratio

The Equity Ratio reflects the proportion of shareholders' funds in relation to the capital employed. A high equity ratio indicates greater reliance on equity compared to debt, providing a larger safety cushion for long-term creditors, as shareholders' equity serves as their margin of safety. Conversely, a low equity ratio suggests higher dependence on debt financing.

6. Interest Coverage Ratio

The Interest Coverage Ratio represents the relationship between a firm's net profit before interest and tax (EBIT) and the interest payable on its long-term borrowings. The purpose of calculating the Interest Coverage Ratio is to evaluate a firm's ability to service its debt, specifically its capacity to meet fixed interest obligations on long-term borrowings.

Components of Interest coverage

There are two components of Interest Coverage Ratio as follows:

Net Profit before Interest and Tax

2. Interest on Long-term Borrowings

Computation of Interest Coverage Ratio

Interest Coverage Ratio is calculated by dividing the net profit before interest and tax (EBIT) by the interest on long-term borrowings. This ratio is typically expressed as a certain number of times. The formula is:

Interest Coverage Ratio= $=\frac{Profit\ before\ Interest\ and\ Tax}{Interest\ on\ long\ term\ Debt}$

Interpretation of Interest Coverage Ratio

The **Interest Coverage Ratio** indicates how many times a company's profits before interest and tax (EBIT) can cover the interest on its long-term borrowings. It reflects the firm's ability to meet its interest payments from its profits. A higher ratio suggests better debt servicing capacity.

For example, an interest coverage ratio of 5 means that even if the company's net profit before interest and tax drops by 80%, it will still be able to cover its interest payments. A higher ratio generally indicates a stronger ability to pay interest, but if the ratio is too high, it could suggest the company is not using enough debt or is operating too efficiently.

7. Preference Dividend Coverage Ratio

The **Preference Dividend Coverage Ratio** measures the relationship between a company's net profit after interest and taxes and the preference dividend paid on preference shares. The purpose of calculating this ratio is to assess a firm's ability to meet the fixed preference dividend payments on preference shares.

Components of Preference Dividend Coverage Ratio

The two key components of this ratio are:

- 1. Net Profits after Interest and Taxes
- 2. Preference Dividend on Preference Shares

Computation of Preference Dividend Coverage Ratio

This ratio is calculated by dividing the net profit after interest and taxes by the preference dividend on preference shares. It is usually expressed as the number of times the preference dividend is covered. The formula is:

Preference Dividend Coverage Ratio= $\frac{Net Profit after Interest and Tax}{Preference Dividend on Pref.Share}$

Interpretation of Preference Widend Coverage Ratio

The **Preference Dividend Coverage Ratio** indicates how many times the preference dividend is covered by the company's profits. It helps determine the limit beyond which the company may struggle to meet its preference dividend obligations.

For example, a coverage ratio of 5 means that even if the company's net profit after interest and taxes declines by 80%, it will still be able to pay the preference dividend. A higher ratio indicates a better ability to pay the preference dividend, but an extremely high ratio may suggest underutilization of preference share capital or overly efficient operations.

8. Bebt Service Coverage Ratio
The Debt Service Coverage Ratio (DSCR) measures the relationship between a company's for profit before interest and tax (EBIT) and its total debt obligations, including both the interest and principal portions of the installment payments.

Components of debt-service coverage ratio

There are two components of this ratio as follows

- 1. Net Profit before Interest and Tax
- 2. Interest and Principal portion of Installment

Computation of Debt Service Coverage Ratio

Debt Service Coverage Ratio= Ratio Profit before Interest and Tax/ Intersect+ Principal portion of the investment/1-Tax rate

Interpretation of Debt-Service Coverage Ratio

The **Debt Service Coverage Ratio** indicates how many times the company's profits can cover its interest and principal payments on long-term debts. It reflects the firm's ability to meet its debt obligations, including both interest and principal, from its profits.

For example, a Debt-Service Coverage Ratio of 5 means that even if the company's her profit before interest and tax drops by 80%, it will still be able to pay both interest and principal installments from its profits. A higher ratio suggests better financial capacity to meet debt obligations, while an excessively high ratio may indicate underutilization of debt or overly efficient operations.

Therefore, a business should aim for a **balanced ratio**, neither too high nor too low. To evaluate whether the ratio is satisfactory, it should be compared with the company's historical ratios, the ratios of similar companies in the same industry, or the industry average.

9. Fixed Charges Coverage Ratio

The **Fixed Charges Coverage Ratio** measures the relationship between cash generated from operations before interest and taxes (EBIT) and the total fixed financial charges, which include both interest and other fixed financial obligations, before tax.

Fixed Charge Coverage Ratio= Cash from operations before Interest and Tax Interest plus Fixed Financial Charges before tax

C. Activity Ratios

Activity Ratios assess how efficiently a firm utilizes its available resources. These ratios evaluate the effectiveness of asset management within the enterprise. Often referred to as **Turnover Ratios**, they measure the speed at which resources are converted into revenue from operations.

Types of Activity Ratios

The commonly calculated Activity Turnover Ratios include:

- 1. Total Assets Turnover Ratio
- 2. Capital Turnover Ratio
- 3. Fixed Assets Turnover Ratio
- 4. Current Assets Turnover Ratio
- 5. Net Working Capital Turnover Ratio
- 6. Inventory/Stock Turnover Ratio
- 7. Receivables/Debtors Turnover Ratio
- 8. Payables/Creditors Turnover Ratio
- 1. Total Assets Turnover Ratio

The **Total Assets Turnover Ratio** measures the relationship between a company's net revenue from operations (or net sales) and its average total assets. The purpose of calculating this ratio is to evaluate how efficiently a company utilizes its total assets to generate revenue.

Components of Total Assets Turnover Ratio

This ratio consists of the following components:

1. Net Revenue from Operations/Net Sales:

Includes both credit and cash revenue from operations.

2. Average Total Assets:

Calculated as:

Average Total Assets Dening Stock + Closing Stock/2

Total assets can be determined in various ways:

(a) Total Assets = Non-Current Assets + Current Assets

(b) Total Assets = Equity Share Capital + Preference Share Capital + Reserves & Surplus + Non-Current Liabilities + Current Liabilities

(c) Total Assets = Shareholders' Funds + Non-Current Liabilities + Current Liabilities

(d) Total Assets = Capital Employed + Current Liabilities

Computation of Total Assets Turnover Ratio

The Total Assets Turnover Ratio is calculated by dividing the net revenue from operations (or net sales) by the average total assets. This ratio is typically expressed as a certain number of times. The formula is:

Total Assets Turnover Ratio= $\frac{Net Revenue from operations/Sales}{Average Total Assets}$

Interpretation of Total Assets Turnover Ratio

The **Total Assets Turnover Ratio** reflects the company's ability to generate revenue from operations or sales for every unit of investment in total assets. Generally, a higher ratio indicates more effective management and utilization of total assets, while a lower ratio suggests inefficiency.

Us important to note that there is no direct correlation between sales and all total assets, as sales are influenced by several other factors, such as product quality, delivery terms, credit policies, after-sales service, advertising, and publicity.

To determine if the ratio is satisfactory, it should be compared with: The Company's past performance, Ratios of similar businesses within the same industry, the industry average.

2. Capital Turnover Ratio

The **Capital Turnover Ratio** measures the relationship between a company's net revenue from operations (or net sales) and its average capital employed. The purpose of calculating this ratio is to evaluate how efficiently a company utilizes its capital employed to generate revenue.

Components of **Expital Turnover Ratio**

This ratio consists of the following components:

- 1. NetRevenuefromOperations/NetSales:Includes both credit and cash revenue from operations.
- 2. Average Capital Employed

Average Capital Employed= Opening Capital employed+ Closing Capital employed/2

Capital employed represents the long-term funds provided by shareholders and long-term creditors. It can be determined in the following ways-

- a) Capital Employed = (Equity Share Capital + Preference Share Capital + Reserves & Surplus) + Non-Current Liabilities
- b) Capital Employed = Shareholders' Funds + Non-Current Liabilities
- c) Capital Employed = Non-Current Assets (excluding non-operating assets) + Current Assets
 Current Liabilities
- d) Capital Employed = Non-Current Assets (excluding non-operating assets) + Working Capital
- e) Capital Employed = Total Assets (excluding non-operating assets) Current Liabilities

Computation of Capital Turnover Ratio

The Capital Turnover Ratio is calculated by dividing the net revenue from operations (or net sales) by the average capital employed. This ratio is generally expressed as a certain number of times. The formula is as follows:

Capital Turnover Ratio= <u>Net Revenue from operations/Sales</u> Average Capital Employed

Interpretation of Capital Turnover Ratio

The Capital Turnover Ratio reflects a company's ability to generate revenue from operations or sales for each unit of capital employed. Generally, a mgher ratio indicates efficient management and utilization of capital employed. However, an excessively high ratio might suggest over-trading or under-capitalization, which could result in the current ratio being lower than a reasonable level, and vice versa.

An enterprise should aim for a balanced ratio—neither too high nor too low. To assess whether the ratio is satisfactory, it should be compared against:

3. Fixed Assets Turnover Ratio

The Fixed Assets Turnover Ratio measures the relationship between net revenue from operations (or net sales) and the average net fixed assets of a company. The purpose of this ratio is to evaluate how effectively a company utilizes its fixed assets to generate revenue.

Components of Fixed Assets Turnover Ratio

He Fixed Assets Turnover Ratio consists of the following components:

1. Net Revenue from Operations/Net Sales

Includes both credit and cash revenue from operations.

2. Average Net Fixed Assets:

Calculated as: Opening Net Fixed Assets + Closing Net Fixed Assets / 2

Computation Fixed Assets Turnover Ratio

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Fixed Assets Turnover Ratio= Revenue from Operations or Sales / Average Net Fixed Assets
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Interpretation of Fixed Assets Turnover Ratio

The Fixed Assets Turnover Ratio reflects the firm's ability to generate revenue from operations or sales for every unit of investment in fixed assets. Generally, a higher ratio indicates more efficient management and utilization of fixed assets, whereas a lower ratio suggests inefficiency.

It is important to note that sales are not solely dependent on fixed assets, as other factors such as product quality, delivery and credit terms, after-sales service, advertising, and promotional efforts also play a significant role.

4. Current Assets Turnover Ratio The Current Assets Turnover Ratio measures the relationship between net revenue from operations (or net sales) and the average current assets of a company. The purpose of this ratio is to assess how efficiently a company utilizes its current assets to generate revenue.

Components of Current Assets Turnover Ratio

1. Net Revenue from Sales: **Operations/Net** Includes both credit revenue and cash revenue from operations.

2. Average Current Assets:

Calculated as- Opening Current Assets + Closing Current Assets/2

Computation of Current Assets Turnover Ratio

Current Assets Turnover Ratio= <u>Net Revenue from operations/Sales</u> Average Current Assets

Interpretation of Current Assets Turnover Ratio

The **Current Assets Turnover Ratio** reflects the firm's ability to generate net revenue from operations or sales for every unit invested in current assets. Generally, a higher ratio signifies more efficient management and utilization of current assets, while a lower ratio indicates inefficiency.

It is important to note that there is no direct correlation between sales and current assets, as sales are influenced by various other factors such as product quality, delivery and credit terms, aftersales service, advertising, and promotional activities.

4. Working Capital Turnover Ratio

The Working Capital Turnover Ratio measures the relationship between Net Revenue from Operations/Net Sales and Average working Capital. The goal of calculating the Working Capital Turnover Ratio is to evaluate how efficiently the company is utilizing its working capital.

20 Components of Working Capital Turnover Ratio

134 There are two components of Working Capital Turnover Ratio as follows

1. Net Revenue from Operations/Net Sales = Credit Revenue from + Operations Cash Revenue from Operations

2. Average Working Capital ²⁰ Copening Working Capital + Closing Working Capital)/2

Computation of Working Capital Turnover Ratio:

Working Capital Turnover Ratio= $\frac{Net Revenue from operations/Net Sales}{Average Working Capital}$

Interpretation:

Working Capital Turnover Ratio measures a company's efficiency in generating revenue from operations or sales for every unit of working capital employed. A higher ratio typically signifies better management and utilization of working capital, while a lower ratio may indicate inefficiency. To evaluate whether this ratio is satisfactory, it should be compared to the company's historical performance, the ratios of comparable businesses in the same sector, or the industry average.

5. Inventory Turnover ratio

This ratio establishes the relationship between cost of revenue from Operations and average inventory.

134 Here are two components of Inventory Turnover Ratio as follows:

- 1. Cost of Revenue from Operations
 - (a) Opening Inventory + Net Purchases Direct Expenses Closing Inventory
 - (b) Cost of Materials Consumed + Purchases of Stock-in-Trade + Changes in Inventories of Finished Goods + Direct Expenses
 - (c) Revenue from Operations Gross Profit
 - (d) Revenue from Operations + Gross Loss
- 2. Average Inventory = (Opening Inventory Closing Inventory)/2ponents:

Computation

Inventory Turnover Ratio= $\frac{Cost of Revenue from operations}{Average Inventory}$

Interpretation:

The Inventory Turnover Ratio reflects how quickly inventory is converted into revenue from operations. Generally, a higher ratio signifies efficient management, as it indicates that either the same level of revenue is achieved with less inventory investment, or revenue has grown without an increase in inventory. However, extreme values in the ratio warrant closer examination. An excessively high ratio could suggest that inventory levels are too low, potentially leading to frequent stock outs and higher stock out costs. Conversely, a very low ratio might indicate excessive inventory, slow-moving goods, or obsolete stock, resulting in increased carrying costs. Therefore, it is important for a company to maintain a balanced and satisfactory inventory Turnover Ratio.

6. Debtors Turnover Ratio

This ratio establishes a relationship between credit revenue from operations and average trade receivables.

Components of Debtors Turnover Ratio

There are two components-

- 1. Credit Revenue from operations= Revenue from operations-Cash revenue from operation
- 2. Average trade Receivables= Opening trade receivables + Closing trade receivables/2

Debtors Turnover Ratio = Cost of Revenue from operations Average Trade Receivables

Interpretation:

The Debtors Turnover Ratio reflects the quality of trade receivables and the effectiveness of a company's credit collection efforts. It measures how quickly debtors are converted into cash within a given period. Generally, a higher ratio suggests a shorter collection period, indicating prompt payments by trade receivables, while a lower ratio indicates a longer collection period, suggesting delays in payments.

However, extreme values require further analysis. An excessively high ratio might result from a highly restrictive credit policy, which could limit sales and reduce profits. Conversely, a very low ratio could stem from overly liberal credit policies, potentially leading to higher risks of bad debts and slower cash flow. Therefore, maintaining a balanced and reasonable Debtors Turnover Ratio is essential for financial efficiency.

7. Creditors Turnover Ratio

This ratio establishes the relationship between net credit purchase and average trade payables.

Components of Creditors Turnover Ratio

There are two components-

- 1. Net Credit Purchase= Net Purchase- Cash purchase
- 2. Average trade payables= Opening trade payables + Closing trade payables/2

 $\frac{\text{Creditors Turnover Ratio}}{\text{Average Trade Paybale}} = \frac{\text{Net Credit purchase}}{\text{Average Trade Paybale}}$

Interpretation

The Creditors Turnover Ratio represents how quickly a company settles its payables within a year. Typically, a higher ratio indicates a shorter payment period, suggesting either limited credit availability or prompt payment to creditors. Conversely, a lower ratio reflects a longer payment period, indicating either extended credit terms or delayed payments to creditors.

D. Profitability Ratio

Profitability Ratios evaluate how effectively a company's management generates returns from its revenue and investments. These ratios are key indicators of the company's financial performance and operational efficiency.

Types of Profitability Ratios

I. Profitability Ratios in Relation to Revenue from Operations/Sales:

- 1. Gross Profit Ratio
- 2. Operating Profit Ratio
- 3. Operating Ratio
- 4. Net Profit Ratio
- 5. Expenses Ratios

II. Profitability Ratios in Relation to Investment:

- 1. Return on Total Assets (ROTA)
- 2. Return on Capital Employed (ROCE) / Return on Investment (ROI)
- 3. Return on Shareholders' Funds (ROE)
- 4. Return on Equity Shareholders' Funds (ROES)

III. Profitability Ratios in Relation to Equity Shareholders' Funds:

- 1. Return on Equity Shareholders' Funds
- 2. Earnings per Share (EPS)
- 3. Dividend per Share (DPS)
- 4. Price-Earnings Ratio (P/E Ratio)
- 5. Dividend Payout Ratio (D/P Ratio)
- 6. Earnings Yield (EY)
- 7. Dividend Yield (DY)
- 8. Market Response Ratio (MRR)

1. Gross Profit Ratio = $\frac{Gross Profit}{Revenue from Operations} \ge 100$

2. Operating Ratio = $\frac{Operating \ cost}{Revenue \ from \ Operations} \mathbf{x} \ 100$

3. Operating Profit Ratio = $\frac{Operating Profit}{Revenue from Operations} \ge 100$

4. Net Profit Ratio= $\frac{Net \ profit \ before \ tax}{Revenue \ from \ Operations} x \ 100 \quad \frac{Net \ profit \ after \ tax}{Revenue \ from \ Operations} x \ 100$

5. Return on Total assets (Pre-tax)

Components on Return on Total Assets

- 1. Net Profit before Interest and Tax
- 2. Average Total Assets = All assets (excluding No operating assets)

Or Shareholders fund+ Total Debt Or Capital Employed+ Current liabilities

Return on Total Assets (Pre-tax)

= Net Profit before Interest and Tax/Average Total Assets or Average Noncurrent Assets/Average tangible Assets x 100

Return on Total Assets (Post-tax)

= Net Profit before Interest and Tax + / Average Total Assets or Average Noncurrent Assets/Average tangible Assets x 100

6. Return on Investment

There are two components-

- 1. Net profit before interest, tax and pref. dividend
- 2. Average capital employed= Opening capital employed+ Closing capital employed/2

Computation of Return on Investment

- Return on Capital employed (Pre-tax)= vet profit before interest and tax/ Average capital employed x 100
- Return on Capital employed (Post-tax)=
 Post-tax)=
 Post-tax =
 Post-tax =</l
- 3. ROI is the product of two ratio i.e. EBIT Ratio and Capital Turnover ratio-

ROI= EBIT Ratio X Capital Turnover Ratio

EBIT/ Revenue from Operations X Revenue from operations/ Average Capital employed.

7. Return on Shareholder's fund

There are two components-

- 1. Net Profit Interest and Tax
- 2. Average shareholders fund

Return on Shareholder's fund = $\frac{Net Profit before interest and Tax}{Average Shareholders' Funds} \ge 100$

8. Return on Equity shareholders' Funds

There are two components-

- 1. Net Profit after Interest, Tax and Preference Dividend (including participating dividend if any. due to Participating Preference Shareholders).
- 2. Average Equity Shareholders' Funds = [Opening Equity Shareholders' Funds + Closing Equity Shareholders' Funds)/2
- a. Equity Shareholders' Funds = Equity Share Capital + Net Reserves & Surplus
- b. Equity Shareholders' Funds = Non-Current Assets + Current Assets-Current Liabilities -Non-Current Liabilities - Pref. Share Capital
- c. Equity Shareholders' Funds = Non-Current Assets + Working Capital Non-Current Liabilities - Pref. Share Capital
- d. Equity Shareholders' Funds = Capital Employed Non-Current Liabilities Pref. Share Capital
- e. Equity Shareholders' Funds = Total Assets Total Debt Pref. Share Capital

Return on Equity shareholders' Funds = $\frac{Net Profit after interest, tax and preference Dividend}{Average Equity Shareholders' Funds} x$ 100

9. Earnings Per Share

There are two components-

- 1. Net Profit after Interest, Tax and Preference Dividend
- 2. Number of Equity Shares

EPS=<u>Net Profit after interest, tax and preference Dividend</u> Number of Equity Shares

10. Dividend Per Share

Profit distributed as Equity Dividend DPS=-Number of Equity Shares

11. Per Earning Ratio

Market Price Per Share $\mathbf{PER} = \frac{PER}{Earning Per Share (EPS)}$

12. Dividend Payout Ratio

Earning per Share $DPR = \frac{1}{Dividend Per Share (DPS)}$

13. Earning yield

Earning yield= $\frac{Earning \ per \ Share}{Market \ Price \ Per \ Share} \ge 100$

14. Dividend yield= Dividend per Share/Market Price Per Share x 100
15. Market Response Ratio= Market value per Share/Book Value Per Share x 100 or Average Market value per Share/Net Worth No. of equit shares

3.5 SUMMERY

Financial ratio analysis helps assess a company's financial health by comparing figures from its financial statements. Ratios are categorized into liquidity, leverage, turnover, profitability, and valuation ratios.

Liquidity Ratios

Current Ratio: Measures current assets against current liabilities.

Acid-Test (Quick) Ratio: Measures immediate liquidity by excluding inventory from current assets.

Leverage Ratios: Assess the use of debt in financing operations.

Key Ratios:

Debt-Equity Ratio: Compares the proportion of debt to equity.

Interest Coverage Ratio: Checks the company's ability to cover interest expenses with operating income.

Turnover Ratios: Evaluate how efficiently a company utilizes its assets to generate revenue. **Key Ratios**:

Inventory Turnover Ratio: Shows how quickly inventory is sold.

Total Assets Turnover Ratio: Assesses the overall efficiency of asset utilization.

Profitability Ratios: Measure a company's ability to generate profit. **Key Ratios**:

Gross Profit Margin: Reflects profit after accounting for cost of goods sold (COGS). Net Profit Margin: Shows profit after all expenses, taxes, and interest. Return on Equity (ROE): Indicates the return shareholders earn on their investments. Valuation Ratios: Help assess how the market values the company.

Key Ratios:

Price-to-Earnings (P/E) Ratio: Indicates how much investors pay per unit of profit.

Market Value-to-Book Value Ratio: Compares the company's market value with its book value.

3.6 SELF ASSESSMENT QUESTIONS

1-Mark Questions:

1. Which of the following categories of ratios is based on the financial statements of a company?

a)	Profitability	ratios
b)	Managerial	ratios
c)	Operational	ratios
d)	Market	ratios

Answer: a) Profitability ratios

2. Which financial statements are primarily used in ratio analysis?

- a) Income statement and cash flow statement
- b) Balance sheet and income statement
- c) Cash flow statement and owner's equity statementd) Tax returns and profit distribution statement
- Answer: b) Balance sheet and income statement

3. Which of the following is an example of a ratio used to analyze a company's profitability?

a)		Current		ratio
b)	Return	on	assets	(ROA)
c)		Debt-equity		ratio
d)		Quick		ratio
A	1.) Determine an exact (D(

Answer: b) Return on assets (ROA)

4. Which classification of ratios is focused on the needs of external users like investors and creditors?

ratios		lity	Liquid		a)
ratios	Profitability				b)
requirements	user	on	based	Classification	c)
ratios	value	Va	Market		d)

Answer: c) Classification based on user requirements

- 5. What does Common Size Statement allow analyze? a users to Only the performance a) company's sales The financial b) performance relative to sales or total assets The c) company's liabilities tax d) The depreciation rate of assets Answer: b) The financial performance relative to sales or total assets Which of the following is true about Comparative Analysis? a) It compares financial statements of two different companies over the same period It compares the performance of a company against industry averages b) It looks at financial performance over several periods to identify trends c)
 - d) It is used to determine a company's market share **Answer:** c) It looks at financial performance over several periods to identify trends
- 7. Which of the following is a key advantage of ratio analysis? a) It simplifies the preparation of financial statements It b) helps the company's operational efficiency in assessing It provides detailed strategies c) tax planning It d) eliminates the need for external audits **Answer:** b) It helps in assessing the company's operational efficiency

5-Marks Questions:

- 1. What are the main categories of financial ratios?
- 2. What are liquidity ratios, and which are the key ones?
- 3. How is leverage ratios defined and assessed?
- 4. What are turnover ratios, and why are they important?
- 5. What are profit margin ratios, and how do they provide insights into profitability?

10- Mark Questions:

1. from the following Balance Sheet-

Particulars	31.03.2018 (₹)
I. EQUITY AND LIABILITIES	
1. Shareholders' Funds	
Share Capital	2,00000
Reserves and Surplus	2,00000
2. Non-Current Liabilities	
Long-Term Borrowings	8,00000
3. Current Liabilities	
Short-Term Borrowings	40,000

Trade Payables	1,00000
Other Current Liabilities	1,40,000
Short-Term Provisions	1,20,000
Total	16,00000
II. ASSETS	
1. Non-Current Assets	
Fixed Assets	10,00000
Non-Current Investments	1,00000
2. Current Assets	
Current investments	20,000
Inventories	1,90,000
Trade Receivables	2,60,000
Cash and Cash Equivalents	10,000
Short-Term Loans and Advances	10,000
Other Current Assets	10,000
Total	16,00000

Calculate-

(a) Gross Profit Ratio (b) Operating Ratio, (c) Net Profit Ratio, (d) Return on Investment, (e) Earnings Per Share, (f) Dividend per Share, (g) Price Earnings Ratio. (h) Dividend Payout Ratio, (1) Earning Yield, (j) Dividend Yield, (k) Market Response Ratio (1) Return on Total Assets (m) Return on Shareholders' Funds (n) Return on Equity Shareholders' Funds.

3.7: REFERENCE

- 1. I.M. Pandey, *Financial Management*, Vikas Publishing House Covers detailed explanations of ratio analysis, its objectives, and classifications.
- **2.** Prasanna Chandra, *Financial Management: Theory and Practice*, McGraw Hill Discusses the use, advantages, and limitations of ratio analysis.
- **3.** M.Y. Khan and P.K. Jain, *Financial Management: Text, Problems and Cases*, Tata McGraw Hill Includes classifications of ratios based on user requirements.
- **4.** Corporate Finance Institute (CFI) (<u>https://corporatefinanceinstitute.com/</u>) Articles on ratio analysis, its objectives, and limitations.
- 5. ICAI Study Material Provides a systematic approach to ratio analysis with examples tailored for financial statement analysis.

Module 2: Investment Decisions

Unit 4: Capital Budgeting- Nature and Process: Capital Budgeting Decisions: Nature and type of investment decision, Investment Evaluation Criteria NPV, IRR, Profitability Index, Payback period, ARR.

Unit 5: Time Value of Money: Time Value for Money, ⁴³ cash flow, an uneven cash flow and annuity

Unit 6: Investment Evaluation: Investment Decision Rule, Evaluation Criteria. Net Present Value Method, Internal Rate of Return Method, Profitability Index, Accounting Rate of Return Method, NPV versus IRR

UNIT 4: CAPITAL BUDGETING- NATURE AND PROCESS

STRUCTURE:

- 4.1 Introduction
- 4.8 Nature of Investment Decisions
- 4.3 Importance of investment decisions
- 4.9 Types of investment decisions
- 4.10 Capital budgeting process
- 4.11 Capital investment planning and control
- 4.12 Summary
- 4.13 Check Your Progress
- 4.14 Reference

BJECTIVES:

After studying this unit you should be able to:

- 1. Understand the Nature and Importance of Investment Decisions
- 2. Learn About Capital Budgeting and Investment Processes

4.1 INTRODUCTION

A corporate entity exists to achieve specific goals, which are outlined in its mission statement. Different companies may focus on developing new products, offering new services, or providing high-quality products to customers. To achieve these goals, businesses need to produce goods and services, which require various resources such as machinery, technology, workers, raw materials, and other productive assets. These assets include long-term assets like machinery, land, and buildings, as well as short-term assets like raw material inventories.

To achieve its objectives, a company must plan effectively to ensure smooth operations. One key aspect of this planning is managing financial matters, which has gained significant importance. This module focuses on the company's investment decisions. Specifically, capital budgeting refers to decisions about investing in long-term assets, and this is the primary topic of the module. Short-term asset management, known as working capital decisions, is covered in a separate module. Thus, capital budgeting decisions involve the firm's long-term investment choices.

4.2 NATURE OF INVESTMENT DECISIONS

Capital budgeting has several unique characteristics, including:

- 1. It is a long-term investment plan for a company, with the benefits expected to occur over an extended period, usually exceeding one year.
- 2. It involves a series of cash flows over time, where funds are initially invested in purchasing equipment, followed by revenue generation in future years.
- 3. There is an element of risk in these investments since the funds are spent upfront, but the returns are expected in the future. Given the uncertainty of the future, the anticipated returns are not guaranteed.
- 4. Capital budgeting typically requires significant financial resources, making it costly and difficult to reverse if the plans do not succeed.

Capital budgeting decisions are critical to the success of a business. For instance, deciding to open a new retail outlet in a city by Reliance Fresh or launching a new manufacturing unit in India by Audi are both examples of capital budgeting decisions. Audi's decision to invest in a long-term presence in India, with substantial financial commitment, qualifies as a capital budgeting decision.

4.3 IMPORTANCE OF INVESTMENT

Capital budgeting decisions are crucial for a business because they have a significant impact on its future. The main reasons for their importance are:

- 1. The survival of the company depends on choosing the right projects. It's essential to carefully evaluate and select beneficial projects using capital budgeting techniques to ensure the company continues to operate.
- 2. Once the company's survival is secured, the focus shifts to achieving consistent growth. Growth is driven by making profitable investment decisions, which are the core of capital budgeting.
- 3. Long-term investment decisions are risky because of the uncertainty about future events and outcomes.
- 4. The funds involved in capital budgeting are usually large, and once the decision is made, it's difficult and costly to undo it.

In summary, capital budgeting decisions are key to a firm's survival, growth, and overall success.

4.4 TYPES OF INVESTMENT DECISIONS

Firms make various investment decisions to grow and sustain their business. These decisions can involve starting a new business or expanding and diversifying an existing one. The main types of investment decisions are as follows:

1. Starting a New Business:

This involves setting up a new business, which requires resources such as land, buildings, machinery, and equipment.

2. Investment Decisions for Existing Businesses:

a. Expansion:

This involves increasing the production capacity of the firm. For example, if Apple is producing 100,000 iPhones annually and expects higher demand, it may decide to increase production to 200,000 units. This requires new machinery and equipment to handle the increased capacity.

b. Diversification:

This involves entering new areas of business to broaden the company's product range. For example, if Airtel, a telecom company, decides to start manufacturing cell phones, this would be considered diversification, as it expands into a new business area.

c. Replacement:

Over time, equipment and machinery may wear out. To maintain production, the firm must replace outdated assets with new ones. This is a common investment decision in businesses.

d. Modernization:

This refers to adopting new technologies and methods to improve products or services. An example is replacing typewriters with computers for office work. Modernization helps improve efficiency and competitiveness.

Classification Investment Decisions Based on Selection:

1. Independent Investment Decision:

This type of decision involves assessing the costs and benefits of a single investment without considering any alternatives. For example, a firm may decide to invest in producing tables and chairs after evaluating its profitability, without considering any other options.

2. Mutually Exclusive Investment Decision:

In this case, there are several options, but choosing one means rejecting the others. For example, a company may have three machines (A, B, and C) to produce goods. Selecting one machine means the other two will be rejected. This is called a mutually exclusive decision.

3. Contingent Investment Decision:

These decisions depend on the occurrence of another event or decision. For example, if a company wants to set up a factory in a remote area, it might also need to invest in building infrastructure like roads, hospitals, and housing for employees. These additional investments depend on the initial decision to set up the factory, making them contingent investments.

4.5 APITAL BUDGETING PROCESS

When making investment decisions, the main goal of financial management is to maximize wealth, which is typically measured by the increase in the company's share price. The primary focus is on how an investment will affect the market value of the company, as it reflects the wealth of the shareholders.

The investment decision process generally follows three steps:

1. Forecasting Cash Flows:

The first step in capital budgeting is estimating the cash flows related to the investment. This involves predicting the series of cash inflows and outflows over time. Initially, there will be an outflow of cash when the investment is made, and later, the project will generate revenue. So, you need to estimate the cash inflows for each year of the project.

However, cash flows from different years are not directly comparable. For example, if a project costs Rs. 1,00,000 and generates Rs. 15,000, Rs. 20,000, Rs. 22,000, Rs. 25,000, and Rs. 30,000 over five years, you cannot simply add up the future cash inflows to get the total revenue. This is because of the **time value of money**, which states that money today is worth more than the same amount in the future. Rs. 100 today is worth more than Rs. 100 that you will receive next year. To compare cash flows over time, you need to adjust for this difference by **discounting** future cash flows at the appropriate interest rate.

2. Discounting Future Cash Flows:

To make future cash flows comparable to present-day values, we apply a discount rate. This discount rate is often referred to as the **weighted average cost of capital (WACC)**, which is the overall cost of funding for the company. In this module, we'll assume that the discount rate is given, and this topic is discussed in detail in another module.

3. Evaluating the Investment Decision:

After estimating the cash flows and applying the discount rate to find the present value of future cash inflows, we compare the investment's cost with the present value of the projected revenue. For example, if the total present value of the cash inflows is Rs. 1,20,000 and the cost of the project is Rs. 1,00,000, the project will generate a positive net value of Rs. 20,000. This difference is known as **Net Present Value (NPV)**. A project is considered acceptable if its **NPV** is positive (i.e., the benefits outweigh the costs). If the NPV is negative, the project should be rejected. Other methods for evaluating investments are discussed in different modules.

4.6 CAPITAL INVESTMENT PLANNING AND CONTROL

Capital investment planning and control is a process that involves five key phases, which help in ensuring that capital expenditures (money spent on long-term investments) are managed effectively. The phases are:

1. Identification (or Origination) of Investment Opportunities

Investment opportunities don't appear automatically; they need to be identified or created within a company. Investment proposals can come from different levels within the organization. For example:

- **a. Plant level**: Suggestions for improvements, cost reductions, or replacing old machinery typically come from factory managers or department heads.
- **b.** Top management: More significant investment opportunities, such as expansions or diversifications, are usually identified by higher-level management.
- **c.** Other sources: In some cases, research centers, consultants, or market surveys can also generate new investment ideas.

In India, the generation of investment ideas is often a **bottom-up process**, meaning that most proposals come from lower-level managers, especially at the plant level. However, top management might also generate ideas for large strategic projects. Many companies use methods like management-sponsored studies, formal suggestion schemes, and even international trade fairs to generate ideas. Financial incentives for proposing ideas are not commonly used.

2. Developing Cash Flow Estimates

Estimating cash flows (i.e., predicting the money a project will earn and spend over time) is a critical step. Since the future is uncertain, this can be challenging. Usually, managers work with financial experts to estimate these cash flows. However, it's important to consider both financial and non-financial data when making these predictions.

Challenges in estimation: Many companies, especially in India, sometimes miss out on including working capital needs, mix up different types of financial flows (like operational and investment flows), or overlook the sale proceeds of existing assets when calculating initial costs. Furthermore, past practices in India used arbitrary periods (e.g., 5 to 10 years) for forecasting, mainly because government financial institutions required such periods for project approval. Accurate cash flow estimation is crucial because it directly affects the financial success of an investment.

3. Project Evaluation

Evaluating an investment proposal helps determine whether it is worth pursuing. The evaluation process should be done by a team of experts who are impartial and objective. This is important because different departments (like production or marketing) may have biases toward certain projects. For example, production managers might be too focused on modernizing equipment even if the project isn't profitable, or marketing managers may overestimate sales projections.

The goal of project evaluation is to select investments that will increase the company's wealth. The methods used for evaluation should help rank projects based on profitability and ensure the selection of the best proposals. Some of the common methods used are:

- a. Net Present Value (NPV): This is the most desirable method because it correctly measures the profitability of a project by considering both cash flows and the time value of money.
- b. **Silternal Rate of Return (IRR)**: This is also popular but less accurate than NPV.
- c. **Payback Period**: This is the simplest method and looks at how long it will take for a project to recover its initial investment.

In India, most companies use a combination of the payback period and IRR/NPV methods, with payback being more popular because it's easy to understand and use. However, relying solely on the payback method can be risky, as it doesn't consider the time value of money.

4. Authorization for Capital Expenditure

After a project has been evaluated and deemed worth pursuing, it must be approved for funding. This process involves determining the amount of money needed and the approval authority for the project.

- a. **Approval**: Smaller projects may be approved by mid-level management, while larger projects usually require the approval of top management.
- b. **Capital Budget**: Once approved, the funds needed for the project are included in the company's capital budget. This is a formal document that outlines the expected capital expenditures for the year and ensures that the company spends money according to planned priorities.

In India, top management often has the final say on capital expenditures. The capital budget is also strictly monitored to prevent overspending or mismanagement. Some companies also create long-range plans for capital expenditures covering 3 to 5 years.

5. Control and Monitoring of Capital Projects

After funds are allocated and a project is started, it's essential to keep track of the progress and ensure that the project stays on budget and on schedule. Companies need to continuously monitor the project's performance by comparing actual results with the original estimates.

- a. **Project Reporting**: Many companies require regular reports (quarterly, monthly, etc.) that show the current status of the project, including financial data, completion progress, and whether the project is within budget.
- b. **Reappraisal**: If the project deviates from the plan or doesn't meet expectations, it may be re-evaluated. Companies often compare actual costs with estimated costs, check savings, and assess the rate of return.
- c. **Corrective Actions**: Based on the reappraisal, companies might take corrective actions, which could include improving project efficiency, adjusting operations, or even abandoning the project if it becomes unprofitable.

In India, most companies have a formal reporting system in place, and top executives are responsible for reviewing the performance of investment projects. This helps in identifying errors and refining the process for future projects.

Capital investment planning and control involves identifying good investment opportunities, developing cash flow estimates, evaluating the potential of the investment, authorizing funds, and monitoring the performance of the projects after they are implemented. Each of these steps plays a crucial role in ensuring that the company makes sound financial decisions and maximizes its wealth. However, in practice, companies often use a mix of simple and sophisticated methods to

evaluate investments, with traditional methods like the payback period being more popular in India.

4.7 SUMMERY

Capital budgeting refers to the decision of investing in long-term assets.

It involves long-term investment planning, with cash flows occurring over multiple years.

The decision includes risks, requires significant funds, and is costly to reverse.

The right investment decision is crucial for the firm's survival and growth.

Investment decisions include setting up new businesses, expanding and diversifying, replacing, or modernizing assets.

Investment decisions can be independent, mutually exclusive, or contingent.

The process of making investment decisions involves forecasting cash flows, choosing an appropriate discount rate, and applying capital budgeting techniques.

Identification of Investment Opportunities: Investment opportunities are identified through proposals from various levels within the company.

Developing Cash Flow Estimates: Cash flow estimates are developed by considering both financial and non-financial factors, though challenges exist in their accuracy.

Project Evaluation: Investment proposals are evaluated using methods like NPV, IRR, and payback period to assess profitability.

Authorization for Capital Expenditure: Once evaluated, projects are approved, and necessary funds are included in the company's capital budget.

Control and Monitoring of Capital Projects: The progress and performance of projects are continuously monitored to ensure they stay on budget and schedule, with corrective actions taken if needed.

4.8 CHECK YOUR PROGRESS

1-Mark Questions:

1. What does capital budgeting primarily focus on?

A) Managing short-term assets

B) Deciding on investments in long-term assets

C) Developing marketing strategies

D) Reducing operational costs

Answer: B) Deciding on investments in long-term assets

2. Which of the following is an example of diversification in investment decisions?

A) Increasing production capacity of existing products

B) Starting a new line of business such as manufacturing cell phones

C) Replacing old machinery with new models

D) Expanding an existing business into a new city

Answer: B) Starting a new line of business such as manufacturing cell phones

3. What is the first step in the capital budgeting process?

A) Evaluating the investment decision

B) Forecasting cash flows

C) Identifying investment opportunities

D) Developing a capital budget

Answer: C) Identifying investment opportunities

4. Which method is used in project evaluation to measure profitability considering both cash flows and the time value of money?

A) Payback period

B) Internal Rate of Return (IRR)

C) Net Present Value (NPV)

D) Return on Investment (ROI)

Answer: C) Net Present Value (NPV)

5. Which phase of capital investment planning and control involves determining the amount of money needed for a project and its approval authority?

- A) Identifying investment opportunities
- B) Developing cash flow estimates
- C) Authorization for capital expenditure
- D) Monitoring and controlling capital projects

Answer: C) Authorization for capital expenditure

6. What is capital rationing in the context of capital budgeting?

A) A method of evaluating investment returns

- B) Limiting investments to stay within budget constraints
- C) Deciding whether a project will be profitable
- D) The process of selling long-term assets

Answer: B) Limiting investments to stay within budget constraints

2-Marks Questions:

- 1. Define investment decisions.
- 2. What is the nature of investment decisions?
- 3. Mention one reason why investment decisions are important.
- 4. Name any two types of investment decisions.
- 5. What is capital budgeting?
- 6. What is capital investment control?
- 7. Differentiate between capital and revenue expenditures in one line.

5-Marks Questions:

1. Briefly discuss the different types of investment decisions.

- 2. Describe the capital budgeting process with its key stages.
- 3. Write a short note on the importance of capital investment planning.
- 4. Discuss the role of investment decisions in achieving an organization's financial goals.
- 5. Explain how capital budgeting aids in financial planning and control.
- 6. Highlight the difference between expansion decisions and replacement decisions under investment types.
- 7. Describe the importance of controlling capital investments in the business environment.

10-Marks Questions:

- 1. Discuss the interrelationship between capital budgeting and investment control in financial management.
- 1. Explain how investment decisions impact long-term profitability and risk management in organizations.
- 2. Discuss the role of financial managers in capital budgeting and investment control.
- **3.** Evaluate the challenges and limitations of capital investment planning in dynamic business environments.
- 4. Explain the significance of integrating capital budgeting processes with corporate strategies.
- 5. Explain the steps involved in capital investment planning and control with practical examples.

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UNIT 5: TIME VALUE OF MONEY

STRUCTURE:

- 5.1 Introduction
- 5.2 Future Value of a Single Cash Flow
- 5.3 Future Value of an Annuity
- 5.4 Present Value of a Single Cash Flow
- 5.5 Present Value of Series of Cash Flows
 - 5.5.1 Present Value of an Annuity
 - 5.5.2 Present Value of Uneven Cash Flows
- 5.6 Summery
- 5.7 Check Your Progress
- 5.8 Reference

OBJECTIVES

After studying this unit, you should be able to:

- 1. Explain filtul.e value and present value concepts.
- 2. Explain compound interest and discount.
- **3.** Compute future value of a single amount and an annuity
- 4. Compute present value of a single amount and an annuity.

5.1 INTRODUCTION

Have you ever heard the saying, "A rupee today is worth more than a rupee tomorrow"? Have you wondered why? Let me explain with an example. Anil's grandfather planned to gift him ₹1,00,000 at the end of five years and gave him an option to either wait or take ₹75,000 today. If you were in Anil's place, which option would you choose? On the surface, ₹75,000 today might seem more appealing than ₹1,00,000 after five years. Why? Because the present is more certain than the future. By taking ₹75,000 now, you could invest it and earn a return. Additionally, ₹1,00,000 in five years might lose its purchasing power due to inflation. This example highlights an important principle: money available today has more value than the same amount in the future. However, financial decisions are rarely this simple. Understanding the concept of the *time value of money* can help unravel such dilemmas, which we all encounter in our daily lives. In fact, grasping the time value of money accounts for 90% of finance sense. Investment decisions often involve cash flows occurring at different times, making it crucial to understand how the value of money changes over time. In this lesson, you'll learn about the concepts of compound interest and discounting, and how to calculate the future value and present value of single sums and annuities.

5.2 FUTURE VALUE OF A SINGLE CASH FLOW

First, let us understand the meaning of *future value*. Future value (FV) refers to the amount of money that an investment will grow to over a specified period of time at a certain interest rate. Simply put, future value represents the cash value of an investment at a particular point in the future.

Future Value of a Single Amount for One Period

Let's consider an example: If you deposit ₹1,000 in a fixed bank account at an annual interest rate of 10%, how much will you receive after one year? You will get ₹1,100. This amount consists of your principal of ₹1,000 and the ₹100 interest earned over the year. Therefore, ₹1,100 is the future value of ₹1,000 invested for one year at 10% interest.

In other words, ₹1,000 today will be equivalent to ₹1,100 in one year, assuming a 10% interest rate. This means that when you invest for one period at an interest rate of *i*, your investment will grow to (1 + i) per rupee invested. In this example, *i* is 10%.

Future Value of a Single Amount for More than One Period

Building on the previous example, let's see what happens if you invest the same $\gtrless1,000$ for two years, assuming the interest rate remains at 10%. After the first year, your investment grows to $\gtrless1,100$ ($\gtrless1,000$ principal + $\gtrless100$ interest). In the second year, you will earn an additional $\gtrless100$ interest on the principal, plus $\gtrless10$ interest on the previous year's interest. By the end of two years, your total amount will be $\gtrless1,210$ ($\gtrless1,000 + \gtrless100 + \gtrless100 + \gtrless100$).

Here's a breakdown of the ₹1,210:

- 1. ₹1,000: The original principal.
- 2. ₹100: Interest earned in the first year.
- 3. \gtrless 100: Interest earned in the second year on the principal.
- 4. ₹10: Interest earned in the second year on the first year's interest (₹100 × 10%).

The total interest earned over two years is ₹210, making the future value ₹1,210.

This process, where the investment and accumulated interest are reinvested to earn further interest over multiple periods, is known as *compounding*. Compounding allows you to earn interest on interest, which is referred to as *compound interest*. In contrast, *simple interest* is earned only on the original principal.

The future value of a single cash flow can be calculated using the formula:

 $FVn = PV (1 + i)^n$

FVn =Future value for n years

PV = Cash flow

i = rate of interest per year

N= total number of years

The future of a single cash flow for n years

Year	Interest	Amount at the	Amount at the End
		Beginning of the	of the Period
		Period	
1	PV × i	PV	PV(1 + i)
2	$PV(1+i) \times i$	PV(1 + i)	PV(1 + i)^2
3	$PV(1+i)^2 \times i$	$PV(1 + i)^{2}$	PV(1 + i)^3
n-1	$PV(1 + i)^{(n-2)} \times i$	$PV(1 + i)^{(n-2)}$	$PV(1 + i)^{(n-1)}$
n	$PV(1+i)^{(n-1)} \times i$	$PV(1 + i)^{(n-1)}$	$PV(1+i)^n$

When analyzing compounding, the key equation is:

Future Value (FV)=Present Value $(1 + i)^n$

Here, $(1 + i)^n$ is called the **Future Value Interest Factor (FVIF)**. This factor shows how much money will grow over a period (n years) at a specific interest rate. For larger values of n or i, $(1 + i)^n$ calculating manually can be tedious. That's why **Future Value Tables** are commonly used. These tables provide the pre-calculated values of $(1 + i)^n$ for different interest rates and time periods, making it easier to find the future value.

For example, to find the FVIF for 10% interest over 5 years:

- 1. Look for the column corresponding to 10% interest.
- 2. Find the row for 5 years.
- 3. The FVIF is **1.611**. This means Rs. 1000 will grow to:

FV=1000×1.611=1611

When Rs. 1000 is invested at 10% for 5 years, the total interest earned is Rs. 611. This is made up of: **Simple Interest**: Rs. 500 (Rs. 100 per year for 5 years). **Compound Interest**: Rs. 111 (Rs. 611 - Rs. 500).

Year	Amount at	Simple	Interest at	Total	Amount at
	the	Interest	the End of	Interest	the End
	Beginning		Year		
1	Rs. 1000	100	0	100	Rs. 1100
2	Rs. 1100	100	10	110	Rs. 1210
3	Rs. 1210	100	21	121	Rs. 1331
4	Rs. 1331	100	33.1	133.1	Rs. 1464.1
5	Rs. 1464.1	100	46.4	146.4	Rs. 1610.5
Total		500	110.5	610.5	Rs. 1610.5

Table given below shows the simple interest, compound interest and total amount earned each year and at the end of five years.

We have explored how to calculate the future value of a single lump sum amount over several years. Now, let's examine how to determine the future value of multiple cash flows.

Let's consider an example to understand the concept. Suppose you deposit Rs. 1000 in a bank today at an interest rate of 10%. After one year, you deposit another Rs. 1000. How much money will you have at the end of two years?

At the end of the first year, your initial deposit will grow to Rs. 1100 (Rs. 1000 + 10% interest), and your second deposit of Rs. 1000 will also be added, making the total Rs. 2100.

Now, leaving this amount for another year at 10% interest, the total will grow to:

Rs.2100×1.10=Rs.2310



This is one way of finding out future value of two deposits of Rs.1000. There is another method. The first Rs. 1000 is deposited for two years at 0% therefore its future value is Rs. $1000X \ 1.10^{2} = 1000 \ x \ 1.2100 = Rs.1210$

The second is 1000 is deposited for one year at 10%, so its future value Rs. 1000×1.10 =Rs. 1100The total value is = 1210 + 1100 = Rs. 2310

There are two methods to calculate the future value of multiple cash flows:

- 1. Accumulate each cash flow forward one year at a time to determine the total future value.
- 2. Calculate the future value of each individual cash flow first, and then sum them all together.

Both approaches will result in the same final answer, so you can choose either method to calculate the future value.

Effect of Compounding

Let's revisit Anil's example from the beginning. Imagine his great-grandfather invested Rs. 100 sixty years ago at an interest rate of 10% per year. How much would this amount have grown to by today? To find the future value, we use the **Future Value Interest Factor (FVIF)** formula:

 $FVIF = (1+r)^n$

Substituting the values:- FVIF=(1+0.1)^60= 1.1^60=304.48

FV= 100 x 304.48 = 30448.00

5.3 FUTURE VALUE OF AN ANNUITY

An **annuity** refers to a series of fixed payments or receipts made at regular intervals, such as premium payments for a life insurance policy or installments for home loans. There are two types of annuities:

- 1. Regular (or ordinary) Annuity: Payments or receipts occur at the end of each period.
- 2. Annuity Due: Payments or receipts occur at the beginning of each period.

Future Value of a Regular (Ordinary) Annuity

The future value of an annuity represents the total amount accumulated at the end of the annuity period if the payments are invested at a specific interest rate and held until the end of the period. For example, a promise to pay Rs. 1,000 annually for five years constitutes a 5-year annuity.

Suppose you deposit Rs. 5,000 at the end of each year into a bank account for 5 years, and the bank offers an annual interest rate of 10%. The future value of this annuity can be calculated as follows:

FV=Rs.5, 000(1.10)^4+Rs.5,000(1.10)^3+Rs.5,000(1.10)^2+Rs.5,000(1.10)^1+Rs.5,000

Alternatively, this can be expressed as:

FV=Rs.5, 000(1.4641)+Rs.5,000(1.3310)+Rs.5,000(1.2100)+Rs.5,000(1.1000)+Rs.5,000

FV=Rs.30,525.5

Future Value of an Annuity Formula

The process for calculating the future value of an annuity can be expressed using the following formula:

FVA = Future Value of an Annuity

 $\mathbf{A} =$ Periodic cash flow

 $\mathbf{n} =$ Number of years

 $\mathbf{r} =$ Interest rate

Using the figures from the previous example:

A = Rs. 5,000

 $\mathbf{n} = 5$ years

r = 10%

The formula for the future value of an annuity is:

 $FVA = A \frac{(1+r)^n - 1}{i}$

Substitute the values: FVA=5000×(1.10)^5-1/0.10

Using the Future Value Interest Factor of an Annuity (FVIFA) table, the factor for 10% over 5 years is **6.105**.

FVA=5000×6.105=Rs.30, 525

Instead of performing detailed calculations manually, you can directly multiply the periodic cash flow (Rs. 5,000) by the FVIFA (6.105) to quickly find the future value of the annuity, which in this case is Rs. 30,525.

Illustration 2

A person plans to contribute Rs. 2,000 annually to a retirement account that earns 8% interest. If the person retires in 30 years, what will be the **future value** of these contributions?

$$FVA = A \frac{(1+r)^n - 1}{i}$$

Where:

FVA = Future Value of the Annuity

A = Annual contribution = Rs. 2,000

 $\mathbf{i} = \text{Interest rate} = 8\% \text{ or } 0.08$

 $\mathbf{n} =$ Number of years = 30

Instead of calculating each step, we can use the **Future Value Interest Factor of an Annuity** (**FVIFA**) from the table. At 8% interest for 30 years, **FVIFA = 113.28**.

FVA= A x FVIFA

FVA=2,000×113.28=Rs.2,26,560

Illustration 3

Suppose you receive a lump sum of Rs. 96,000 at the end of 8 years after making annual payments of Rs. 8,000 for the same period. What is the **implicit interest rate (i)** in this scenario?

To find the implicit rate, use the formula for FVIFA:

 $FVIFA = \frac{Future \, Value}{Annual \, Payment}$

 $FVIFA = \frac{96,000}{8,000} = 12$

Future Value of Annuity Due

An **annuity due** is a type of annuity where cash flows occur at the **beginning of each period** rather than at the end. Examples include lease payments and installments.

To calculate the future value of an annuity due, we use a method similar to that for an ordinary annuity, with a slight modification.

Comparison between Ordinary Annuity and Annuity Due

Let's calculate the future value of a Rs. 1,000 ordinary annuity for 3 years at an 8% interest rate and compare it with the future value of a Rs. 1,000 annuity due for the same period and rate:

For an ordinary annuity, cash flows occur at the end of periods 1, 2, and 3.

For an **annuity due**, cash flows occur at the **beginning of periods 1, 2, and 3**, which is equivalent to the start of periods 2, 3, and 4.

The key difference lies in the timing of cash flows:

For an ordinary annuity, the future value (FV) is calculated at the end of the last cash flow.

For an annuity due, the future value (FV) is calculated one period after the last cash flow.

Future Value Formula for Annuity Due

The future value of an annuity due can be calculated by compounding the future value of an ordinary annuity for one additional period:

FVAD= FV Ordinary Annuity× (1+r)

Where:

FVAD = Future Value of Annuity Due

 $\mathbf{r} =$ Interest rate

The future value of an annuity due is always higher than that of an ordinary annuity because the payments are invested for an additional period. By using this formula, you can calculate the future value of an annuity due with ease.

5.4 PRESENT VALUE OF A SINGLE CASH FLOW

If the future value of Re. 1 for one year at 10% is Rs. 1.10, let's consider the question differently: How much would you need to invest today at a 10% interest rate to have Re. 1 at the end of one year? Here, the future value is Re. 1. To find the present value of Re. 1, we calculate how much needs to be invested today to grow to Re. 1 in a year. This is determined by discounting Re. 1 back to its present value using the formula:

The relationship between present value (PV) and future value (FV) can be expressed as:

 $PV \times (1+i)^n = FV$

Where:

PV = Present Value

FV = Future Value

i= Interest Rate per period

n = Number of periods

Alternatively, rearranging to solve for PV

 $PV = \frac{Future \, Value}{(1+i)^n}$

$$FV, \frac{1}{(1+i)^n}$$

The term $\frac{1}{(1+i)^n}$ is the **present value interest factor (PVIF)** or **discount factor**, which helps us calculate how much needs to be invested today to reach a specific future value.

Suppose you want to earn Rs. 1500 in three years at 7% rate of interest. How much should you invest today to get Rs. 1,500 in three years?

$$PV = \frac{1}{(1.07)^3} = 1500 \text{ x } 0.8163 = Rs \ 1224$$

Present value is the reverse of future value. While future value involves **compounding** money to calculate how much it will grow in the future, the present value concept uses **discounting** to bring future amounts back to their current worth. The process of reducing future income or payments to their present value is known as **discounting**, and the current worth of a sum to be received in the future is referred to as its **present value**.

For example, to calculate the present value (PV) of Rs. 500 to be received in one year at an 8% interest rate:

PV x 1.08 = Rs. 500PV= $500 \text{ x} \frac{1}{1.08} = \text{Rs } 462.5$

You don't need to perform detailed calculations to determine the present value. **Present Value Tables** simplify the process by providing pre-calculated factors for different interest rates and time periods. To use these tables, simply multiply the present value interest factor (PVIF) for the given rate and period by the amount. For example:

If you want to find the present value of Rs. 500 at an 8% interest rate for one year, use the PVIF from the table Rs 500 x 0.925 = 462.5

5.5 Present Value of Series of Cash Flows

Cash flows can be categorized into two types:

a) Even series of cash flows (also known as annuities)b) Uneven series of cash flows

In the equation $\frac{1}{(1+i)^n}$ is referred to as the **discount factor** or **present value factor**, and the rate used in the calculation is called the **discount rate**. The method of determining the present value of a future cash flow is known as **Discounted Cash Flow (DCF)** valuation.

You want to have Rs. 800 at the end of each of three years. If the discount rate is 10% What the present value of Rs.2,400?

There are two methods to find out present value. Under first method the present value of an annuity is the sum of present value of all the cash inflows. It can be expressed as follows-

Rs. 800
$$\left(\frac{1}{1.10}\right)^{1}$$
 + 800 $\left(\frac{1}{1.10}\right)^{2}$ + 800 $\left(\frac{1}{1.10}\right)^{3}$

= Rs. 800 x 0.9091 + Rs. 800 x 0.8264 +.Rs. 800 x 0.75 13

= Rs. 727.28 + 66 1.12 + 60 1.04 = Rs. 1989.44

The above can be arrived by using this formula-

Or PVA =
$$\frac{A}{(1+i)} + \frac{A}{(1+i)^2} + \frac{A}{(1+i)^3} + \dots + \frac{A}{(1+i)^n}$$
$$PVA = \left[\frac{(1+i)^n - 1}{(1+i)^n}\right]$$

A = Annuity I = Discount rate n = number of years PVA = present value of annuity

5.5.2 Present Value of Uneven Cash Flows

You may often encounter uneven cash flow streams, such as dividends on equity shares.

Illustration:

Aman invests in a mutual fund that promises the following cash flows over five years. The discount rate is 10%. Calculate the present value.

Year	Cash Flow (Rs.)	P.V. Factor	P.V. of Each Cash
			Flow (Rs.)
1	1,000	0.9091	909.1
2	2,000	0.8264	1652.8
3	2,000	0.7513	1502.6
4	3,000	0.6830	2049.0
5	3,000	0.9209	1862.7
Total			7976.2

Perpetuities

When cash flows continue indefinitely, they are referred to as **perpetuities** a special type of annuity. The present value of perpetuity is calculated as:

 $PV = \frac{Cash flow}{Discount Rate}$

Example:

If you receive a perpetual cash flow of Rs. 1,000 annually and the required return is 16%, the value of the perpetuity is:

 $PV = \frac{1000}{0.16} = 6,250$

This means that investing Rs. 6,250 at a 16% interest rate would yield an annual income of Rs. 1,000 indefinitely.

Present Value of an Annuity Due

Let's simplify how to calculate the **present value of an annuity due**. We'll compare it to the present value of an ordinary annuity.

Ordinary Annuity: Payments are made at the end of each period.

Annuity Due: Payments are made at the beginning of each period.

For example, consider an ordinary annuity with payments of Rs. 1,000 at 8% interest for 3 years (PVA₃), and an annuity due with the same payments for 3 years (PVAD).

To calculate the present value of an annuity due for 3 years:

Step 1: Calculate the present value of an ordinary annuity for 2 years.

Step 2: Add back one payment of Rs. 1,000 (since the first payment of an annuity due is not discounted). It is expressed as-

PVADn=A× (PVIFAi, n-1+1)

Where,

PVADn= Present value of an annuity due

A= Amount of each payment

(PVIFi n-1+ 1)= Present Value Interest Factor for an ordinary annuity for n-ln-ln-l periods at interest rate i.

This approach simplifies the calculation by recognizing that the first payment of an annuity due is not discounted.

5.6 SUMMARY

The time value of money is based on the idea that Re. 1 received today is worth more than the same amount received at any future time. This is because money received today can be invested and earn returns, whereas money received in the future does not have the same earning potential, making future money less valuable.

The time value of money helps convert different amounts of money occurring at various points in time into equivalent values at a specific point. These equivalent values are represented either as future values (FV) or present values (PV), allowing for meaningful comparisons of cash flows at different times.

The concept involves two main techniques: compounding and discounting. Using compounding, the present value can be converted into a future value by applying interest over time. On the other hand, discounting allows for the conversion of future values into present values by reversing the compounding process.

To apply these techniques, the rate of interest (in compounding) or the discount factor (in discounting) is used to calculate the equivalent value. These calculations can be applied to both single amounts (a one-time payment) and annuities (a series of equal payments).

5.7 CHECK YOUR PROGRESS

2-Mark Questions:

- 1. What do you mean by future value?
- 2. What is compounding?
- 3. What is the difference between regular annuity and annuity due?
- 4. You have deposited Rs. 10,000 in a fixed deposit in a bank at 6% rate of Interest. How much will you get after 5 years?
- 5. If a deposit of Rs. 3000 is made today and the interest received is 10% yearly, how much the deposit will grow after 7 years and 11 years1?

5-Mark Questions:

- 1. Define the present value of a single cash flow and its significance in financial decisionmaking.
- 2. How is the present value of an annuity calculated? Provide a brief explanation.
- **3.** Differentiate between the present value of an annuity and the present value of uneven cash flows
- 4. Calculate the **future value of a single cash flow** of ₹10,000 invested for 5 years at an annual interest rate of 8%.
- 5. An investor deposits ₹5,000 annually for 6 years at an interest rate of 10%. Calculate the **future value of the annuity**.

10-Mark Questions:

- 1. A person invests ₹15,000 at 10% interest compounded annually for 7 years. Calculate the future value of the investment.
- 2. An individual deposits ₹10,000 annually in a bank account for 10 years. If the interest rate is 8%, compute the **future value of the annuity**.
- 3. A company plans to receive ₹50,000 after 6 years. Find the **present value of this cash flow** if the discount rate is 10%.
- **4.** Discuss the significance of the present value of a single cash flow and how it is applied in investment decisions.

- 5. Explain the steps involved in calculating the present value of a series of cash flows, including annuities and uneven cash flows.
- 6. Compare and contrast the concepts of future value and present value with practical applications.

5.8 REFERENCES:

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- **9.** Corporate Finance Institute (CFI) (<u>https://corporatefinanceinstitute.com/</u>) Articles on ratio analysis, its objectives, and limitations.
- **10.** ICAI Study Material Provides a systematic approach to ratio analysis with examples tailored for financial statement analysis.

UNIT 6: INVESTMENT EVALUATION

STRUCTURE:

6.1 Introduction

6.2 Investment Decision Rule 6.2.1Evaluation Criteria 6.3 Net Present Value Method 6.3.1 Why is NPV Important?; 6.3.2 Acceptance Rule 6.3.3 Evaluation of the NPV Method 6.4 Internal Rate of Return Method 6.4.1Uneven Cash Flows: Calculating IRR by Trial and Error 6.4.2 Level Cash Flows; 6.4.3 NPV Profile and IRR; 6.4.4 Acceptance Rule 6.4.5 Evaluation of IRR Method 6.5 Profitability Index 6.5.1 Acceptance Rule 6.5.2 Evaluation of PI Method 6.6 Payback Period 6.6.1 Acceptance Rule 6.6.2 Evaluation of Payback;

6.7 Discounted Payback Period
6.8 Accounting Rate of Return Method
6.8.1 Acceptance Rule
6.8.2 Evaluation of ARR Method

6.9 Summary

6.10 Check Your Progress

6.11 Reference

OBJECTIVES:

- 1. Understand the significance of investment decision-making and the evaluation criteria used in the process.
- 2. Learn the detailed methodology of calculating and interpreting Net Present Value (NPV), Internal Rate of Return (IRR), and Profitability Index (PI).
- 3. Evaluate the strengths and weaknesses of different investment evaluation methods
- 4. Recognize the importance of techniques such as the Payback Period, Discounted Payback Period, and Accounting Rate of Return (ARR) in investment decision-making.

6.1 INTRODUCTION

Investment evaluation is a critical process that involves analyzing and assessing potential investment opportunities to determine their feasibility, profitability, and alignment with an investor's financial goals. It serves as the foundation for informed decision-making in finance and business, enabling stakeholders to allocate resources effectively and minimize risks.

The primary goal of investment evaluation is to ensure that the selected investments yield optimal returns while aligning with the investor's risk tolerance, time horizon, and strategic objectives. This process typically encompasses the analysis of both qualitative and quantitative factors, such as market trends, financial metrics, economic conditions, and potential risks.

Investment evaluation can be seen in the decision-making process of a company considering whether to invest in a new manufacturing facility. The company must assess several factors before making a final decision:

- 1. **Feasibility**: The company will first evaluate whether the new facility is technically and economically feasible, looking at factors such as available land, construction costs, and regulatory requirements.
- 2. **Profitability**: Financial metrics like projected cash flows, operating costs, and expected revenue will be analyzed. For instance, the company may use **Net Present Value (NPV)**

and **Internal Rate of Return (IRR)** to determine if the investment will generate sufficient returns over time.

- 3. **Risk Assessment**: The Company will also consider potential risks, such as market fluctuations, supply chain disruptions, and regulatory changes. These risks can be quantified through **sensitivity analysis** or scenario planning to evaluate how changes in key assumptions might impact profitability.
- 4. **Strategic Objectives**: Finally, the company will assess whether the investment aligns with its long-term goals, such as expanding market share, entering a new geographical region, or improving production efficiency.

By analyzing all these factors, the company can make a well-informed investment decision, ensuring the project aligns with both its financial goals and risk tolerance. This is a practical example of how investment evaluation works in real-world scenarios, ensuring resources are allocated effectively for maximum benefit.

6.2 INVESTMENT DECISION RULE :

Investment decision rules, also known as capital budgeting techniques or investment criteria, are essential for evaluating the economic value of investment projects. A reliable appraisal method should aim to maximize shareholders' wealth. In addition to this fundamental goal, a robust investment evaluation criterion should possess several key characteristics:

- 1. It must consider all relevant cash flows to accurately assess the profitability of the project.
- 2. It should offer a clear and objective approach to distinguish between good and bad projects.
- 3. It should allow for ranking projects based on their true profitability.
- 4. It must prioritize larger cash flows over smaller ones, and earlier cash flows over those that occur later.
- 5. It should assist in selecting the project that maximizes shareholders' wealth when choosing between mutually exclusive projects.
- 6. The criterion should be universally applicable to any potential investment project, regardless of the type or nature of the investment.

6.2.1 Evaluation Criteria:

When assessing investment decision rules, several criteria help determine their effectiveness in guiding decision-making. These criteria ensure that the chosen rule aligns with an investor's goals, financial strategies, and project requirements. Below are the primary evaluation criteria

1. Discounted Cash Flow (DCF) Criteria

- a. Net present value (NPV)
- b. Internal rate of return (IRR)
- c. Profitability index (PI)

2. Non-discounted Cash Flow Criteria

- a. Payback period (PB)
- b. Discounted payback period
- c. Accounting rate of return (ARR).

Discounted payback is a variation of the payback method. It involves discounted cash flows, but, as we shall see later, it is not a true measure of investment profitability. We will show in the following pages that the net present value criterion is the most valid technique of evaluating an investment project. It is consistent with the objective of maximizing the shareholders' wealth.

6.3 NET PRESENT VALUE METHOD:

The Net Present Value (NPV) method is a widely used economic approach for evaluating investment proposals. As a discounted cash flow (DCF) technique, it explicitly incorporates the time value of money. The method acknowledges that cash flows occurring at different points in time have varying values and can only be compared by converting them into their present value equivalents.

The steps for calculating NPV are as follows:

- 1. Forecasting Cash Flows: Estimate the project's cash flows based on realistic assumptions.
- 2. **Determining the Discount Rate**: Identify an appropriate discount rate, typically the project's opportunity cost of capital. This rate represents the required return expected by investors for investments of similar risk.
- 3. Calculating Present Value: Use the identified discount rate to compute the present value of the forecasted cash flows.
- 4. **Calculating NPV**: Subtract the present value of cash outflows from the present value of cash inflows. A project is considered viable if the NPV is positive (i.e., NPV > 0).

Illustration 1: Calculating Net Present Value

Assume that Project *X* costs Rs 2,500 now and is expected to generate year-end cash inflows of Rs 900, Rs 800, Rs 700, Rs 600 and Rs 500 in years 1 through 5. The opportunity cost of the capital may be assumed to be 10 per cent.

The net present value for Project X can be calculated by referring to the present value table The calculations are shown below:

$$\mathbf{NPV} = \left[\frac{900}{1+0.10} + \frac{800}{(1+0.10)^2} + \frac{700}{(1+0.10)^3} + \frac{600}{(1+0.10)^4} + \frac{500}{(1+0.10)^5}\right] - Rs\ 2500$$

NPV= 900x PVIF1, 0.10 + 800 x PVIF2,0.10 + 700 x PVIF3, 0.10 + 600x PVIF4, 0.10 + 500 X PVIF5,0.10 - 2500

NPV Rs 2,725 Rs 2,500=+ Rs 225

Project X's present value of cash inflows (Rs 2,725) is greater than that of cash outflow (Rs 2,500). Thus, it generates a positive net present value (NPV = + Rs 225). Project X adds to the wealth of owners; therefore, it should d be accepted.

The formula for the net present value can be written as follows:

$$\mathbf{NPV} = \left[\frac{C1}{1+k} + \frac{C2}{(1+k)^2} + \frac{C3}{(1+k)^3} + \frac{C4}{(1+k)^4} + \frac{C5}{(1+k)^5}\right] - \mathcal{C}o)$$

Where C1, C2... represent net cash inflows in year 1, 2..., k is the opportunity cost of capital, C0 is the initial cost of the investment and n is the expected life of the investment. It should be noted that the cost of capital, k, is assumed to be known and is constant.

Illustration 2: A company is considering an investment of ₹2,500 in Project X. The company's current total market value is ₹10,000, consisting of ₹7,500 in other assets and ₹2,500 in cash available for investment.

- If the company chooses to keep the cash and reject Project X, its market value remains ₹10,000.
- If the company invests in Project X, which has a present value (PV) of ₹2,725, the new market value of the company will change.

Based on this information:

- 1. What will the company's new market value be if it invests in Project X?
- 2. What is the net change in the company's market value as a result of the investment?
- 3. Should the company invest in Project X? Explain why or why not.

Solution:

1. What will the company's new market value be if it invests in Project X? If the company invests ₹2,500 in Project X, the cash is replaced by the present value (PV) of the project, which is ₹2,725. Adding this to the value of the company's other assets (₹7,500):

New Market Value=₹7,500+₹2,725=₹10,225

2. What is the net change in the company's market value as a result of the investment? The change in market value is the difference between the new market value ($\gtrless 10,225$) and the current market value ($\gtrless 10,000$):

Net Change in Market Value=₹10,225-₹10,000=₹225

3. Should the company invest in Project X? Explain why or why not. Yes, the company should invest in Project X because the investment increases the total market value by ₹225. This aligns with the shareholders' goal of maximizing the value of their shares. The project's positive NPV indicates it adds value to the company, making it a desirable investment.

6.3.1 Why is NPV Important?

A common question in financial decision-making is why a manager should invest in a particular project.

Suppose a company has the option to invest ₹2,500 in Project X. For the company's shareholders, the goal is to maximize the value of their shares. To assess whether Project X is a good investment, assume the company's total market value is ₹10,000. This includes ₹2,500 in cash that could be used to fund Project X, leaving the value of the company's other assets at ₹7,500. If the company keeps the cash and rejects Project X, its market value remains ₹10,000. However, if the company invests in Project X, which has a present value (PV) of ₹2,725, the new market value of the company becomes:

₹7,500+₹2,725=₹10,225

This represents an increase of ₹225 in the company's total market value, making Project X a desirable investment.

Why Does the PV of a Project Reflect in a Company's Market Value?

To answer this, imagine forming a new company, "Company X," with Project X as its only asset. The value of this new company would be determined by the present value of the expected dividends it generates, which are equivalent to the forecasted cash flows from Project X.

Investors use a discount rate reflecting the return expected on investments with similar risk to value these dividends. This is the same rate that should be used to discount Project X's cash flows. Thus, calculating the PV of Project X mirrors the process investors would follow to value the shares of Company X. Once the PV of Project X is determined, it can be added to the value of the company's other assets to calculate its total market value.

Understanding the Discount Rate

The discount rate, or the opportunity cost, is crucial in calculating the PV of a project. Funds within a company can either be reinvested into new projects or distributed to shareholders. Shareholders, in turn, could invest these funds in financial assets. Therefore, the discount rate reflects the return shareholders could earn from equivalent-risk investments in the market.

Alternate Interpretation of NPV

A positive NPV can also be seen as the maximum price a firm would be willing to pay to acquire the opportunity to invest in a project without being financially worse off. Alternatively, it represents the amount a firm could raise at the required rate of return (10% in this case) while still covering the initial investment and earning a surplus.

For instance, if the firm raises only ₹2,500 (the initial outlay) instead of ₹2,725 (the PV of the project plus the NPV), it would have ₹363 left at the end of the project's life. The present value of ₹363 at a 10% discount rate is ₹225, which matches the project's NPV.

6.3.2 Acceptance Rule:

The **Net Present Value (NPV)** method provides a clear criterion for evaluating investment projects:

1. Accept the project:

If the NPV is positive (NPV > 0). A positive NPV increases the net wealth of shareholders, leading to an increase in the firm's share price. This happens when the project's cash inflows exceed the opportunity cost of capital.

2. **Reject the project** if the NPV is negative (NPV < 0)

A negative NPV indicates the project fails to meet the required return and would decrease shareholder value.

3. Consider accepting the project

If the NPV is zero (NPV = 0). A zero NPV means the project generates cash flows exactly at the opportunity cost of capital, making it a neutral investment decision.

NPV Rules for Project Selection

1. Individual Projects:

- a. Accept if NPV > 0.
- b. Reject if NPV < 0.
- c. Evaluate cautiously if NPV = 0.

2. Mutually Exclusive Projects:

a. Choose the project with the highest positive NPV.

3. Ranking of Projects:

- a. Rank projects based on their NPVs in descending order.
- b. The project with the highest positive NPV is given the first rank, followed by others in order of their NPVs.

6.3.3 Evaluation of the NPV Method:

NPV is the true measure of an investment's profitability. It provides the most acceptable investment

Rule for the following reasons-

- 1. Time value: It recognizes the time value of money—a rupee received today is worth more than a rupee received tomorrow.
- 2. **Measure of true profitability:** It uses *all* cash flows occurring over the entire life of the project in calculating its worth. Hence, it is a measure of the project's true profitability. The NPV method relies on estimated cash flows and the discount rate rather than any arbitrary assumptions, or subjective considerations.
- 3. Value-additivity The discounting process facilitates measuring cash flows in terms of present values; that is, in terms of equivalent, current rupees. Therefore, the NPVs of projects can be added. For example, NPV (A + B) = NPV (A) + NPV (B). This is called the **value-additivity principle.** It implies that if we know the NPVs of individual projects, the value of the firm will increase by the *sum* of their NPVs. We can also say that if we know values of individual assets, the firm's value can simply be found by adding their values. The value-additivity is an important property of an investment criterion because it means that each project can be evaluated, independent of others, on its own merit.
- 4. **Shareholder value** The NPV method is always consistent with the objective of the shareholder value maximization. This is the greatest virtue of the method. Are there any limitations in using the NPV rule? The NPV method is a theoretically sound method. In practice, it may pose some computational problems.
- 5. **Cash flow estimation** The NPV method is easy to use *if* forecasted cash flows are known. In practice, it is quite difficult to obtain the estimates of cash flows due to uncertainty.

- 6. **Discount rate** It is also difficult in practice to precisely measure the discount rate.
- 7. **Mutually exclusive projects** Further, caution needs to be applied in using the NPV method when alternative (mutually exclusive) projects with unequal lives, or under funds constraint are evaluated. The NPV rule may not give unambiguous results in these situations.
- 8. **Ranking of projects** It should be noted that the ranking of investment projects as per the NPV rule is *not* independent of the discount rates.

Net Present Value (NPV) method for Ranking of Investment Project:

NPV can help us to rank investment projects and rankings can change with different discount rates. Consider two projects—A and B—to understand this concept. Three scenario are given-

- 1. Both **Project A** and **Project B** require an initial investment of $\mathbf{\xi}$ 50.
- 2. Project A returns ₹100 after one year and ₹25 after two years.
- 3. Project B, on the other hand, returns ₹30 after one year and ₹100 after two years." Analyze their NPVs at two different discount rates—5% and 10%.

Scenario:

Both **Project A** and **Project B** require an initial investment of $\gtrless 50$.

Project A returns ₹100 after one year and ₹25 after two years.

Project B, on the other hand, returns ₹30 after one year and ₹100 after two years

Discount Rate	Project A	Rank	Project B	Rank
Project A	67.92	II	₹69.27	Ι
Project B	₹61.57	Ι	59.91	II

At a 5% discount rate, Project B has a higher NPV, so it's ranked first.

At a 10% discount rate, Project A moves to the top

The reason lies in the timing of cash flows and how discounting affects their present value.

Project A has a larger cash flow in the first year (\gtrless 100), which is discounted less at both 5% and 10%.

Project B, however, has a larger cash flow in the second year (₹100), which is more heavily discounted, especially at the higher rate of 10%."

As the discount rate increases, the cash flows occurring later in the project's life lose more of their value. This is why Project B, with its larger second-year cash flow, sees a sharper drop in NPV as the discount rate rises.

6.4 INTERNAL RATE OF RETURN METHOD

The internal rate of return (IRR) method is another discounted cash flow technique, which takes account of the magnitude and timing of cash flows. Other terms used to describe the IRR method are yield on an investment, marginal efficiency of capital, rate of return over cost, time-adjusted rate of internal return and so on.

The Internal Rate of Return (IRR) is a crucial concept in financial decision-making. To understand it better, let's begin with a simple example:

Suppose you deposit Rs 10,000 in a bank, and after one year, you receive Rs 10,800. Now, the question is: What is your true rate of return?

The true rate of return on your investment can be calculated as follows:

Rate of Return=10,800/10,000-1 = 0.08 = 8%

This means the rate of return on your investment is 8%.

In this case, the amount you receive in the future (Rs 10,800) is made up of:

Your original investment (Rs 10,000)

The return on your investment (8% of Rs 10,000):

0.08×10,000=Rs800

The rate of return on your investment (8%) equates the discounted (present) value of your future cash inflow (Rs 10,800) to the initial investment (Rs 10,000). This principle forms the foundation of the IRR method.

The Formula:

 $\mathbf{NPV} = \left[\frac{C1}{1+k} + \frac{C2}{(1+k)^2} + \frac{C3}{(1+k)^3} + \frac{C4}{(1+k)^4} + \frac{C5}{(1+k)^5}\right] - \mathcal{C}o)$

It can be noticed that the IRR equation is the same as the one used for the NPV method. In the NPV method, the required rate of return, k, is known and the net present value is found, while in the IRR method the value of r has to be determined at which the net present value becomes zero.

6.4.1Uneven Cash Flows: Calculating IRR by Trial and Error

The approach is to select any discount rate to compute the present value of cash inflows. If the calculated present value of the expected cash inflow is lower than the present value of cash outflows, a lower rate should be tried. On the other hand, a higher value should be tried if the present value of inflows is higher than the present value of outflows. This process will be repeated unless the net present value becomes zero.

Illustration 1: A project costs Rs 16,000 and is expected to generate cash inflows of Rs 8,000, Rs 7,000 and Rs 6,000 at the end of each year for next 3 years.

Solution:

At 20% Discount Rate NPV is

NPV = - Rs 16,000+Rs 8,000(PVF1, 0.20)+Rs 7,000(PVF2, 0.20) + Rs 6,000(PVF3, 0.20) -- - -16,000+ Rs 8,000 0.833+Rs 7,000 0.694 + Rs 6,000 0.579

-16,000+Rs 14,996= -1,004

At 16 per cent, the project's NPV is

NPV = - 16,000+Rs 8,000(PVF1, 0.16)+Rs 7,000(PVF2, 0.16)+Rs 6,000(PVF3, 0.16) -16,000+Rs 8,000 0.862+Rs 7,000 0.743+Rs 6,000 0.641

-16,000+Rs 15,943= Rs 57

At 15 % Discount Rate is

NPV = Rs -16,000 + Rs 8,000(PVF1, 0.15) + Rs 7,000(PVF2, 0.15) + Rs 6,000(PVF3, 0.15)

-16,000 + Rs 8,000 0.870 + Rs 7,000 0.756 + Rs 6,000 0.658

- 16,000 + Rs 16,200 = Rs 200

The true rate of return should lie between 15–16 per cent.

6.4.2 Acceptance Rule

The **IRR** is the return a project earns on its investment. In other words, it's the percentage return where the project's inflows (money coming in) exactly equal its outflows (money spent).

- 1. Accept the project if the IRR is greater than the opportunity cost of capital (also called apprendix required rate of return or hurdle rate).
- 2. **Reject the project** if the IRR is less than the opportunity cost of capital. Because the project isn't earning enough to justify the investment.
- 3. **Be indifferent** (you may accept or reject) if the IRR is exactly equal to the opportunity cost of capital. Because the project is just breaking even you're neither gaining nor losing compared to other investment options

6.4.3 Evaluation of the IRR Method

IRR method is like the NPV method. It is a popular investment criterion since it measures profitability as a percentage and can be easily compared with the opportunity cost of capital. IRR method has some advantages

- 1. **Time Value of Money**: The IRR method recognizes that money received today is worth more than the same amount received in the future. This is because money can be invested to earn returns. By discounting future cash flows, IRR adjusts for this time value, giving a more accurate picture of a project's profitability over time. For example, if a project provides Rs 5,000 today and Rs 5,000 two years later, IRR ensures that the later cash flow is valued appropriately in today's terms.
- 2. **Profitability Measure**: Unlike methods like the payback period that ignore some cash flows, IRR considers all cash inflows and outflows throughout the project's life. This means that even small or late-period cash flows are included when calculating profitability. For instance, if a project has an initial investment of Rs 50,000 and generates Rs 10,000 annually for 7 years, the IRR calculation includes all 7 years of inflows to determine the return rate accurately.
- 3. Acceptance Rule Consistency: For most independent projects, the IRR method leads to the same decisions as the NPV method. Both approaches identify projects that add value. For example, if a project has an IRR of 18% and the opportunity cost of capital is 10%, both IRR and NPV will suggest accepting it. This consistency makes IRR a reliable method for deciding whether to invest in independent projects.
- 4. Shareholder Value: The IRR method aligns with the goal of maximizing shareholder wealth. When a project's IRR exceeds the opportunity cost of capital (also called the required rate of return), it indicates that the project earns more than shareholders expect from alternative investments. For example, if a project delivers an IRR of 15% and the shareholders expect 12%, accepting the project increases their wealth.

Limitation of IRR methods:

- 1. **Multiple Rates of Return**: Projects with unconventional cash flows—those that alternate between positive and negative—can result in multiple IRRs or no IRR at all. This happens because the IRR calculation relies on solving equations that may produce multiple solutions. For instance, if a project involves an initial investment of Rs 1,000, a profit of Rs 2,000 in the first year, and a loss of Rs 1,200 in the second year, the IRR equation might yield two rates, making it unclear which one to use.
- 2. **Mutually Exclusive Projects**: When comparing mutually exclusive projects (those where only one can be chosen), the IRR method might give the wrong recommendation. This is because IRR focuses on percentages, while NPV focuses on the total value added. For

example, Project A might have an IRR of 20% but a smaller NPV compared to Project B, which has an IRR of 12%. If maximizing value is the goal, NPV is the better criterion.

3. Value Additivity: The IRR method does not follow the principle of value additivity, meaning the IRRs of individual projects cannot be combined to evaluate their total effect. For example, if Project A has an IRR of 20% and Project B has an IRR of 12%, the combined IRR of the two projects (A + B) is not 32%; it could be a completely different value. However, NPVs of individual projects do add up, maintaining consistency in evaluating combined investments.

6.5 PROFITABILITY INDEX

Profitability index is the ratio of the present value of cash inflows, at the required rate of return, to the initial cash outflow of the investment. The **Profitability Index (PI)**, also known as the **Benefit-Cost (B/C) Ratio**. This method helps us decide whether an investment is worth pursuing by comparing the benefits (cash inflows) to the cost (initial cash outflow). The **Profitability Index (PI)** is a ratio that shows how much value a project generates for every unit of money invested.

The formula for calculating benefit-cost ratio or profitability index is as follows: PI= Present Value of Cash inflows/Initial Cash outlay PT = PV(Ct)/Cn

Illustration 1: The initial cash outlay of a project is Rs 100,000 and it can generate cash inflow of Rs 40,000, Rs 30,000,Rs 50,000 and Rs 20,000 in year 1 through 4. Assume a 10 per cent rate of discount. The PV of cash inflows at 10 per cent discount rate is:

PV= Rs 40,000(PVF1, 0.10) + Rs 30,000(PVF2, 0.10) + Rs 50,000(PVF3, 0.10) + Rs 20,000(PVF4, 0.10) = Rs 40,000 0.909 + Rs 30,000 0.826 + Rs 50,000 0.751 + Rs 20,000 0.68 = NPV Rs112,350 Rs100,000 = Rs12,350 PI= Rs 112,350/Rs100,000 = 1.1235.

6.5.1 Acceptance Rule

The following are the PI acceptance rules:

- 1. Accept the project when PI is greater than one PI > 1
- 2. Reject the project when PI is less than one PI < 1
- 3. May accept the project when PI is equal to one PI = 1

The project with positive NPV will have PI greater than one. PI less than means that the project's NPV is negative.

6.5.2 Evaluation of PI Method

Advantages of PI Method:

- 1. **Easy Comparison:** PI allows to compare multiple projects, especially when funds are limited. Projects with a higher PI are better investments.
- 2. Accounts for Time Value: Like the NPV method, PI accounts for the time value of money by discounting future cash inflows.

Limitations of PI:

While PI is useful, it has some limitations. It may not always work well when comparing **mutually exclusive projects** because it doesn't show the absolute value (total NPV) a project generates.

So, the PI is a great tool for assessing projects, especially when deciding between several small projects. But remember to pair it with NPV when you're choosing between large, mutually exclusive projects.

6.6 PAYBACK PERIOD

The payback (PB) is one of the most popular and widely recognized traditional methods of evaluating investment proposals. Payback is the number of years required to recover the original cash outlay invested in a project. The **Payback Period** is the amount of time it takes for a project to recover its initial investment through the cash inflows it generates. In simple terms, it tells us **how long it will take to get our money back**. This is especially useful when you need to make quick decisions or focus on minimizing financial risk.

Formula for Payback Period:

The formula to calculate the Payback Period depends on whether cash inflows are constant or vary over time.

- 1. If Cash Inflows Are Constant: Payback Period = Initial Investment/ Annual Cash inflows, this formula can be used.
- 2. If Cash Inflows Vary: Add up the cash inflows year by year until they equal the initial investment. The Payback Period is the time it takes to reach that point.

Illustration 1: Constant Cash Inflows

Initial investment (Co): Rs 50,000

Annual cash inflow: Rs 10,000

PB = Co/C = 50,000/10,000 = 5 years

Result: The project will recover the investment in 5 years.

Payback (Uneven Cash Flows):

Illustration 2: Suppose that a project requires a cash outlay of Rs 20,000, and generates cash inflows of Rs 8,000; Rs 7,000; Rs 4,000; and Rs 3,000 during the next 4 years. What is the project's payback?

Solution: In the first three years (8,000+7000+4000) Rs 19,000

In the fourth year cash inflow generated is Rs 3,000 and only Rs 1,000 of the original outlay remains to be recovered.

$(\text{Rs } 1,000/\text{Rs } 3,000) \times 12 \text{ months} = 4 \text{ months}$

Payback period is 3 years and 4 months.

6.6.1 Acceptance Rule:

The Payback Period helps us decide whether baccept or reject a project. If the payback period is **shorter than the target period**, the project is accepted. If it's **longer than the target period**, the project is rejected. For example: If your company's maximum acceptable payback period is 3 years, and a project pays back in 2 years, you would accept it.

Many firms use the payback period as an investment evaluation criterion and a method of ranking projects. They compare the project's payback with a predetermined, standard payback. The project would be accepted if payback period is less than the maximum or **standard payback** period set by management. As a ranking method, it gives highest ranking to the project which has the shortest payback period and lowest ranking to the project with highest payback period. Thus, if the firm has to choose between two mutually exclusive projects, the project with shorter payback period will be selected.

6.6.2 Evaluation of Payback:

Advantages of Payback Period

- 1. Simplicity; It's easy to understand and calculate.
- 2. Quick Risk Assessment: It shows how quickly the initial investment can be recovered, reducing financial risk.

3. Liquidity Focus: Projects with shorter payback periods improve cash flow and financial stability.

Limitations of Payback Period

- 1. **Ignores Time Value of Money:** It doesn't account for the fact that money today is worth more than the same amount in the future.
- 2. **Ignores Cash Flows After Payback:** It only focuses on the recovery of the initial investment and ignores any additional profits after that.
- 3. No Profitability Measure: It doesn't show the project's overall profitability or value to shareholders.

	0		
Table No. 1	eash	flows	(Rs)

Project	Co	C1	C2	C3	Payback	NPV
X	4,000	0	4,000	2,000	2 YEARS	+806
X	4,000	2,000	2,000	0	3 YERAS	-530

In the above table as per the payback rule, both the projects are equally desirable since both return the investment outlay in two years. If we assume an opportunity cost of 10 per cent, Project Xyields a positive net present value of Rs 806 and Project Y yields a negative net present value of Rs 530. As per the NPV rule, Project X should be accepted and Project Y rejected. Payback rule gave wrong results because it failed to consider Rs 2,000 cash flow in third year for Project X. Payback is not an appropriate method of measuring the profitability of an investment project as it does not consider all cash inflows yielded by the project. Considering Project X again, payback rule did not take into account its entire series of cash flows.

6.7 SCOUNTED PAYBACK PERIOD

The Discounted Payback Period solves the problem of ignoring time time value of money. It calculates how long it takes to recover the initial investment based on the present value (PV) of cash inflows. Each cash inflow is discounted to its present value using a required rate of return (also called the discount rate).

The **regular payback period** assumes that Rs 1 received today is worth the same as Rs 1 received five years later. The **discounted payback period**, however, adjusts future cash inflows to their present value, recognizing that money today is more valuable than money tomorrow.

6.8 **COUNTING RATE OF RETURN METHOD**

Price accounting rate of return (ARR), and known as the **return on investment** (ROI), the accounting information, as revealed by financial statements, to measure the profitability of an investment. The accounting rate of return is the ratio of the average after tax profit divided by the average investment. The average investment would be equal to half of the original investment if it were depreciated constantly. Alternatively, it can be found out by dividing the total of the myestment's book values after depreciation by the life of the project. The accounting rate of return, thus, is an average rate and can be determined by the following equation:

ARR= Average Income/ Average Investment

Illustration 1: Hoject will cost Rs 40,000. Its stream of earnings before depreciation, interest and taxes (EBDIT) during first year through five years is expected to be Rs 10,000, Rs 12,000, Rs 14,000, Rs 16,000 and Rs 20,000. Assume a 50 per cent tax rate and depreciation on straight-line basis.

	1	2 z	3	4	5	Average
EBDIT	10,000	12,000	14.000	16,000	20,000	14,400
Depreciation	8,000	8,000	8,000	8000	8000	8000
EBIT	2000	4000	6000	8000	12,000	6400
Tax 50%	1000	2000	3000	4000	6000	3200
After Tax(EBIT- Tax)	1,000	2000	3000	4000	6000	3200

ARR = 3200/20,00 x 100 = 16%



This method will accept all those projects whose ARR is higher than the minimum rate established by the management and reject those projects which have ARR less than the minimum rate. This method would rank a project as number one if it has highest AR and lowest rank would be assigned to the project with lowest ARR.

6.8.2 Evaluation of ARR Method

The ARR method may claim some merits:

- 1. Simplicity: The ARR in the d is simple to understand and use. It does not involve complicated computations.
- 2. Accounting data: The ARR can be readily calculated from the accounting data; unlike in the NPV and IRR methods, no adjustments are required to arrive at cash flows of the project.
- 3. Accounting profitability The ARR rule incorporates the entire stream of income in calculating the project's profitability. The ARR is a method commonly understood by accountants, and frequently used as a performance measure.

As a decision criterion, however, it has serious shortcomings.

- 1. Cash flows ignored The ARR method uses accounting profits, not cash flows, in appraising the projects. Accounting profits are based on arbitrary assumptions and choices and also include non-cash items. It is, therefore, inappropriate to rely on them for measuring the acceptability of the investment projects.
- 2. Time value ignored the averaging of income ignores the time value of money. In fact, this procedure gives more weight age to the distant receipts.
- **3.** Arbitrary cut-off the firm employing the ARR rule uses an arbitrary cut-off yardstick. Generally, the yardstick is the firm's current return on its assets (book-value). Because of this, the growth companies earning very high rates on their existing assets may reject profitable projects (i.e., with positive NPVs) and the less profitable companies may accept bad projects (i.e., with negative NPVs).

The ARR method continues to be used as a performance evaluation and control measure in practice. But its use as an investment criterion is certainly undesirable. It may lead to unprofitable allocation of capital.

6.9 SUMMARY

- 1. Net Present Value (NPV) Method: Explored the importance of NPV as an investment evaluation tool. Covered its acceptance rule and detailed evaluation process.
- 2. **Mernal Rate of Return (IRR):** Understood the calculation of IRR for both uneven and level cash flows. Examined the relationship between IRR and the NPV profile.
- 3. **Profitability Index (PI):** Discussed the PI method, its acceptance criteria, and practical application.
- 4. **Payback Period:** Analyzed the traditional Payback Period method for evaluating investments.
- 5. **Discounted Payback Period:** Reviewed the Discounted Payback Period, focusing on its enhanced accuracy over the traditional method.
- 6. Accounting Rate of Return (ARR): Studied the ARR method, its acceptance criteria, and practical evaluations.
- 7. Strategic Application of Tools: Emphasized the importance of these tools in making informed and strategic investment decisions. Encouraged reflection on real-world applications to build confidence in financial decision-making.

6.10 CHECK YOUR PROGRESS

2 Marks Questions

- 1. Define the mernal Rate of Return (IRR).
- 2. What is the acceptance rule 😽 the Net Present Value (NPV) method?
- 3. Differentiate between Payback Period and Discounted Payback Period.
- 4. State the formula to Exculate the Accounting Rate of Return (ARR).
- 5. What does the Profitability Index (PI) indicate about a project's desirability?

5 -Mark Questions:

- 1. Explain the relationship between the NPV profile and IRR.
- 2. Discuss the advantages and limitations of the Payback Period method.
- 3. How is IRR calculated for uneven cash flows? Illustrate with an example.
- 4. Compare and contrast NPV and PI methods in investment decision-making.
- 5. Why fire Discounted Payback Period is considered more reliable than the traditional Payback Period?

10- Mark Questions:

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1. A project costs **Rs 16,000** and is expected to generate cash inflows of **Rs 8,000**, **Rs 7,000**, and **Rs 6,000** at the end of each year for the next 3 years.

- a. Calculate the Internal Rate of Return (IRR).
- b. Calculate the **Payback Period**.
- A company is considering an investment of Rs 2,500 in Project X. The company's current total market value is Rs 10,000, consisting of Rs 7,500 in other assets and Rs 2,500 in cash available for investment. If the company does not invest in Project X, the market value remains Rs 10,000. If the company invests in Project X, which has a Present Value (PV) of Rs 2,725, the new market value will change.
 - a. What will the company's new market value be if it invests in Project X?
 - b. What is the **net change** in the company's market value as a result of the investment?
 - c. Should the company invest in Project X? Explain why or why not.
- 3. A project costs Rs 12,000 and is expected to generate year-end cash inflows of Rs 4,000, Rs 5,000, Rs 3,000, and Rs 2,000 in years 1 through 4.
 - a. Calculate the **IRR** of the project.
 - b. Calculate the **Discounted Payback Period**, assuming the discount rate is 10%.
 - c. Discuss whether the project should be accepted based on the IRR and payback criteria.

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- 4. Corporate Finance Institute (CFI) (<u>https://corporatefinanceinstitute.com/</u>) Articles on ratio analysis, its objectives, and limitations.
- 5. ICAI Study Material Provides a systematic approach to ratio analysis with examples tailored for financial statement analysis.

Module 3: Financing Decisions

Unit 7: Cost of Capital: Determining components of cost of debt, preference capital, equity capital, weighted Average Cost of capital (WACC)

Unit 8: Capital Structure; Theories of Capital Structure: Net Income Approach, Net Operating Income Approach, Traditional Approach, Modigliani and Miller (MM) Theory with and without corporate taxes.

Unit 9: Leverage Analysis and EBIT-EPS Analysis: Operating and Financial Leverage, EBIT EPS Analysis

UNIT 7: COST OF CAPITAL

STRUCTURE:

9.1 Introduction

7.2 Connection to Capital Budgeting

7.3 Factors Affecting Cost Of Capital

7.4 Significance of Cost of Capital

7.5 **Opportunity Cost of Capital**

7.5.1 The Role of Risk in Opportunity Cost

7.5.2 Importance of Opportunity Cost of Capital in Decision-Making

7.6 Components of Required Return

7.7 Explicit and Implicit Cost of Capital

- 7.8 Marginal Cost
- 7.9 Cost of Debt

7.9.1 Taxes and the Cost of Debt

7.9.2 Calculation of Cost of Debt

7.10 Preference Share Capital – Concept

7.10.1 Cost of irredeemable preference share capital

7.10.2 Cost of Redeemable Preference share capital

7.11 Equity Share Capital – Concept

7.11.1 Cost of Equity using Dividend Valuation Model (DVM)

7.11.2 Capital Asset Pricing Model (CAPM)

7.12 Cost of Retained Earnings

7.13 Weighted Average Cost of Capital (WACC)

7.14 Summary

7.15 Check Your Progress

7.16 Reference

OBJECTIVES

- 1. Understand the concept of **cost of capital**, its significance, and the factors influencing it, such as market conditions, risk, and capital structure.
- 2. Explore the relationship between **risk and return**, and differentiate between **explicit and implicit costs of capital** in financing decisions.
- 3. Recognize **comportunity cost of capital** and its role as a benchmark for evaluating investment projects and trade-offs
- **4.** Explain the concept of **marginal cost of capital** and its implications for raising additional funds.

7.1 INTRODUCTION

In financial management, the cost of capital is a cornerstone concept that prays a vital role in making strategic decisions, such as setting up a new project or installing new machinery. Every business activity of this kind requires funds, which can be sourced from various channels, each carrying its own cost.

Key Sources of Funds

- 1. **Debentures or Bonds**: These represent debt instruments where a company borrows funds and agrees to repay them with interest.
- 2. **Preference Shares**: Investors holding preference shares are entitled to fixed dividends and priority over equity shareholders, though they typically lack voting rights.
- 3. Equity Shares: Equity shares represent ownership in the company, and shareholders expect returns through dividends and capital gains.
- 4. **Retained Earnings**: Instead of distributing profits as dividends, companies reinvest retained earnings into their operations, which carry an implicit cost as they forgo potential shareholder payouts.

Together, these sources constitute the **capital structure** of a company—a mix of debt and equity that funds its operations and fuels its growth.

Debt vs. Equity in Capital Structure

Debt, such as long-term loans, bonds, and debentures, typically comes with fixed obligations like interest payments. Short-term debts, including working capital loans, are also integral to a company's finances. On the other hand, equity consists of common stock, preferred stock, and retained earnings.

A company's **capital structure** is pivotal in determining how it finances its operations. The ideal combination, known as the **optimal capital structure**, balances debt and equity to minimize the cost of capital while maximizing shareholder value.

Defining Post of Capital

The **cost of capital** refers to the expense a company incurs to raise funds from various sources, such as debt, preference capital, and equity. It represents the **minimum return** a company must achieve on its investments to meet the expectations of both investors and creditors.

To measure the overall cost of capital, companies use the weighted average cost of capital (WACC). This metric accounts for the proportion of each funding source in the capital structure and its respective cost. WACC provides a comprehensive understanding of the company's cost of financing, helping guide critical financial decisions and ensuring long-term sustainability.

7.2 CONNECTION TO CAPITAL BUDGETING

The **cost of capital** plays a crucial role in capital budgeting, serving as a foundation for evaluating investment proposals. When deciding whether to undertake a project, two key inputs are essential:

- 1. Expected Cash Flows: These are the future inflows that the project is anticipated to generate.
- 2. **Discount Rate**: Also referred to as the **weighted average cost of capital (WACC)**, this represents the minimum return the company must achieve for the project to be considered profitable.

The discount rate acts as a **cut-off rate** or **target rate** in the decision-making process. If a project's expected returns exceed the cost of capital, it is deemed worthwhile. However, if the expected returns fall short of the cost of capital, the project should be rejected. This approach ensures that financial management focuses on projects that generate returns higher than the cost of financing.

For instance, if a company's WACC is 10%, it must only pursue projects expected to earn a return of 10% or more. Projects earning the cost of capital risk reducing shareholder value, undermining the company's profitability and growth potential.

He cost of capital is known by various terms, including:

- 1. Hurdle Rate
- 2. Discount Rate
- 3. Cut-Off Rate
- 4. Target Rate
- 5. Required Rate of Return
- 6. **Opportunity Cost of Capital**

While the terminology may vary, the concept remains central to sound financial decision-making. For effective financial management, it is essential to:

- 1. Accurately calculate the cost of capital.
- 2. Compare it with the expected returns from investment projects.
- 3. Select only those projects that **add value** by earning returns above the hurdle rate.

This disciplined approach ensures that a company maintains its profitability, supports its growth, and enhances its market value over time. By prioritizing value-generating projects, financial managers safeguard the interests of shareholders and contribute to the company's long-term success.

7.3 FACTORS AFFECTING COST OF CAPITAL

22 The cost of capital is influenced by various factors that determine the expense a company incurs to raise funds. These factors can be broadly categorized into internal and external elements, each playing a critical role in shaping the overall cost of financing.

1. Risk-Free Rate

The risk-free rate represents the minimum return investors require to compensate of the time value of money and the erosion of purchasing power due to inflation. It serves as the baseline return, reflecting the opportunity cost of lending or investing without taking on risk. The risk-free rate is a fundamental building block in financial decision-making, as all investments must provide a return higher than this rate to be deemed worthwhile.

2. Business Risk

Business risk refers to the uncertainty in a company's Earnings before interest and taxes (EBIT) due to factors such as:

- 1. Market demand fluctuations
- 2. Competition

3. Input costs

4. Operating leverage

Higher business risk increases the cost of capital, as investors and creditors demand greater returns to compensate for the added uncertainty. Companies with stable and predictable sales patterns generally experience lower business risk, resulting in a reduced cost of capital.

4. Financial Risk

Financial risk arises from the company's financing decisions, specifically its the company's financing decisions, specifically its the company's equity in the capital structure. It reflects how changes in earnings (EBIT) impact the company's earnings per share (EPS).

Debt and Financial Risk: Debt introduces fixed obligations in the form of interest payments, which the company must meet regardless of its earnings performance. A higher proportion of debt increases financial risk, as it heightens the likelihood of default during periods of reduced profitability.

A balanced capital structure combining both debt and equity is essential to managing financial risk and keeping the cost of capital at sustainable levels.

4. Liquidity and Profitability

Liquidity: The ease with which financial instruments such as equity shares can be traded in the market impacts the cost of raising funds. Companies with highly liquid shares face a lower cost of equity, as investors find it easier to enter or exit their positions.

Profitability: Profitable firms are perceived as lower-risk investments, making it easier for them to raise capital with minimal floatation costs.

5. Level of Interest Rates

The prevailing interest rates in the economy significantly affect the cost of debt. An increase in interest rates raises the cost of borrowing, which, in turn, increases the company's overall cost of capital. Changes in interest rates also indirectly influence the cost of equity, as they alter investors' expectations of returns.

6. Tax Rates

Tax rates influence the after-tax cost of debt. As therest payments on debt are tax-deductible, higher tax rates reduce the effective cost of debt, thereby lowering the overall cost of capital.

7. Type of Financing Instrument

The type of instrument used to raise funds has a direct impact on the cost of capital. For example:

Debt: Typically, debt is less expensive than equity due to its fixed interest payments and taxdeductible nature. However, excessive reliance on debt increases financial risk.

Preferred Stock: Preferred stockholders generally require a higher return than debt holders but lower than equity shareholders.

Equity: Equity is the most expensive source of financing, as it involves higher expectations of returns to compensate for the greater risk borne by equity shareholders.

For a company, debt is riskier than preferred stock, which, in turn, is less risky than common equity. This hierarchy explains the varying return expectations of different investor groups.

7.4 SIGNIFICANCE OF COST OF CAPITAL

The cost of capital is a fundamental concept in financial management, serving as a cornerstone for effective decision-making and financial strategy. It acts as a guiding principle in evaluating investments, designing the capital structure, and appraising managerial performance. Understanding its significance enables companies to maximize shareholder value, maintain financial stability, and plan strategically for growth.

1. Evaluating Investment Proposals (Capital Budgeting Decisions)

The cost of capital serves as a benchmark in evaluating the profitability of investment proposals and plays a pivotal role in capital budgeting decisions. If the presents the minimum return a company must earn on its investments to cover its financing costs and create value for shareholders.

Net Present Value (NPV) Method:

In the NPV method, a project's future cash flows are discounted using the cost of capital. A project is accepted if the total discounted cash flows exceed the project's cost, resulting in a positive NPV. This indicates that the project adds value to the company.

Internal Rate of Return (IRR) Method:

Under the IRR method, a project is considered viable if its IRR—representing the rate at which the project's cash flows equal its cost exceeds the cost of capital.

By using these methods, businesses can prioritize projects that generate returns above their financing costs, ensuring value creation, financial stability, and alignment with the overarching goal of maximizing shareholder wealth.

2. Designing the Capital Structure (Debt Policy)

Recapital structure of a company refers to the mix of funding sources it uses, including debt, equity, preference shares, and retained earnings. The cost of capital is a crucial determinant in designing an optimal capital structure that minimizes risk and maximizes value.

Debt:

Debt is often a cheaper source of financing due to the tax-deductibility of interest payments. However, excessive reliance on debt increases financial risk because of the fixed interest obligations that must be met, regardless of the company's financial performance.

Equity:

Equity does not involve fixed payments but is generally more expensive because shareholders expect higher returns to compensate for the risks they bear.

An efficient max of debt and equity is essential to maintain a balance between cost and risk. By monitoring market conditions and evaluating the cost of different funding sources, finance managers aim to design a capital structure that minimizes the company's overall cost of capital. This, in turn, enhances market value and improves metrics like earnings per share (EPS).

3. Performance Appraisal of Top Management

The cost of capital serves as a standard for evaluating the financial decisions and performance of a company's top management. It helps assess whether management is effectively utilizing the company's resources and making sound investment decisions.

Project Profitability:

Comparing a project's actual returns with the company's cost of capital indicates the success of managerial decisions. If the returns exceed the cost of capital, it reflects good financial performance. Conversely, returns below the cost of capital suggest inefficient decision-making.



Management can review the cost of obtaining funds and determine whether it was done at competitive rates. Any unnecessary expenses incurred in raising capital can be identified and addressed.

By using the cost of capital as a performance metric, companies can ensure accountability, encourage prudent financial management, and align managerial actions with the goal of value creation.

The cost of capital, therefore, is not merely a financial metric but a strategic tool that influences critical aspects of business operations and decision-making. Its accurate calculation and application enable companies to achieve sustainable growth, enhance shareholder wealth, and maintain long-term financial health.

7.5 OPPORTUNITY COST OF CAPITAL

The opportunity cost of capital refers to the return that is foregone by choosing one investment over another of similar risk. It represents the potential benefit missed when an alternative investment opportunity is not pursued. This concept is critical in financial decision-making, as it helps assess whether an investment is worthwhile by comparing its expected return to the return from alternative investments of comparable risk.

For any investment to be considered beneficial, its expected return must exceed or at least equal the opportunity cost of capital. The opportunity cost represents the rate of return that could have been earned from an alternative investment with the same level of risk. Therefore, the cost of capital is often referred to as the opportunity cost of capital, as it reflects the next best alternative.

7.5.1 The Role of Risk in Opportunity Cost

Opportunity cost is influenced by the risk level associated with investments. Higher risk typically demands higher returns, which investors require to compensate for the uncertainty. The distinction between risk-free and risky investments highlights how risk affects opportunity cost:

Risk-Free Securities:

Investments such as treasury bills, issued by the government, are considered risk-free because the government guarantees payment. The return on these securities is referred to as the **risk-free rate**, as it involves no additional risk.

Risky Investments:

Investments like equity shares carry higher risk because their returns depend on the performance of the underlying company. To compensate for this uncertainty, investors demand a **risk premium**, which is an additional return above the risk-free rate.

7.5.2 Importance of Capital in Decision-Making

The concept of opportunity cost of capital is fundamental in evaluating the viability of investments:

1. Benchmark for Decision-Making:

The opportunity cost serves as a benchmark for determining whether an investment is worthwhile. Shy projects that are expected to generate returns greater than or equal to me opportunity cost of capital are considered viable.

2. Risk-Return Alignment:

By factoring in the risk premium, the opportunity cost ensures that investments are evaluated not just on potential returns but also on their risk profiles. Riskier investments must provide higher returns to justify their selection over less risky alternatives.

3. Resource Optimization:

Opportunity cost encourages businesses to allocate resources effectively by choosing investments that offer the highest potential value within their risk tolerance.

By understanding the opportunity cost of capital, companies and investors can make informed financial decisions, ensuring that their investments provide returns that justify the associated risks and enhance overall value. This principle reinforces the critical relationship between risk, return, and decision-making in financial management.

7.6 COMPONENTS OF REQUIRED RETURN

The required return on an investment represents the minimum return that an investor expects to earn in exchange for taking on the associated risk. This concept is critical for decision-making in finance, as it ensures that investments compensate adequately for both time time value of money and the inherent risks involved. The required return is composed of two primary components:

1. Risk-Free Rate

The **risk-free rate** is the return associated with an investment that carries no risk of financial loss. It compensates investors solely for the **time value of money**, which reflects the principle that money today is worth more than the same amount in the future to its earning potential. Treasury bills, issued by the government, are typically used as a proxy for the risk-free rate, as they are considered virtually free of default risk.

2. Risk Premium

The **risk premium** represents the additional return required by investors for taking on the risk associated with a particular investment. It compensates for the uncertainty and variability of returns. The risk premium depends on the risk profile of the investment—the higher the perceived risk, the greater the premium demanded by investors.

Relationship between Risk-Free Rate, Risk Premium, and Required Return

The required return on an investment is the sum of the risk-free rate and the risk premium: **Required Return = Risk-Free Rate + Risk Premium**

For instance, if the risk-free rate is 6% and investors demand a 6% premium for the risks associated with equity shares, the required return for those shares will be 12%.

Significance of the Components in Financial Decision-Making

1. Understanding Opportunity Cost:

The required return highlights the opportunity cost of capital, showing what an investor gives up when choosing one investment over another with similar risk.

2. Risk-Return Trade-Off:

The risk-return relationship underscores that **higher risk** necessitates **higher returns** to compensate investors adequately. Risk-free investments, such as Treasury bills, offer lower returns, while riskier investments like equity shares require higher returns to attract investors.

3. Investment Evaluation:

Investors and companies use the required return as a benchmark to evaluate the attractiveness of an investment. If an investment's expected return is below the required return, it is typically deemed unsuitable, as it fails to compensate for the associated risks.

4. Capital Allocation:

The required return ensures efficient allocation of capital by guiding investors toward projects and assets that offer returns commensurate with their risk profiles.

7.7 EXPLICIT AND IMPLICIT COST OF CAPITAL

Understanding the explicit and implicit costs of capital is essential for evaluating the financial performance of a company and making sound business decisions. Both concepts reflect different aspects of the cost incurred to raise and manage funds.

Explicit Cost of Capital

The explicit cost of capital involves direct payments made 24 a company to its fund suppliers. These payments are measurable and represent a clear cash outflow. Some common examples include:

1. Interest on Debentures or Loans:

A fixed payment made to debenture holders or lenders, representing the cost of borrowing funds. For instance, if a company issues debentures worth $\gtrless 10,00,000$ at an interest rate of 10% per annum, it must pay $\gtrless 1,00,000$ annually as interest to debenture holders.

2. Dividends on Preference Shares and Equity Shares:

Profits distributed to shareholders, whether in the form of fixed dividends on preference shares or variable dividends on equity shares. Example: A company declaring a ₹5 per share dividend for its preference shareholders incurs an explicit cost equal to the total dividend payout.

Key Characteristics of Explicit Cost:

- 1. Direct Payment: A company makes an identifiable payment, such as interest or dividends.
- 2. **Measurable Outflow:** The cost is easily quantifiable and directly linked to financing activities.

Implicit Cost of Capital

The implicit cost of capital does not involve any direct payment or cash outflow. Instead, it represents the **opportunity cost** of using funds in a particular way rather than the next best alternative. This is often associated with retained earnings, where the company foregoes the chance to distribute profits as dividends.

Opportunity Cost Example: Suppose a company retains ₹50,00,000 in earnings instead of distributing it as dividends. If shareholders could have earned a 7% return by investing this amount in fixed deposits, the implicit cost of retaining these earnings is 7%. This implies that the company must generate a return of at least 7% on retained earnings to justify its decision not to distribute them.

Key Characteristics of Implicit Cost:

- 1. No Direct Payment: Unlike explicit costs, there is a actual cash outflow.
- 2. **Opportunity Cost:** Reflects the potential return investors could have earned elsewhere.

7.8 MARGINAL COST

Marginal cost refers to the additional cost incurred when a company raises one more unit of capital or produces one more unit of output. It reflects the incremental cost associated with obtaining extra funds or resources. Businesses use marginal cost to evaluate whether the cost of securing additional resources or funding is justified for new projects or production expansions.

Key Characteristics of Marginal Cost

1. Incremental Nature:

Marginal cost measures the **extra cost** of raising additional funds or producing one more unit of output.

2. Dynamic Factor:

It **can vary** depending on the source of funds (such as equity, debt, or retained earnings) and market conditions.

3. Influence on Decision-Making:

Marginal cost plays a critical role in assessing new investment opportunities or deciding whether to increase production.

Application of Marginal Cost

Marginal cost is essential in financial and operational decision-making because it:

- 1. Helps companies determine whether raising additional funds for new projects is viable.
- 2. Guides businesses in evaluating the **profitability of increasing production** or launching a new product.

By understanding marginal cost, businesses can optimize resource allocation and improve profitability while minimizing unnecessary expenses.

7.9 COST OF DEBT

The cost of debt is a fundamental concept in finance that measures the expense a company incurs when raising funds through borrowed instruments like bonds, debentures, or long-term loans. It reflects the rate of return demanded by lenders for providing capital and plays a crucial role in financial decision-making and capital structure management.

The **cost of debt** is determined by combining these two components:

- 1. **Risk-Free Rate:** Represents the base compensation by the time value of money.
- 2. **Risk Premium:** Accounts for the additional risk lenders assume when providing funds.

Key Factors Influencing the Cost of Debt

1. Firm's Creditworthiness:

Companies with strong credit ratings from agencies like **Moody's** or **S&P** are considered less risky, allowing them to secure debt at lower interest rates. Firms with poor credit ratings must offer higher interest rates to attract lenders.

2. Default Risk:

Higher perceived default risk increases the **risk premium**, resulting in a higher cost of debt.

3. Market Conditions:

The broader credit environment and economic conditions and influence the cost of borrowing.

Tax Advantage of Debt

One crucial feature of debt is its **tax advantage**: Interest payments on debt are **tax-deductible expenses**, reducing the firm's taxable income and effectively lowering the cost of borrowing. For this reason, companies often calculate in **after-tax cost of debt** using the formula:

After-Tax Cost of Debt=Cost of Debt × (1-Tax Rate)

Importance of Understanding the Cost of Debt

Understanding the cost of debt is essential for firms because:

1. It affects profitability: Higher borrowing costs reduce profits.
- 2. It **influences financing decisions:** Firms can assess whether debt or equity is the better funding option.
- 3. It **impacts investment decisions:** Evaluating the cost of debt helps firms decide if a project will yield returns higher than the cost of borrowed funds.

By carefully managing their cost of debt, companies can optimize their capital structure, minimize financial risk, and maximize shareholder wealth.

7.9.1 Taxes and the Cost of Debt

Debt financing offers a unique advantage to companies: the tax-deductibility of interest payments. This feature significantly lowers the effective cost of debt for a firm, making it an attractive financing option. While the return paid to debt holders, known as interest, reflects the yield investors receive, it does not represent the company's true cost of debt because of the tax savings created by interest deductibility. The government allows firms to deduct interest expenses from their taxable income, reducing the taxes owed. This creates a tax shield, which effectively lowers the cost of borrowing.

Tax Savings Reduce the Cost of Debt

1. Interest Payments to Debt Holders:

Companies pay interest to lenders or bondholders. This is the yield that investors receive.

2. Reduction in Taxable Income:

The company calculates its taxable income after **55** btracting the interest expense from its gross income.

3. **Areation of a Tax Shield:**

By reducing taxable income, the firm saves money on taxes, which lowers the effective cost of borrowing.

After-Tax Cost of Debt

The **after-tax cost of debt** is lower than the interest rate or yield to maturity (YTM) because of the tax shield. The formula to calculate it is:

After-Tax Cost of Debt=Yield to Maturity× (1-Tax Rate)

Yield to Maturity (YTM):

The rate of return investors demand on the company's debt in the current market.

Tax Rate:

The percentage of income the firm would pay in taxes without the deduction.

By multiplying the YTM by (1 - Tax Rate), the formula accounts for the tax savings, providing the firm's **true cost of debt**.

For example: If a company issues bonds with a **YTM of 8%** and has a corporate tax rate of **30%**, the after-tax cost of debt can be calculated as:

After-Tax Cost of Debt= 8 %×(1-0.30) = 8%×0.70=5.6%

This means the effective cost of borrowing for the company is only **5.6%** after accounting for the tax shield. Without the tax shield, the company would have incurred the full **8%** cost.

Significance of Tax-Deductibility in Decision-Making

Understanding the tax benefit of debt financing is critical for companies because it:

1. Lowers the Cost of Borrowing:

Firms can raise funds at a lower effective rate, improving their financial efficiency.

2. Impacts Capital Structure Decisions:

The tax advantage of debt makes it an attractive choice compared to equity financing, where dividends are not tax-deductible.

3. Maximizes Shareholder Value:

By reducing the cost of capital, companies can enhance profitability and shareholder returns

Example: Suppose a company's bonds have a yield to maturity of **10%**, and the firm's corporate tax rate is **30%**. The after-tax cost of debt would be:

After-Tax Cost of Debt=Yield to Maturity × (1-Tax Rate)

10% × (1-0.30) =10%×0.70=7%

The True Cost of Debt: Tax Savings and After-Tax Cost

When considering debt financing, it is important to understand the distinction between the yield paid to bondholders and the firm's actual cost of debt. While bondholders or lenders receive the stated yield to maturity (YTM) as their return, the true cost to the company is reduced by the tax savings generated from the tax-deductibility of interest payments.

For

example: If a firm issues bonds with a 10% yield, and its corporate tax rate is 30%, the after-tax cost of debt is calculated as:

```
After-Tax Cost of Debt=Yield to Maturity ×(1-Tax Rate)
```

After-Tax Cost of Debt=10 %×(1-0.30)=10%×0.70=7%

This means the **true cost of debt** for the firm is 7%, not the 10% yield paid to bondholders. The 3% difference represents the tax savings created by the interest deduction, also known as the tax shield.

Example: Suppose a company has two alternative sources for raising Rs. 5, 00,000 worth funds to finance its business. It can go for equity financing or 10% debt financing. Tax rate is 40%. Let us see the benefit accruing to the firm if it goes for debt financing, other tings remaining same.

Particulars	Equity Financing	Debt Financing
Earnings before Interest and Taxes (EBIT)	4,00000	4,00000
Less: Interest		50,000
Earnings before tax (EBT)	4,00000	3,50,000
Less: Tax	1,60,000	1,40,000
Earnings after Tax (EAT)	2,40,000	2,10,000
Dividend paid to Equity shareholder	50,000	
Retained Earnings	1,90,000	2,10,000

From the above table; we can see that the tax deductibility of Rs. 50,000 of interest saves Rs. 20,000 of tax. Thus, Debt is the cheapest source of finance because. It's the safest form of investment from the point of view of creditors because they are the first to be paid their interest regardless of whether the firm has profits or not. Further, they are the first claimants on the company's assets at the time of its liquidation.

7.9.2 Calculation of Cost of Debt

a) Cost of Irredeemable or Perpetual Debt

The **cost of irredeemable** or perpetual debt refers to the expense a firm incurs for issuing debt instruments that do not have a fixed maturity date. Unlike redeemable debt, where the principal amount is repaid at the end of the loan term, perpetual debt requires the company to pay interest indefinitely without any obligation to return the principal amount.

This type of debt is called "**perpetual**" because the payments continue for an unlimited period unless the company chooses to buy back the debt or retires it under special circumstances.

The cost of perpetual or irredeemable debt is calculated as:

Kd=I(1-t)/Bo

Where, Kd = After tax cost of debt

I = Annual Interest payment

Bo = Issue price (Net of any discount, floatation cost and so on)

t = Tax rate

Example: A Ltd. issued 12% perpetual debentures of Rs. 100 each at a discount of 5%. The tax rate applicable to the company is 40%. Calculate the cost of debt.

Kd=I(1-t)/Bo

Kd= 12 (1-0.40)/95 = Kd= 7.2/95 = Kd= 0.0757895 or 7.578%

b) Cost of Redeemable Debt

The **cost of redeemable debt** refers to the effective expense a firm incurs when issuing debt instruments that have a **specified maturity date**. Unlike perpetual debt, redeemable debt requires the firm to repay the **principal amount** to lenders at me end of the debt's term.

The cost of redeemable debt considers two key components:

- 1. Interest Payments: Periodic payments made to lenders during the life of the debt.
- 2. **Difference between Issue Price and Redemption Value**: Any variation between the price at which the debt was issued and the amount to be repaid at maturity.

$$\mathrm{Kd} = \frac{I(1-t) + (RV - Bo)/n}{(RV + Bo)/2}$$

Where,

RV = Redemption value

Example: A company issues redeemable bonds with the following details: Face Value: \$1,000 per bond, Coupon Rate: 8%, Redemption Value (RV): \$1,050, Issuance Price (NP): \$970 (net proceeds), Time to Maturity: 5 years, Tax Rate: 30%

I=1,000×0.08=80

Calculate Pre-Tax Cost of Debt = $\frac{80+(1050-970)/5}{(1050+970)/2}$

80 + 16 /1012 = 96/1010 = 9.50 %

Challenges H Calculating the Cost of Debt

Determining the cost of debt is a crucial but complex task for firms. Several factors contribute to the challenges involved in its calculation:

1. Absence of Market Price for Non-Traded Bonds or Debentures

One of the primary challenges arises when bonds or debentures are not actively traded in the secondary market. The market price is often a critical input in calculating the cost of debt, but when bonds are not traded, there is no market price to reference. This lack of transparency makes it difficult to determine the exact cost of debt for these instruments.

2. Floating-Rate Debt Complexity

Floating-rate debt comes with interest rates that change periodically based on market conditions. The cost of debt for such instruments depends not only on the current interest rate but also on future interest rate expectations. This introduces uncertainty, as future rates are influenced by various unpredictable economic factors.

3. Option-Like Features in Debt Instrument

Debt instruments often include embedded options such as **callability**, **putability**, **or convertibility**, which add to their complexity.

Callability: Allows the issuer to repay the bond before its maturity.

Putability: Enables the bondholder to sell the bond back to the issuer.

Convertibility: Provides the bondholder the option to convert the debt into equity.

These features affect the bond's value and alter its risk-return profile. Calculating the true cost of debt becomes more challenging as the value of these features must be accounted for.

4. Non-Rated or Non-Traded Debt

When a company issues **non-rated debt** that is not traded in the market, it adds another layer of difficulty. Without a credit rating or market activity, it is hard to find a comparable debt instrument to benchmark against. This lack of a benchmark makes it nearly impossible to estimate the appropriate yield or interest rate, complicating the calculation.

7.10 PREFERENCE SHARE CAPITAL – CONCEPT

The Indian Companies Act categorizes the share capital of a company into two categories namely, Equity share capital and Preference share capital. Preference shares are a part of a company's share capital which carries a preferential right as to receive.

- 1. **Priority in Receiving Dividends:** Preference shareholders get paid dividends before equity shareholders. For example, if the company makes a profit and decides to distribute it as dividends, preference shareholders are first in line.
- 2. **Priority in Repayment:** If the company closes or winds up, preference shareholders are paid back their invested money before equity shareholders.

Preference shares are called a **hybrid security** because they have features of both debt (like loans) and equity (like regular shares). Here's an easy explanation of the key points:

- 1. Fixed Dividends: Preference shareholders are entitled to a fixed rate of dividend. This is similar to the interest paid on loans. However, unlike loans, this dividend is **not tax-deductible** for the company, which makes preference shares more expensive than debt.
- 2. Cost Comparison: Since dividends are paid from profits after tax, the post-tax cost of preference shares is higher than debt, even if the returns (interest/dividends) are the same.
- 3. **Priority in Payments:** Preference shareholders have a **preferential right** to receive dividends before equity shareholders. This means they get paid first when the company distributes profits.

- 4. **Cumulative Preference Shares:** If the company doesn't pay dividends in a particular year, the unpaid dividends get **accumulated** and must be paid in future years before equity shareholders receive anything.
- 5. Redeemable vs. Irredeemable Preference Shares:

Redeemable Preference Shares: These are shares that the company agrees to buy back after a certain period.

Irredeemable Preference Shares: Previously, some preference shares were issued without a fixed redemption date. But now, Fredeemable preference shares are not allowed under Indian law. All preference shares must be redeemed (bought back by the company) within a maximum of 10 years from the date of issue.

The main limitation of preference shares is that they do not carry the voting rights and therefore, cannot participate in the company's decision making.

The rationale for denying the preference shareholders the right to vote is that the preference shareholders are in a relatively secure position and, therefore, should have no right to vote except in the special circumstances. Preference shares don't legally force a company to pay dividends, unlike debt, where not paying interest can lead to bankruptcy. However, **practical consequences** make it important for companies to prioritize paying dividends on preference shares when they have enough profits because:

- 1. Voting Rights for Preference Shareholders:: Normally, preference shareholders do not have voting rights. But if the company fails to pay their dividends, these shareholders may gain voting rights, giving them control over the company's decisions. This can shift power away from ordinary (equity) shareholders, which companies want to avoid.
- 2. **Impact on Credit Rating:** Not paying dividends on preference shares can harm the company's **credit rating**. A poor credit rating makes it harder and more expensive for the company to borrow money in the future, as it signals financial instability to lenders and investors.
- 3. Concerns of Ordinary Shareholders: When preference dividends are not paid, it creates uncertainty for ordinary shareholders because:
 - 1. Preference shareholders are prioritized, so unpaid dividends must be cleared before equity shareholders get any returns.
 - 2. This may reduce the trust of equity investors in the company's management and financial health.
- 4. Difficulty in Raising New Equity Capital: If a company fails to pay dividends to preference shareholders, it sends a negative signal to the market. New investors may

hesitate to buy equity shares because they see the company as struggling to meet its obligations. This makes raising funds in the future more difficult.

SEBI Regulations, 2013

Prior to 2013, there were no specific regulations or provisions governing the issuance and listing of Non-Convertible Redeemable Preference Shares. To address this gap, SEBI introduced the Regulations in 2013. The key objectives of these Regulations are:

a) To mandate the listing of preference shares offered to the public.
b) To allow the listing of privately offered preference shares, provided certain conditions are met.

Here are two types of preference shares:

- 1. Irredeemable preference shares
- 2. Redeemable preference shares

Irredeemable Preference Shares: These are shares that do not have a fixed redemption period and are not repaid during the company's lifetime. However, under current regulations in India, irredeemable preference shares are **no longer permitted**.

Redeemable Preference Shares: These shares are issued with a fixed redemption period and must be repaid by the company within a specified time, usually within a maximum of **10 years** from the date of issue, as per the law.

7.10.1 Cost of irredeemable preference share capital

The **cost of irredeemable preference share capital** refers to the rate of return a company must pay to its preference shareholders in exchange for the funds raised through the issuance of these shares. Irredeemable preference shares, unlike other forms of capital, do not have a maturity date, meaning the company is not required to repay the principal amount unless it is liquidated.

This cost is primarily determined by the **annual dividend** paid to preference shareholders, which is expressed as a percentage of the net proceeds from issuing the shares. Since these shares are irredeemable, the company's obligation is limited to paying the dividend each year, without the need to repay the principal unless the company faces liquidation.

The cost of irredeemable preference share capital is calculated using the formula:

Kp = PD/Po

Where:

Kp: Cost of preference share capital (expressed as a percentage).

PD: Annual dividend payment (fixed percentage of the face value of the preference share).

Po: Issue price or net proceeds from the sale of the preference share (after deducting any costs, such as discounts or flotation costs).

Example: A Ltd. issues 13% preference share capital with face value Rs. 100 at a discount of 4%. Floatation cost is 2%. Calculate the cost of preference share capital.

Kp = PD/Po

Face Value: Rs. 100

Dividend Rate: 13%

Dividend= 13% of Rs.100= Rs.13

Net Proceeds=Face Value-Discount-Floatation Cost=100-4-2=Rs.9

Cost of Preference Share Capital = 13/94 = 13.83%

Tax on Preference Dividend

When a company is required to pay a tax on the dividends distributed to **preference shareholders**, the **cost of preference share capital** increases. This is because the company must consider both the **dividend payment** and the **additional tax expense** when calculating its overall cost of financing through preference shares.

The tax paid on preference dividends effectively reduces the amount of money available to the company after the dividend is paid. As a result, the company must adjust its cost of preference share capital to account for this tax impact.

The formula for the cost of preference share capital in such a scenario is adjusted to include the dividend tax as follows:

Cost of preference share Capital = Dividend x (1+ Dividend Tax Rate)/Net Proceeds from Issuance

7.10.2 Cost of Redeemable Preference share capital

To calculate the cost of redeemable preference share capital, we look at two main cash outflows for the company:

- 1. **Regular Dividends**: These are the fixed amounts paid to preference shareholders every year, based on the dividend rate.
- 2. **Redemption Payment**: This is the amount the company pays back to the shareholders when the preference shares are redeemed (usually after a fixed number of years).

The formula combines these two cash flows to find the overall cost to the company.

Kp=[PD+(P0-Pn)/n]/[(P0+Pn)/2]

P0 = Issue price

PD = Annual Dividend payments

Kp = Cost of preference share capital

Pn = Redemption value

n = life of preference share capital

7.11 EQUITY SHARE CAPITAL – CONCEPT

Under the Indian Companies Act, a company's share capital is divided into two primary categories: Equity Share Capital and Preference Share Capital. Any share capital that does not qualify as preference share capital is classified as equity share capital.

Equity shares, also known as ordinary shares, represent ownership in a company. These shares are issued to raise funds, either in exchange for cash or other considerations. The total amount of equity share capital includes both the paid-up capital (the amount shareholders have paid for their shares) and any reserves and surpluses (profits retained by the company rather than distributed as dividends).

Equity share capital can increase over time as the company issues new shares or bonus shares, thereby raising additional funds for expansion or other purposes.

Key Features of Equity Shareholders

Equity shareholders are the ultimate owners of the company and bear the risk associated with its performance. They also enjoy several important rights, including:

1. Voting Right:

Equity shareholders have the right to vote on key company decisions, such as the election of directors, approval of financial statements, and other significant matters that affect the company's operations and governance.

2. Right to Dividends:

Shareholders are entitled to receive a portion of the company's profits in the form of dividends, if declared. The amount and frequency of dividends depend on the company's performance and decisions made at shareholder meetings.

3. Right to Attend General Meetings

Equity shareholders can attend and participate in general meetings of the company, where they can engage in decision-making processes and vote on matters that affect the company's future.

There are two methods which are most commonly used to roughly calculate the cost of common stock:

- 1. Dividend Valuation Model
- 2. Capital Asset Pricing Model

7.11.1 Cost of Equity using Dividend Valuation Model (DVM)

The **Cost of Equity** using the **Dividend Valuation Model (DVM)** determines the expected return that equity investors anticipate from a company, based on the dividends they receive and the price they pay for the shares. This model is particularly relevant for companies that regularly distribute dividends to their shareholders. It calculates the cost of equity (Ke) as the rate at which investors discount future dividends to find the true value of the share. This return compensates investors for the risks they assume when investing in equity.

The Dividend Valuation Model (DVM), introduced by **Myron J. Gordon** and **Eli Shapiro** in 1956, is also known as the **Gordon Growth Model**. It assumes that the value of a snare is the present value of all future dividends expected to be paid over an indefinite period. According to the model, dividends are considered the primary source of return for equity investors.

Formula for Cost of Equity (Ke)

The cost of equity (Ke) using the DVM is calculated using the following formula:

Ke = D1/Po + g

D1=Expected dividend in the next period

Po = Current market price of the share

g= Constant growth rate of dividends

Interpretation of the Formula

Ke represents the rate of return required by equity investors, reflecting the risk associated with holding the company's shares.

The term D1/Po indicates the return from dividends relative to the current market price of the share.

The growth rate (g) accounts for the expected growth in dividends over time.

Assumptions of DVM

- 1. The current market price of a share is influenced by the expected future dividends.
- 2. The initial dividend paid by the company is always greater than zero.
- 3. The primary goal of investors in purchasing shares is to earn returns from future dividends.
- 4. All investors have uniform expectations regarding the future dividend stream.
- 5. Dividends per share grow at a constant rate over time.
- 6. Investors can accurately assess the firm's risk level and agree on the appropriate rate to discount future dividends.
- 7. The stock market efficiently reflects all available information in the pricing of securities.
- 8. The present value (PV) of the expected dividend stream equals the current market price of the share.

Example: A company's share is trading in the market at Rs. 200 per share. Expected dividend is Rs.20. Growth rate in dividends is 4%. Floatation cost is 2%. What is the cost of equity?

Solution:

Ke = D1/Po(1-f) + g

D1: Expected dividend (Rs. 20)

Po: Current market price of the share (Rs. 200)

F: Floatation cost as a percentage (2% or 0.02)

g: Growth rate in dividends (4% or 0.04)

Net Price After Floatation Cost: P0(1-F)=200×(1-0.02)=200×0.98=196

Dividend Yield: D1/Po(1-F) = 20/196 = 0.1020 or 10.20%

Add Growth Rate= Ke=0.1020+0.04=0.1420 or 14.20%

Limitations:

- 1. The model only applies to dividends that grow at a constant rate and cannot handle variable dividend growth rates.
- 2. It cannot calculate the cost of equity for companies that do not pay dividends in the current period
- 3. The model fails when the dividend growth rate exceeds the required rate of return on equity, as this results in a negative stock price, which is impossible.
- 4. The model requires the current market price of the share, which is readily available for listed companies. However, for privately held companies, where the stock price is not available, an estimate of the share price is necessary, making DVM inapplicable.
- 5. The Dividend Valuation Model (DVM) does not account for risk factors, such as those reflected in beta.

7.11.2 Papital Asset Pricing Model (CAPM)

The **Capital Asset Pricing Model (CAPM)** a widely used framework in finance that explains the relationship between the risk of an investment and its expected return. The model helps investors determine the return required to compensate for the risk of investing in a particular security.

Key Concepts in CAPM

1. Risk-Free Rate (Rf):

The risk-free rate (Rf) $\frac{13}{100}$ represents the return that investors can earn from a completely safe investment, such as government bonds. It serves as the baseline return, as these investments are considered free from default risk. Example: If a government bond pays 7% interest annually, then Rf = 7%.

2. Beta (β):

Beta (β) measures the sensitivity of a company's stock price to overall market movements. It reflects the level of risk that a stock has in comparison to the broader market. A beta of 1 means

the stock moves in line with the market; a beta greater than 1 indicates more volatility (higher risk), and a beta less than 1 indicates less volatility.

3. Market Return (Rm):

The market return (Rm) is the average return of the entire stock market or a representative market portfolio. It represents the return investors expect from investing in a broad market index. Example: If the stock market is expected to return 12%, then Rm = 12%.

4. Market Risk Premium (Rm - Rf):

The **market risk premium** is the additional return that investors expect from investing in the market as opposed to a risk-free asset. It compensates investors for the risk associated with the volatility of the market. **Example:** If the **market return is** 12% and the risk-free rate is 7%, the market risk premium would be: Rm-Rf=12%-7%=5%

7.12 COST OF RETAINED EARNINGS

Retained earnings represent the portion of a company's profits that is not distributed to shareholders as dividends but instead reinvested into the business for growth and expansion. While there is no direct payment involved in using retained earnings, they are not a cost-free resource. Retained earnings carry an **opportunity cost**, which reflects the potential return shareholders could have earned had the company distributed the earnings as dividends, allowing shareholders to invest elsewhere.

Key Aspects of Retained Earnings:

1. **Opportunity Cost:**

Shareholders forgo potential returns by not receiving dividends. They could have invested these dividends in other opportunities (e.g., stocks, bonds, or real estate) to earn a return. The cost of retained earnings is essentially the return shareholders expect from their investments.

2. Comparison with External Equity:

If a company needs funds for a project, it can either issue new shares (external equity) or use retained earnings (internal equity). The **cost of external equity** is typically higher than retained earnings because it includes **flotation costs**—expenses related to the issuance of new shares, such as underwriting fees, legal fees, and other costs. These additional expenses make external equity more expensive compared to internal equity.

3. Cost of Retained Earnings:

Although retained earnings avoid flotation costs, they still carry an opportunity cost, as they represent the return shareholders expect on their investments. In essence, the cost of retained earnings is equal to the cost of equity, which is the return required by shareholders to compensate for the risk of investing in the company.

4. Internal vs. External Equity:

While retained earnings are a cost-effective source of funding compared to issuing new shares, they are not free. The distinction is important for companies when making decisions about whether to reinvest profits or raise external capital.

7.13 WEIGHTED AVERAGE COST OF CAPITAL (WACC)

Once a company determines the individual costs of capital for its various financing sources—such as **cost of debt**, **cost of preference share capital**, **cost of equity share capital**, and **cost of retained earnings**—the next step is to combine these costs to calculate the company's overall **cost** of capital. This combined cost is known as the **Weighted Average Cost of Capital (WACC)**, which represents the average cost a firm incurs to raise funds from all sources. The weight of each source is determined by its proportion in the company's overall capital structure.

The terms **WACC**, overall cost of capital, and combined cost of capital are often used interchangeably to refer to this consolidated figure.

Importance of WACC in Financial Decision-Making:

1. **Project Evaluation:**

WACC is crucial in capital budgeting and project evaluation. It serves as the benchmark or **hurdle rate** in assessing the potential profitability of new projects. A company should aim to undertake projects that generate returns higher than the WACC, as this will add value to the firm. If the expected return on a project is lower than the WACC, the project will destroy value and should be avoided.

2. Minimizing Cost of Capital:

A company aims to structure its capital to minimize its WACC. The lower the WACC, the cheaper it is for the firm to finance new ventures. By calculating the WACC for different alternative capital structures, companies can identify the optimal mix of debt, equity, and other financing sources that result in the lowest cost of capital.

3. Investor Decision-Making:

WACC also serves as a critical tool for investors. By comparing a company's WACC with the returns it is expected to generate, investors can assess whether the company is likely to generate a satisfactory return on their investment. If a company's return on invested capital (ROIC) exceeds its WACC, it indicates that the company is efficiently using its capital and generating value. Conversely, if ROIC is lower than WACC, it suggests that the company is not using its capital effectively, which may deter investors.

4. Performance Measurement (ROIC vs. WACC):

The comparison between WACC and ROIC is key to understanding how efficiently a company is utilizing its capital. **Return on Invested Capital (ROIC)** measures how effectively a company is generating returns from its capital. If ROIC exceeds WACC, the company is creating value. If ROIC is less than WACC, it signals that the company is not generating sufficient returns relative to its cost of capital.

5. Economic Value Added (EVA):

WACC is also integral to calculating **Economic Value Added (EVA)**, which measures the value a company creates over and above the required return on its capital. EVA is calculated as the net operating profit after taxes (NOPAT) minus the cost of capital (WACC) multiplied by the invested capital. A positive EVA indicates that the company is generating value beyond the cost of capital, while a negative EVA suggests that the company is not meeting the required returns for its investors.

Calculation of Weighted Average Cost of Capital (WACC)

Weighted Average Cost of Capital (WACC) is a method used to calculate the overall cost of a company's capital by assigning different weights to each component of its capital structure, such as debt, equity, and preference capital, based on their proportion in the firm's total capital. Unlike a simple average, which may not accurately represent the firm's capital structure (as most companies use varying proportions of different financing sources), WACC accounts for the relative contributions of each financing source, providing a more precise measure of the company's overall cost of capital.

Example: The capital structure of H Ltd, as on 31st March 2013 is as follows:

Equity share capital Rs. 100 lacs (10 lacs shares of Rs. 10 each)

Reserves and Surpluses Rs. 20 lacs

14% Debentures of Rs. 100 each Rs. 30 lacs

For the year ended 31st March 2013, the company paid equity dividend at 20% and dividends are expected to grow by 5% every year. The current market price per share is Rs. 80 and tax rate applicable for the company is 50%.

Solution: Step 1: Calculate the Specific Cost of Equity (Ke)

The Cost of Equity is calculated using the Gordon Growth Model: Ke= D1/Po + g

D1 = Next year's expected dividend

P0 = Current market price per share

g = Growth rate of dividends

Dividend paid (D0)= $20\% \times 10$ =Rs.2

Growth rate (g) = 5% or 0.05

Current market price (P0) = Rs. 80

 $D1=D0\times(1+g)=2\times(1+0.05)=2.10$

Ke = D1/Po + g = 2.10/80 + 0.05 = 0.07625 or 7.625%

Step 2: Calculate the Specific Cost of Debt (Kd)

The After-Tax Cost of Debt is calculated as: $Kd = i \times (1-t)$

Where: i = Coupon rate of debt = 14% or 0.14, t = Tax rate = 50% or 0.50

Kd=0.14×(1-0.50)=0.14×0.50=0.07or 7%

Step 3: Determine the Weights of Equity and Debt

Equity = Equity share capital + Reserves and Surpluses = 100+20=Rs.120 lacs

Debt = 303030 lacs

Total Capital = 120+30=Rs.150 lacs

Weights:

Weight of Equity (We) = 120/150 = 0.8

Weight of Debt (Wd) = 30/150 = 0.2

Step 4: Calculate the WACC (Ko):

The formula for WACC is: Ko=We×Ke+Wd×Kd

 $Ko = (0.8 \times 0.07625) + (0.2 \times 0.07)$

Ko=0.061+0.014=0.075or 7.5%

The Weighted Average Cost of Capital (WACC) for H Ltd is 7.5%.

7.14 SUMMARY

Connection to Capital Budgeting: Explains the relationship between the cost of capital and capital budgeting decisions, highlighting its importance as a benchmark for evaluating projects.

Factors Affecting Cost of Capital: Discusses various factors that influence the cost of capital, such as market conditions, risk, and capital structure.

Significance of Cost of Capital: Emphasizes the critical role of cost of capital in financial decision-making, including project evaluation and investment planning.

Opportunity Cost of Capital: Highlights the concept of opportunity cost and its relevance in assessing alternative investment options.

Components of Required Return: Identifies the various components that determine the return required by investors, including risk-free rate, risk premium, and others.

Explicit and Implicit Cost of Capital: Differentiates between explicit costs (actual payments) and implicit costs (opportunity costs) in the context of capital.

Marginal Cost: Explores the concept of marginal cost of capital, which represents the cost of raising additional funds.

Cost of Debt: Discusses the calculation of the cost of debt, including the impact of taxes on the effective cost of borrowing.

Preference Share Capital – Concept Explains the characteristics of preference share capital and its role in financing.

Cost of Irredeemable Preference Share Capital: Examines the cost of perpetual preference shares that do not have a maturity date.

Cost of Redeemable Preference Share Capital: Explains the cost of preference shares with a specific redemption date.

Equity Share Capital – Concept: Introduces the concept of equity share capital and its importance in financing.

Cost of Equity Using Dividend Valuation Model (DVM): Describes the DVM method calculate the cost of equity based on dividends and growth.

Capital Asset Pricing Model (CAPM): Explains the CAPM framework to determine the cost of equity considering market risk.

Cost of Retained Earnings: Highlights the opportunity cost associated with retained earnings and its role as a financing source.

Weighted Average Cost of Capital (WACC): Summarizes the calculation and significance of WACC in evaluating a firm's overall cost of capital.

7.15 CHECK YOUR PROGRESS

1 Mark Questions

- 1. Define the cost of capital.
- 2. What is capital budgeting?
- 3. What is opportunity cost?
- 4. What does WACC stand for?
- 5. Name any one factor affecting the cost of capital.
- 6. What is the formula for the cost of debt after tax?
- 7. Define the term "explicit cost."
- 8. What is the role of dividends in the Dividend Valuation Model?
- 9. Who introduced the Dividend Valuation Model (DVM)?
- 10. What is the full form of CAPM?

2 Marks Questions

- 1. Explain the significance of the cost of capital in project evaluation.
- 2. What is the importance of opportunity cost in decision-making?
- 3. Differentiate between explicit and implicit cost of capital.
- 4. State the formula to calculate the cost of redeemable preference share capital.
- 5. Briefly explain the connection between WACC and capital budgeting.
- 6. What is the impact of taxes on the cost of debt?
- 7. How does CAPM explain the relationship between risk and return?
- 8. Mention two components of the required return in investment decisions.
- 9. Why is retained earnings not considered a cost-free resource?
- 10. What is the role of market beta (β) in CAPM?

5 Marks Questions

- 1. Explain the factors that affect the cost of capital.
- 2. Discuss the importance of WACC in financial decision-making.
- 3. How does opportunity cost influence investment decisions?
- 4. Explain the process of calculating the cost of irredeemable preference share capital.
- 5. Write short notes on the significance of CAPM in determining the cost of equity.
- 6. Compare and contrast the cost of equity and the cost of retained earnings.
- 7. Discuss the relevance of the Dividend Valuation Model (DVM) in determining the cost of equity.
- 8. Explain the explicit and implicit costs associated with raising capital.
- 9. What are the factors considered in the calculation of the weighted average cost of capital?
- 10. How does the cost of capital serve as a benchmark for capital budgeting?

10 Marks Questions

- 1. Explain the significance of the cost of capital in financial decision-making, with examples.
- 2. Discuss in detail the factors affecting the cost of capital and their implications.
- 3. Elaborate on the concept of WACC and its importance in evaluating alternative capital structures.
- 4. Describe the relationship between the opportunity cost of capital and risk in decisionmaking.
- 5. Explain the CAPM model and its application in determining the cost of equity.
- 6. Illustrate the calculation of the cost of redeemable preference share capital with an example.
- 7. Compare and contrast the cost of debt, preference share capital, and equity share capital.
- 8. Analyze the importance of the Dividend Valuation Model in determining the cost of equity.
- 9. Explain the connection between WACC and capital budgeting in selecting profitable projects.
- 10. Discuss the components of the required return and their significance in evaluating investments.

5 Marks Numerical Questions

- 1. A company issues bonds worth Rs. 10,00,000 at a YTM of 12%. The corporate that rate is 40%. Calculate the after-tax cost of debt and the tax shield.
- 2. A firm issues Rs. 5,00,000 of debt at a yield of 8%, and the tax rate is 30%. Calculate the after-tax cost of debt and the total tax savings over a year.
- 3. A company plans to raise Rs. 20,00,000 through debt at a YTM of 10%. The corporate tax rate is 35%. Calculate the after-tax cost of debt and annual tax savings.
- 4. A firm issues Rs. 8,00,000 worth of bonds at a yield of 9%, with a tax rate of 25%. Calculate the after-tax cost of debt and total tax savings for the firm.

- 5. A company issues Rs. 15,00,000 worth of debt at a YTM of 14%, and the tax rate is 30%. Calculate the annual tax shield and the effective cost of debt to the company.
- 6. A company issues bonds worth Rs. 2,00,000 at a yield of 6%. The tax rate is 25%. Calculate the after-tax cost of debt and the total tax savings for the company.
- 7. A firm has Rs. 12,00,000 of debt outstanding at a YTM of 8%, and the tax rate is 40%. Calculate the tax savings and after-tax cost of debt.
- 8. A company issues Rs. 18,00,000 of bonds at a YTM of 11%. The corporate tax rate is 35%. Calculate the annual tax shield and the effective cost of debt.
- 9. A company considers raising Rs. 25,00,000 through debt with a YTM of 10%. The tax rate is 30%. Calculate the after-tax cost of debt and the tax savings.
- 10. A company issues Rs. 5,00,000 worth of bonds at a yield of 7%, and the tax rate is 20%. Calculate the after-tax cost of debt and the annual tax shield.

10 Marks Numerical Questions

- 1. A company is considering two financing options: raising Rs. 10,00,000 through equity or through debt at a YTM of 9%. The corporate tax rate is 30%. Calculate the after-tax cost of debt, the tax shield, and compare the cost-effectiveness of both options.
- 2. A firm plans to issue Rs. 20,00,000 in bonds at a yield of 10%, with a tax rate of 35%. Calculate the annual after-tax cost of debt and the total tax savings over 5 years.
- 3. A company has Rs. 30,00,000 of debt at a YTM of 12% and a tax rate of 40%. Calculate the after-tax cost of debt and the total tax shield for 3 years.
- 4. A firm issues Rs. 25,00,000 worth of bonds at a yield of 8%, with a tax rate of 25%. Calculate the total tax savings over 5 years and the after-tax cost of debt.
- 5. A company is evaluating two funding options: Rs. 50,00,000 through equity or debt with a YTM of 11%. The tax rate is 30%. Determine the after-tax cost of debt, the tax shield, and evaluate which option is more cost-effective.

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- **13. M.Y. Khan and P.K. Jain**, *Financial Management: Text, Problems and Cases*, Tata McGraw Hill Includes classifications of ratios based on user requirements.
- **14.** Corporate Finance Institute (CFI) (<u>https://corporatefinanceinstitute.com/</u>) Articles on ratio analysis, its objectives, and limitations.
- **15.** ICAI Study Material Provides a systematic approach to ratio analysis with examples tailored for financial statement analysis.

UNIT 8: CAPITAL STRUCTURE

STRUCTURE

8.1 Introduction

8.6 Capital Structure and Firm Value: Two Schools of Thought 8.7 Net Income (NI) Approach

8.3.1Assumptions under the NI Approach

8.8 Firm valuation using NI Approach

8.9 Net operating income and traditional approach8.5.1: Traditional Approach8.5.2 Criticism of the Traditional Approach

8.6 Net operating income approach

- 8.8 Mm hypothesis with no taxes: irrelevance of capital structure
- 8.8: criticism of mm approach
- 8.9 mm hypothesis with taxes: relevance of capital structure

8.10 net operating income after tax (tax advantage)

8.11 Unit Summary

8.12 Check Your Progress

8.13 Reference

OBJECTIVES:

- 1. Understand the Concept of Capital Structure:
- 2. Explore Two Perspectives on the Relationship Between Capital Structure and Firm Value.
- 3. Learn the Net Income (NI) Approach to Capital Structure:
- 4. Calculate the Value of Unlevered and Levered Firms Using the NI Approach

8.1 INTRODUCTION:

Capital structure refers to the combination of debt and equity used by a company to finance its assets. Debt and equity differ significantly in terms of cost and risk. From the company's

perspective, debt is often considered a more cost-effective funding source compared to equity. However, relying on debt also increases the financial risk of the company relative to equity.

Financial leverage, or the use of debt financing, impacts both the earnings and risk borne by shareholders. While earnings per share (EPS) can increase under favorable economic conditions due to financial leverage, the use of debt also heightens the risk for shareholders. Consequently, it cannot be definitively stated that leverage will always enhance a firm's value.

The decision regarding capital structure must be evaluated in terms of its impact on the firm's overall value. If a particular capital structure can influence the firm's utility, the company should aim for a structure that maximizes its value. This ideal combination of debt and equity is referred to as the optimum capital structure.

8.2 CAPITAL STRUCTURE AND FIRM VALUE: TWO SCHOOLS OF THOUGHT

Capital Structure and Firm Value: Two Schools of Thought: There are two primary schools of thought regarding the relationship between capital structure and a firm's value.

- 1. Relevance of Capital Structure: This perspective argues that capital structure significantly impacts a firm's value. Theories supporting this view include the Net Income Approach and the Traditional Approach, both of which suggest that an optimal mix of debt and equity can enhance the firm's value by minimizing the cost of capital.
- 2. Irrelevance of Capital Structure: This viewpoint, championed by Modigliani and Miller, asserts that capital structure does not influence a firm's value. According to this theory, the value of a firm is independent of how it is financed, assuming a perfect market with no taxes, transaction costs, or bankruptcy risks. Theories aligned with this school of thought include the Net Operating Income Approach, the MM Hypothesis, and Miller's Argument.

8.3 NET INCOME (NI) APPROACH

The **Net Income (NI) Approach**, developed by **David Durand** in 1959, posits that a firm's capital structure is critical in determining its value. Unlike other theories that argue for the irrelevance of capital structure, this approach emphasizes the significant impact that leveraging debt can have on reducing the firm's overall cost of capital and increasing its market value.

1. Relevance of Capital Structure:

This approach maintains that the proportion of debt and equity in a firm's financing mix directly influences its total value. By increasing the share of debt in the capital structure, firms can lower their overall cost of capital, thereby boosting their value.

2. Value of Levered vs. Unlevered Firms:

A levered firm (one that uses both debt and equity) will always have a higher value than an unlevered firm (one that relies solely on equity). This is because debt is a cheaper source of financing compared to equity, owing to its lower required rate of return.

3. Impact of Financial Leverage

Financial leverage refers to the use of debt in a firm's capital structure. According to the NI Approach, as the proportion of debt increases, the overall cost of capital declines. This is because debt capital, being less expensive, replaces the costlier equity capital. The greater the financial leverage, the higher the firm's market value.

8.3.1 Assumptions under the NI Approach

1. Fixed Total Capital Requirement:

The total capital required by the firm remains constant and does not change with variations in debt or equity proportions.

2. Cost of Debt and Equity Remain Constant:

Both the cost of debt (Kd) and cost of equity (Ke) are assumed to remain unchanged, irrespective of the level of financial leverage. Investors do not perceive an increase in risk with higher debt levels.

3. No Taxes or Transaction Costs:

This approach assumes a perfect market environment, with no taxation or transaction costs impacting financial decisions.

4. Perpetual Existence of the Firm

The firm is assumed to have an indefinite lifespan, ensuring that the benefits of a lower cost of capital continue over time.

8.4 FIRM VALUATION USING NI APPROACH

The **Net Income (NI)** Approach provides a framework for valuing firms based on their capital structure. It posits that the proportion of debt and equity used in financing significantly impacts a firm's overall value. According to this approach, firms can increase their value by incorporating more debt into their capital structure, as debt is a cheaper source of financing compared to equity. By leveraging debt, the overall cost of capital decreases, which enhances the firm's market value.

This method is especially useful for comparing the values of levered and unlevered firms and understanding the role of financial leverage in optimizing firm valuation.

8.4.1 Value of a levered firm

In an unlevered firm, no debt capital is used, making it an all-equity firm. In such cases, the overall cost of capital (Ko) is equal to the cost of equity (Ke) as equity is the sole source of financing. Since there is no debt, the firm incurs no interest expenses, and the entire net operating income (EBIT) is available to equity shareholders.

Vu = EBIT / Ke

A levered company is one that incorporates debt capital into its capital structure. The value of a levered firm is calculated by combining the value of equity and the value of debt, expressed mathematically as:

VL=E+D

Value of Equity = Discounted Value of Net Income available to equity shareholders.

E = Net Income available to equity shareholders /Cost of Equity

EBIT-I/Ke

Value of Debt = Discounted Value of Interest

D = Interest / Cost of Debt = I/Kd

Further we can calculate the Weighted average cost of capital (WACC) denoted by Ko as below. Ko is also termed as overall cost of capital. Ko = We*Ke + Wd*Kd

Where: We = proportion of equity capital Wd = proportion of debt capital

When we are given the Net operating income (NOI or EBIT) of a firm and its market value (V) then the following identity holds true:

Ko = Net Operating Income or EBIT/V

According to the **Net Income (NI)** Approach, the optimum capital structure—where the overall cost of capital is minimized—is achieved with 100% debt financing. This structure is believed to maximize the firm's value due to the lower cost of debt compared to equity. However, the NI Approach faces significant criticism for its unrealistic assumptions. In real-world scenarios, the cost of equity and debt does not remain constant. As financial leverage increases, so does the perceived risk, leading to higher costs for both equity and debt. Additionally, factors such as taxes, transaction costs, and the risk of financial distress complicate the relationship between capital structure and a firm's value, making the NI Approach impractical in real-life applications.

Illustration 1: The expected Earnings before interest and taxes (EBIT) of a firm is Rs 2,00,000. It has issued equity share capital and the cost of equity is 10%. It has also issued 6% debt of Rs 5,00,000. Find out the value of company and overall cost of capital (WACC).

EBIT = Rs. 200,000. Ke = 10%, Kd = 6% and Value of Debt = Rs. 500,000.

Total Value of Firm	22,00,000
Value of Debt	5,00,000
Value of Equity (1,70,000/0.10)	17,00,000
Cost of Equity (Ke)	10%
Net Profit available for equity shareholders (EBT)	1,70,000
Less: Interest (6% of Rs 5,00,000)	30,000
EBIT	2,00,000

Weighted Average Cost of Capital (WACC) Ko = 200000/2200000 = 0.09 = 9%

WACC can also be calculated as follows:

WACC = Cost of Equity × Weight of Equity + Cost of Debt × Weight of Debt

 $Ke \times E / V + Kd \ge D / V$

0.10 x 17, 00000/22, 00000 + 0.06 x 5, 00000/22, 00000 = 0.09 = 9%

Now if the company had issued 6% debt of Rs 7, 00,000 instead of Rs 5, 00,000 the position have been as follows:

EBIT Less: Interest (6% of Rs 7,00,000)	2,00,000 42,000
Net Profit available for equity shareholders (EBT)	1,58,000
Cost of Equity (Ke) Value of Equity (158,000/0.10) 80,000	10% 15,
Value of Debt	7, 00,000
Total Value of Firm	22,80,000
Weighted Average Cost of Capital (WACC) = 200000/22,80,000	0.087 or 8.7%

So, if 6% debt is increased from Rs 5,00,000 to Rs 7,00,000 the value of firm increases from Rs 22,00,000 to Rs 22,80,000 and WACC decreases from 9% to 8.7%.

Now suppose that the company has issued 6% debt of Rs 2,00,000 only instead of Rs 5,00,000. The position would be as follows:

EBIT	2,00,000
Less: Interest (6% of Rs 2,00,000)	12,000
Net Profit provided to equity shareholders (EBT)	1, 88,000
Cost of Equity (Ke)	10%
Value of Equity (188,000/0.10)	
18,80,000	
Value of Debt	2,00,000
Total Value of Firm	20,80,000
Weighted Average Cost of Capital (WACC) 2,00,000/20,80,000	0.096 or 9.6%

So, when the proportion of 6% debt is reduced to Rs 2,00,000 the value of firm reduces to Rs 20,80,000 and WACC increases from 9% to 9.6%.

8.5 NET OPERATING INCOME AND TRADITIONAL APPROACH

Capital structure refers to the mix of debt and equity used by a company to finance its assets. Debt and equity differ in terms of cost and associated risk. Financial leverage, which involves the use of debt financing, influences shareholders' earnings and risk. While earnings per share (EPS) may increase with financial leverage under favorable economic conditions, the use of debt also elevates the risk borne by shareholders. Consequently, it is uncertain whether leveraging will enhance the firm's value. The decision regarding capital structure should be evaluated based on its impact on the firm's value. If capital structure can influence the value of a firm, companies would aim to adopt a structure that maximizes value. There are two primary perspectives on the relationship between capital structure and firm value. The first, known as the Traditional Approach, asserts that capital structure affects a firm's value, making it relevant. The second perspective, called the Net Operating Income Approach, argues that capital structure has no impact on the firm's value, rendering it irrelevant. Various theories explore the connection between capital structure and the value of a firm, offering insights into this critical financial decision.

8.5.1: Traditional Approach:

According to the traditional approach, a firm should carefully balance the use of debt and equity to achieve an optimal capital structure. At this point, the firm's Weighted Average Cost of Capital (WACC) is minimized, and its value is maximized. This approach suggests that increasing financial leverage can enhance the firm's value, but only up to a certain threshold. Beyond this point, further increases in financial leverage will raise the WACC and reduce the firm's value.

The initial decline in WACC occurs because lower-cost debt capital replaces more expensive equity capital. However, as financial leverage increases, the financial risk to equity shareholders also rises, causing the cost of equity capital to escalate. It is a commonly accepted view that debt financing is more cost-effective than equity financing. Consequently, the combined cost of debt and the higher cost of equity, weighted proportionally, remain lower than the cost of equity alone prior to the use of debt financing.

Consider a company that is entirely equity-financed, with a cost of capital of 10%. Since it relies solely on equity, the cost of equity matches the cost of capital. Now, if the firm replaces 50% of its equity with debt capital that carries an interest rate of 7%, the cost of equity will rise slightly due to the increased financial risk borne by shareholders. In this scenario, the new cost of equity increases to 11%.

The Weighted Average Cost of Capital (WACC) is calculated using the formula:

WACC = (Cost of Equity × Weight of Equity) + (Cost of Debt × Weight of Debt)

WACC (Ko) = Ke × We + Kd × Wd = (0.11 × 0.50) + (0.07 × 0.50) = 0.09 or 9%.

This demonstrates that introducing financial leverage can initially reduce the WACC. However, this reduction is only sustainable up to a certain point. As leverage continues to increase, so does

the financial risk for equity shareholders, prompting them to demand a higher risk premium. Consequently, the rising cost of equity will eventually outweigh the benefit of lower-cost debt, causing the WACC to rise beyond this critical threshold.

The relationship between capital structure and a firm's value, according to the traditional approach, can be explained in three distinct stages:

First Stage: Increasing Value

In the initial stage, as a company transitions from being entirely equity-financed to incorporating debt financing, the cost of equity (Ke) increases only slightly. This small rise in the cost of equity does not outweigh the benefit of using lower-cost debt (Kd). Additionally, the cost of debt remains stable, as the market views the firm's use of debt as a reasonable strategy. As a result, the overall cost of capital (WACC or Ko) decreases, leading to an increase in the firm's value.

Second Stage: Optimum Value

As the firm continues to increase its reliance on debt financing, it eventually reaches a point where the value of the firm is maximized. At this stage, any further increase in debt causes the cost of equity to rise significantly, offsetting the benefits of low-cost debt entirely. Consequently, the WACC stabilizes at its minimum level, resulting in the highest possible value for the firm. This stage represents the optimal debt-to-equity ratio, where the firm achieves its most favorable capital structure.

Third Stage: Decreasing Value

Beyond the optimum level, additional debt leads to a significant rise in the cost of equity, as shareholders demand higher returns to compensate for the increased financial risk. This sharp increase in the cost of equity outweighs the benefits of using low-cost debt. Additionally, the cost of debt also starts to rise due to increased perceived risk by lenders. These factors contribute to an increase in the WACC, causing the firm's value to decline.

The key points of the traditional approach are as follows:

- 1. The cost of equity is not assumed to be constant; instead, it rises with increased financial leverage due to the higher financial risk borne by equity shareholders.
- 2. The Weighted Average Cost of Capital (WACC) does not decline continuously. It decreases initially but only up to a certain point, after which it begins to rise again. A moderate level of debt can reduce the overall cost of capital and, in turn, enhance the firm's value.
- 3. The initial rise in the cost of equity is more than compensated by the lower cost of debt, resulting in a decline in WACC.

4. However, as debt levels continue to increase, shareholders perceive greater financial risk. This causes the cost of equity to rise to a point where the benefit of lower-cost debt is entirely outweighed, leading to an increase in WACC.

8.5.2 Criticism of the Traditional Approach:

The primary criticism of the traditional approach lies in its assumption regarding the financial risk premium. The theory suggests that the risk premium demanded by equity shareholders increases only slightly at moderate levels of debt and rises at varying rates as leverage increases. However, it fails to offer any concrete justification or evidence to support this assumption, making it a significant point of contention.

8.6: NET OPERATING INCOME APPROACH:

The Net Operating Income Approach stands in contrast to the Net Income Approach. According to this theory, the value of a firm is determined by its net operating profit (EBIT) and the overall cost of capital (WACC). The capital structure or financing mix has no impact on the firm's value, making it irrelevant in this context.

The assumptions of the Net Operating Income (NOI) Approach are as follows:

- 1. Investors view the firm as a whole and, therefore, capitalize the firm's total earnings to determine its overall value.
- 2. The firm's overall cost of capital (Ko) remains constant and is based on its business risk, which is assumed to stay unchanged.
- 3. The cost of debt (Kd) is also considered constant.
- 4. As the firm increases its use of debt in the capital structure, the risk to equity shareholders rises, leading to an increase in the cost of equity capital (Ke). This rise in Ke is assumed to fully offset the benefits of using cheaper debt.
- 5. There are no taxes considered in this model.

Value of the Firm = Net Operating Profit /WACC = EBIT/Ko

Alternatively, Value of the Firm = Value of Equity + Value of Debt

Cost of Equity (Ke) = Net Income /Value of Equity

We can understand the working of Net Operating Income Approach through the hypothetical example given below.

Example 1: A firm has an EBIT of Rs 2, 00,000 and belongs to a risk class of 10%. What is the value of equity capital if it employees 6% debt to the extent of 30%, 40% or 50% of the capital fund of Rs 10,00,000.

	30 % Debt	40% Debt	50% Debt
EBIT	2,00000	2,00000	2,00000
Overall Cost of	10%	10%	10%
Capital(Ko)			
Value of the Firm V=	20,00000	20,00000	20,00000
EBIT/Ko			
Value of 6 % Debt (D)	3,00000	4,00000	5,00000
Value of Equity E= V-	17,00000	16,00000	15,00000
D			
Interest on Debt	18,000	24,000	30,000
Net profit for Equity	1,82,000	1,76,000	1,70,000
Ke (Net profit/E	10.7%	11%	11.33%

The cost of equity capital (Ke) of 10.7%, 11% and 11.33% can be verified for different proportion of debt by calculating WACC as follows:

For 30% Debt:

Ko = 0.107 x 17, 00000/20, 00000 + 0.06 x 3, 00000/20, 00000 = 0.10 = 10%

For 40 % Debt:

Ko = 0.11 x 16,00000/20,00000 + 0.06 x 4,00000/20,00000 = 0.10 = 10%

For 50% Debt:

Ko = 0.1133 x 15,00000/20,00000 + 0.06 x 4,00000/20,00000 = 0.10 = 10%

These calculations of WACC testify that the benefit of employment of more and more debt in the capital structure is offset by the increase in equity capitalization rate, Ke.

8.7 MM HYPOTHESIS WITH NO TAXES: IRRELEVANCE OF CAPITAL STRUCTURE

The capital structure of a firm refers to the proportion of debt and equity in its total capital. One crucial factor in determining this combination is the firm's value. Traditional theories suggest that capital structure influences the value of a firm, as previously discussed. However, Modigliani and Miller argue that, in the absence of taxes and transaction costs, the capital structure does not affect the firm's value. On the other hand, when taxes are taken into account, capital structure becomes significant. This perspective on capital structure is elaborated in the following sections.

Modigliani and Miller (MM) propose that a firm's capital structure does not affect its overall value. In other words, simply changing the mix of debt and equity will not change the firm's value. Instead, the firm's value depends on its earnings and the risk of its assets, not on its debt-to-equity ratio. However, they also recognize that capital structure can influence the returns to shareholders or investors. These ideas are summarized in two key propositions, explained below:

Proposition 1: Capital Structure is Irrelevant for a Firm's Value

The first proposition of the MM hypothesis states that the value of a firm is not affected by its capital structure.

Assumptions of Proposition 1:

This idea is based on the following assumptions about investor behavior, capital markets, firms, and taxes:

- 1. Perfect Capital Markets: Capital markets are considered perfect if:
 - a. Investors can freely buy and sell securities.
 - b. Investors act rationally.
 - c. Investors can borrow on the same terms as firms, without restrictions.
 - d. There are no transaction costs.
 - e. If firms could borrow at cheaper rates than investors, they would increase their value by using debt.

2. Homogeneous Risk:

It is assumed that all firms within the same industry face the same level of operating risk. Operating risk refers to the variability in the firm's net operating income.

3. No Taxes:

There are no corporate taxes in this scenario. As a result, firms do not benefit from tax savings on interest payments from debt.

4. Full Payout of Earnings:

Firms distribute all their earnings after paying interest as dividends, meaning the dividend payout ratio is 100%.

How Proposition 1 Works?

Modigliani and Miller's Proposition 1 holds true based on several assumptions discussed earlier. Let's explain this with an example of two firms, A and B. Both firms operate in the same industry, have the same market share, and face the same operating risks. Therefore, their operating income and risk are identical, meaning investors expect the same rate of return or cost of capital for both firms' assets.

Example 1: Both Firms are 100% Equity-Financed

If both firms are completely equity-financed, their net operating income (NOI) before and after interest will be the same because no interest payments are made. Since taxes are not considered, income before and after taxes will also remain the same.

The value of the firm can be calculated using the formula:

Value of the Firm= Net Operating Income (NOI)/ Opportunity Cost of Capital (Ka) As a result, the value of both firms will be equal.

Example 2: Different Capital Structures

When the capital structures of Firms A and B differs:

Firm A: 100% equity-financed.

Firm B: 50% equity-financed and 50% debt-financed.

According to MM's assumptions:

- 1. Both firms have the same earning potential because earnings depend on their investments in assets, not their capital structure.
- 2. The operating risk for both firms is identical because risk depends on the business environment, not on the use of debt.
- 3. Since risk and returns are the same, the expected rate of return (cost of capital) will also be the same.

Therefore, the value of both firms remains the same despite differences in leverage:

Value of Firm A=Value of Firm B

Or symbolically:

Vu=VL

Here,

V = Value of the firm (sum of debt and equity).

NOI = Net operating income (EBIT).

Kd = Cost of capital (Ka or WACC).

Arbitrage Process: Why Proposition 1 Works?

Proposition 1 relies on the assumptions of identical returns, risks, assets, and other factors. But what happens if the two firms have different capital structures and different market values?

In such a case, **arbitrage** comes into play. Arbitrage is a process where investors exploit price differences between the two firms to create a "homemade leverage" (personal borrowing) that mimics corporate leverage. As investors switch between the two firms, their market values adjust until they become equal again.

This process ensures that the values of the two firms, regardless of their capital structures will always align.

Proposition 2: Capital Structure Affects Investors' Returns

MM's second proposition states that it **does affect investors' returns**, such as **return on equity** (**ROE**) and **earnings per share (EPS)**.

When a firm increases its leverage (borrows more debt), the **variability in dividends** paid to shareholders also rises. This happens because debt repayment takes priority, leaving shareholders with more uncertainty about their returns. As a result, the **risk to shareholders increases**.

To compensate for this additional risk, shareholders expect a **higher return**. Therefore, as leverage increases, both the **risk** and **expected return** for shareholders grow.

How Proposition 2 Works?

To understand Proposition 2 of Modigliani and Miller (MM) by comparing compare two firms:

Firm U: An unlevered firm (financed entirely by equity).

Firm L: A levered firm (financed by a mix of equity and debt).

Unlevered Firm

For an unlevered firm, there is no debt in its capital structure. Therefore, the **weighted average cost of capital (WACC)** is the same as the **cost of equity (Ke)**. In simple terms:

Ka=Ke

Here, Ka is the cost of capital (WACC), and Ke is the cost of equity.

Levered Firm

For a levered firm, WACC (Ka) includes both the **cost of equity (Ke)** and the **cost of debt (Kd)**. According to MM's Proposition 1, the WACC (Ka) remains the same for both levered and unlevered firms. However, since debt is cheaper than equity, the cost of equity (Ke) for a levered firm increases to compensate for the added financial risk caused by debt. This increase in the cost of equity is called the **financial risk premium**.

The Formula

The relationship between cost of equity (Ke), WACC (Ka), and cost of debt (Kd) for a levered firm can be explained using this equation:

Ke = Ka + (Ka-Kd) D/E

Where:

Ke = Cost of equity (for levered firm).

Ka = WACC (same for both levered and unlevered firms).

Kd = Cost of debt.

D = Debt.

E = Equity.

Breaking It Down

1. Unlevered Firm (D=0):

If there is no debt (D=0), then the equation becomes: Ke= Ka

This means the cost of capital is the same as the cost of equity

2. Levered Firm For a firm with debt, the equation becomes: Ke = Ka + (Ka-Kd) D/E

Here:

The term (Ka-Kd) is the difference between the cost of equity and the cost of debt.

D/E is the **debt-to-equity ratio**.

The product (Ka-Kd) DE is the financial risk premium.

Debt is a cheaper source of finance compared to equity. When a firm takes on debt, its WACC (Ka) does not change (as per Proposition 1). However, the cost of equity (Ke) increases to account for the additional financial risk created by debt.

The financial risk premium represents this increase in the cost of equity and is calculated as: (Ka-Kd) DE

8.8 CRITICISM OF MM APPROACH:

The MM approach is based on the idea that investors can use the **arbitrage process** to balance the value of levered and unlevered firms. However, this process works only if the **assumptions** of the MM model hold true. In reality, these assumptions do not always apply in the capital markets, which is why there can be a difference in the value of levered and unlevered firms. Below are the key criticisms of the MM approach:

1. Different Borrowing Rates

Firms and investors borrow money at different rates. Firms usually have better credit ratings, allowing them to borrow at lower interest rates compared to individual investors. This means the assumption of "homemade leverage" (where investors create their own leverage) is not practical.

2. Corporate vs. Personal Leverage

The risks for investors are different when it comes to corporate and personal leverage. If a firm uses leverage and goes bankrupt, an investor loses only their equity investment. However, with personal leverage, the investor not only loses their equity but also has to repay the loan they took out. This makes personal leverage riskier than corporate leverage, so they are not equivalent.

(**D>0**):
3. Transaction Costs

There are costs involved in buying and selling shares or setting up personal leverage. These transaction costs reduce the extra return that investors might earn through arbitrage. As a result, arbitrage is not always possible.

4. Institutional Restrictions

Some investors, such as institutional investors (e.g., mutual funds, pension funds), face restrictions on borrowing and creating personal leverage. Because of these restrictions, they cannot participate in arbitrage, which makes MM's assumptions less realistic.

5. Corporate Taxes

The MM model assumes there are no taxes, but in reality, taxes exist. Levered firms benefit from tax savings because interest payments on debt are tax-deductible. This increases the net income and value of levered firms, making MM's propositions less valid.

8.9 MM HYPOTHESIS WITH TAXES: RELEVANCE OF CAPITAL STRUCTURE

The MM hypothesis of capital structure irrelevance holds primarily under the assumption of no corporate taxes, placing both levered and unlevered firms on equal footing. However, in reality, corporate taxes do exist, and interest on debentures is tax-deductible. This makes leverage (debt) more advantageous for firms, as it leads to tax savings and, consequently, an increase in the firm's value. Therefore, in the presence of corporate taxes, the MM hypothesis suggests that the value of a firm increases with higher leverage.

How does Proposition I of MM's Hypothesis work with corporate taxes?

In the presence of corporate taxes, Proposition I of MM's Hypothesis suggests that the value of a firm increases as its leverage increases. This occurs because the interest payments on debt are taxdeductible, resulting in tax savings that add to the firm's value. Consequently, a levered firm is valued higher than an unlevered firm by the amount of the tax shield on debt. This modification demonstrates that, with corporate taxes, capital structure becomes relevant to the firm's value.

8.10 Net Operating Income after Tax (Tax Advantage)

Consider two firms: Firm U and Firm L. Firm U is an unlevered firm with entirely equity capital, while Firm L is a levered firm with Rs 50,000 of debt at an interest rate of 10% as part of its capital structure. Both firms have a net operating income of Rs 2,500. The corporate tax rate is 50%, and both firms follow a 100% dividend payout policy.

Interest payments on debt are tax-deductible, which gives levered firms a tax advantage compared to unlevered firms. This benefit is known as the "Interest Tax Shield (INTS)" or the "Tax Advantage of Debt." This tax shield increases the net operating income after tax for the levered firm compared to the unlevered firm.

8.11 UNIT SUMMARY

- 1. Capital Structure and Firm Value Two Schools of Thought: Examines contrasting views on the impact of capital structure on a firm's value: one advocating relevance and the other supporting irrelevance.
- 2. Net Income (NI) Approach: Proposes that capital structure impacts firm valuation, suggesting that an optimal capital structure maximizes firm value and minimizes the cost of capital.
- **3.** Assumptions under the NI Approach: Corporate taxes are ignored. Cost of debt remains constant irrespective of leverage. Equity shareholders bear the entire risk of increasing leverage.
- **4. Firm Valuation Using NI Approach:** Explains how to calculate a firm's value by capitalizing its net income, considering the impact of debt and equity proportions.
- 5. Net Operating Income and Traditional Approach: Discusses the relationship between net operating income and capital structure under different theories.
- **6.** Traditional Approach: Suggests that an optimal capital structure exists, where the cost of capital is minimized, leading to maximum firm value.
- 7. Criticism of the Traditional Approach: Lacks theoretical clarity and empirical evidence to validate the existence of an optimal capital structure.
- 8. Net Operating Income (NOI) Approach Asserts that capital structure is irrelevant, as changes in debt-equity proportions do not affect the total value of the firm.
- **9. MM Hypothesis with No Taxes: Irrelevance of Capital Structure** Modigliani and Miller's proposition demonstrates that under ideal conditions (no taxes, no bankruptcy costs, and perfect markets), capital structure does not impact firm value.
- **10.** Criticism of MM Approach Unrealistic assumptions such as no taxes, no transaction costs, and perfect markets reduce its practical applicability.
- **11. MM Hypothesis with Taxes: Relevance of Capital Structure** Acknowledges the tax shield advantage of debt, which makes the capital structure relevant and encourages firms to include debt in their financing.
- **12. Net Operating Income after Tax (Tax Advantage)** highlights the reduction in tax liability due to interest deductibility, enhancing firm value by incorporating debt financing.

8.12 CHECK YOUR PROGRESS

2 Marks Questions

- 1. What are the two schools of thought regarding the relationship between capital structure and firm value?
- 2. State any two assumptions of the Net Income (NI) approach.
- 3. Define the Net Operating Income (NOI) approach.
- 4. What is the tax shield advantage in the MM hypothesis with taxes?
- 5. Mention one criticism of the traditional approach to capital structure.

5 Marks Questions

- 1. Explain the assumptions of the Net Income (NI) approach.
- 2. Briefly describe the Traditional Approach to capital structure.
- 3. Compare the MM Hypothesis with and without taxes.
- 4. Discuss the concept of the irrelevance of capital structure as proposed by the NOI approach.
- 5. Highlight the major criticisms of the MM approach to capital structure.

10 Marks Questions

- 1. Explain the Net Income (NI) approach in detail and illustrate how firm valuation is calculated using this approach.
- 2. Discuss the Traditional Approach to capital structure and critically evaluate its relevance.
- 3. Explain the MM Hypothesis with no taxes and with taxes. Highlight the differences in their assumptions and implications.
- 4. Analyze the tax advantage of debt under the MM hypothesis with taxes and its impact on firm valuation.
- 5. The expected Earnings before Interest and Taxes (EBIT) of a firm is Rs 3,00,000. The company has issued equity share capital, and the cost of equity is 12%. It has also issued 8% debt of Rs 4, 00,000. Calculate:
 - 1. The value of the company.
 - 2. The overall cost of capital (WACC).

8.13 REFERENCES

- **16. I.M. Pandey**, *Financial Management*, Vikas Publishing House Covers detailed explanations of ratio analysis, its objectives, and classifications.
- **17. Prasanna Chandra**, *Financial Management: Theory and Practice*, McGraw Hill Discusses the use, advantages, and limitations of ratio analysis.
- **18. M.Y. Khan and P.K. Jain**, *Financial Management: Text, Problems and Cases*, Tata McGraw Hill Includes classifications of ratios based on user requirements.
- **19. Corporate Finance Institute (CFI)** (<u>https://corporatefinanceinstitute.com/</u>) Articles on ratio analysis, its objectives, and limitations.

20. ICAI Study Material – Provides a systematic approach to ratio analysis with examples tailored for financial statement analysis.

UNIT 9: LEVERAGE ANALYSIS AND EBIT-EPS ANALYSIS

STRUCTURE

9.1 Introduction:

9.2: Leverage: Concept and Overview

9.3 Operating Leverage

9.3.1 Computation: Degree of Operating Leverage (DOL)

9.3.2: Interpretation of Operating Leverage

9.4 Financial Leverage

9.4.1 Measures of Financial Leverage

9.4.2: Degree of Financial Leverage (DFL)

9.4.3 Significance of Financial Leverage

9.5 Combined Leverage

9.6 EBIT-EPS Analysis

9.6.1 Limitations of EBIT-EPS Analysis

9.7 Summary

9.8 Check Your Progress

9.9 Reference

OBJECTIVES

By the end of this unit, learners will be able to:

1. Understand the concept of leverage and its significance in financial management.

- 2. Identify and analyze the features of operating leverage and its applications in decisionmaking.
- 3. Compute measures of operating, financial, and combined leverage to assess their impact on the firm's risk and return.
- 4. Develop the ability to perform EBIT-EPS analysis to evaluate the implications of various financing options on earnings per share.
- 5. Apply leverage and EBIT-EPS concepts in real-world financial scenarios to make informed decisions.

9.1 INTRODUCTION

Leverage is a critical concept in a firm's financial decision-making process as it significantly affects both profitability and risk. This chapter examines the three main types of leverage operating leverage, financial leverage, and combined leverage—and their influence on a firm's financial performance. Understanding these concepts helps analyze how fixed costs and the financial structure of a firm impact its earnings and profitability.

The chapter also introduces **EBIT-EPS analysis**, a valuable tool for assessing the impact of various financing options on a firm's earnings per share (EPS). This analysis aids in making strategic financial decisions by evaluating the trade-offs between debt and equity financing.

Leverage has its practical applications in financial planning and decision-making, equipping them to assess and manage the risks and rewards associated with different levels of fixed costs and financing structures.

9.2: LEVERAGE: CONCEPT AND OVERVIEW

Leverage, in a broad sense, refers to the proportional change in a dependent variable caused by a specific percentage change in an independent variable. In financial management, these variables often pertain to measures like sales, operating income, or earnings. Leverage analysis focuses on how fixed costs—whether operational or financial—can magnify potential returns, but with an associated increase in risk.

In simpler terms, leverage is the use of fixed costs to amplify potential returns (or losses) from an investment or business activity. It measures the sensitivity of a dependent financial variable, such as operating income or earnings per share (EPS), to changes in an independent variable, like sales or revenue.

Leverage is categorized into three main types:

- **1.** Operating Leverage
- 2. Financial Leverage

3. Combined Leverage

9.3 OPERATING LEVERAGE

Operating leverage arises due to the presence of fixed costs in a business. It indicates how sensitive a company's operating profits (EBIT) are to changes in sales. The higher the proportion of fixed costs in the cost structure, the greater the impact of changes in sales on operating profits.

Key Cost Components:

- 1. **Fixed Costs**: These remain constant regardless of production or sales levels (e.g., rent, machinery depreciation, or permanent staff salaries).
- 2. Variable Costs: These vary directly with production or sales levels (e.g., raw material costs or wages of temporary workers).

If a business has no fixed costs, any change in sales will result in a similar percentage change in EBIT. For instance, a 10% increase in sales would result in a 10% increase in EBIT. However, with fixed costs, a percentage change in sales will lead to a magnified percentage change in EBIT. This amplification occurs because fixed costs do not change with sales. Once fixed costs are covered, additional sales directly contribute to profits, resulting in higher profitability.

Features of Operating Leverage

Operating leverage highlights the relationship between a company's fixed costs and its impact on profitability due to changes in sales revenue. Below are the key features of operating leverage:

1. Relationship between Sales Revenue and EBIT

Operating leverage measures how changes in sales revenue affect a company's operating income (EBIT). Businesses with high operating leverage experience amplified changes in EBIT for a given percentage change in sales. This occurs due to the presence of fixed costs, which remain constant regardless of sales volume. **Example**: If a company has high fixed costs, a 10% increase in sales could lead to a 30% increase in EBIT, showcasing the sensitivity of profits to sales fluctuations.

2. Impact on Capital Structure and Return on Total Assets

Operating leverage influences decisions about the capital structure (the mix of debt and equity financing). Companies with high operating leverage, and thus significant fixed costs, often avoid excessive debt financing since debt adds more fixed costs in the form of interest payments. Furthermore, when sales increase, high operating leverage spreads fixed costs over a larger revenue base, potentially improving the return on total assets.

3. Relation to Business Risk

Operating leverage is closely tied to business risk, which refers to the variability in a company's earnings due to changes in sales. Companies with high operating leverage face greater earnings volatility because their fixed costs remain constant regardless of sales performance. This increases business risk, as a decline in sales could lead to substantial losses. **Example**: A company with high fixed costs and low variable costs is more vulnerable to downturns in sales compared to a company with mostly variable costs.

4. Linked to the Composition of Fixed Assets

The degree of operating leverage is influenced by the company's investment in fixed assets such as machinery, buildings, and equipment. A higher proportion of fixed assets leads to higher fixed costs (e.g., depreciation and maintenance), which in turn increases operating leverage.

Example: A manufacturing firm with significant investment in machinery will have higher operating leverage than a retail company leasing its storefronts.

5. Effect on the Asset Side of the Balance Sheet

Operating leverage is inherently tied to a firm's balance sheet, as fixed costs often stem from fixed assets like property, plant, and equipment. Companies with higher operating leverage typically show a larger portion of fixed assets in their balance sheets. These fixed assets generate fixed costs that influence the firm's profitability and financial structure. **Example**: A company investing heavily in equipment will see an increase in fixed assets on its balance sheet, which contributes to higher fixed costs and, consequently, higher operating leverage.

9.3.1 Computation: Degree of Operating Leverage (DOL)

The Degree of Operating Leverage (DOL) measures how sensitive a company's operating profit (EBIT) is to a change in sales. It shows the percentage change in EBIT resulting from a percentage change in sales.

- 1. Basic Formula: DOL= % Change in EBIT/ % change in Sales
- 2. Expanded Formula: DOL = Change in EBIT/ EBIT/change in Sales/Sales
- 3. Using Contribution and EBIT: DOL = Contribution/EBIT
- 4. Using Sales, Variable Costs, and Fixed Costs: DOL= Sales-Variable Cost/Sales-Vc Fc

Key Terms:

- 5. Fixed Costs: These are costs that do not depend on the level of production or sales. They remain constant within a certain range of output. Examples: Rent, machinery costs, insurance.
- 6. Variable Costs: These are costs that change directly with the level of production or sales. As output increases, variable costs also increase, and vice versa. Examples: Raw materials, wages of hourly workers, utilities.
- 7. Contribution: Contribution is the amount remaining after subtracting variable costs from sales revenue. Formula: Contribution=Sales Revenue-Variable Costs
- 8. Earnings before Interest and Taxes (EBIT): EBIT is the company's operating profit before deducting interest and taxes. EBIT=Contribution-Fixed Costs

The DOL tells us how much operating profit (EBIT) will change for a given percentage change in sales. A higher DOL means the company has higher fixed costs, which leads to greater sensitivity in profits when sales change.

9.3.2: Interpretation of Operating Leverage

Operating leverage measures the sensitivity of a company's operating income (EBIT) to changes in sales revenue. It is determined by the proportion of fixed costs within the company's cost structure. The level of operating leverage provides insight into the efficiency of utilizing fixed costs to generate profits. Below is a detailed interpretation:

1. If Contribution > Fixed Costs

Contribution, calculated as **Sales - Variable Costs**, is sufficient to cover the fixed costs, resulting in a surplus. This indicates that the company is in a favorable position, as it is generating operating profit.

Favorable Operating Leverage: An increase in sales will lead to a disproportionately higher increase in operating income (EBIT). This favorable leverage demonstrates effective use of fixed costs to amplify profits.

2. If Contribution < Fixed Costs

Contribution is insufficient to cover the fixed costs, resulting in an operating loss. This reflects an **unfavorable operating leverage**, as the company is not effectively utilizing its fixed cost structure.

Types of Operating Leverage

1. Favorable Operating Leverage

Occurs when **contribution exceeds Fixed Costs**, leading to the generation of operating profit. This indicates a favorable cost structure, where increases in sales will result in a greater percentage increase in operating income. If sales grow by 10%, operating income may increase by 20%, showcasing the benefits of a favorable leverage scenario.

2. Unfavorable Operating Leverage

Occurs when **Contribution is less than Fixed Costs**, resulting in an operating loss. This signifies an unfavorable cost structure, where even sales growth may not adequately cover the fixed costs, leading to continued losses. Companies in this situation need to reassess their cost structure to improve profitability.

Example 1 Calculate Degree of Operating Leverage (DOL)

	Case I	Case II
Sales	2,00000	3,00000
Variable Cost	1,20,000	1,80,000
Fixed Cost	40,000	40,000

Solution: DOL = Contribution/EBIT

Contribution = Sales - VC

2,00000-1,20,000 = 80,000

EBIT= Sales-VC-FC

EBIT = 200000-1, 20,000- 40,000 = 40,000

DOL = 80,000/40,000= 2

Interpretation:

A 2 increase in EBIT means that for every 1% increase in sales, EBIT will increase by 2%. For example, a 50% increase in sales will result in a 100% ($2 \times 50\%$) increase in EBIT.

Significance:

For a firm with a higher Degree of Operating Leverage (DOL), even a small change in sales can have a magnified impact on EBIT. A slight increase in sales can lead to a substantial rise in operating profit (EBIT). Conversely, a small decline in sales can result in a significant drop in operating profits.

Applications of Operating Leverage in financial decision-making:

- 1. **Capital Budgeting Decisions**: Operating leverage helps firms evaluate the profitability of investment projects by analyzing how fixed costs and sales interact. This assists in identifying projects that can generate higher returns with existing cost structures.
- 2. Long-Term Profit Planning: By using the concept of operating leverage, firms can predict the impact of changes in sales on EBIT. This helps in planning for sustained profitability over the long term, considering the level of fixed costs.
- 3. **DOL and Business Risk**: Business risk refers to the uncertainty in operating income caused by changes in sales volume, variable costs, or other factors. Since operating leverage magnifies changes in EBIT for a given change in sales, it increases the volatility of operating profits, thereby intensifying business risk.
- 4. **Capital Structure Decisions**: A firm's operating leverage affects its choice of financing (debt vs equity). Firms with high operating leverage may avoid excessive debt to minimize financial risk, as they are already exposed to significant business risk from fixed costs.

9.4 FINANCIAL LEVERAGE

Financial leverage refers to the use of fixed-cost-bearing securities such as preference shares and debt, along with equity, in a company's capital structure. These fixed-cost instruments act as a lever, magnifying the potential returns for equity shareholders when the company performs well, but also increasing the financial risk when the company underperforms.

When the company's earnings exceed the fixed cost of debt and preference shares, the remaining profits after paying these obligations are distributed among equity shareholders. These results in amplified returns for shareholders compared to what they would have earned without leverage.

If the company earns less than the fixed cost of debt and preference shares, it still has to meet these obligations, even if it means cutting into its reserves or equity. This amplifies losses for shareholders and increases financial strain. Financial leverage has the potential to enhance the return on equity when the company's earnings before interest and taxes (EBIT) are higher than the

cost of debt and preference shares. While financial leverage can increase returns, it also increases the company's financial risk due to the fixed nature of obligations such as interest payments and dividend commitments. Financial leverage plays a crucial role in determining the optimal capital structure. Companies need to carefully evaluate the trade-off between higher returns and increased financial risk to ensure long-term sustainability.

9.4.1 Measures of Financial Leverage

To evaluate the extent of financial leverage and assess the associated risk, several key ratios are used. These measures help stakeholders understand a company's reliance on debt financing and its ability to manage financial obligations.

1. Debt Ratio

The **Debt Ratio** measures the proportion of a company's total assets financed through debt. It is calculated as:

Debt Ratio=Total Debt/Total Assets

This ratio provides insights into the level of financial leverage a firm employs and indicates the extent to which its assets are funded by borrowed money. A **higher debt ratio** signifies greater reliance on debt, which increases financial risk as the company must meet regular repayment obligations.

2. Debt-Equity Ratio

The **Debt-Equity Ratio** compares the total debt of a company to its shareholders' equity. It is calculated as:

Debt-Equity Ratio=Total Debt/Total Equity

This ratio illustrates the balance between debt and equity financing in the company's capital structure. A **higher debt-equity ratio** indicates that the company is heavily leveraged, amplifying potential returns for equity holders but also increasing financial risk. While high debt-equity ratios can make it difficult for companies to secure additional financing and lead to higher interest costs, a **lower ratio** reflects a more stable and conservative financial structure.

3. Interest Coverage Ratio (ICR)

The Interest Coverage Ratio (ICR) measures a company's ability to meet its interest payment obligations using its operating income. A higher ICR indicates strong financial health, as the company generates sufficient income to cover its interest expenses comfortably. For instance, an

ICR of **5** implies that the company earns five times its interest obligations, showcasing a robust ability to manage debt payments. Conversely, a **low ICR** (below 1) suggests that the company's earnings are insufficient to cover its interest costs, potentially leading to financial distress or insolvency risks.

9.4.2: Degree of Financial Leverage (DFL)

The **Degree of Financial Leverage (DFL)** is a crucial financial metric that measures the sensitivity of a company's Earnings per Share (EPS) to changes in its Operating Income (EBIT). It evaluates the impact of fixed-cost financing such as debt and preference shares—on a firm's earnings available to equity shareholders.

The DFL reflects how effectively a company uses financial leverage to magnify the effect of changes in EBIT on EPS. By doing so, it highlights the role of fixed financing costs (e.g., interest on debt or preference dividends) in the firm's capital structure. A high DFL indicates that even a small percentage change in EBIT will result in a larger percentage change in EPS. While financial leverage can amplify returns during favorable conditions, it also introduces higher financial risk, as a decline in EBIT could lead to significant reductions in EPS.

The Degree of Financial Leverage is calculated using the formula:

DFL = EBIT/EBIT - Interest x (1-t)

Where:

EBIT is the operating income or earnings before interest and taxes.

Interest represents the fixed financing costs associated with debt.

t is the tax rate.

Interpretation of Degree of Financial Leverage (DFL)

The **Degree of Financial Leverage (DFL)** plays a vital role in determining how changes in a company's operating income (EBIT) will affect its Earnings per Share (EPS). Here's a breakdown of the key aspects of DFL:

1. Higher the Fixed Financial Costs, Greater the DFL

The DFL is directly impacted by the amount of fixed financial costs in a company's capital structure, such as interest on debt or preference dividends. When a company relies heavily on debt or other fixed-cost securities, it increases its DFL. Fixed costs remain constant regardless of the

company's performance, meaning that any changes in EBIT will have a greater effect on EPS. The higher the fixed costs, the higher the DFL, as these obligations magnify the impact of operating income fluctuations on earnings available to equity shareholders.

2. Higher the DFL, More Volatile the EPS

A higher DFL indicates a greater degree of financial leverage, which intensifies the effect of changes in EBIT on a company's EPS. With high leverage, both positive and negative shifts in EBIT are magnified in EPS.

3. Higher the DFL, Greater the Financial Risk

As the DFL rises, the financial risk also increases due to the higher fixed obligations, such as interest payments. The greater the DFL, the more the company relies on debt or other fixed-cost securities, thus exposing it to greater risk. A small change in EBIT can lead to a significant fluctuation in EPS, making the company more vulnerable during periods of declining earnings.

4. DFL as a Multiplier for Changes in EBIT

The DFL acts as a multiplier that indicates how a change in EBIT will impact EPS. Specifically, for a given percentage change in EBIT, the DFL determines the corresponding percentage change in EPS.

Formula:

DFL=Percentage Change in EPS/Percentage Change in EBIT

This formula shows that the DFL quantifies the sensitivity of a company's EPS to fluctuations in its operating income. The larger the DFL, the more significant the effect of a change in EBIT on EPS.

Example: Compute Degree of Financial Leverage (DFL) in following information For Advaita Ltd., whose EBIT has increased from Rs.100 million to Rs. 150 million and EPS has increased from Rs. 4 per share to Rs. 7 per share.

Solution: EBIT has increased from Rs. 100 million to Rs. 150 million.

EPS has increased from Rs. 4 per share to Rs. 7 per share.

Percentage Change in EBIT = New EBIT -Old EBIT/ Old EBIT X 100

Percentage Change in EBIT= 150 m - 100 m/100 m x 100

50 m / 100 m x 100 = 50 %

Percentage Change in EPS= New EPS-Old EPS/Old EPS x 100

7-4/4 x 100 = 75%

Degree of Financial Leverage (DFL

DFL=Percentage Change in EBIT/ Percentage Change in EPS

DFL=50%/75%

1.5

Interpretation of DFL:

- 1. The Degree of Financial Leverage (DFL) for Advaita Ltd. is 1.5.
- 2. This means that for every 1% change in EBIT, EPS changes by 1.5%.
- 3. In this case, as EBIT increased by 50%, EPS increased by 75% (1.5 times the percentage change in EBIT), indicating the company's sensitivity to changes in operating income.

9.4.3 Significance of Financial Leverage

1. Amplification of EPS through Financial Leverage

Financial leverage plays a pivotal role in enhancing Earnings Per Share (EPS) when Earnings Before Interest and Taxes (EBIT) increase. By utilizing debt effectively, firms can generate higher returns for their shareholders due to the fixed nature of interest expenses. However, financial leverage is a double-edged sword. If EBIT declines, the firm's EPS can experience a sharp reduction. Consequently, prudent management of financial leverage is essential to balance potential gains against associated risks.

2. Effective Management of Financial Leverage

A firm that demonstrates proficiency in managing its financial leverage exhibits its ability to mitigate the risks associated with debt financing. Such financial discipline instills confidence among investors and lenders, thereby enhancing the firm's creditworthiness. Improved credit ratings enable the firm to secure future funding more efficiently and often at lower interest rates, further strengthening its financial position.

3. Debt as a Cost-Effective Funding Option

Debt is generally a more economical source of financing compared to equity or preference capital. By incorporating a higher proportion of debt into its capital structure, a firm can reduce its overall or weighted average cost of capital (WACC). This cost efficiency makes debt a compelling choice for funding, provided the firm maintains a sustainable debt level.

4. Lower WACC and Its Influence on Capital Budgeting

Most organizations use WACC to discount cash flows during the evaluation of investment projects. A lower WACC increases the present value of projected cash flows, making more investment opportunities financially viable. By effectively leveraging debt to reduce WACC, firms can enhance their ability to undertake profitable projects, thereby driving long-term growth and shareholder value.

9.5 COMBINED LEVERAGE

Operating leverage and financial leverage are two crucial concepts that measure distinct types of risks faced by a firm. Operating Leverage reflects business risk by illustrating the impact of sales changes on the company's Earnings before Interest and Taxes (EBIT). Financial Leverage Captures financial risk by showing how variations in EBIT influence Earnings per Share (EPS), primarily due to fixed financial costs such as interest and dividends.

In reality, a firm simultaneously encounters both business risk and financial risk. To evaluate the total risk or overall exposure faced by the firm, it is essential to examine the combined impact of operating and financial leverage. This comprehensive assessment is facilitated by the concept of **Combined Leverage**. Combined leverage measures the total risk of a firm by summarizing the effects of both operating leverage and financial leverage on EPS, while accounting for changes in sales.

Calculating Combined Leverage

The Degree of Combined Leverage (DCL) is a metric used to quantify the total risk faced by the firm. It is calculated as the product of the Degree of Operating Leverage (DOL) and the Degree of Financial Leverage (DFL):

Degree of Combined Leverage (DCL) = DOL × DFL

This formula demonstrates the combined effect of business and financial risks, enabling firms to understand how a change in sales will impact their EPS. By analyzing DCL, firms can make more informed financial and operational decisions to mitigate risks and enhance profitability.

Importance of Combined Leverage:

By calculating combined leverage, a firm can assess its total risk exposure. It helps in determining the optimal level of both operating and financial leverage that a firm should use to balance risk and return. A firm with high operating and financial leverage may experience significant fluctuations in EPS, which can be both beneficial and risky. Understanding combined leverage allows firms to make more informed decisions on how much debt to take on and how to manage fixed operating costs, ensuring that the firm's risk profile aligns with its financial goals.

Example: Calculate Degree of Combined Leverage (DCL) in following cases: Degree of operating leverage (DOL) and the degree of financial leverage (DFL) of XYZ Ltd. are 2 and 1.5 respectively.

Solution: Degree of Combined Leverage (DCL) = DOL x DFL = $2 \times 1.5 = 3$

Degree of Combined Leverage (DCL) of XYZ Ltd. is 3.

9.6 EBIT-EPS Analysis

The **EBIT-EPS Analysis** is a vital tool in financial decision-making, allowing companies to assess the impact of various financing options on their **Earnings per Share (EPS)** at different levels of **Earnings before Interest and Taxes (EBIT)**. This analysis helps us evaluate how leverage whether through debt, equity, or a combination of both—affects shareholder returns.

When a company needs to raise funds for growth or to invest in new projects, it faces critical decisions about financing methods. The question is:

- 1. Should the company rely solely on equity capital (its own funds)?
- 2. Should it raise debt by borrowing money?
- 3. Should it use a mix of equity and debt financing?
- 4. Should it include preference capital as part of the financing structure?

Each of these options carries unique benefits and drawbacks. The **EBIT-EPS analysis** helps compare these alternatives to determine which method yields the most favorable results for both the company and its shareholders under varying business scenarios.

What Does EBIT-EPS Analysis Accomplish?

The EBIT-EPS analysis examines how changes in **EBIT** influence **EPS**, providing insights into financial risks and rewards associated with each funding option. It answers critical questions, such as:

How will EPS respond to an increase in EBIT?

How will EPS be affected if EBIT decreases?

By exploring these scenarios, the analysis offers a deeper understanding of how funding decisions

impact the company's financial structure and shareholder value. It enables informed decisionmaking to optimize financial performance while balancing risks and returns.

Example: XYZ Ltd. needs to raise Rs. 5, 00,000 for a new project. The company is considering two financing options:

Option A: 100% Equity financing.

Option B: 50% Equity and 50% Debt (at 10% interest per annum).

The expected EBIT for the company is Rs. 1, 00,000. Assume a tax rate of 40% and the face value of equity shares is Rs. 100 each.

Solution: 1. Number of equity shares issued under each option

Option	Α	(100%		Equity)	
Total	funds	=	Rs.	5,00,000	
Number of shar	$es = Rs. 5,00,000 \div Rs$. 100 = 5,000 shares	6		

Option		В	(50%		Equity		+		50%		Debt)
Equity		fu	nds		=			Rs.			2,50,000
Number	of	shares	=	Rs.	2,50,000	÷	Rs.	100	=	2,500	shares
Debt = Rs	2,50,	000 (at 10	% int	erest)							

EPS for each option

Option A (100% Equity):

EBIT = Rs. 1, 00,000

Interest = Rs. 0 (no debt)

EBT = EBIT – Interest = Rs. 1, 00,000 – Rs. 0 = Rs. 1, 00,000

Tax = 40% of EBT = Rs. 40,000

Earnings after Tax (EAT) = EBT - Tax = Rs. 1, 00,000 - Rs. 40,000 = Rs. 60,000

 $EPS = EAT \div Number of Shares = Rs. 60,000 \div 5,000 = Rs. 12 per share$

Option B (50% Equity + 50% Debt):

EBIT = Rs. 1, 00,000

Interest = 10% of Rs. 2, 50,000 = Rs. 25,000

EBT = EBIT - Interest = Rs. 1, 00,000 - Rs. 25,000 = Rs. 75,000

Tax = 40% of EBT = Rs. 30,000

Earnings after Tax (EAT) = EBT - Tax = Rs. 75,000 - Rs. 30,000 = Rs. 45,000

 $EPS = EAT \div Number of Shares = Rs. 45,000 \div 2,500 = Rs. 18 per share$

Analysis

Option A: EPS is Rs. 12 with no financial risk (no debt obligation).

Option B: EPS is Rs. 18, which is higher than Option A due to the use of cheaper debt financing.

However, Option B carries financial risk because the company must pay Rs. 25,000 as interest, regardless of whether it earns profits.

9.6.1 Limitations of EBIT-EPS Analysis

While the **EBIT-EPS Analysis** is a valuable tool in evaluating financing options, it has several limitations that must be considered:

1. Focus on EPS Instead of Share Price

The analysis focuses on maximizing **Earnings per Share (EPS)** rather than the firm's **share price**. However, as discussed in earlier sections, maximizing EPS does not necessarily lead to the maximization of shareholder wealth. Share price is a more comprehensive measure of value for shareholders.

2. Ignores Financial Risk

EBIT-EPS Analysis does not take into account the additional **financial risk** that comes with higher levels of debt. Increased leverage raises the firm's risk profile, but this is not factored into the decision-making process.

3. Unpredictability of EPS

The analysis assumes EPS is predictable, but in reality, higher leverage increases the unpredictability of EPS due to the associated financial risks. This makes the analysis less reliable in volatile business environments.

4. Overemphasis on EPS

While the goal of the analysis is to identify the optimal **capital structure**, it places undue emphasis on EPS. However, EPS is heavily dependent on the firm's profitability and does not always reflect long-term financial health or stability.

5. Ignores Time Value of Money

One critical shortcoming is that the analysis does not consider the **time value of money**, a fundamental principle in financial decision-making. This omission can lead to less accurate or incomplete conclusions.

6. Imaginary Indifference Point

In some scenarios, the **EBIT indifference point**—the level of EBIT where two financing options yield the same EPS—may occur at a negative EBIT value. Such situations are

impractical and unrealistic, reducing the usefulness of the analysis.

7. Absence of Indifference Point for Certain Plans If none of the alternative financial plans involve issuing new equity shares, the analysis will not yield an EBIT indifference point. This limits its applicability in certain scenarios, especially when equity financing is not a consideration.

9.7: SUMMARY

In this unit on Leverage and Its Applications in Financial Management, we explored the concept of leverage, which involves using fixed costs—whether operational or financial—to amplify potential returns. We examined operating leverage and its role in magnifying the impact of changes in sales volume on operating income, as well as learned to compute measures of operating, financial, and combined leverage. Additionally, we focused on EBIT-EPS Analysis, a critical tool for evaluating the impact of debt and equity on earnings per share (EPS) under varying levels of operating income (EBIT). This analysis enables informed decision-making by identifying the optimal financing mix for a firm. Finally, we highlighted the practical application of these concepts in real-world scenarios, such as evaluating capital structures, assessing investment decisions, and making operational choices, to ensure sound financial management.

9.8: CHECK YOUR PROGRESS

2-Marks Questions

- 1. Define the concept of leverage in financial management.
- 2. What is operating leverage?
- 3. What does the Degree of Financial Leverage (DFL) indicate?
- 4. Explain the concept of combined leverage.
- 5. List any two limitations of EBIT-EPS analysis.

5-Marks Theory Questions

- 1. Differentiate between operating leverage and financial leverage.
- 2. Explain the significance of the Degree of Financial Leverage (DFL) in financial decisionmaking.
- 3. What is the importance of EBIT-EPS analysis in evaluating financing options?
- 4. Discuss the role of combined leverage in financial planning.
- 5. Describe the key limitations of EBIT-EPS analysis.

10-Marks Theory Questions

- 1. Explain the concept of operating leverage and its significance in business decision-making.
- 2. Discuss the significance of financial leverage and how it affects shareholder returns.
- 3. Explain the concept of combined leverage and its importance in assessing financial risk.
- 4. Critically analyze the limitations of EBIT-EPS analysis in financial decision-making.
- 5. Discuss the interpretation and application of the Degree of Operating Leverage (DOL) and Degree of Financial Leverage (DFL).

Numerical Problems (5 Marks)

1. Calculate Degree of Operating Leverage (DOL)

Company ABC has the following financial data:

Case I: Sales = Rs. 5,00,000, Variable Cost = Rs. 3,00,000, Fixed Cost = Rs. 1,00,000

Case II: Sales = Rs. 6,00,000, Variable Cost = Rs. 3,60,000, Fixed Cost = Rs. 1,00,000

2. Calculate Degree of Financial Leverage (DFL)

For XYZ Ltd., the following information is provided:

EBIT has increased from Rs. 200,000 to Rs. 300,000

EPS has increased from Rs. 10 per share to Rs. 15 per share

3. Calculate Degree of Combined Leverage (DCL)

The Degree of Operating Leverage (DOL) and Degree of Financial Leverage (DFL) of ABC Ltd.are3.5and2.0,respectively.

4. XYZ Ltd. needs to raise Rs. 10, 00,000 for a new project. The company is considering two financing options:

Option A: 100% Equity financing

Option B: 50% Equity and 50% Debt (at 12% interest per annum)

Additional Information:

Expected EBIT = Rs. 2, 00,000, Tax Rate = 30%, Face Value of Equity Shares = Rs. 100 each

Calculate the EPS for both options and recommend the better financing option.

5. ABC Ltd. is considering two financing options to raise Rs. 8,00,000:

Option A: 100% Equity financing

Option B: 50% Debt (12% interest) and 50% Equity

Additional Information: Tax Rate = 25%, Face Value of Equity Shares = Rs. 100 each

Determine the EBIT indifference point for the two financing options.

9.9 REFERENCE:

- 6. I.M. Pandey, *Financial Management*, Vikas Publishing House Covers detailed explanations of ratio analysis, its objectives, and classifications
- 7. Prasanna Chandra, Financial Management: Theory and Practice, McGraw Hill –

Discusses the use, advantages, and limitations of ratio analysis.

- 8. M.Y. Khan and P.K. Jain, *Financial Management: Text, Problems and Cases*, Tata McGraw Hill Includes classifications of ratios based on user requirements.
- **9.** Corporate Finance Institute (CFI) (<u>https://corporatefinanceinstitute.com/</u>) Articles on ratio analysis, its objectives, and limitations.

10. ICAI Study Material – Provides a systematic approach to ratio analysis with examples tailored for financial statement analysis.

Module 4: Dividend Decisions and Working capital Management

Unit 10: Theories of Dividend: Dividend Decision: Relevance of dividend, Walter's Model, Gordon's Model; MM Hypothesis, basic concept of dividend payout methods- cash dividend, bonus shares; stock split and share buyback.

Unit 11: Working Capital Management: Working capital policy, Cash Management, Credit management, working capital financing.

Unit 12: Working Capital Financing: Short-term sources of finance, Trade credit, Benefits of trade credit, Costs of trade credit, Bank credit, Securities required in bank credit, Commercial paper, Spontaneous sources of finance, Long-term sources of finance.

UNIT 10: THEORIES OF DIVIDEND

STRUCTURE

10.3 Introduction

- 10.4 WALTER'S MODEL
 - 10.2.1 Assumptions of Walter's Model
 - 10.2.2 Share valuation using Walter's model
 - 10.2.3 Optimal dividend payout
 - 10.2.4 Criticism of Walter's Model

10.3 Gordon's Model

- 10.3.1 Assumptions of Gordon Model
- 10.3.2 Optimal dividend payout
- 10.3.3 Criticism of Gordon's Model

10.4: Dividend Irrelevance

10.5 Miller and Modigliani (Mm) Theory on Dividend

11.5.1 Assumptions

11.6. Summary

11.7 Check Your Progress

11. Reference

OBJECTIVES

At the end of this unit you will be able to

- 1. Explore Walter's Model, which emphasizes the relationship between a firm's dividend policy, its profitability, and its cost of capital, demonstrating how dividend decisions impact the value of the firm.
- 2. Examine Gordon's Model, which highlights the role of dividends in determining a firm's market value by linking dividend payouts to investor preferences for current income versus future growth.
- 3. Analyze the Impact of Changes in Dividend Payout on Market Price.
- **4.** Identify the ideal dividend payout strategy for firms based on their financial characteristics, such as growth opportunities, profitability, and investment needs.

10.1 INTRODUCTION

The concept of **Dividend Relevance** asserts that a firm's dividend policy plays a crucial role in determining its market value. According to this view, paying regular dividends reduces uncertainty for investors, as they tend to prefer receiving a steady and reliable income now over the prospect of uncertain future gains. This reduction in uncertainty lowers the required rate of return from investors, leading to an increase in the firm's share price.

Conversely, when a firm retains all its earnings or pays minimal dividends, it may be perceived as riskier by investors. This perception of increased risk raises the required rate of return, ultimately resulting in a decline in the firm's market value. In other words, paying dividends is not merely a financial decision but also a strategic tool for sustaining or enhancing the firm's market price in the eyes of investors.

To understand the dynamics of dividend relevance more comprehensively, two important theoretical frameworks are often used: the **Walter Model** and the **Gordon Model**. Both models highlight the interconnection between a firm's dividend and investment decisions and demonstrate how these decisions jointly influence the firm's overall value. These models provide a structured approach to analyzing the impact of dividend policy on a firm's market valuation and help explain why dividends are a critical factor in financial decision-making.

10.2 WALTER'S MODEL

Professor James E. Walter proposed this model, arguing that the choice of dividend policy is not iust a routine decision but a critical factor in determining the value of the firm. Walter's model

- 1. The cost of capital (k): This is the rate at which the firm raises funds for its operations.
- 2. The required rate of return (r): This is the return the firm generates from investing its earnings. It reflects how efficiently the firm is utilizing its resources.

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3. The market value (P): This is what the firm is worth in the stock market, reflected in its share price.

Walter's model tries to determine the dividend policy that will maximize shareholder wealth. It does this by analyzing the relationship between the required rate of return (r) and the cost of capital (k). Consider three scenarios:

1. When r > k:

In this case, the firm is generating higher returns on its investments than its cost of capital. Here, it makes sense to *retain earnings* rather than pay them as dividends because reinvesting those earnings will create more value for shareholders.

2. When r < k:

If the firm's returns are lower than its cost of capital, retaining earnings isn't a good idea. Instead, the firm should distribute those earnings as *dividends* to shareholders, as this will maximize their wealth.

3. When **r** = **k**:

In this situation, the firm's returns are equal to its cost of capital. It means that whether the firm retains earnings or pays dividends, the market value remains the same. Dividend policy doesn't have any significant impact on the firm's value here.

Walter's model provides us with a framework to decide the best dividend policy based on the firm's financial situation

10.2.1 Assumptions of Walter's Model:

It's important to understand the assumptions on which this model is built. These assumptions simplify the relationship between a firm's dividend policy and its market value, making the model easier to analyze.

1. Internal Financing:

The first assumption is that the firm uses only its retained earnings to finance new investments. In other words, the firm does not issue any fresh shares or take on debt for funding. This means that all investment decisions are limited by the profits the firm chooses to retain.

2. Constant Return and Cost of Capital

The second assumption is that both the firm's required rate of return on investments (r) and its cost of capital (k) remain constant over time. For example, if the firm earns a 10% return on its investments, this return stays the same no matter how much the firm invests.

3. No Taxes

Walter's Model ignores the impact of taxes. This means neither corporate tax on the firm's profits nor personal taxes on dividends are considered. The decisions about whether to retain earnings or distribute dividends are analyzed in a tax-free environment.

4. Infinite or Perpetual Life

The model assumes that the firm will continue to operate indefinitely, with no end in sight. This infinite life span allows the model to focus on long-term investment and dividend policies without worrying about the firm's closure or liquidation. It essentially treats the firm as a permanent entity in the market.

10.2.2 Share valuation using Walter's model

Walter's Model gives us a formula that connects a firm's earnings, dividends, and reinvestments to its share price. Walter's Model provides a simple yet effective formula for valuing the market price of an equity share. The formula is:

P = D/K + (E-D) r/K

Where:

P = Price per equity share

D = Dividend per share

E = Earnings per share

(E - D) = Retained earnings per share (portion of earnings not paid as dividends)

r = Rate of return on investments (return earned by the firm on retained earnings)

k = Cost of capital (rate of return required by shareholders)

The formula essentially divides the share price into two components:

1. The Present Value of Dividends D/K

This part represents the value derived from the dividends paid to shareholders. It assumes that dividends are paid as an infinite stream, discounted at the cost of capital (k).

2. The Present Value of Returns on Retained Earnings (E-D) r/K

This part represents the value generated by reinvesting retained earnings. The retained earnings contribute to future growth, and this value depends on the rate of return (r) the firm can generate from those retained earnings.

10.2.3 Optimal dividend payout

The optimal dividend payout is the one that maximizes the share price of a firm. According to Walter's Model, the optimal dividend payout depends on the type of firm, whether it's a growth firm, normal firm, *or* declining firm.

1. Growth Firms:

Growth firms are those that have numerous profitable investment opportunities and a high rate of growth. In these firms, the rate of return on investments (r) is higher than the cost of capital (k). This means they can reinvest their retained earnings at a higher rate of return and earn better returns. For such firms, retaining earnings to invest in these opportunities leads to higher market value and better share prices. **Therefore, for growth firms, the optimal dividend payout ratio is zero**. They should not pay dividends at all, but rather reinvest all their profits to take advantage of their growth opportunities. This maximizes the share price.

2. Normal Firms

Normal firms are those that have reached a stage where they no longer have profitable investment opportunities that can provide returns higher than the cost of capital. In these firms, the return on investment (r) is equal to the cost of capital (k). Because of this, it doesn't matter whether the firm distributes dividends or reinvests its earnings; the market value of the firm remains the same. For normal firms, the optimal dividend payout ratio is flexible. Since the firm's market value is unaffected by dividend policy, the firm can pay any amount of dividends without influencing the share price.

3. Declining Firms

Declining firms are those that do not have profitable investment opportunities, and their rate of return (r) is lower than their cost of capital (k). These firms are in a situation where reinvesting retained earnings would not generate a good return. Therefore, rather than keeping the earnings, the firm should distribute them to shareholders, who can invest the money at a better return. For declining firms, the optimal dividend payout ratio is 100%. They should pay out all of their earnings as dividends because reinvesting them would not generate value. This payout maximizes the market price of the firm's shares.

Walter's Model for Optimal Dividend Payout:

- 1. If r > k, the firm should have a zero payout ratio and reinvest its earnings.
- 2. If r = k, the firm is indifferent between paying dividends and reinvesting, as the market value will remain the same.
- **3.** If r < k, the firm should have a 100% payout ratio, distributing all retained earnings as dividends.

10.2.4 Criticism of Walter's Model

The assumptions made in the model are quite idealistic and don't always hold true in the real world.

1. No External Financing

One of the core assumptions of Walter's Model is that the firm uses only internal financing, i.e., it finances all investments through retained earnings. However, in the real world, firms often need to raise external funds by issuing new equity or taking on debt. This assumption doesn't hold in situations where a firm needs more capital than it can generate internally.

2. Constant Return (r)

Walter's Model assumes that the required rate of return on investments (r) is constant. However, this assumption is unrealistic because the return on investments varies depending on the projects a firm undertakes. Profitable projects usually generate higher returns, but as more investments are made, the returns often decrease due to factors like market saturation or increasing risk.

3. Constant Opportunity Cost of Capital (k)

Another assumption in Walter's Model is that the cost of capital (k) remains constant. This doesn't reflect reality, where the cost of capital varies based on the firm's risk profile. If a firm

becomes riskier, its investors will demand a higher return, increasing the cost of capital. Similarly, if the firm becomes less risky, the cost of capital may decrease.

10.3 GORDON'S MODEL

Gordon's Model, another popular theory on dividend relevance. Myron Gordon proposed a model that suggests the market value of a firm is indeed affected by its dividend policy, similar to Walter's but with some key differences.

Gordon's Formula for Share Valuation

Gordon's Model provides a formula to calculate the price of a share based on dividends, earnings, and the required rate of return.

Po = E1 (1-b)/k - br

Where:

 P_0 = Price per share at the end of year 0 (current price)

 E_1 = Earnings per share at the end of year 1 (next year's earnings)

(1 - b) = Fraction of earnings the firm distributes as dividends, also called the **dividend payout** ratio

b = Fraction of earnings retained or ploughed back into the firm, also called the **retention ratio**

 \mathbf{k} = Rate of return required by shareholders (cost of equity)

 \mathbf{r} = Rate of return earned by the firm on its investments

br = Growth rate of earnings and dividends (since retained earnings are reinvested at rate *r*)

10.3.1 Assumptions of Gordon Model

The key assumptions are follows:

1. No External Financing:

The first assumption in Gordon's Model is that the firm uses only retained earnings for financing all its investments. This means the firm doesn't issue fresh capital (like new equity or debt). This assumption implies that the investment and dividend decisions are linked — the

firm either reinvests its earnings or pays them out as dividends. This approach is similar to Walter's Model, where internal financing is emphasized.

2. Constant Return and Cost of Capital

Another important assumption is that both the **rate of return on investments (r)** and the **cost of capital (k)** are constant. In other words, the firm is assumed to earn a fixed return on its reinvested earnings, and its cost of capital, which is the required return by shareholders, remains the same over time.

3. Perpetual Earnings:

Gordon's Model also assumes that the firm has **perpetual earnings**. This means that the firm will continue to exist indefinitely, and its earnings will remain constant or grow indefinitely. The model assumes that earnings will last forever, and it doesn't account for potential declines or the firm's closure. This assumption allows the model to use the concept of an infinite time horizon for calculating the present value of dividends and earnings.

4. No Taxes:

In Gordon's Model, **no taxes** are considered. This means that the firm does not have to account for tax expenses when making decisions about dividends or retained earnings. Taxes can have a significant impact on the firm's net earnings and dividend policy in the real world, but for the sake of simplicity, Gordon's Model ignores this factor.

5. Constant Retention Ratio (b):

The model assumes that the **retention ratio** (b), which is the fraction of earnings that the firm retains and reinvests, is constant. Once the firm decides how much of its earnings to retain, this ratio remains unchanged over time.

6. Cost of Capital Greater Than Growth Rate

Gordon's Model assumes that the **cost of capital (k)** is greater than the **growth rate (g)**. This means that the firm's required return from its shareholders is greater than the return generated by the reinvested earnings. This assumption ensures that the model remains valid, as it prevents the firm from growing too quickly or becoming over-leveraged, which could lead to unrealistic results.

10.3.2 Optimal dividend payout

Gordon's Model helps determine the **optimal dividend payout ratio** for different types of firms. The optimal dividend payout is the one that maximizes the market value of the firm's shares. But, depending on the type of firm whether it's a growth firm, a normal firm, or a declining firm the optimal dividend policy will vary.

1. Growth Firm:

A growth firm is one that has profitable investment opportunities, meaning it can reinvest its earnings at a rate of return (r) higher than the firm's cost of capital (k). In this case, the rate of return (r) is greater than the cost of capital (k), which means the firm can generate more value by retaining earnings and reinvesting them in growth projects. In this scenario, the optimal dividend payout ratio is low or zero. The logic is that the firm should reinvest its retained earnings to fund new, high-return investments. By doing so, the firm can maximize its future share price. Distributing dividends would reduce the funds available for reinvestment, thus limiting the firm's growth potential. So, for a growth firm: r > k. The share price increases as the dividend payout decreases or even becomes zero.

2. Normal Firm:

A normal firm is one where the firm's return on investments (\mathbf{r}) is equal to its cost of capital (\mathbf{k}) . This means that the firm is earning just enough return on its investments to cover its cost of capital, and there are no surplus profits to fund additional high-return investments. In this case, the dividend policy does **not matter** much in terms of share price. Whether the firm retains earnings or distributes them as dividends, the market value of the firm remains the same. The reason for this is that any retained earnings are reinvested at the same rate as the firm's cost of capital, and thus no additional value is created.

For a normal firm: $\mathbf{r} = \mathbf{k}$

The share price is **indifferent to the dividend payout ratio**. The firm can either distribute or retain earnings without affecting the share price.

3. Declining Firm:

A declining firm is one where the firm's rate of return (r) is less than its cost of capital (k). This means that the firm is not earning enough return on its investments to cover its cost of capital. In this case, the firm does not have sufficient profitable investment opportunities, so it's better to distribute its earnings rather than reinvesting them. For a declining firm, the optimal dividend payout ratio is 100%. By paying out all its earnings as dividends, the firm avoids investing in low-return projects and allows shareholders to reinvest the dividends in higher-return opportunities elsewhere. This increases the market value of the firm, as the

shareholders can put their dividends to better use. For a declining firm: r < k. The share price increases as the dividend payout increases. A 100% payout maximizes the share price.

10.3.3 Criticism of Gordon's Model

The criticisms of Gordon's Model are similar to those of Walter's Model due to the shared assumptions between the two. Both models emphasize that the "market value of a firm is influenced by its investment and dividend policies. Both **Walter's Model** and **Gordon's Model** attempt to highlight the impact of dividend policy on a firm's market value, focusing on the relationship between investment decisions, retained earnings, and dividends. However, these models oversimplify real-world conditions by assuming no external financing, constant rates of return and capital costs, perpetual growth, and the absence of taxes. As a result, while the models provide valuable insights into the theoretical importance of dividend policies, they fail to account for the complexities and variations found in real-life corporate finance scenarios.

10.4: DIVIDEND IRRELEVANCE

The theory of **Dividend Irrelevance** posits that a firm's dividend policy has no impact on its market value. According to this view, investors are primarily concerned with the total returns they receive, whether these returns come in the form of dividends or capital gains. What truly determines a firm's market value is its earning power and the profitability of its investment decisions, not the manner in which profits are distributed.

This concept is formally presented in the **Miller and Modigliani (MM) Dividend Irrelevance Theorem**, introduced by economists Franco Modigliani and Merton Miller in their seminal 1961 article. The MM theorem argues that under certain assumptions, such as perfect capital markets, no taxes, and no transaction costs, the firm's dividend policy does not influence its share price. Instead, the value of the firm is driven solely by the returns generated from its investments.

10.5 MILLER AND MODIGLIANI (MM) THEORY ON DIVIDEND

This model was proposed by **Miller and Modigliani (MM)**, which suggests that a firm's **dividend policy does not affect its share price** or the market value. According to MM, the value of a firm is determined by its **investment decisions**, not by how the firm distributes its earnings between **dividends** and **retained earnings**. MM argue that whether a firm pays out dividends or retains its earnings, it does not change the overall value of the firm. The reasons are-

1. Earnings and Share Value:

The value of the firm is influenced by its **earnings** and the **investment decisions** it makes. If a firm increases its earnings through profitable investments, the firm's overall value increases.

However, how those earnings are distributed (whether as dividends or retained earnings) doesn't impact the firm's market value.

2. Retained Earnings and Capital Appreciation:

If a firm decides to **retain all its earnings** (i.e., not pay dividends), those earnings can be invested to generate **capital appreciation**. This means the value of the firm will increase over time, and shareholders will benefit from the growth of the firm's share price.

3. Dividends and Immediate Returns:

On the other hand, if a firm **distributes all its earnings as dividends**, shareholders will receive the equivalent amount upfront, which they can then reinvest elsewhere. In this case, the shareholders receive immediate returns rather than waiting for the long-term capital appreciation that would come from retained earnings.

10.5.1 Assumptions:

MM's hypothesis is based on the following assumptions:

1. Perfect Capital Markets:

All investors are rational, and information is freely available to everyone without any cost. There are no transaction costs, and securities are infinitely divisible. No investor is large enough to influence the market price of securities, and there are no flotation costs.

2. No Taxes:

There are no taxes on dividends or capital gains, meaning investors are not taxed differently on the form of return they receive.

3. Fixed Investment Policy:

A firm's investment policy is constant, meaning there are no changes in the firm's required rate of return over time.

4. Perfect Certainty:

Investors have perfect certainty regarding the firm's future investments and profits. They can forecast future prices and dividends with certainty. A single discount rate is applicable to all securities at all time periods, so $\mathbf{r} = \mathbf{k} = \mathbf{k}\mathbf{t}$ for all time periods. (This assumption was later revised.)

Criticism:

The MM hypothesis of irrelevance is based on a set of simple assumptions. However, in the real world, markets are imperfect due to factors such as transaction costs, taxes on capital gains and dividends, and differing perceptions of investors toward dividends and capital gains. The following criticisms highlight the limitations of MM's hypothesis:

1. Information About Company's Prospects:

Dividend payments can signal a company's future prospects. A high dividend payout may indicate a bright future, while a low dividend payout could suggest financial uncertainty. Gordon's theory supports this idea, stating that dividends reduce uncertainty for investors. In the real world, high dividend-paying stocks often command higher prices in the market because investors interpret them as lower-risk investments. MM, on the other hand, views dividends as merely an alternative to future earnings for firm valuation.

2. Uncertainty and Fluctuations:

Stock market returns are uncertain due to both systematic and unsystematic factors. This uncertainty may make shareholders prefer current income in the form of dividends. Future income is often discounted at a higher rate because of uncertainty, which may lead investors to value dividend-paying firms more highly. Additionally, some investors prefer the security of receiving current income, which makes dividend payments more relevant.

3. Transaction Costs:

MM assumes no transaction costs when buying or selling securities. In reality, transaction costs exist, meaning that capital gains and dividends are not treated equally by investors. For example, if an investor needs current income or wants to reinvest a dividend, they may sell some of their shares. However, the cost of doing so (transaction fees) makes capital gains less attractive compared to dividends. As a result, investors who seek current income tend to prefer firms with higher dividend payouts.

4. Different Rates of Taxes:

MM assumes there are no taxes on dividends or capital gains. However, in the real world, taxes are levied on both. For instance, in India, there is no tax on dividends for shareholders, but capital gains tax is charged at 15% if shares are sold within a year. This tax difference can influence investor preferences. Those who prefer current income may favor dividends over capital gains to avoid the tax burden associated with selling shares.

5. Issuance Costs on Raising Additional Capital:

MM assumes that firms can raise additional capital without incurring flotation costs (such as underwriting fees, legal fees, and registration fees). However, in reality, flotation costs exist and depend on the size of the issue. Firms may not be able to raise additional equity to pay dividends without incurring these costs. As dividend payments are typically smaller sums, firms may avoid issuing new equity in response to frequent dividend payouts.

6. Additional Equity at Current Market Price:

MM assumes that firms can issue new shares at the existing market price. In practice, companies often need advice from merchant bankers to determine an appropriate price, which is typically lower than the current market price. This discrepancy can lead to suboptimal outcomes for firms raising capital.

7. Rationing of Investment Projects:

MM assumes that firms only invest in projects where the rate of return equals the cost of capital, meaning the firm's investment policy is independent of its financing policy. In reality, firms may struggle to raise capital due to difficult market conditions or the firm's risk profile. Additionally, firms may choose to distribute profits as dividends rather than reinvest them. As a result, dividends become relevant in such situations.

10.6. SUMMARY

This unit provided an in-depth analysis of dividend policies and their influence on a firm's value, examining both **dividend relevance** and **dividend irrelevance** theories.

The **Walter Model** suggests that the optimal dividend payout is determined by the firm's growth stage:

Growth firms should retain earnings to reinvest in profitable opportunities.

Normal firms are indifferent to dividend payout ratios.

Declining firms should distribute all earnings as dividends.

However, the Walter Model is criticized for its unrealistic assumptions, such as no external financing and constant returns.

The **Gordon Model** also links dividend policy to firm value, proposing that the optimal payout depends on the firm's type. Despite its theoretical appeal, it is critiqued for assumptions like no taxes, transaction costs, or market imperfections, which are not reflective of real-world conditions.

In contrast, the **Miller and Modigliani (MM) Dividend Irrelevance Theory** argues that dividend policy does not affect firm value. According to this theory, investors can achieve their desired returns through capital gains or share sales. The MM model is based on idealized assumptions, such as perfect capital markets, no taxes, and no transaction costs, but it is often criticized for neglecting practical factors like taxes, transaction costs, and market imperfections.

10.7 CHECK YOUR PROGRESS

2 Marks Questions

- 1. Briefly explain the concept of dividend relevance.
- 2. What is the role of growth stage in determining the dividend payout according to Walter's Model?
- 3. Mention two assumptions of Walter's Model.
- 4. How does the Gordon Model relate dividend policy to firm value?
- 5. Explain the key difference between dividend relevance and dividend irrelevance theories.
- 6. What is the core idea of the MM Dividend Irrelevance Theory?
- 7. State two criticisms of Walter's Model.
- 8. Highlight two unrealistic assumptions of the Gordon Model.
- 9. How can investors create their own dividend policy according to the MM theory?
- 10. Why is dividend policy relevant in the real world despite the MM theory?

5 Marks Questions

- 1. Explain the key assumptions of Walter's Model.
- 2. Discuss the formula used for share valuation in Walter's Model with an example.
- 3. What is the relationship between a firm's growth stage and its optimal dividend payout under Walter's Model?
- 4. Highlight the major criticisms of Walter's Model.
- 5. Explain the assumptions underlying the Gordon Model of dividend relevance.
- 6. Discuss the concept of optimal dividend payout as per the Gordon Model.
- 7. What are the limitations of the Gordon Model in practical scenarios?
- 8. Explain the MM Dividend Irrelevance Theory and its core assumptions.
- 9. Discuss the relevance of dividend policy in real-world scenarios, considering market imperfections.
- 10. Compare and contrast the Walter Model and the Gordon Model of dividend relevance.

10 Marks Questions

1. Elaborate on the assumptions, methodology, and criticism of Walter's Model.

- 2. Using Walter's Model, calculate the value of a firm with hypothetical data. Explain your results.
- 3. Explain the Gordon Model in detail, highlighting its assumptions, formula, and implications for dividend policy.
- 4. Compare the Walter Model and the Gordon Model, emphasizing their similarities, differences, and criticisms.
- 5. Discuss the MM Dividend Irrelevance Theory in depth, including its assumptions, implications, and criticisms.
- 6. How do real-world factors like taxes and transaction costs challenge the MM Dividend Irrelevance Theory?
- 7. Analyze the impact of dividend policies on a firm's market value with reference to all three models Walter, Gordon, and MM.
- 8. Evaluate the importance of understanding a firm's growth stage in determining dividend policies, citing Walter's Model.
- 9. Discuss the practical relevance of dividend theories in corporate financial decision-making.
- 10. Critically analyze the concept of dividend irrelevance and its application in financial management.

10.8 REFERENCE

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UNIT 11: WORKING CAPITAL MANAGEMENT

STRUCTURE

- 11.1 Introduction
- 11.2 Characteristics of Current Assets

11.3 Factors Requirements

Influencing

Working

Capital

11.5 Level of Current Assets

11.4.1 Consequences of Flexible and Restrictive Policies

11.4.2 Optimal Level of Current Assets

- 11.4.3 Current Assets Financing Policy
- 11.4.4 Permanent vs. Temporary Current Assets

11.5 Financing Strategies

- 11.5.1 The Matching Principle
- 11.6 Operating Cycle and Cash Cycle
- 11.7 Cash and Liquidity Management

11.7.1 The Opportunity Cost of Holding Cash

11.7.2 Cash Budgeting and Short-Term Cash Forecasting

11.7.3 Short-Term Forecast Formats

11.7.4 Methods of Short-Term Cash Forecasting

11.7.5 Long-Term Cash Forecasting

11.7.6 Methods of long term Cash Forecasting

11.7.7 Optimal Cash Balance

11.8 Credit Management

11.9 Credit Policy Variables

11.10 Summary

11.11 Check Your Progress

11.12 Reference

OBJECTIVES:

After studying this chapter, you should be able to:
- 1. Understand the factors influencing working capital.
- 2. Illustrate strategies for financing working capital.
- 3. Calculate the operating cycle and cash cycle.
- 4. Estimate the cash requirements for working capital.

11.1 INTRODUCTION

This chapter focuses on working capital management, a key aspect of short-term financial management, which deals with decisions related to current assets and liabilities. While long-term financial management covers areas such as capital budgeting, dividend policy, and capital structure, which involve cash flows over a longer period (5 to 15 years or more), working capital management typically involves cash flows within a year or within the firm's operating cycle.

There are two key concepts of working capital:

- 1. Gross Working Capital: The total of all current assets.
- 2. Net Working Capital: The difference between current assets and current liabilities.

The management of working capital involves managing both current assets and liabilities, though the primary focus is usually on current assets, as current liabilities arise in relation to current assets. Working capital management is crucial for two main reasons:

- 1. Investment in current assets forms a substantial portion of total investment.
- 2. The investment in current assets and the level of current liabilities must be adjusted quickly in response to changes in sales. While fixed asset investment and long-term financing also respond to sales variations, the relationship is closer and more direct for working capital components.

Financial managers dedicate significant time to managing current assets and liabilities, which includes arranging short-term financing, negotiating favorable credit terms, controlling cash flow, administering accounts receivable, managing inventory investments, and handling short-term surpluses.

11.2 CHARACTERISTICS OF CURRENT ASSETS

When managing working capital, it is important to keep in mind two key characteristics of current assets:

- (i) Short life span and
- (ii) (ii) Rapid transformation into other forms of assets.

Current assets typically have a short life span. For example, cash balances may remain idle for just a week or two, accounts receivable may last between 30 to 90 days, and inventories may be held for anywhere from 1 to 60 days. The exact duration depends on factors like procurement, production, sales, and collection activities, as well as how well these processes are synchronized.

Current assets also undergo swift transformation into other asset forms. For instance, cash is used to acquire raw materials, which are then transformed into finished goods (possibly passing through several stages as work-in-process). These finished goods are generally sold on credit, creating accounts receivable (book debt). Finally, accounts receivable, once realized, are converted back into cash. Exhibit 23.2 illustrates this transformation cycle.

The short life span and rapid transformation of working capital components have significant implications:

- 1. Working capital management decisions are frequent and repetitive.
- 2. The difference between profit and present value is relatively insignificant.
- 3. The close interaction between working capital components means that efficient management of one component requires simultaneous consideration of others. For example, if a firm accumulates large amounts of finished goods inventory, it may need to offer more generous credit terms or relax credit collection practices. Similarly, during a liquidity crunch, the firm might need to offer attractive discounts to encourage sales.

11.3 FACTORS INFLUENCING WORKING CAPITAL REQUIREMENTS

The working capital requirements of a firm are influenced by several factors, some of the most important ones being:

1. Nature of Business

The working capital needs of a firm are closely tied to the nature of its business. For example, a service-oriented firm, like an electricity provider or a transport company, typically has modest working capital requirements because they have a short operating cycle and often sell on a cash basis. In contrast, a manufacturing business, such as a machine tools manufacturer, with a longer operating cycle and a larger proportion of credit sales, will require significantly more working capital. Exhibit 23.3 illustrates the relative proportions of investment in current assets and fixed assets for various industries.

2. Seasonality of Operations

Firms with seasonal fluctuations in operations tend to experience significant variations in their working capital needs. For example, a ceiling fan manufacturer faces peak sales during the summer months and a sharp decline in sales during winter. This results in an increase in

working capital requirements during the summer and a decrease in winter. On the other hand, firms with more consistent sales, like a lamp manufacturer, typically have more stable working capital requirements year-round.

3. Production Policy

Companies experiencing seasonal sales fluctuations may adopt production policies aimed at reducing the impact of these variations on working capital. For instance, a ceiling fan manufacturer could opt for steady production throughout the year, rather than ramping up production only during peak season. This approach helps stabilize working capital requirements throughout the year.

4. Market Condition

The level of competition in the market plays a key role in determining a firm's working capital needs. In a highly competitive market, companies must maintain larger inventories of finished goods to quickly meet customer demands, and they may also need to offer more generous credit terms. This increases working capital requirements due to higher investment in inventory and accounts receivable. Conversely, in a market with less competition, a firm may manage with a smaller inventory, as customers are more willing to wait, and the firm can encourage cash payments or even request advance payments to reduce the need for working capital.

5. Conditions of Supply

The availability of raw materials, spares, and other supplies significantly impacts inventory management. If supply is reliable and prompt, a firm can operate with a smaller inventory. However, when supply is unpredictable or insufficient, the firm must maintain larger inventories to ensure continuous production. This is especially true if the raw materials are available only seasonally, requiring the firm to stock up when supplies are available to maintain year-round production.

11.4 LEVEL OF CURRENT ASSETS

A crucial aspect of working capital management is determining the appropriate level of investment in current assets. This decision can follow two main strategies:

1. Flexible Policy (Conservative Policy):

Under a flexible policy, the firm maintains a high level of investment in current assets. This means the firm keeps a large balance of cash and marketable securities, holds substantial inventories, and extends generous credit terms to customers, leading to a high level of accounts receivable (debtors).

2. Restrictive Policy (Aggressive Policy):

In contrast, a restrictive policy involves a lower investment in current assets. The firm keeps a smaller balance of cash and marketable securities, maintains lower inventories, and offers stricter credit terms to customers, resulting in lower accounts receivable.

11.4.1 Consequences of Flexible and Restrictive Policies

1. Flexible Policy:

A flexible policy has several advantages, such as minimizing production stoppages due to inventory shortages, ensuring timely deliveries to customers, and stimulating sales through generous credit terms. However, these benefits come at the cost of higher investment in current assets, meaning the firm ties up more of its capital in cash, inventory, and accounts receivable.

2. Restrictive Policy:

A restrictive policy, on the other hand, may lead to certain drawbacks, including frequent production stoppages, delayed deliveries, and potential sales losses due to limited inventory and stricter credit terms. These issues arise as the firm tries to minimize its investment in current assets.

11.4.2 Optimal Level of Current Assets

The key to managing working capital effectively is determining the **optimal level of current assets**. This involves balancing two types of costs:

1. Carrying Costs:

These are the costs associated with holding higher levels of current assets, such as the cost of financing additional cash, inventory, and receivables.

2. Shortage Costs:

These are the costs incurred when the firm holds insufficient current assets, leading to production disruptions, loss of sales, and damaged customer relationships due to inventory shortages or delays in fulfilling orders.

The **optimal level of current assets** is where the total cost (the sum of carrying costs and shortage costs) is minimized. This level is represented by **CA** in the graph (Exhibit 23.4). At this point, the firm strikes a balance between the costs of holding excess assets and the risks of running out of essential resources.

It's important to note that the total cost curve may be relatively flat around the optimal level, making it difficult to pinpoint the exact optimal point. In practice, financial managers often aim for a level of current assets that is close to the optimal range, ensuring that the business can operate efficiently without over-investing in current assets or facing frequent shortages.

11.4.3 Current Assets Financing Policy

Once a firm determines the appropriate level of current assets, the next step is deciding how these assets should be financed. Specifically, the firm must figure out what combination of **long-term capital** and **short-term debt** should be used to support its current assets.

To illustrate this, **Exhibit 23.5** shows how the total capital requirements of a growing firm change over time. The assets are categorized into **fixed assets** and **current assets**. Fixed assets, like machinery or buildings, grow at a constant rate, reflecting the long-term growth in sales. Current assets also grow at this constant rate over the long term but can fluctuate significantly due to seasonal or cyclical changes in sales or purchases.

11.4.4 Permanent vs. Temporary Current Assets

The firm's investment in current assets can be divided into two parts:

- 1. **Permanent current assets**: These are the assets the firm needs to maintain operations even during the lowest points of its sales cycle. They are the core, ongoing requirements.
- 2. **Temporary current assets**: These fluctuate with sales, often increasing during peak seasons and decreasing during off-seasons. They reflect the variable component of current assets.

11.5 FINANCING STRATEGIES

Three financing strategies are commonly used to support the firm's capital needs, as illustrated in

Strategy A: In this approach, the firm uses **long-term financing** to cover both fixed asset requirements and peak working capital needs. When the working capital requirement is below its peak level, the excess funds are invested in liquid assets like **cash** or **marketable securities**.

Strategy B: Here, **long-term financing** is used for fixed assets, permanent working capital, and part of the fluctuating working capital needs. During seasonal sales peaks, the firm uses **short-term financing** to cover the temporary increase in working capital. When sales are low, the firm can invest the surplus funds in liquid assets.

Strategy C: This strategy uses long-term financing for fixed assets and permanent working capital requirements, while short-term financing is used to cover the fluctuating working

capital needs. This strategy aligns with the firm's seasonal requirements, using short-term debt to support fluctuations and long-term debt for stable, permanent needs.

11.5.1 The Matching Principle

The **matching principle** states that the maturity of the financing sources should align with the maturity of the assets being financed. This means that:

Long-term financing should be used for **fixed assets** and **permanent current assets**, which are stable and have a longer useful life.

Short-term financing should be used for **fluctuating current assets**, which vary over the short term due to seasonal or cyclical sales patterns.

Strategy C reflects the matching principle. Under this strategy, **long-term debt** finances fixed assets and permanent working capital, while **short-term debt** finances fluctuating working capital.

The rationale for the matching principle is straightforward: If a firm finances a long-term asset, such as machinery, with short-term debt (like commercial paper), it will need to refinance that debt periodically. This introduces risks and complications since the firm will have to continually repay or refinance its short-term debt. To avoid this risk and ensure smooth operations, the maturity of assets and financing sources should be matched appropriately. A firm has several options for financing its current assets, with each strategy aligning long-term and short-term capital needs differently. The **matching principle** guides firms to ensure that long-term assets are financed with long-term debt and short-term assets with short-term financing. This balance helps maintain financial stability and reduces the risk of refinancing short-term debt used for long-term assets.

11.6 OPERATING CYCLE AND CASH CYCLE

The investment in working capital is influenced by four critical events in a firm's production and sales cycle:

- 1. Purchase of raw materials
- 2. Payment for raw materials
- 3. Sale of finished goods
- 4. Collection of cash from sales

The process begins with the purchase of raw materials, followed by a delay before payment, representing the *accounts payable period*. The raw materials are then converted into finished goods, which are subsequently sold. The duration between purchasing raw materials and selling finished goods is referred to as the *inventory period*. After sales, customers take some time to settle

their bills. The time gap between the sales date and the collection of receivables is known as the accounts receivable period.

The total time from the purchase of raw materials to the collection of cash from sales is called the *operating cycle*. On the other hand, the *cash cycle* refers to the time span between the payment for raw material purchases and the collection of cash from sales.

Mathematically:

The operating cycle is the sum of the inventory period and the accounts receivable period.

The cash cycle is the operating cycle minus the accounts payable period.

These periods—inventory, accounts receivable, and accounts payable—can be estimated using the firm's financial statements.

Inventory Period =
$$\frac{Average Inventory}{Annual Cost of Goods sold/365}$$

Accounts Receivable Period = $\frac{Average \ Accounts \ Receivales}{Annual \ Sales/365}$

Accounts Payable Period = $\frac{Average\ Accounts\ Payable}{Annual\ Cost\ of\ goods\ sold\ /365}$

Illustration 1: From the following information calculate Operating Cycle and Cash Cycle.

	P/L Account Data		Beginning of 20X0	Ending of 20X0
Sales	800	Inventory	96	102
COGS	720	Trade Receivable	86	90
		Trade Payable	56	60

Inventory Period = $\frac{(96+102)/2}{720/365} = 50.1$ days

Accounts Receivable Period = $\frac{(86+90)/2}{800/365}$ = 40.2 days

Accounts Payable Period $=\frac{(50+60)/2}{720/365} = 29.4$ days

Operating Cycle = Inventory Period + Accounts Receivable Period

50.1 + 40.2 = 90.3 days

Cash Cycle = Operating Cycle – Accounts Payable period

$$90.3 - 29.4 = 60.9$$
 days

11.7 CASH AND LIQUIDITY MANAGEMENT:

Cash, the most liquid asset, plays a critical role in the daily operations of business firms. Although it typically constitutes only a small proportion of corporate assets—often ranging between 1 and 4 percent—its efficient management is essential for ensuring the solvency of a business. Cash serves as the central point for the flow of funds within a business and is therefore often referred to as the "lifeblood of a business enterprise."

John Maynard Keynes identified three key motives for holding cash:

1. Transaction Motive

Firms require cash to meet their transactional needs. The timing of cash inflows—arising from the sale of goods and services, disposal of assets, and securing financing—is rarely perfectly aligned with the timing of cash outflows—such as purchasing goods and services, acquiring capital assets, and meeting financial obligations. Therefore, a buffer of cash is necessary to address these timing mismatches.

2. Precautionary Motive

Uncertainty surrounding the magnitude and timing of cash inflows (e.g., sales revenue, asset sales, or securities issuance) and cash outflows (e.g., purchases or other obligations) necessitates maintaining a precautionary cash balance. This helps firms protect themselves against unforeseen cash flow disruptions.

3. Speculative Motive

Cash enables firms to capitalize on profit-making opportunities arising from fluctuations in commodity prices, security prices, interest rates, and foreign exchange rates. A cash-rich firm is better positioned to take advantage of such opportunities. However, for many firms, speculative needs can often be met through reserve borrowing capacity or liquidating marketable securities.

11.7.1 The Opportunity Cost of Holding Cash

While cash is critical for these functions, it remains an idle resource with an inherent opportunity cost. The liquidity it provides comes at the expense of profits foregone from alternative investment opportunities. Hence, financial managers must strive to balance liquidity and profitability by:

- 1. Establishing reliable forecasting and reporting systems.
- 2. Enhancing the efficiency of cash collections and disbursements.
- 3. Optimizing the conservation and utilization of funds.

11.7.2 Cash Budgeting and Short-Term Cash Forecasting

Cash budgeting, also known as short-term cash forecasting, is a crucial component of cash management for businesses. It helps organizations maintain liquidity and ensures efficient cash flow management. Firms routinely prepare cash budgets to achieve the following objectives:

1. Estimating Cash Requirements:

This involves determining the amount of cash needed to meet operational and other financial commitments.

2. Planning Short-Term Financing:

Cash budgeting helps businesses identify when they might need to borrow or secure short-term loans to cover expenses.

3. Scheduling Payments for Capital Expenditure Projects:

By forecasting cash flows, businesses can plan the timing of payments related to significant investments like equipment or infrastructure.

4. Planning Purchases of Materials:

Forecasting allows companies to align material purchases with available cash, avoiding unnecessary delays or excess inventory.

5. Developing Credit Policies:

It assists in setting policies for extending credit to customers and managing collections to improve cash inflow.

6. Checking the Accuracy of Long-Term Forecasts:

Short-term cash budgets act as a reference point to verify the reliability of long-term financial projections.

11.7.3 Short-Term Forecast Formats

Businesses use various short-term cash forecasting formats, tailored to their specific needs. Common designs include:

1. One Year Divided into Quarters or Months:

Suitable for annual planning, this provides a broad overview of the firm's cash position.

2. One Quarter Divided into Months:

Useful for more detailed quarterly planning, particularly when specific projects or seasonal cash flow changes are anticipated.

3. One Month Divided into Weeks:

This format provides weekly insights, offering greater control over cash management during high-activity periods.

4. Weekly Forecast Divided into Days:

For businesses experiencing liquidity challenges, a daily forecast ensures precise monitoring and management of cash flow.

11.7.4 Methods of Short-Term Cash Forecasting

1. Receipts and Payments Method

It is the most widely used method for short-term cash forecasting. It focuses on tracking actual cash inflows (receipts) and outflows (payments) to provide a realistic view of the firm's liquidity position.

2. Adjusted Net Income Method:

Though primarily used for long-term cash forecasting, this method can also provide insights into short-term forecasts. It involves adjusting the firm's net income to account for changes in non-cash items and working capital.

11.7.5 Long-Term Cash Forecasting

The distinction between short-term and long-term cash forecasting is typically marked by a oneyear horizon, though this is somewhat arbitrary. Long-term cash forecasts are usually developed for periods ranging from two to five years. These forecasts provide a high-level view of a firm's future financing requirements and the potential availability of investible surplus. Such forecasts are instrumental in planning for capital investment expenditures and long-term financing strategies.

11.7.6 Methods for Long-Term Cash Forecasting

1. Receipts and Disbursements Method

While theoretically applicable for long-term cash forecasts, this method is more commonly associated with short-term forecasting due to its detailed nature.

2. Adjusted Net Income Method

This is the preferred method for long-term cash forecasting. Resembling funds flow statements, it aims to estimate the firm's cash requirements at a future point in time and assess whether these needs can be fulfilled from internal sources.

Steps in the Adjusted Net Income Method

- 1. Prepare a forecast based on the firm's budgets.
- 2. Use the budgeted data to calculate cash inflows and outflows.
- 3. Estimate the firm's net cash position and identify surplus or deficit areas.

The adjusted net income forecast provides a framework for understanding future financing requirements and facilitates strategic financial decision-making. This method is especially valuable for aligning long-term investments and financing plans with the firm's strategic goals.

11.7.7 Optimal Cash Balance:

Determining the **optimal cash balance** is a critical aspect of cash management. A firm must strike a balance between **transaction costs** (incurred when converting marketable securities into cash) and **opportunity costs** (the cost of holding idle cash that could have been invested to earn returns).

Understanding the Tradeoff

1. Transaction Costs:

When a firm holds a **smaller cash balance**, it will need to convert marketable securities into cash more frequently to meet its liquidity needs. Every conversion involves **trading costs**, such as brokerage fees or administrative expenses. These costs **decrease** as the firm maintains a **larger cash balance**, since fewer conversions are required.

2. **Opportunity Costs**

On the other hand, holding larger **cash balance** means keeping more funds idle instead of investing them in profitable opportunities, like marketable securities or projects. As the cash balance increases, the **opportunity cost** rises due to the foregone returns that could have been earned from investing the idle funds.

The Optimal Cash Balance (C)*:

The optimal cash balance, denoted as C^* , is the point where the total cost of holding cash (the sum of transaction costs and opportunity costs) is at its **minimum**. At this point, the firm achieves the most cost-effective balance between holding cash and converting marketable securities.

This concept is often illustrated graphically, where:

Transaction costs decrease as the cash balance increases.

Opportunity costs increase as the cash balance increases.

The total cost curve is a U-shaped curve, with its minimum point representing C*.

Figure No 1: The Optimal Cash Balance (C)*



11.8 CREDIT MANAGEMENT

While businesses prefer selling on a cash basis, competitive pressures and customary practices often compel them to offer credit sales. Firms extend credit to stimulate sales, providing value to customers by augmenting their resources. This is particularly beneficial for customers who cannot borrow from alternative sources or find it too costly or inconvenient to do so.

Typically, the credit period offered by firms ranges between 15 and 60 days. When goods are sold on credit, the finished goods are transformed into **accounts receivable (trade receivables)** in the seller's books. Conversely, in the buyer's books, the obligation resulting from the credit purchase is recorded as **accounts payable (trade payables)**.

The amount a firm invests in accounts receivable depends on the volume of credit sales and the time taken to collect these receivables. For instance, if a firm sells ₹1 million worth of goods on credit daily and its average collection period is 40 days, its accounts receivable would amount to ₹40 million.

In most businesses, accounts receivable (or trade receivables, as they are commonly known in India) represent the third most significant asset category, following **plant and equipment** and **inventories**. Therefore, effective credit management is essential for maintaining financial health and operational efficiency.

11.9 CREDIT POLICY VARIABLES:

The key dimensions of a firm's credit policy include:

1. Credit Standards

- 2. Credit Period
- 3. Cash Discount
- 4. Collection Effort

These variables are interconnected and significantly influence factors such as sales levels, bad debt losses, customer discounts, and collection expenses. For clarity and ease of explanation, each of these variables will be analyzed independently.

1. Credit Standards

A crucial aspect of a firm's credit policy is determining the criteria for accepting or rejecting a customer for credit. Firms have a broad spectrum of choices in this regard. At one extreme, a firm may decide not to extend credit to any customer, regardless of their creditworthiness. At the other extreme, it may choose to extend credit to all customers, irrespective of their credit rating. Between these two extremes lie several practical options.

In general, **liberal credit standards** tend to boost sales by attracting more customers. However, this is often accompanied by an increase in bad debt losses, a higher investment in receivables, and greater collection costs. On the other hand, **strict credit standards** have the opposite effects—they tend to reduce sales, minimize bad debt losses, lower receivables investment, and decrease collection costs.

To decide whether to relax or tighten credit standards, it is important to measure their impact on **residual income**. Residual income is the surplus remaining after accounting for the additional capital required due to relaxed credit standards.

2. Credit Period

The credit period refers to the amount of time customers are given to pay for their purchases. This period typically ranges between 15 and 60 days. In cases where a firm does not extend any credit, the credit period is effectively zero. For instance, if a firm offers a 30-day credit period without providing any discounts for early payments, its credit terms are described as "net 30."

Extending the credit period often leads to an increase in sales by encouraging existing customers to buy more and attracting new customers. However, this comes with certain drawbacks, such as a higher investment in accounts receivable and an increased likelihood of bad debt losses. On the other hand, shortening the credit period has the opposite effects. It can reduce sales, lower the investment in accounts receivable, and decrease the risk of bad debt losses.

3. Cash Discount

Firms often provide cash discounts to encourage customers to make payments promptly. These discounts are typically expressed as a percentage and are linked to a specific time frame, as outlined in the credit terms. For instance, credit terms such as "2/10, net 30" indicate that customers can avail of a 2% discount if payment is made within 10 days; otherwise, the full payment is due by the 30th day.

Liberalizing the cash discount policy can involve increasing the discount percentage and/or extending the discount period. Such measures are generally aimed at boosting sales, as customers perceive the discount as a price reduction. Additionally, it encourages faster payments, thereby reducing the average collection period. However, this approach also increases the total cost of offering discounts, which must be carefully evaluated to ensure financial feasibility.

4. Collection Effort

The collection effort of a firm refers to the measures taken to ensure timely payments from customers. A well-structured collection program may include the following steps:

- 1. Regular monitoring of receivables to track outstanding payments.
- 2. Sending reminder letters to customers before their payment due date.
- 3. Providing e-mail or telephonic notifications to customers around the due date
- 4. Issuing warnings about potential legal action for overdue accounts.
- 5. Initiating legal proceedings against accounts that remain overdue.

A rigorous collection effort typically has mixed effects. While it reduces the percentage of bad debts and shortens the average collection period, it may also discourage some customers, leading to lower sales. Additionally, it increases collection expenses due to the additional resources and actions involved.

11.10 Summary

Characteristics of Current Assets: Explores the unique features of current assets, which are essential for day-to-day operations.

Factors Influencing working Capital Requirements: Highlights internal and external factors that determine the working capital needs of a business.

Level of Current Assets: Flexible and Restrictive Policies: Discusses the consequences of adopting either policy for managing current assets.

Optimal Level of Current Assets: Explains how to achieve a balance in current assets to maximize efficiency.

Current Assets Financing Policy: Focuses on the financing approaches for current assets.

Permanent vs. Temporary Current Assets: Differentiates between assets required continuously and seasonally.

Financing Strategies: The Matching Principle: Examines the principle of matching asset lifecycles with financing durations.

Operating Cycle and Cash Cycle: Defines and differentiates the operating and cash cycles in managing working capital.

Opportunity Cost of Holding Cash: Discusses the trade-offs in holding excess cash.

Cash Budgeting and Short-Term Cash Forecasting: Highlights the importance of budgeting for effective cash management.

Short-Term Forecast Formats: Presents different formats for short-term cash forecasts.

Methods of Short-Term Cash Forecasting: Explains techniques for predicting short-term cash needs.

Long-Term Cash Forecasting: Covers approaches to forecasting cash over an extended period.

Methods of Long-Term Cash Forecasting: Details techniques for long-term predictions.

Optimal Cash Balance: Identifies strategies to maintain an ideal cash balance.

Credit Management: Examines the processes and practices involved in managing credit effectively.

Credit Policy Variables: Discusses the key variables that influence credit policies and their implementation.

11.11 CHECK YOUR PROGRESS

2 Marks Questions

- 1. Define current assets and give two examples.
- 2. What is the matching principle in financing strategies?
- 3. Distinguish between permanent and temporary current assets.
- 4. State the key factors influencing working capital requirements.
- 5. What is the opportunity cost of holding cash?

5 Marks Questions

- 1. Explain the consequences of adopting a restrictive policy for managing current assets.
- 2. What are the key differences between the operating cycle and the cash cycle?
- 3. Describe the methods of short-term cash forecasting.
- 4. Discuss the importance of maintaining an optimal cash balance in cash management.
- 5. Highlight the major credit policy variables that influence credit management.

10 Marks Questions

- 1. Explain the concept of current assets financing policy and its relevance to working capital management.
- 2. Discuss the factors that determine the level of current assets in an organization and their impact on business operations.
- 3. Elaborate on cash budgeting and forecasting, including the methods of short-term and long-term cash forecasting.
- 4. Compare and contrast flexible and restrictive policies for current asset management.
- 5. Examine the relationship between credit management and working capital efficiency.

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UNIT 12: WORKING CAPITAL FINANCING

STRUCTURE:

12.1: Introduction

12.2 Short-Term Sources of Finance

- 12.2.1 Trade credit
- 12.2.2: Benefits of Trade Credit:

12.2.3: Costs of Trade Credit

12.2.4 Bank Credit

12.2.5: Commercial Paper

12.2.6 Factoring

12.3: Spontaneous Sources of Finance

12.3.1 Accrued Expenses

12.3.2: Deferred Income

12.4 Long Term Sources of Finance

12.4.1 Shares

12.4.2 Preference Shares

12.4.3 Debentures

12.4.4 Term Loans

12.5 Summary

12.6 Check Your Progress

12.7 Reference

OBJECTIVES:

After studying this module, you shall be able to:

- 1. Understand the different financial options for businesses, both for immediate and future needs.
- 2. Recognize the growing importance of commercial papers and factoring in business financing.

- 3. Assess the advantages and disadvantages of different financial sources for the company's financial strategy.
- 4. Learn about the different types of bank credit available, such as overdrafts, loans, and credit lines.

12.1: INTRODUCTION

This unit focuses on the various sources of finance available to a company for financing its working capital needs. Working capital is essential for maintaining the day-to-day operations of a business, and determining how to finance it is crucial for ensuring smooth functioning. Companies can access three main types of finance: **short-term**, **long-term**, and **spontaneous** sources. Short-term sources provide funds for periods of one year or less, typically used to address temporary financial requirements. Long-term sources, on the other hand, provide financing for longer durations, supporting more stable and permanent working capital needs. Spontaneous sources arise naturally during the normal course of business, such as accrued expenses or accounts payable, without any specific effort from the firm. Understanding these different sources and their respective benefits helps companies make informed decisions about how to manage their working capital efficiently.

12.2 SHORT-TERM SOURCES OF FINANCE

The two most significant short-term sources of finance for working capital are trade credit and bank borrowing. Bank borrowing has historically been the next major source of short-term working capital finance. Prior to the 1970s, it was the primary source, as bank credit was readily available to businesses. However, in the 1980s and 1990s, government restrictions and policy changes made it a more limited source. Today, with no government-imposed restrictions, banks are free to provide funds for working capital financing. Additionally, two other short-term sources have emerged in recent years: commercial papers and factoring of receivables. The various short-term financing options are outlined below.

12.2.1 Trade credit

Trade credit is a form of credit extended by suppliers to firms when they purchase raw materials or goods on credit and defer payment. It arises as a part of normal business operations. In India, over one-third of short-term financing is sourced through trade credit, making it especially important for small businesses, as they often find it difficult to obtain loans from banks.

There are three forms of trade credit:

a. **Sundry Creditors**: This is an informal arrangement where credit is extended to a firm on an open account basis. No legal documents are signed to acknowledge the debt, but the firm makes continuous deferred payments to the supplier based on mutual trust. This is shown as "sundry creditors" (or accounts payable in the USA) in the balance sheet.

- b. **Bills Payable**: A more formal arrangement, where the buyer firm signs a bill of exchange to secure credit from the supplier. The bill specifies a maturity date by which payment must be made. This is reflected as "bills payable" in the buyer's balance sheet and is typically used when the supplier lacks trust in the buyer.
- c. **Promissory Note**: In this formal agreement, the buyer firm makes a written promise to pay the supplier at a specific future date. These are recorded as "notes payable" in the buyer's balance sheet.

These three forms of trade credit offer flexibility to firms in managing their short-term financing needs.

12.2.2: Benefits of Trade Credit:

1. Easy Availability:

Trade credit is a spontaneous and easily accessible source of finance, making it especially valuable for small firms that struggle to raise funds through other channels.

2. Flexibility:

Trade credit is highly flexible, directly tied to the sales of a company. As sales increase, purchases from suppliers also rise, automatically boosting the credit amount, and the reverse happens when sales decrease.

3. Informality:

Unlike other sources of finance, trade credit doesn't require legal formalities or negotiations, making it a simple and attractive option for businesses.

12.2.3: Costs of Trade Credit

While the cost of trade credit is not directly paid by the firm, as it does not involve interest payments, there are implicit costs associated with the "credit terms." These terms primarily specify the due date for payment, and in some cases, whether or not a cash discount is offered. For instance, if the credit terms state "45 days net," the payment must be made within 45 days, and the amount payable remains the same. However, in some cases, credit terms may include a cash discount. For example, if the terms are "4/15 net 45," it means the buyer gets a 4% discount if payment is made within 15 days. After that period, no discount is available, and the full payment is due on the 45th day.

In this case, the implicit cost of trade credit arises from the fact that firms miss out on the cash discount if they delay the payment. Therefore, businesses should be aware that if they are taking credit but not utilizing the discount, they should defer the payment until the last day to minimize the cost of trade credit.

12.2.4: Bank Credit

After trade credit, bank credit is one of the most important sources of financing working capital requirements. In India, banks serve as the main institutional source for working capital financing. Banks typically set a credit limit, which specifies the maximum amount a firm can borrow for working capital needs. There are various forms of bank credit available to businesses:

1. Overdraft:

The overdraft facility is available for current accounts, allowing firms to withdraw funds from the bank beyond their balance, up to a specified limit and within a set time period. Interest is charged on the daily balance of the amount withdrawn. This is a highly flexible option, as funds can be accessed at any time and repaid within the given time frame through cheques.

2. Cash Credit:

Similar to an overdraft facility, a cash credit account allows the borrower to make withdrawals up to a specified limit. The borrower must repay the amount within a set time period. Interest is charged only on the actual amount withdrawn, and the credit limit is usually secured against current assets. This is another flexible form of bank credit.

3. Purchase/Discounting of Bills:

Introduced by the Reserve Bank of India (RBI) in 1970, the bill market scheme allows firms to discount bills with banks to obtain credit. This scheme aims to reduce the reliance on cash credit. The RBI also serves as a lender of last resort if a bank needs to sell discounted bills to raise funds. When a bill is discounted, the borrower receives the discounted value, and the bank collects the full amount from the drawee at maturity. This scheme has not been very successful in India.

4. Loans:

Under this form of bank credit, the full loan amount is credited to the borrower's account, and interest is paid on the entire amount. The loan is typically repaid in periodic installments and the loan can be renewed as needed.

5. Working Capital Loan:

Sometimes, firms need additional funds beyond the credit limit for unforeseen expenses. Banks provide these loans, which often carry higher interest rates than standard loans. Repayment is typically scheduled in half-yearly or yearly installments.

6. Letter of Credit:

Unlike the direct credit sources mentioned above, a letter of credit is an indirect form of bank credit. In this arrangement, the bank assumes the risk of default, while the supplier provides the credit. The purchaser of goods receives the letter of credit from their bank, which agrees to make payment only if the purchaser defaults on payment within the agreed time.

These various forms of bank credit offer flexibility and support to businesses in meeting their working capital needs.

Security Required in Bank Credit

Banks typically require adequate security before extending credit to borrowers. The following are the common modes of security required by banks:

1. Hypothecation:

Under this mode, the borrower provides security in the form of movable property, usually inventories, to the bank for raising credit. The goods hypothecated remain in the possession of the borrower, and the bank does not take ownership. However, if the borrower defaults on payments, the bank has the legal right to sell the goods to recover the amount. This facility is typically available for established borrowers, not new ones.

2. Pledge:

This is similar to hypothecation, but the key difference is that when the borrower raises shortterm credit from the bank, the borrower transfers the physical possession of goods to the bank. The bank holds a lien on the goods and retains possession until the borrower repays the principal, interest, and any other charges. If the borrower defaults, the bank has three options: (a) sue the borrower for the outstanding amount, (b) sue for the sale of the pledged goods, or (c) sell the goods after giving due notice.

3. Lien:

Lien refers to the lender's right to retain possession of goods until the borrower repays the amount owed. There are two types of lien:

1. Particular lien: The right to retain goods until the dues related to those goods are paid.

2. General lien: The right to retain possession of goods until all dues to the lender are paid. Banks typically enjoy a general lien when extending credit.

4. Mortgage:

A mortgage involves transferring legal or equitable interest in a specific immovable property as collateral for the repayment of a loan. It is commonly used for financing working capital. In this case, the borrower is known as the mortgagor, the lender is the mortgagee, and the transfer document is called the mortgage deed.

5. Charge:

A charge refers to the transfer of an interest in immovable property to another party as security for the repayment of money, where the transaction does not constitute a mortgage. The person holding the charge has rights similar to those of a mortgagee, and the provisions of simple mortgage apply to such charges.

These forms of security help banks mitigate the risks associated with lending, ensuring repayment through various forms of collateral.

12.2.5: Commercial Paper

Commercial paper is a key money market instrument used in developed countries to raise shortterm credit. Following the recommendations of the Vaghul Working Group, the Reserve Bank of India (RBI) introduced the commercial paper scheme in 1989. A commercial paper is an unsecured promissory note issued by the borrower to secure short-term credit. In the United States, only financially sound and highly rated companies, known as blue-chip companies, can issue commercial paper in the market to raise funds.

The main customers of commercial paper include banks, insurance companies, mutual funds, other financial institutions, and companies with surplus funds. Investments in this market are typically short-term and carry minimal risk.

Effective Cost/Interest Yield:

Commercial papers are typically issued at a discount to their face value and redeemed at their full face value. The interest rate on commercial paper is generally lower than the borrowing rate of other forms of credit. Instead of paying interest, the company issues the commercial paper at a discounted rate from its face value. The sale price of the commercial paper is net of flotation costs, which are the costs associated with issuing the paper, such as fees and other charges.

In simpler terms, commercial papers don't pay regular interest like traditional loans. Instead, they are sold at a lower price than their face value (the amount that will be paid back at maturity). For example, if a commercial paper has a face value of $\gtrless1,000$, it might be sold for $\gtrless950$, meaning the investor buys it at a discount. When the paper matures, the company repays the full face value, and the difference between the purchase price and the redemption amount acts as the interest earned by the investor. This makes commercial paper a cost-effective option for companies to raise short-term funds, as the interest expense is lower compared to other forms of borrowing. However, the actual sale price of the commercial paper is also reduced by any flotation costs, which are the costs incurred in issuing the paper.

Advantages:

- 1. Additional Source of Finance: Commercial paper provides an extra short-term source of finance, which is especially useful when bank credit is not easily available.
- 2. **Cost-Effective**: From the issuer's perspective, it is a cheaper source of finance since the interest yield on commercial paper is typically lower than the lending rate of banks.
- 3. **Safe Investment**: For investors, commercial paper is a relatively safer investment due to its short maturity period and low risk.

Disadvantages:

- 1. **Redemption Risk**: If the issuing company is unable to redeem its commercial paper on time, it may not be possible to extend the maturity period, creating potential liquidity problems.
- 2. Limited to Financially Sound Companies: Only financially strong companies with a good credit rating can issue commercial paper. Companies facing liquidity issues may not be able to use this source of finance.
- 3. **Repayment on Maturity**: The funds raised through commercial paper must be repaid only on maturity. If a company no longer needs the funds before maturity, it cannot repay early and must bear the interest costs until the due date.

12.2.6: Factoring

Factoring is a financial service where a company sells its accounts receivable (the money owed by customers for goods or services provided on credit) to a third party known as a **factor**. The factor is typically a financial institution or a specialized firm that purchases these receivables at a discounted price, providing the seller with immediate cash. The factor then takes over the responsibility of collecting the payments from the customers.

How Factoring Works:

1. Sale of Receivables:

A firm sells its receivables (outstanding payments from customers) to a factor, which provides the firm with immediate cash. The firm typically receives a percentage of the receivable amount upfront, often around 80-90% of the invoice value.

2. Collection and Risk:

The factor then assumes responsibility for collecting the payments from the firm's customers. This includes all the risks associated with the receivables, such as potential defaults. If a customer does not pay, the factor absorbs the loss (depending on the type of factoring agreement, as some agreements may involve recourse, meaning the company may still have to pay the factor if the customer defaults).

3. Payment on Maturity:

Once the customer pays, the factor releases the remaining amount (minus its fee) to the company. The fee charged by the factor is typically a percentage of the total receivables, reflecting the cost of the service and the risk assumed by the factor.

Advantages of Factoring:

- 1. **Immediate Cash Flow**: It provides businesses with immediate cash instead of waiting for the customer to pay their invoices, which can be crucial for companies with tight working capital.
- 2. **Outsourced Collection**: The factor takes over the responsibility of collecting payments, which can reduce administrative costs and improve efficiency.
- 3. **Risk Reduction**: Non-recourse factoring allows companies to transfer the risk of customer defaults to the factor.
- 4. **No Collateral Required**: Unlike traditional bank loans, factoring doesn't require physical assets as collateral. It is based on the receivables of the company.

Disadvantages of Factoring:

- 1. **Cost**: Factoring can be expensive, especially non-recourse factoring, as the factor assumes the risk of non-payment by the customer.
- 2. **Customer Relationship**: The factor takes over the collection process, which might affect the relationship between the company and its customers. Customers may prefer dealing directly with the business rather than a third party.
- 3. Limited to Creditworthy Customers: Factors usually prefer to buy receivables from companies whose customers have a good credit history. This might limit the scope for small businesses or those dealing with less reliable customers.

12.3: SPONTANEOUS SOURCES OF FINANCE

These sources of finance are not actively sought out by firms but naturally arise during the course of business operations. There are two main spontaneous sources of finance: accrued expenses and deferred income. Among these, **accrued expenses** are more relevant, as they occur when a firm receives goods or services before making payment for them.

12.3.1 Accrued Expenses

Accrued expenses are liabilities that a firm must pay for goods or services it has already received but not yet paid for. These expenses serve as an interest-free source of finance. Also referred to as outstanding expenses, accrued expenses primarily consist of wages and salaries, taxes, and interest.

1. Accrued Wages and Salaries:

This represents the liability a firm has to its employees for services already rendered. While the obligation arises as soon as employees provide their services, payment is made later, typically at regular intervals (often monthly). The longer the interval between payments, the larger the amount of funds owed to employees. However, legal restrictions usually prevent firms from extending the payment interval.

2. Accrued Taxes and Interest:

Taxes are typically paid after the firm earns income, making them a deferred payment and thus a source of finance. Similarly, interest on borrowed funds is paid periodically, but the firm continues using the funds throughout the year. It's important to note that firms cannot delay these payments indefinitely, and they have limited control over the frequency and amount of these expenses.

12.3.2: Deferred Income

Deferred income refers to the amount a firm receives in advance for the supply of goods or services that will be provided in the future. This advance payment increases the company's cash balance, thereby improving its liquidity. In accounting terms, it is also known as "income received in advance."

Typically, these payments are made for high-value products or services, such as boilers, large projects, or contracts involving products in limited supply. Until the goods or services are delivered to the customer, the firm cannot recognize these receipts as revenue. Therefore, the firm records these advance payments as liabilities on the balance sheet until the goods or services are provided.

12.4 LONG TERM SOURCES OF FINANCE

A business can obtain credit through long-term sources of finance, which provide funds for an extended period, typically exceeding one year. Companies have three main options for raising capital: shares, debentures, and term loans. Equity shares grant ownership rights to investors, whereas debentures represent loans to the company, making debenture holders its creditors. Term loans, on the other hand, are directly provided by financial institutions.

12.4.1 Shares

Shares can be classified into two categories: equity shares and preference shares.

Equity Shares:

Equity shares represent ownership in a business and are also referred to as owners' capital. A company issuing equity shares is not obligated to repay the capital to equity shareholders. Additionally, the company has the discretion to pay dividends to equity shareholders only after settling other claims, such as interest on debentures and dividends to preference shareholders. In the event of liquidation, equity shareholders' claims are addressed only if there are remaining assets after settling other liabilities.

While equity shares provide ownership benefits, they also have certain limitations. It is an expensive source of finance because dividends are not tax-deductible, and the company incurs high floatation costs during their issuance. Furthermore, issuing additional shares can dilute existing shareholders' ownership rights.

12.4.2 Preference Shares:

Preference shares are considered a hybrid security because they share characteristics of both equity shares and debentures. They are called "preference shares" for two key reasons:

- 1. The company pays dividends on preference shares before paying dividends on equity shares.
- 2. Preference shareholders have priority over equity shareholders in claiming income and assets upon maturity or liquidation.

Dividends on preference shares are generally fixed, and these shareholders do not participate in residual earnings. Additionally, preference shareholders do not have voting rights in the company.

12.4.3 Debentures

A debenture is a long-term loan taken by a company to raise capital. Companies can issue different types of debentures, such as **secured** and **unsecured**, or **convertible** and **non-convertible** debentures. One of the key advantages of debentures is that they typically come with fixed interest

payments, which are tax-deductible. This makes debentures a relatively cheaper source of finance for businesses. However, there are some drawbacks to using debentures. The company is obligated to repay the principal amount upon maturity, which is predetermined at the time of issuance. Failure to do so can result in the company facing liquidation. Additionally, certain clauses in the debenture agreement, also known as the *debenture indenture*, may impose restrictions that limit the company's operational flexibility.

12.4.4 Term Loans

Term loans are long-term loans obtained directly from banks or financial institutions, typically with a maturity period exceeding one year. In India, they are often referred to as *project financing* because they are primarily used for financing activities such as expansion, modernization, or diversification projects.

One of the key advantages of term loans is their flexibility in negotiation, allowing businesses to structure the loan according to their needs. Additionally, they can be raised at a relatively low cost compared to other sources of finance.

However, term loans come with certain drawbacks. Companies are legally obligated to repay the loan amount, including fixed interest charges, within the agreed timeline. They are also required to provide their assets as collateral to secure the loan. Furthermore, banks often impose restrictions on the company's operations to safeguard their interests, which may limit the company's operational flexibility.

12.5 SUMMARY:

There are three primary sources of finance available for financing working capital: short-term, long-term, and spontaneous sources. Short-term sources provide funds for a duration of less than one year and include options such as trade credit, bank credit, commercial paper, and factoring. Trade credit is extended by suppliers on the purchase of raw materials and is reflected in forms like sundry creditors, bills payable, and promissory notes. Bank credit, on the other hand, refers to short-term loans obtained from banks and can take various forms such as overdrafts, cash credit, bills discounting, letters of credit, short-term loans, and working capital loans. Commercial paper is an unsecured promissory note issued by borrowers to raise short-term funds, while factoring involves an agreement where a firm sells its receivables to a factor in exchange for immediate funds. Spontaneous sources of finance, such as accrued expenses and deferred income, arise naturally in the course of business operations and are not specifically arranged by firms. Finally, long-term sources provide funds for a duration exceeding one year and include shares, debentures, and term loans, which are typically used for more extended financial needs.

12.6 CHECK YOUR PROGRESS:

1- Mark Questions:

1.	Which of the	following is considered a short-term source of finance	for working
	capital?	a)	Shares
	b)	Term	Loans
	c)	Bank	Credit
	$\mathbf{D} \mathbf{D} 1$		

d) Debentures

2. Which of the following is NOT a benefit of trade credit?

a)	No	immediate	cash	outflow
b)	Flexible		payment	terms
c)		Requires		collateral
d) Convenient for managing short-term working capital needs				

3. Which of the following securities is required by banks in case of a bank credit?

a)	Hypothecation
b)	Shares
c)	Mortgages
d) None of the above	

4. What is a characteristic of commercial paper as a source of finance?

a)	It		is	secured	by	assets
b)	It	is	issued	for	long-term	financing
c)	It	is	an	unsecured	promissory	note
d) It re	quires the t	ransfer of	physical posse	ession of goods		

5. Which of the following is an example of a spontaneous source of finance?

- a) Term Loans
- b) Trade Credit
- c) Bank Credit
- d) Mortgage

5-Mark Questions:

- 1. What are the main advantages of trade credit for a business?
- 2. Explain the difference between hypothecation and pledge as modes of security required in bank credit.
- 3. What are the key costs associated with trade credit?

- 4. What is the role of commercial paper in short-term financing?
- 5. Describe the characteristics of spontaneous sources of finance. Provide examples.
- 6. Explain the difference between long-term and short-term sources of finance for working capital.
- 7. What is a lien, and how is it used by banks in securing loans?

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Module 5: corporate restructuring, Mergers and acquisitions

Unit 13: Introduction to Mergers, Acquisitions, and Restructuring: Merger and Amalgamation, Acquisition and Takeover, Forms of Merger, Motivates and Benefits of Merger and Acquisition, Value Creation through Merger and Acquisition, Corporate Restructuring.

Unit 14: Merger and Amalgamation: Financing and Accounting: Financing a Merger, Merger Negotiations: Significance of P/E Ratio and EPS Analysis, Tender Offer and Hostile Takeover, Corporate Strategy and Acquisitions, Accounting For Mergers and Acquisitions

Unit 15: Valuation: Benchmarks of Value, Discounted Future Cash Flows (DCF) or Net Present Value Approach, Continuing or Terminal Value, Adjustments to DCF Enterprise Value, Defining Free Cash Flows, Choice of the Discount Rate, Acquirer's Hurdle Rate, How the Market Determines Discount Rates, Real Options in Valuation, Valuation of the Target's Equity, Valuation Effects of Mergers and Acquisitions

UNIT 13: INTRODUCTION TO MERGERS, ACQUISITIONS, AND RESTRUCTURING

STRUCTURE:

13.1 Introduction

13.2 Merger and Amalgamation

13.3 Acquisition and Takeover

13.3.1 Takeover

13.3.2 Takeover Vs Acquisition

13.3.3 Holding Company

13.4 Forms of Merger

13.5 Motivates and Benefits of Merger and Acquisition

13.5.1 Accelerated growth

13.5.2 Enhanced Profitability through Mergers

13.5.3 Diversification of Risk through Mergers

13.5.4 Reduction in Tax liability through Mergers

13.5.6 Financial Benefits

13.5.6 Increased Market power

13.6 Value Creation through Merger and Acquisition

13.7 Corporate Restructuring

13.8 Summary

13.9 Check Your Progress

13.10 Reference

OBJECTIVES:

- 1. To discuss the various forms of mergers and acquisitions
- 2. To highlight the true motives behind mergers and acquisitions
- 3. To explain how mergers and acquisitions can create value for organizations
- 4. To focus on the key considerations during mergers and acquisitions negotiations

13.1 Introduction:

Corporate restructuring encompasses various strategic actions such as mergers and acquisitions (M&A), amalgamation, takeovers, spin-offs, leveraged buyouts, buybacks of shares, capital reorganization, and the sale of business units and assets. Among these, M&A have emerged as the most popular methods of corporate restructuring and business combinations. They have significantly contributed to the external growth of leading companies worldwide.

Historically, the first wave of mergers in the United States occurred between 1890 and 1904, followed by a second wave at the end of World War I, continuing through the 1920s. The third wave began during the later part of World War II and persists today. In fact, approximately two-thirds of large public corporations in the USA have undergone mergers or amalgamations at some point in their history. In India, between 1976 and 1986, around 1,180 amalgamation proposals involving about 2,400 companies were filed with the High Courts. These represented 6% of the 40,600 companies operating at the start of 1976. In the fiscal year 2003-04, 834 M&A deals were valued at Rs 35,980 crore. While M&A have been common in Western countries, these practices have gained traction in India in recent years, with a surge in mega mergers and hostile takeovers.

Several critical aspects of mergers and acquisitions deserve in-depth exploration. Some important questions to consider include:

- 1. What are the key economic forces that drive mergers and acquisitions, and how do they interact with one another?
- 2. What are the true motives behind mergers and acquisitions from a managerial perspective?
- 3. Why do mergers and acquisitions occur more frequently at certain times than others, and which sectors of the economy benefit or lose the most?
- 4. How can merger and acquisition decisions be effectively evaluated?
- 5. What managerial processes are involved in making merger and acquisition decisions?
- 6. What steps should be taken to integrate merging and merged firms after the deal is completed?

13.2: Merger or Amalgamation

A merger occurs when two or more companies combine to form a single entity. This can involve one or more companies merging with an existing company or merging to create a new company. In a merger, there is a complete integration of the assets, liabilities, and shareholders' interests of the merging companies. In some cases, one company may acquire another without offering proportionate ownership to the shareholders of the acquired company or continuing its business operations. In India, the term "amalgamation" is often used synonymously with "merger." For example, Section 2(1A) of the Income Tax Act, 1961 defines amalgamation as the merger of one or more companies (known as amalgamating companies) with another company (known as the amalgamated company), or the merger of multiple companies to form a new company. In this process, all assets and liabilities of the amalgamating companies are transferred to the amalgamated company, and shareholders holding at least nine-tenths of the shares in the amalgamating companies become shareholders of the amalgamated company. Therefore, the terms merger and amalgamation are used interchangeably in this context.

Merger or amalgamation can take two primary forms:

1. Merger through Absorption

Absorption involves the combination of two or more companies into an existing company, where only one company survives. All other companies involved in the merger lose their individual identities. An example of this type of merger is the absorption of Tata Fertilisers Ltd. (TFL) by Tata Chemicals Ltd. (TCL). In this case, TCL, the acquiring company, continued to exist after the merger, while TFL ceased to exist. TFL transferred its assets, liabilities, and shares to TCL. Under the merger scheme, TFL's shareholders were offered 17 shares of TCL for every 100 shares of TFL held by them.

2. Merger through Consolidation

Consolidation involves the combination of two or more companies to form a new entity. In this process, all companies involved are legally dissolved, and a new company is created. The acquired companies transfer their assets, liabilities, and shares to the new company, typically in exchange for cash or shares in the new company. A notable example of consolidation is the merger of Hindustan Computers Ltd., Hindustan Instruments Ltd., Indian Software Company Ltd., and Indian Reprographics Ltd. in 1986, which resulted in the creation of HCL Ltd.

In some contexts, the terms amalgamation and consolidation are used interchangeably, although consolidation specifically refers to the creation of a new entity.

13.3: Acquisition and Takeover

Acquisition is a fundamental aspect of mergers and acquisitions (M&A), whether it occurs through absorption or consolidation. In an acquisition, one company takes over the ownership of another company and combines its operations with its own. However, unlike a merger, an acquisition does not necessarily involve the amalgamation of businesses or companies. Instead, it is the act of gaining effective control over the assets or management of a company by another company.

A **substantial acquisition** happens when an acquiring firm acquires a significant quantity of shares or voting rights in the target company. In this case, the companies involved may remain separate legal entities, but control of the target company changes hands. The acquirer may be a company or individuals acting together to acquire shares or voting rights, thereby gaining control over the target company.

13.3.1 Takeover

A **takeover** generally refers to an acquisition, but it carries a specific connotation. In a takeover, the acquiring firm takes control of the target firm. A takeover does not always imply complete legal control; a company can achieve effective control even by holding a minority stake. According to the **Monopolies and Restrictive Trade Practices Act**, a takeover is defined as the acquisition of at least 25% of the voting power in a company. Additionally, **Section 372 of the Companies Act** places limits on a company's investment in another company. If a company seeks to invest more than 10% of the subscribed capital in another company, it must obtain approval from the shareholders and the central government. Exceeding this threshold could lead to a takeover situation.

Takeover vs. Acquisition

While the terms **takeover** and **acquisition** are often used interchangeably, a distinction is sometimes made between the two. A **takeover** is typically associated with a hostile acquisition, where the target company's management opposes the acquisition. In contrast, an **acquisition** is generally considered a friendly transaction, where both the acquiring and target companies agree to the terms.

For example, Blow Plast Ltd. acquired a controlling interest (45% of shares) in Universal Luggage Manufacturing Company Ltd. In another instance, Mahindra and Mahindra Ltd. acquired a 26% equity stake in Allwyn Nissan Ltd., and HCL Ltd. acquired 28% equity in International Data Management (IDM).

However, in recent years, the liberalization of the financial sector and the opening of the economy to foreign investors have led to several hostile takeovers in India. Notable examples include the takeover of Shaw Wallace, Dunlop, Mather and Platt, and Hindustan Dorr Oliver by the Chhabrias, as well as Ashok Leyland by the Hindujas.

Holding Company

A **holding company** is a company that acquires and holds more than half of the equity capital of another company, referred to as its **subsidiary**. A holding company may also control the composition of its subsidiary's Board of Directors. Despite the control exerted by the holding

company, both the holding company and the subsidiary remain separate legal entities with distinct books of accounts.

In India, unlike countries like the United States or the United Kingdom, it is not legally required for holding and subsidiary companies to consolidate their financial accounts. However, this structure allows the holding company to maintain control over the subsidiary while both companies continue to operate independently.

Acquisition and takeover are key mechanisms of corporate restructuring. While acquisition refers to the process of gaining control over another company, a takeover specifically involves the control of a target company. Both terms may be used in various contexts, including hostile takeovers and friendly acquisitions. Additionally, holding companies play an essential role in corporate strategy by controlling subsidiaries without merging operations.

13.4: Forms of Merger

Mergers can take several forms, each with distinct characteristics based on the nature of the companies involved. Here are the three major types of mergers:

1. Horizontal Merger:

A **horizontal merger** occurs when two or more firms that operate in the same industry or market combine their operations. These companies typically produce similar products or services. The goal of such mergers is often to increase market share, reduce competition, and achieve economies of scale.

For example, the merger between two **book publishers** or two **luggage manufacturing companies** would be considered a horizontal merger. By merging, they can gain a dominant share of the market, reduce operational costs, and improve their competitive position.

2. Vertical Merger

A **vertical merger** takes place when two companies operating at different stages of production or distribution combine their businesses. These mergers are aimed at improving the efficiency of the supply chain and gaining greater control over the production process. A vertical merger can be either **forward** or **backward**:

A backward merger occurs when a company merges with a supplier of raw materials or components, such as a TV manufacturing company merging with a supplier of electronic components.

A forward merger occurs when a company merges with a company further along the supply chain, such as a **TV manufacturing company merging with a marketing company** that sells

TVs.

Vertical mergers help companies reduce costs, improve supply chain efficiency, and secure resources or markets for their products.

3. Conglomerate Merger

A **conglomerate merger** involves the combination of companies that operate in entirely different industries. These firms are not related in terms of their business activities, but they come together to diversify their operations and reduce business risk by operating in multiple sectors. For example, a merger between a **cement manufacturing company**, a **fertilizer production company**, and an **electronics business** would be considered a conglomerate merger. **Voltas Ltd.** is a well-known example of a conglomerate company, as it operates in a variety of industries, including air conditioning, engineering, and consumer products.

13.5 MOTIVES AND BENEFITS OF MERGERS AND ACQUISITIONS

Mergers and acquisitions (M&A) are strategic decisions that companies make to maximize growth by improving production and marketing operations. In recent times, M&A activity has increased due to factors such as heightened competition, the breaking down of trade barriers, the free flow of capital, and the globalization of business. As economies become deregulated and integrated with others, M&A has become a common approach for companies seeking to expand.

There are several reasons why mergers and acquisitions take place. These include:

- 1. Limiting competition by consolidating market share.
- 2. Utilizing under-used market power to increase efficiency.
- 3. Overcoming slow growth and profitability challenges within a particular industry.
- 4. Achieving diversification into new markets or sectors.
- 5. Gaining economies of scale to increase income with reduced investment.
- 6. Establishing a transnational presence to access foreign markets without excessive startup costs.
- 7. Utilizing under-used resources, including human, physical, and managerial skills
- 8. Displacing existing management to improve operational efficiency.
- 9. Circumventing government regulations that may hinder growth.
- 10. **Reaping speculative gains** through new security issues or changes in the price-to-earnings (P/E) ratio.
- 11. Creating an image of strategic aggressiveness and power, often associated with empire building.

While these reasons may drive M&A activity, not all of them lead to genuine benefits. Based on empirical evidence and the experiences of various companies, the actual benefits of mergers include:

- 1. Maintaining or accelerating growth, especially when internal resources are limited.
- 2. Enhancing profitability through cost reduction via economies of scale, operational efficiency, and synergy.
- 3. **Diversifying risk** by acquiring businesses with income streams not correlated to the company's core operations.
- 4. **Reducing tax liability** through provisions that allow for setting off accumulated losses and unabsorbed depreciation of one company against the profits of another.
- 5. Limiting competition by increasing market power, thus allowing for greater control within the industry.

While mergers and acquisitions can offer these advantages, it's important to note that not every merger results in the realization of these benefits. Each M&A deal is unique and may carry its own set of challenges and rewards.

13.5.1: Accelerated Growth

Growth is essential for maintaining the long-term viability, dynamism, and value-creation potential of a company. A company that is growth-oriented not only attracts the best talent but also retains it by offering exciting challenges and opportunities for career advancement. As the company expands, it provides executives with job enrichment, which in turn enhances managerial efficiency. Growth also leads to higher profits, which boosts shareholder value.

A company can achieve its growth objectives in two primary ways:

- 1. Expanding its existing markets
- 2. Entering new markets

A company can pursue both internal and external growth strategies. Internal growth involves expanding and developing the company's existing operations, such as manufacturing, research, and marketing. However, internal growth requires significant physical and managerial resources, as well as time. If a company lacks the necessary resources or if internal development takes too long, it can pursue external growth by merging with or acquiring other companies.

Mergers and acquisitions are a convenient and efficient way to accelerate a company's growth, especially when internal expansion is not feasible due to resource constraints. By acquiring production facilities, technical expertise, marketing skills, or distribution networks, a company can enter new markets or launch new products more quickly than by developing these resources internally.

While mergers and acquisitions can offer fast-paced growth, they come with costs. External growth can become expensive if the company overpays for the merger or acquisition. For the growth to add value for shareholders, the benefits of the acquisition must exceed its costs. In practice, some companies have overpaid in their pursuit of rapid growth, aiming to increase size and market share. Therefore, it's crucial that the price paid for the acquisition is carefully determined and negotiated to ensure that the merger creates long-term value for shareholders.

13.5.2 Enhanced Profitability through Mergers

Mergers and acquisitions can lead to enhanced profitability due to cost reductions and the more efficient use of resources. This typically happens because of the following reasons:

- 1. Economies of Scale
- 2. **Operating Economies**
- 3. Synergy

Economies of Scale:

Economies of scale occur when a company can reduce its cost per unit of production by increasing the volume of its output. Through mergers, companies can expand their production volume without a corresponding increase in fixed costs. As a result, fixed costs are spread over a larger volume of production, leading to a reduction in the cost per unit.

This is not limited to just production; economies of scale can also arise from better utilization of resources like plant and machinery, marketing functions, and management systems. For example, a factory that produces more units can do so more efficiently by fully utilizing its machinery. Similarly, by covering wider markets with the same sales force and advertising efforts, a merged company can reduce marketing costs per unit.

Another area where economies of scale can be realized is in management systems. Larger companies can make better use of resources like planning, budgeting, and control systems that would otherwise be inefficient in smaller firms.

Operating Economies:

In addition to economies of scale, mergers can also lead to cost reductions through operating economies. A merged company can avoid overlapping functions, consolidate operations like manufacturing, marketing, and R&D, and eliminate unnecessary costs.

For example, a combined company might reduce duplicated distribution channels or centralize training facilities. In a vertical merger, combining with suppliers (backward integration) or customers (forward integration) allows for better coordination across the various stages of business operations. This can lead to reduced bargaining costs, smoother operations, and minimized uncertainty in supply and demand.

Synergy:

Synergy refers to the idea that the combined firm is more valuable than the sum of the individual firms, often described by the equation "2 + 2 = 5." This occurs when two companies merge and create value through complementary resources, enhanced managerial capabilities, and greater innovation potential.

13.5.3: Diversification of Risk through Mergers

Diversification refers to the strategy of expanding a company's operations into different industries or markets to reduce risk. In the context of mergers, this type of growth occurs when companies from unrelated industries combine, resulting in a **conglomerate merger**. While conglomerate mergers may not always benefit from economies of scale or strengthen vertical or horizontal linkages, they can help reduce a company's total risk by decreasing the cyclicality of its operations.

Reducing Total Risk through Diversification

The primary benefit of a conglomerate merger is the reduction of total risk. By combining firms whose operations are not correlated (i.e., their business cycles are not synchronized), the overall risk to the merged firm can be reduced. This happens because the risks associated with one business may be offset by the stability of another business in a different industry.

1. Non-Systematic Risk:

This is company-specific risk, which can be reduced through diversification. Investors can diversify their portfolios by holding shares of multiple companies, thus spreading out their exposure to any single company's risk.

2. Systematic Risk:

This is market-wide risk, which cannot be reduced through diversification, as it affects all companies within the market. Therefore, investors generally do not pay a premium for reducing total risk via diversification, since they can achieve the same effect on their own.

For instance, an investor holding 1% of shares in **Company X** and 1% in **Company Y** would experience the same level of risk and returns if both companies merged into one firm, with the investor holding 1% of the merged entity. While the variability in earnings might be reduced postmerger, it does not necessarily reduce the variability tied to overall market conditions or systematic risk.

Benefits of Conglomerate Mergers

Even though shareholders can diversify their portfolios to reduce non-systematic risk, conglomerate mergers can still offer significant advantages for the combined company. For the company itself, a diverse portfolio of businesses can help cushion against unforeseen economic changes that could potentially threaten the survival of individual firms.

Conglomerate mergers are particularly beneficial for companies in industries with volatile earnings, as they help stabilize the combined firm's overall performance. This is especially valuable for companies with unquoted shares, as their shareholders lack the opportunity to diversify their risk by trading shares on the stock market.

Example of Diversification through Mergers

A notable example of diversification through mergers is **RPG Enterprises (Goenka Group)**. Since its takeover activities began in 1979, RPG has expanded by acquiring companies from a range of sectors. The group's strategy was to target companies undergoing disinvestment or facing financial distress, which could be acquired at low prices. Notably, in 1988, RPG acquired **ICIM** and **Harrisons Malayalam Limited**. By acquiring these companies, RPG was able to enter the electronics industry, further diversifying its portfolio.

For RPG, this expansion helped reduce the total risk of its business operations, while also increasing profitability by leveraging synergies between the various businesses within the conglomerate.

In conclusion, while conglomerate mergers may not necessarily reduce systematic market risks, they offer significant benefits in terms of risk reduction and profitability by diversifying operations and stabilizing earnings across different industries. This strategy is especially useful for companies looking to build resilience against unpredictable economic changes.

13.5.4: Reduction in Tax Liability through Mergers

In many countries, businesses are allowed to carry forward their accumulated losses to offset future taxable income. This tax provision can be highly beneficial, especially for companies that are not currently profitable but expect to generate profits in the future. However, if a loss-making or struggling company cannot foresee enough future earnings to utilize these carry-forward losses, it may seek a merger with a profitable company. The combined company can then use the accumulated losses to reduce its tax liability.

In India, for instance, a profitable company can merge with a struggling or "sick" company to offset its profits with the accumulated losses and unutilized depreciation of the merged company. This strategy has led to several mergers, particularly among companies looking to reduce tax liability.

13.5.5: Financial Benefits

A merger can result in several financial synergies and benefits. These include:

1. Eliminating Financial Constraints

A company may face financial limitations that prevent it from growing through internal development due to a lack of funds. By acquiring another company, it can grow externally and remove these financial constraints.

2. Deploying Surplus Cash

A company with surplus cash may face a situation where it does not have enough internal opportunities to invest it. In such cases, instead of distributing the cash to shareholders, the company can use it to acquire another company. This benefits shareholders, as they can experience an increase in the market value of their shares rather than having to pay tax on the surplus cash received.

3. Enhancing Debt Capacity

A merger of two companies with fluctuating but negatively correlated cash flows can result in increased stability of cash flows for the combined company. This stability reduces the risk of insolvency and enhances the ability to service larger amounts of debt. The combined entity can also take advantage of an interest tax shield, which benefits shareholders by increasing their wealth.

4. Lowering Financing Costs

The enhanced debt capacity of the merged firm can result in a reduction of its cost of capital. Since the probability of insolvency is reduced due to financial stability, the merged firm may be able to borrow at a lower interest rate. However, this advantage may be partially offset by an increase in shareholders' risk due to greater protection offered to lenders.

13.5.6: Increased Market Power

A merger can significantly enhance the market share of the merged entity, leading to various strategic advantages. As discussed earlier, an increase in market concentration or share can improve profitability due to economies of scale. Beyond that, it also boosts the bargaining power of the firm in relation to labor, suppliers, and buyers. This enhanced bargaining power allows the merged firm to secure better terms with suppliers, negotiate higher prices with customers, and streamline operations.

Moreover, a larger company can better manage technological advancements and counter obsolescence, thus protecting itself from price wars and fierce competition. By reducing competition, the merged company can earn super-normal profits, which can then be reinvested strategically to further consolidate its market position and enhance its market power.

For example, the merger between Universal Luggage and Blow Plast serves as a case of using market power to limit competition. Prior to the merger, the two companies were engaged in intense competition, resulting in a price war and rising marketing costs. After the merger, Blow Plast gained a dominant position in the market and operated in a near-monopoly situation, which allowed the company to control pricing and reduce competitive pressure. Similarly, the acquisition of Tomco by Hindustan Lever allowed Hindustan Lever to dominate the soap and detergent market, controlling one-third of the market and reducing competition.

While mergers can be a route to increasing market power, it is important to note that market power can also be achieved through internal growth, joint ventures, or strategic alliances. Additionally, while increased market power can bring economic benefits, it does not necessarily lead to greater efficiency or an optimal allocation of resources. In some cases, market power can result in undue concentration, limiting consumer choice, and potentially exploiting suppliers and labor.

13.6: Value Creation through Mergers and Acquisitions

A merger is considered economically beneficial for the acquiring firm if it creates value for its shareholders. The value creation from a merger occurs when the combined present value of the merged firms is greater than the sum of their individual present values as separate entities.

For example, if Firm P and Firm Q merge, with their separate values being VP and VQ respectively, and the value of the combined firm being VPQ, then the economic advantage occurs if:

VPQ>(VP+VQ)

The economic advantage (EA) is calculated as:

EA=VPQ-(VP+VQ)

However, an acquisition or merger involves costs. For example, if Firm P acquires Firm Q, Firm P will gain the present value of Firm Q, which is VQ but will also have to pay a price (often in cash) to acquire Firm Q. Therefore, the cost of the merger to Firm P is:

Cost of merger=Cash paid-VQ

For Firm P, the net economic advantage (NEA) is positive if the economic advantage exceeds the cost of merging. Thus, the net economic advantage (NEA) is:

The economic advantage represents the benefits arising from operational efficiencies and synergies when the two firms merge. If the acquiring firm pays cash equal to the value of the acquired firm (Cash paid-VQ=0), the entire advantage of the merger will accrue to the shareholders of the acquiring firm.

In practice, the acquiring firm might issue shares to the target firm instead of paying cash. This works similarly if the shares are exchanged in a ratio corresponding to the cash-to-be-paid in relation to the combined value of the merged firms.

13.7: Corporate Restructuring

Corporate restructuring refers to the process of making significant changes in a company's ownership, business portfolio, asset composition, or alliances to enhance shareholder value. This can be achieved through ownership restructuring, business restructuring, and asset restructuring.

1. Ownership Restructuring:

This involves changes in the company's ownership structure, which may include mergers and acquisitions, leveraged buyouts, share buybacks, spin-offs, joint ventures, and strategic alliances.

2. Business Restructuring:

This focuses on reorganizing the company's business units or divisions. It can include diversification into new business areas, outsourcing operations, divestment of existing businesses, and acquiring new brands.

3. Asset Restructuring:

This involves the acquisition, disposal, or rearrangement of assets. Examples include the sale and leaseback of assets, securitization of debt, and factoring of receivables.

The primary objective of corporate restructuring is to enhance shareholder value. To achieve this, companies must continuously evaluate their business portfolios, capital structure, ownership arrangements, and asset utilization. By identifying and leveraging profitable investment opportunities, companies can optimize their resources. Additionally, restructuring enables firms to divest or reorganize less profitable or loss-making businesses and products.

Companies can further enhance value through capital restructuring by designing innovative financial instruments that help to reduce the cost of capital and improve financial efficiency.

This unit explored the critical aspects of mergers and acquisitions, beginning with a discussion of the various forms they can take, such as horizontal, vertical, conglomerate, and concentric mergers. We delved into the underlying motives behind these strategic moves, highlighting factors like achieving economies of scale, increasing market power, diversification, tax benefits, and operational synergies.

13.8 SUMMARY:

This unit explored the critical aspects of mergers, acquisitions, and corporate restructuring. We began by discussing the various forms of mergers and acquisitions, such as horizontal, vertical, conglomerate, and concentric mergers. The underlying motives for these strategic moves were highlighted, including achieving economies of scale, increasing market power, diversification, tax benefits, and operational synergies.

The unit further explained how mergers and acquisitions create value for organizations by enhancing shareholder wealth through economic advantages, operational efficiencies, and strategic synergies. Additionally, we introduced corporate restructuring as a strategic tool for enhancing shareholder value. This involves changes in ownership, business mix, and asset arrangements, such as mergers, divestitures, leveraged buyouts, spin-offs, and securitization of assets.

Finally, the key considerations during mergers, acquisitions, and corporate restructuring were discussed. By understanding these elements, organizations can strategically use mergers, acquisitions, and restructuring to achieve long-term growth, financial stability, and competitive advantage.

13.9 CHECK YOUR PROGRESS

1-Mark Questions

- 1. Define merger.
- 2. What is an amalgamation?
- 3. State one key difference between a takeover and an acquisition.
- 4. What is a holding company?
- 5. Name any one form of a merger.
- 6. Give one reason for a merger.
- 7. Mention one benefit of diversification of risk through mergers.
- 8. State one way mergers can reduce tax liability.
- 9. Define market power in the context of mergers.
- 10. What is corporate restructuring?

2-Mark Questions

- 1. Differentiate between merger and amalgamation.
- 2. Briefly explain the concept of a takeover.
- 3. What is the significance of a holding company in acquisitions?
- 4. List two key forms of mergers.
- 5. Explain how mergers lead to accelerated growth.
- 6. Discuss two financial benefits of mergers.
- 7. How does diversification of risk occur in mergers?
- 8. Write two ways mergers enhance profitability.
- 9. Explain the concept of market power in mergers and acquisitions.
- 10. What does corporate restructuring aim to achieve?

5-Mark Questions

- 1. Discuss the key differences between a takeover and an acquisition.
- 2. Explain the role and significance of holding companies in mergers and acquisitions.
- 3. Elaborate on the different forms of mergers with examples.

- 4. Discuss the concept of accelerated growth through mergers and acquisitions.
- 5. Explain how mergers enhance profitability with examples.
- 6. How do mergers help in the diversification of risk? Illustrate with an example.
- 7. Analyze the role of tax benefits in motivating mergers.
- 8. Discuss the financial benefits of mergers and acquisitions.
- 9. Explain how mergers and acquisitions lead to increased market power.
- 10. Write a short note on the importance of corporate restructuring.

10-Mark Questions

- 1. Critically analyze the differences between a takeover and an acquisition.
- 2. Discuss the various forms of mergers with detailed examples and their significance.
- 3. Examine the key motivations and benefits of mergers and acquisitions in detail.
- 4. Analyze how mergers contribute to accelerated growth and enhanced profitability.
- 5. Discuss the concept of diversification of risk through mergers, with real-world examples.
- 6. Explain the reduction of tax liability through mergers and acquisitions, citing relevant cases.
- 7. Elaborate on the financial benefits and increased market power achieved through mergers.
- 8. Discuss the role of value creation in mergers and acquisitions with suitable illustrations.
- 9. Analyze the importance and processes involved in corporate restructuring.
- 10. Discuss the overall impact of mergers and acquisitions on organizational value and market dynamics.

13.10 REFERENCE

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UNIT 14: MERGER AND AMALGAMATION: FINANCING AND ACCOUNTING STRUCTURE:

- 14.1 Introduction
- 14.2: Financing a Merger
 - 14.2.1: Cash Offer
 - 14.2.2: Share Exchange
- 14.3: Merger Negotiations: Significance of P/E Ratio And EPS Analysis
 - 14.3.1: Share Exchange Ratio
 - 14.3.2: Earnings Growth
- 14.4: Tender Offer and Hostile Takeover
 - 14.4.1: Defensive Tactics against Hostile Takeovers
- 14.5: Corporate Strategy and Acquisitions
- 14.6: Accounting For Mergers and Acquisitions
 - 14.5.1: Pooling of Interests Method

14.5.2: Purchase Method

- 14.7 Summary
- 14.8 Check Your Progress
- 14.9 Reference

OBJECTIVES:

By the end of this unit, learners will be able to:

- 1. **Understand** the methods of financing mergers and the significance of P/E ratios and EPS analysis in merger negotiations.
- 2. Examine the processes and strategic considerations of tender offers and hostile takeovers.

- 3. **Identify** the challenges and resistance associated with tender offers and the defensive tactics used against hostile takeovers.
- 4. **Explain** the accounting methods for mergers and acquisitions, including the Pooling of Interests Method and the Purchase Method.

14.1 INTRODUCTION:

Introduction: Mergers and amalgamations are complex corporate restructuring strategies that require meticulous planning and execution, particularly in terms of financing and accounting. This unit focuses on the critical elements of financing a merger, including the role of P/E ratios and EPS analysis in merger negotiations, and the strategic considerations involved in tender offers and hostile takeovers. Learners will explore the challenges and resistance faced during tender offers, alongside defensive tactics employed against hostile takeovers. Additionally, the unit delves into corporate strategies and acquisitions, emphasizing their alignment with organizational objectives. On the accounting front, the unit provides a comprehensive understanding of the Pooling of Interests Method and the Purchase Method, highlighting their application in recording and reporting mergers and acquisitions. By the end of this unit, learners will grasp the financial and strategic dimensions that drive successful mergers and amalgamations, alongside the accounting practices ensuring regulatory compliance and transparency.

14.2: Financing a Merger

Mergers and acquisitions can be financed through cash, share exchanges, or a combination of cash, shares, and debt. The chosen method of financing can significantly alter the debt-equity ratio of the combined or acquiring firm post-merger. In the case of large-scale mergers, maintaining the desired capital structure becomes challenging, complicating the calculation of the cost of capital. Consequently, the choice of financing method is often guided by its impact on the acquiring firm's capital structure. Additional factors influencing this decision include the financial stability and liquidity of the acquiring firm, prevailing capital market conditions, and the availability of long-term debt.

14.2.1: Cash Offer

A cash offer is a straightforward method of financing a merger. It avoids dilution of earnings per share and preserves the ownership structure of the existing shareholders of the acquiring company. Additionally, it minimizes significant fluctuations in the share prices of the merging companies. In this scenario, the shareholders of the target company receive cash in exchange for their shares, which may result in tax liabilities for them.

Consider an example where SFC decides to offer Rs 42.40 per share to acquire Excel's shares. To execute this cash offer, SFC would require Rs 1,060 crore. This amount could be raised through

borrowing, utilizing tradable investments, and surplus cash. Currently, SFC's debt stands at Rs 2,170 crore, which is 50% of its book value equity. After the merger, the combined firm's debt would increase to Rs 2,465 crore, comprising SFC's existing debt of Rs 2,170 crore and Excel's debt of Rs 295 crore.

The combined firm's debt capacity would depend on its target debt-equity ratio. Assuming a 1:1 ratio, the total debt capacity would be Rs 4,330 crore, equal to the combined firm's equity (the pre-merger equity of SFC). This leaves an unutilized debt capacity of Rs 1,865 crore, calculated as Rs 4,330 crore minus the combined debt of Rs 2,465 crore. Both SFC and Excel also have marketable investments worth Rs 52 crore, which could be used for the acquisition.

With an unutilized debt capacity of Rs 1,865 crore, SFC is well-positioned to borrow the required Rs 1,060 crore to acquire Excel's shares, ensuring the transaction is financially feasible.

14.2.2: Share Exchange

A share exchange offer involves the sharing of ownership of the acquiring company between its existing shareholders and the new shareholders, who are the shareholders of the acquired company. This means that both groups share the earnings and benefits of the combined firm. The distribution of net benefits depends on the exchange ratio, which is determined by the market prices of the acquiring and acquired companies' shares. One advantage of a share exchange is that the receiving shareholders are not required to pay ordinary income tax immediately; instead, they will pay capital gains tax only when they sell their shares after holding them for the required period.

14.3: MERGER NEGOTIATIONS: SIGNIFICANCE OF P/E RATIO AND EPS ANALYSIS

In practice, investors place significant importance on the earnings per share (EPS) and the priceearnings (P/E) ratio, as the product of these two determines the market price per share. Ideally, in an efficient capital market, the market price of a share should align with the value derived using the discounted cash flow (DCF) technique. However, in reality, various factors can create discrepancies between these two values. As a result, mergers and acquisitions are not only evaluated based on the market price and DCF value of shares but also through other metrics such as EPS, P/E ratio, and book value.

14.3.1: Share Exchange Ratio

In many mergers, the current market values of the acquiring and the acquired firms are used as the basis for determining the exchange of shares. As mentioned earlier, the share exchange ratio (SER) is calculated as follows:

Share exchange ratio = Share price of the acquired firm / Share price of the acquiring firm

This exchange ratio, based on the market value of shares, ensures that the value of shareholders' holdings remains unchanged after the merger, as their proportionate wealth stays at the same level as it was before the merger. However, for shareholders of the acquired company, this means there is no immediate incentive to accept the offer unless a premium is paid by the acquiring company.

The question then arises: can the acquiring company pay a premium and still benefit its shareholders by creating additional value? In the absence of a net economic gain from the merger, the shareholders of the acquiring company could actually be worse off, unless the price-earnings (P/E) ratio of the acquiring firm remains the same as before the merger. For the shareholders of the acquiring company to be better off after the merger, without any net economic gain, the P/E ratio must either increase significantly or the share exchange ratio must be set at a low enough level, while keeping the P/E ratio unchanged.

Illustration 1: Shyama Enterprise is considering acquiring Rama Enterprise, and the following financial data is provided for both companies:

	Shyam Enterprise	Rama Enterprise
Profit after tax	40,000	8,000
No. of shares	10,000	4,000
EPS	4	2
Market Value per share	60	15
P/E Ratio	15	7.5
Total market capitalization	6,00000	60,000

Shyama Enterprise plans to acquire Rama Enterprise through an exchange of shares, using the market value per share of both companies as the basis for the exchange ratio. According to this, Shyama will offer 0.25 of its shares for every Rama share:

SER=15/60=0.25

The value of each share for Rama shareholders after the merger remains the same, i.e., Rs 15 (since $60 \times 0.25 = 15$).

The total number of shares exchanged by Shyama will be

Total shares of Rama=0.25×4,000=1,000 shares

Thus, the total number of shares post-merger will be:

Total shares post-merger=10,000(Shyama shares)+1,000(Rama shares)=11,000 shares

The combined profit after tax (PAT) post-merger will be:

PATc=40,000(Shyama)+8,000(Rama)=48,000

The EPS after the merger will be:

EPS after merger=48,000/11,000 = 4.36

Thus, Shyama's EPS increases from Rs 4 to Rs 4.36, while Rama's shareholders experience a decline in their per-share earnings from Rs 2 to Rs $1.09 (4.36 \times 0.25 = 1.09)$.

The post-merger market value per share will depend on the combined firm's P/E ratio. The following table shows the impact on the wealth of shareholders of both firms after the merger for different P/E ratios:

P/E Ratio	Shyama's	Market Value after	Market Value after Merger
	EPS	Merger (Shyam)	(Rama)
7.5	4.36	32.70	8.18
15.0	4.36	65.40	16.35
13.75	4.36	60.00	15.00

Key Observations:

- 1. Shyama's Share Price Post-merger: This is calculated by multiplying Shyama's EPS (Rs 4.36) by the P/E ratio.
- 2. Rama's Share Price Post-merger: Rama's share price post-merger is calculated as the per-share earnings (Rs 1.09) multiplied by the P/E ratio.
- **3. Rama's Shareholders' Value**: The value of Rama's shareholders' holding in Shyama shares will be the market value after the merger multiplied by 0.25.

If the post-merger P/E ratio is equal to the weighted average of the pre-merger P/E ratios of the two companies (13.75), the shareholders of both companies neither gain nor lose in value terms.

Weighted Average P/E Ratio Calculation:

The weighted average P/E ratio of the combined company is given by:

 $P/Ew = (P/Ea) \times (PATa/PATc) + (P/Eb) \times (PATb/PATc)$

Substituting Values:

 $P/Ew = (15) \times (40,000/48,000) + (7.5) \times (8,000/48,000)$

P/Ew = 12.5 + 1.25 = 13.75

The acquiring company (Shyama) would lose value if the post-merger P/E ratio is lower than 13.75. On the other hand, any post-merger P/E ratio above 13.75 would benefit both the acquiring and acquired firms.

Impact on Shyama's Shareholders:

Shyama's EPS increases after the merger because it is acquiring a company (Rama) with a lower P/E ratio (7.5), thus reducing the overall P/E ratio after the merger. However, if Shyama were to exchange shares at a higher P/E ratio (e.g., 22.5), its EPS would fall while Rama's EPS would increase post-merger.

Example:

If Shyama exchanges shares at a P/E ratio of 22.5, the share exchange ratio would be 0.75, and the earnings per share post-merger would be:

EPS post-merger=48,000/13,000=3.69

This results in Shyama's EPS decreasing from Rs 4 to Rs 3.69, while Rama's EPS increases from Rs 2 to Rs 2.77 (Since 3.69×0.75=2.77)

14.3.2: Earnings Growth

At the share exchange ratio based on current market values, Shyama's (the acquiring firm) EPS decreases.

Should Shyama proceed with acquiring Rama?

Shyama can justify the acquisition if Rama's future earnings are expected to grow at a higher rate.

Post-acquisition, Shyama's EPS could grow at a faster rate since the future growth rate of the combined firm would be the weighted average of the growth rates of both merging firms.

Assume Shyama's EPS is expected to grow at 6%, while Rama's EPS is expected to grow at 15%. The weighted EPS growth rate for Shyama would be calculated as follows:

gw=0.06 x 40,000/48,000 + 0.15 x 8,000/48,000 = 0.075 or 7.5 %

Weighted Growth in EPS = Acquiring firm's growth \times (Acquiring firm's pre-merger PAT/combined

firm's PAT) + Acquired firm's growth × (Acquired firm's pre-merger

PAT/combined firm's PAT)

gw= ga x PATa/PATc + gb x PATb/PATc

Where:

gw: Weighted average growth rate after the merger

ga: Growth rate of the acquiring firm before the merger

gb: Growth rate of the acquired firm before the merger

PATa Pre-merger profit after tax (PAT) of the acquiring firm

PATb Pre-merger profit after tax (PAT) of the acquired firm

PATc : Combined profit after tax (PAT) after the merger

14.4: TENDER OFFER AND HOSTILE TAKEOVER

A tender offer is a formal proposal made by an acquiring company to purchase a specified number of shares from the shareholders of a target company at a predetermined price. Typically, the offer price is set at a premium to encourage shareholders to sell or "tender" their shares. Tender offers can be utilized in two scenarios:

- 1. The acquiring company may initially seek a friendly takeover by negotiating directly with the target company. If the target company declines, the acquiring company can bypass management and approach the shareholders directly through a tender offer.
- 2. A tender offer may also be initiated without any prior negotiations, which could effectively amount to a hostile takeover.

Shareholders are usually approached via public announcements in financial media or through direct communication. Their decision to accept or reject the offer depends on factors such as their sentiment, attitude, and the difference between the current market price and the offer price. Importantly, the management of the target company may or may not support the tender offer.

While tender offers have been a common practice in the USA for several years, instances of such offers are relatively rare in India, with only one or two examples in recent years.

Case Study: Tata Tea Ltd.'s Tender Offer for Consolidated Coffee Ltd.

In September 1989, Tata Tea Ltd. (TTL), India's largest integrated tea company, made a groundbreaking move in the Indian corporate sector by issuing an open offer to acquire a

controlling stake in Consolidated Coffee Ltd. (CCL). TTL's Chairman, Darbari Seth, proposed a unique offer to CCL shareholders: one share in TTL along with ₹100 in cash, equivalent to a total value of ₹140 per CCL share. At that time, CCL shares were trading at ₹88 on the Madras Stock Exchange. This decision was both innovative and a trendsetter, as TTL had announced its intentions in the financial press, inviting shareholders of certain tea estates to sell their holdings.

Challenges and Resistance in Tender Offers

The management of target companies generally opposes tender offers, primarily due to the fear of being replaced. The acquiring company's plans may not always align with the long-term interests of the target company's shareholders.

To counter a tender offer, the target company's management can employ various strategies to discourage shareholders from accepting the deal. For instance, they may argue that the offered price does not reflect the true intrinsic value of the shares and convince shareholders to reject the offer as insufficient.

Other techniques include announcing higher dividends to create a psychological boost in shareholder confidence, potentially driving up the share price. Issuing bonus or rights shares can further dilute the acquiring company's ability to gain control.

Additionally, the target company might launch a counter-publicity campaign, highlighting why the tender offer is not in the best interest of shareholders. If shareholders are persuaded, the tender offer could fail.

The management can also employ delay tactics and seek assistance from regulatory bodies such as the Securities and Exchange Board of India (SEBI) or stock exchanges. These interventions could help stall or prevent the tender offer, adding to the challenges faced by the acquiring company.

14.4.1: Defensive Tactics against Hostile Takeovers

To protect itself from a hostile takeover initiated through a tender offer, a target company may implement various defensive strategies. These tactics include divestitures, crown jewels, poison pills, greenmail, white knights, and golden parachutes.

Divestiture:

The target company may sell or spin off certain business units, forming a separate subsidiary. This reduces the overall appeal of the target company to the acquirer.

Crown Jewels:

When the target company sells its most valuable assets or core businesses as part of a divestiture strategy, this is referred to as selling the "crown jewels." However, in some jurisdictions, such as the UK, this tactic is prohibited once the takeover becomes imminent and unavoidable.

Poison Pill:

The acquiring company can also become vulnerable to a hostile takeover while pursuing another company. To make itself less appealing to potential bidders, it may adopt a poison pill strategy. For example, it could issue a large number of convertible debentures to its existing shareholders, which would be converted to shares if a takeover threat arises. This significantly increases the number of shares required to gain voting control, making the takeover more challenging.

Greenmail:

In this tactic, the target company's management offers an incentive to the potential acquirer to abandon the takeover. Typically, this involves buying back the acquirer's shares at a price higher than the market value.

White Knight:

When faced with a hostile takeover, the target company may seek a friendly acquirer, referred to as a "white knight." This alternative buyer agrees to acquire the company, allowing the current management to retain their positions and avoid being replaced by the hostile bidder.

Golden Parachutes:

The company may offer substantial financial benefits to its executives in the event they are ousted due to a takeover. These "golden parachutes" serve to reduce resistance from management, as they are compensated generously if they lose their positions.

14.5: CORPORATE STRATEGY AND ACQUISITIONS

In previous discussions, we distinguished between mergers and acquisitions (or takeovers). While they may differ in structure, the analyses and evaluations involved are quite similar. A merger or acquisition is considered successful if it enhances shareholder value. However, if the post-merger performance is poor, the merger or acquisition is often labeled a failure, as it is challenging to determine how the firm would have performed without it.

What are the chances of success for mergers or acquisitions? Empirical studies suggest that they have a success rate of over 50%. Despite this, many mergers and acquisitions fail due to various reasons.

Reasons for Failure

1. Overpaying for the Target (Excessive Premium):

Sometimes, the acquiring company pays an exorbitant price for the target company, significantly exceeding the potential benefits. This often happens when the acquirer is overly eager to complete the deal, driven by prestige or the desire to expand its empire.

2. Inaccurate Valuation (Faulty Evaluation):

In some cases, acquirers fail to conduct thorough due diligence on the target company. Misjudging the potential benefits leads to overpayment, which ultimately reduces the value of the deal.

3. Inadequate Research:

Acquisitions require extensive data collection, analysis, and research. Poorly conducted research or insufficient preparation can lead to significant financial losses for the acquiring company.

4. Challenges in Post-Merger Integration:

Acquirers often struggle to integrate the acquired company into their existing operations. This can stem from ignoring organizational and cultural differences, which can hinder synergy and collaboration.

To prevent these issues, the acquiring company must develop a clear and well-defined merger and acquisition strategy. Every acquisition should be treated as a strategic decision. The process should involve meticulous planning, with careful selection of target companies based on thorough screening and evaluation. Additionally, it is essential for the acquiring company to gain a deep understanding of the target company's organizational environment and culture during the due diligence process.

The decision-making process for a merger or acquisition involves four key steps:

- 1. Planning
- 2. Search and Screening
- 3. Financial Evaluation
- 4. Integration

Planning

A merger or acquisition must align with the overall strategic vision of the acquiring company. It should complement the company's growth objectives and contribute to creating value for its shareholders and stakeholders. To identify suitable target companies, the acquiring firm must evaluate its strengths, weaknesses, and the potential opportunities that the acquisition could bring. Additionally, the acquisition should be assessed in light of the company's corporate goals and objectives. This process helps the firm determine appropriate product-market strategies, identify business units that should be divested, and pinpoint areas that require strengthening or expansion.

The planning phase involves two key steps:

1. Formulating an Acquisition Strategy:

The acquiring company should establish a clear and well-defined acquisition strategy, focused on growth. The strategy must outline the objectives of the acquisition and evaluate other growth options. This step should be based on a comprehensive assessment of the company's strengths and weaknesses.

2. Defining Assessment Approaches and Criteria:

The company must define its approach to acquisitions and set clear criteria for evaluating potential opportunities. Effective planning requires an in-depth analysis of both industry-specific and company-specific factors.

3. Industry Information:

The acquiring firm should examine data related to market growth, competitive dynamics, barriers to entry, capital and labor requirements, and regulatory influences.

4. Target Firm Information:

Key factors to evaluate include the quality of management, market share, company size, capital structure, profitability, and production and marketing capabilities.

By thoroughly addressing these elements, the acquiring company can lay a solid foundation for a successful merger or acquisition.

Search and Screening

The search phase involves identifying potential candidates for acquisition, focusing on where and how to find suitable targets. The screening process narrows down this list to a select few candidates, gathering detailed information about each. The objectives of the merger play a crucial role in guiding the search and screening stages. These objectives might include goals such as achieving rapid growth, enhancing profitability, improving management effectiveness, gaining market leadership, or reducing costs. However, these objectives can often be achieved through alternatives to mergers, such as joint ventures, strategic alliances, eliminating inefficiencies, improving cost management, enhancing productivity, or hiring capable managers. If a merger is deemed the most suitable option, the acquiring company must ensure it meets its specific screening criteria and is the most economically viable choice.

Financial Evaluation

Financial evaluation is a critical component of the due diligence process. While financial aspects are key, due diligence also involves assessing the target company's organizational culture, employee competencies, and overall capabilities. The financial evaluation helps determine the potential earnings, cash flow, and areas of risk, as well as the maximum price that can be paid for the target company and the optimal financing structure for the merger.

The acquiring company must offer a fair price for the target firm's business. In an efficient capital market, the current market value of the target company's shares is typically the correct value. The target company is unlikely to accept any offer below its current market value. In fact, it may expect the acquisition price to exceed the market value, anticipating that the merger will benefit the acquiring company.

A merger is considered to be at a **premium** when the offer price is higher than the target company's pre-merger market value. The acquiring firm may decide to pay this premium if it believes it can enhance the target company's profitability post-merger, through operational improvements or synergies. Additionally, the premium serves as an incentive for the target company's shareholders, encouraging them to sell their shares and allowing the acquiring firm to gain control of the target company.

Integration

The integration phase is often the most challenging aspect of a merger or acquisition. In the case of a hostile takeover, the acquiring company may be disheartened by the poor quality of the acquired company's assets or workforce. The complexity of integration largely depends on the level of control the acquirer seeks. If the acquirer only wants financial consolidation, leaving management to the existing leadership, the process is simpler. However, if full integration across departments such as manufacturing, marketing, finance, and personnel is desired, the process becomes much more complicated.

For a **horizontal merger** or acquisition, detailed planning is essential for successful integration.

Integration Plan:

After the merger, the acquiring company should create a comprehensive strategic integration plan that leverages both its own and the acquired company's strengths and addresses weaknesses. The plan should outline specific objectives and the steps involved in the integration process.

Communication:

The integration plan needs to be clearly communicated to all employees. Management should emphasize the importance of each employee's role in ensuring a smooth transition, addressing any concerns, and removing uncertainties about the future.

Authority and Responsibility:

The first step is to build trust with employees and establish clear lines of authority and responsibility. While the detailed organizational structure can be developed later, this step is crucial to avoid confusion and indecisiveness.

Cultural Integration:

People management is vital during integration. Many mergers fail because of the failure to integrate employees from different organizational cultures. Management should focus on understanding the cultural differences between the two organizations and work to bridge those gaps through clear communication, training, and mutual respect.

Skills and Competencies Up gradation:

If there are differences in skills and competencies between the two companies' employees, a plan should be implemented to upgrade those skills through training. Skills assessment survey can help identify gaps and guide the development of the training program.

Structural Adjustments:

After addressing cultural integration and skills development, management can design a new organizational structure, redefine roles, and clarify responsibilities. Flexibility is needed to accommodate the aspirations and needs of the acquired company's employees.

Control Systems:

Management must establish control over all the resources and activities of the merged entities. Proper financial controls should be implemented to optimize resource use and minimize waste.

Peter Drucker's five rules for successful integration include:

- 1. Ensure the acquired firm shares a common core of unity with the parent, such as overlapping technologies or markets, to create synergies.
- 2. Consider the potential skills and contributions the acquirer can provide to the acquired company.
- 3. Respect the acquired firm's products, markets, and customers.
- 4. Appoint skilled top management for the acquired company within a year.
- 5. Encourage cross-company promotions to foster integration within the first year.

14.6: ACCOUNTING FOR MERGERS AND ACQUISITIONS

Mergers and acquisitions involve intricate accounting processes. In India, a merger, referred to as an amalgamation, occurs when the acquiring company absorbs the target company, leading to the unification of the interests of both companies. This type of merger is typically structured as a pooling of interests. On the other hand, in an acquisition, where the acquiring company purchases the target company's shares, the transaction is structured as a purchase.

14.5.1: Pooling of Interests Method

Under the pooling of interests method of accounting, the balance sheet items and profit and loss accounts of the merging companies are consolidated without recognizing the effects of the merger. This means that the assets, liabilities, and other financial items of both the acquiring and acquired firms are combined at their book values without any adjustments. As a result, there is no revaluation of assets, and no goodwill is created.

Example: Pooling of Interests Method

Firm T merges with Firm S, with Firm S issuing shares worth Rs 15 crore to the shareholders of Firm T. The balance sheets of both companies at the time of the merger are as shown in Table 11.15. After the merger, the combined balance sheet reflects the addition of the book values of the assets and liabilities of both firms. It is important to note that the shareholders' funds are recorded at their book value, even though Firm T's shareholders received shares worth Rs 15 crore in Firm S. As a result, they now own Firm S along with its existing shareholders.

Assets	Firm T	Firm S	Combined Firm
Net Fixed Assets	24	37	61
Current Assets	8	13	21
Total Assets	32	50	82

Table 1: Pooling of Interests Method: Merger of Firms S and T

Liabilities	Firm T	Firm S	Combined Firm
Shareholders'	10	18	28
Funds			
Borrowings	16	20	36
Current Liabilities	6	12	18
Total Liabilities	32	50	82

14.5.2: Purchase Method

Under the purchase method, when a company acquires another, the assets and liabilities of the acquired company are adjusted either to their existing carrying amounts or to their fair market values based on the purchase price paid by the acquirer. In this method, the acquiring company often revalues the assets and liabilities. If the acquirer pays a price higher than the fair market value of the target company's assets and liabilities, the difference is recorded as goodwill on the acquiring company's balance sheet. Conversely, if the fair value of the assets and liabilities is less than the purchase price, the difference is recognized as a capital reserve.

Example: Purchase Method

Firm S acquires Firm T, assuming all of its assets and liabilities. The fair values of Firm T's assets are as follows: fixed assets are valued at Rs 26 crore, and current assets at Rs 7 crore. Current liabilities are recorded at their book value, while the fair value of debt is Rs 15 crore. Firm S raises Rs 15 crore in cash, issuing shares worth the same amount to its own shareholders to pay Firm T's shareholders. The balance sheet of Firm S after the acquisition is adjusted to reflect these changes.

Firm T	Firm S	Firm S after Merger	Rs in crore
Assets			
Net Fixed Assets	24	37	63
Current Assets	8	13	20
Goodwill			03
Total	32	50	86

Table No 2: Purchase Method - Merger of Firms S and T (Rs in crore)

Liabilities			
Shareholders Fund	10	18	33
Borrowings	16	20	35
Current Liabilities	6	12	18
Total	32	50	86

The calculation of Goodwill in this context follows the purchase method of accounting for mergers, where the acquiring firm (Firm S) pays for the target firm (Firm T) at a price that may exceed the fair value of the target firm's assets and liabilities.

Calculation of Goodwill:

- 1. **Payment to Firm T's shareholders (Rs 15 crore):** This is the total amount Firm S pays to acquire Firm T, i.e., the purchase price.
- 2. Fair value of assets:

Fixed assets (Rs 26 crore): These are the tangible long-term assets of Firm T, such as property, plant, and equipment, valued at Rs 26 crore.

Current assets (Rs 7 crore): These include short-term assets like inventory, receivables, and cash, valued at Rs 7 crore.

3. Liabilities:

Fair value of borrowings (Rs 15 crore): The amount of debt that Firm T owes, which is valued at Rs 15 crore.

Fair value of current liabilities (Rs 6 crore): These are short-term obligations, such as payables, that Firm T has, valued at Rs 6 crore.

4. Fair value of net assets (Rs 12 crore): This represents the total value of Firm T's assets after subtracting its liabilities:

Total assets = Rs 26 crore (fixed assets) + Rs 7 crore (current assets) = Rs 33 crore

Total liabilities = Rs 15 crore (borrowings) + Rs 6 crore (current liabilities) = Rs 21 crore

Net assets = Rs 33 crore - Rs 21 crore = Rs 12 crore

5. Goodwill (Rs 3 crore): Goodwill is the excess of the purchase price over the fair value of net assets acquired. In this case:

Purchase price = $Rs \ 15$ crore

Fair value of net assets = Rs 12 crore

Goodwill = Rs 15 crore (purchase price) - Rs 12 crore (net assets) = Rs 3 crore

Goodwill represents the intangible value that Firm S expects to derive from the acquisition, which may include factors like brand value, customer relationships, intellectual property, or other unquantifiable benefits.

14.7 SUMMARY

- 1. Financing a merger can involve a combination of cash offers and share exchanges, depending on the preferences of the acquiring and target companies.
- 2. Cash offers provide immediate liquidity to shareholders, whereas share exchanges allow shareholders to retain a stake in the combined entity.
- 3. P/E ratio and EPS analysis are crucial tools in merger negotiations, helping evaluate the profitability and valuation of the target company.
- 4. The share exchange ratio determines the proportion of ownership in the merged entity, ensuring fairness to both parties.
- 5. Earnings growth analysis focuses on the financial synergies and enhanced profitability post-merger.
- 6. Tender offers are a direct approach to acquiring shares from shareholders, bypassing the target company's management.
- 7. Hostile takeovers occur when an acquiring company seeks to gain control without the approval of the target company's board, often leading to conflict.
- 8. Defensive tactics like poison pills, golden parachutes, and white knight strategies are deployed by companies to prevent hostile takeovers.
- 9. Acquisitions as part of corporate strategy are aimed at achieving growth, market expansion, technological advancement, or operational efficiencies.
- 10. The pooling of interests method treats merging entities as equals, consolidating assets and liabilities at book value.
- 11. The purchase method treats the acquisition as a transaction, recording the acquired assets and liabilities at their fair market value.
- 12. Accounting standards and regulations play a significant role in ensuring transparency and accuracy in merger and acquisition transactions.
- 13. Effective integration of financial, operational, and cultural aspects post-merger is essential for achieving the desired outcomes.

14. Mergers and acquisitions can create shareholder value through synergies, cost efficiencies, and enhanced competitive positioning.

14.8 CHECK YOUR PROGRESS

1-Mark Questions

- 1. What is a cash offer in financing a merger?
- 2. Define a share exchange in the context of mergers.
- 3. What does P/E ratio stand for?
- 4. What is the significance of EPS analysis in mergers?
- 5. What is meant by the share exchange ratio?
- 6. Define a tender offer.
- 7. What is a hostile takeover?
- 8. Name one defensive tactic against a hostile takeover.
- 9. What is the pooling of interests method in accounting for mergers?
- 10. What is the purchase method in accounting for mergers?

2-Mark Questions

- 1. Differentiate between a cash offer and a share exchange in financing mergers.
- 2. Explain the importance of P/E ratio in merger negotiations.
- 3. Briefly discuss the significance of earnings growth in mergers.
- 4. Define tender offer and state its purpose in acquisitions.
- 5. What are hostile takeovers, and why are they considered aggressive?
- 6. Name and explain two defensive tactics against hostile takeovers.
- 7. How does the pooling of interests method differ from the purchase method in accounting?
- 8. State two advantages of a share exchange over a cash offer in mergers.
- 9. What role does the share exchange ratio play in mergers?
- 10. Why is corporate strategy important in acquisitions?

5-Mark Questions

- 1. Explain the process and advantages of financing a merger through a cash offer.
- 2. Discuss the role of EPS analysis in evaluating the financial benefits of a merger.
- 3. How does the P/E ratio influence merger negotiations? Provide examples.
- 4. Analyze the concept of a tender offer and its significance in acquisitions.
- 5. What are hostile takeovers, and how can companies defend against them?
- 6. Compare and contrast the pooling of interests method and the purchase method in accounting for mergers.
- 7. Discuss the financial and strategic advantages of using a share exchange in mergers.

- 8. Explain the share exchange ratio and its relevance to fairness in merger transactions.
- 9. Highlight the importance of corporate strategy in planning mergers and acquisitions.
- 10. Analyze the role of earnings growth in the success of mergers.

10-Mark Questions

- 1. Critically analyze the two main methods of financing a merger: cash offers and share exchanges.
- 2. Discuss the significance of P/E ratio and EPS analysis in merger negotiations, providing detailed examples.
- 3. Explain the concept of the share exchange ratio and its impact on the ownership structure of the merged entity.
- 4. Analyze the process and implications of a tender offer in acquisitions, with examples from real-world cases.
- 5. Evaluate various defensive tactics against hostile takeovers and their effectiveness in protecting companies.
- 6. Compare the pooling of interests method and the purchase method, highlighting their implications on financial statements.
- 7. Discuss the strategic objectives and financial considerations of corporate acquisitions in achieving organizational goals.
- 8. Explain the role of earnings growth in creating value through mergers, supported by examples.
- 9. Assess how hostile takeovers can disrupt corporate strategies and how companies can safeguard against them.
- 10. Elaborate on the role of corporate strategy in mergers and acquisitions, focusing on achieving synergies and long-term growth.

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UNIT 15: VALUATION

STRUCTURE:

15.1: Introduction

15.2: Benchmarks of Value

15.2.1 Book Value

15.2.2 Equity Value

15.2.3 Enterprise Value

15.2.4 Liquidation Value

15.3: Discounted Future Cash Flows (DCF) or Net Present Value Approach

15.4: Continuing or Terminal Value

15.5 Adjustments to DCF Enterprise Value

15.5.1 Arriving at Equity Value Using Enterprise Value

15.6: Defining Free Cash Flows

15.7: Choice of the Discount Rate

15.7.1 Cost of Capital and the Discount Rate

15.7.2: Cost of Debt:

15.7.3: Cost of Preferred Stock

15.7.4: Cost of Common Stock

15.8: Acquirer's Hurdle Rate

15.9 How the Market Determines Discount Rates

15.9.1 Discount Rate and Risk

15.10: Real Options in Valuation

15.11: Valuation of the Target's Equity

15.12: Valuation Effects of Mergers and Acquisitions

15.13 Summary

15.14 Check Your Progress

15.15 Reference **OBJECTIVES:**

By the end of this unit, learners will be able to:

- 1. Understand the key methods used for valuing both public and private companies.
- 2. Analyze the importance of discount rates and comparable multiples in business valuation.
- 3. Evaluate the role of the marketability discount in valuing closely held businesses.

15.1: INTRODUCTION:

Business valuation plays a critical role in understanding the worth of a company, whether it is a publicly traded entity or a privately held business. This unit focuses on the main methods of business valuation, emphasizing the similarities and differences in the approaches used for public and private companies. While many valuation techniques, such as selecting an appropriate discount rate or using comparable multiples, are universally applicable, certain aspects are more specific to private companies. For instance, factors like the marketability discount, which accounts for the limited liquidity of closely held businesses, are particularly significant in valuing such entities. By the end of this unit, learners will gain a comprehensive understanding of these valuation methods, enabling them to assess the financial value of businesses effectively, regardless of their ownership structure.

15.2: BENCHMARKS OF VALUE

This chapter introduces several methods for valuing a company. To ensure these methods produce accurate results, we can perform a basic "sensibility check." This involves comparing the calculated values to certain benchmarks that represent the minimum value, or "floor value," of the

company. The floor value is the lowest value a company is generally expected to have in the market. These benchmarks help confirm whether the valuation results make sense. The following sections will describe some of these benchmarks in detail.

15.2.1 Book Value

Book value represents the dollar value per share that would be received if a company's assets were sold at their recorded values and the liabilities and preferred stock were paid off. It is also referred to as shareholders' equity, net worth, or net asset value. However, book value doesn't always reflect the true market value of a company because it is based on historical costs recorded in the company's financial statements. If these recorded values don't match the actual current value of the assets—especially intangible assets like goodwill—then the book value becomes less relevant for determining the company's true worth.

One way book value is used is as a "floor value," which means the company's true value is generally higher than its book value. The evaluator's job is to estimate how much higher the actual value might be. However, in rare cases, a company might be worth less than its book value, especially if it has significant uncertain liabilities, like pending lawsuits. In such cases, it can be helpful to look at the "tangible book value," which excludes intangible assets like goodwill.

Additionally, companies' sales prices are often expressed as multiples of their book values. These multiples vary across industries. For example, if most companies in an industry sell for six times their book value, but the company being analyzed is priced at only three times its book value, this could suggest that the company is undervalued. Industry trends and averages are useful benchmarks for comparing the market price of a company.

15.2.2 Equity Value

Equity value refers to the value of an ownership stake in a business, typically represented by the value of its stock in a corporation. If the company has multiple types or classes of stock, the equity value is the total value of all these classes combined.

While the book value of equity, as discussed earlier, is calculated from the balance sheet by subtracting liabilities from the value of assets, the market value of equity reflects how the market values the company's shares. This is commonly known as market capitalization.

15.2.3 Enterprise Value

Enterprise value refers to the total value of a business, considering both the ownership (equity) and debt (debt holders) claims on the company. It includes the value of all types of equity, such as both preferred and common stock. When analysts refer to enterprise value, they are generally talking about the market value of these equity claims.

15.2.4 Liquidation Value

Liquidation value is another way to measure a company's minimum value, or floor value. It shows the per-share value that would result if the company's assets were sold off and all liabilities, preferred stock, and liquidation costs were paid. This value can vary depending on whether the liquidation is happening in a distressed situation or under more normal conditions. In a distressed liquidation, assets might be sold at much lower, "fire sale" prices.

15.3: DISCOUNTED FUTURE CASH FLOWS (DCF) OR NET PRESENT VALUE APPROACH

The Discounted Future Cash Flows (DCF) method is used to value a business by calculating the present value of its future expected cash flows or earnings. When the cost to purchase the company is subtracted from these future cash flows, we get the net present value (NPV). This concept is similar to the NPV calculations used in capital budgeting, which are explained in most corporate finance textbooks.

To value a business using DCF, we first estimate the future benefits the company will generate, either in terms of earnings or cash flows. These future benefits are then discounted back to the present to determine the current value of the company. This process is similar to how NPV is used in capital budgeting to decide if a project is worth pursuing. The general formula for NPV is:

NPV=Initial Investment- (Σ Future Cash Flows× $\frac{1}{(1+r)^{\wedge i}}$)

Where:

Future Benefits in Year i are the expected benefits for each year.

r is the discount rate.

Initial Investment is the amount invested at the start.

Before constructing the projection, we need to adjust the future cash flows so that they reflect the value a buyer would gain. For example, we might remove excessive executive compensation from the calculations.

A key part of the DCF method is choosing the right discount rate, which reflects the risk level of the company being valued. We will discuss how to calculate the discount rate later in this chapter.

The DCF valuation process is done in two parts. The first part is to value the specific cash flows forecasted for a certain period, usually about five years, during which the forecasts are considered

reliable. The second part values the remaining cash flows as a perpetuity, or an ongoing stream of cash flows after the forecast period ends. This value is called the "terminal value" or "continuing value."

The overall value of the business (BV) is the sum of the specific forecasted cash flows and the terminal value. The formula for the total business value is:

BV=Value from specific forecast period+Value of remaining cash flows

The value can be calculated as:

 $BV = \frac{FCF1}{1+r} + \frac{FCF2}{(1+r)^{2}} + \dots + \frac{FCF5}{(1+r)^{5}} + \frac{FCF6}{(r-g)} \times \frac{1}{(1+r)^{5}}$

Where:

FCF is the free cash flow for each period.

r is the discount rate.

g is the growth rate of future cash flows after the forecast period.

In the terminal value calculation, after the fifth year, we treat future cash flows as a perpetuity that grows at a constant rate (g). This future stream of cash flows is valued using a capitalization process. We first estimate the free cash flow for year six by multiplying the fifth year's cash flow by (1 + g). This value is then divided by the capitalization rate to get the value at the beginning of year six. Finally, we discount that value back to the present (year 0) to determine its present value.

This present value is added to the present value of the first five years' cash flows, giving us the total value of the business.

15.4: CONTINUING OR TERMINAL VALUE

The continuing value (CV), also known as terminal value, is the estimated worth of a business after a specific forecast period ends. Essentially, it represents what the business could potentially sell for at that time. There are two common ways to calculate this value:

1. Perpetuity Method:

Here, the business is treated as if it will continue indefinitely, with its future cash flows growing at a steady rate. These cash flows are "capitalized" using a formula to determine their total value.

2. Exit Multiple Method:

This involves applying a specific multiple (e.g., based on earnings or revenue) to estimate the business's value at the end of the forecast period. The chosen multiple should reflect the expected market conditions at that time. For example, a company in a high-growth phase might have a higher multiple initially, but a lower, more stable multiple might be more appropriate for mature companies in the same industry.

When using the perpetuity method, the calculation is very sensitive to the growth rate assumed for the business after the forecast period. Even small changes in this growth rate can significantly impact the calculated value. For example:

If the free cash flow (FCF) at the end of the forecast is \$10 million, with an 11% discount rate and a 6% growth rate, the continuing value is calculated as:

 $CV = $10,000,000 \times (1 + 0.06) \div (0.11 - 0.06) = $212 million$

However, if the growth rate is reduced to 5%, the value becomes: $CV = $10,000,000 \times (1 + 0.05) \div (0.11 - 0.05) = $175 million$

This 1% change in the growth rate reduces the continuing value by **21%**. Remember, this value must also be discounted back to reflect its worth in today's terms.

The takeaway is that growth rate assumptions play a critical role in determining the company's overall value. Overestimating growth can lead to inflated valuations, which could result in overpaying for a business. For instance, as seen in the Quaker Oats–Snapple case study, flawed growth assumptions can have costly consequences.

15.5 ADJUSTMENTS TO DCF ENTERPRISE VALUE

When calculating the enterprise value of a company using the Discounted Cash Flow (DCF) method, we are essentially focusing on assets that help generate free cash flows. However, if the company owns other valuable assets that do not contribute to cash flow like unused real estate these assets are not included in the DCF calculation. To get the total enterprise value, the market value of such non-operating assets must be added to the DCF-derived value.

Think of DCF as measuring the value of a company based only on the money its main business activities can generate. But companies sometimes own extra things, like buildings or land they don't use for their business. These things are still worth money. Since DCF doesn't include the

value of these extra assets, we need to add their value separately to get the company's total worth (enterprise value).

15.5.1 Arriving at Equity Value Using Enterprise Value

To calculate equity value from enterprise value using the DCF approach, we subtract the company's liabilities from the total enterprise value. However, the liabilities shown on the balance sheet may not represent the full extent of the company's obligations. Additional adjustments may be required to account for significant off-balance-sheet liabilities, such as unfunded pension obligations (future payments owed to employees that haven't been set aside) and contingent liabilities (potential obligations that depend on specific future events, like lawsuits). Including these ensures an accurate calculation of equity value.

Important details:

- 1. Step 1: Start with Enterprise Value
- 2. Step 2: Subtract Liabilities to Find Equity Value
- 3. Step 3: Watch Out for Hidden Liabilities
- 4. Step 4: Why Adjustments Are Important

15.6: DEFINING FREE CASH FLOWS

Free cash flows (FCF) represent the money a company has available to pay both its shareholders (owners) and debt holders (lenders). To calculate free cash flow, we start with the cash generated from the business and then subtract the necessary expenses to keep the business running smoothly in the future.

Subtract:

- 1. **Capital Expenditures (CE):** These are funds spent on maintaining or replacing equipment, buildings, or other assets that are needed to keep the business operating. For example, if a company replaces old machinery, that cost is deducted.
- 2. Changes in Working Capital (CWC): This includes money tied up in day-to-day operations, such as inventory or payments to suppliers. If more cash is needed for these activities, it's also subtracted.
- 3. Cash Taxes Paid (CTP): Subtract the taxes the company pays in cash.

The formula for free cash flow is FCF = EBITDA - CE - CWC - CTP
Free cash flow shows how much cash is left after covering all these expenses, which is available to pay dividends to shareholders or interest to lenders. It's a key measure of how much value the business is creating for its investors.

15.7: CHOICE OF THE DISCOUNT RATE

Choosing the right discount rate to calculate the present value of future cash flows requires understanding the level of risk involved and how much the target's cash flows fluctuate. When acquiring a company, it's important to focus on the target's cash flows because they represent the value of the investment for the buyer. The discount rate acts as a way to factor in the risks of the acquisition.

If an investment had no risk at all, the discount rate would equal the rate offered by risk-free investments, like Treasury bills. Treasury bills are short-term government securities with almost no risk of default. Longer-term Treasury bonds also have no default risk but can be affected by changes in interest rates (known as interest rate risk). This means that even though the investor is guaranteed fixed interest payments, they may not earn the same return if they reinvest those payments at a lower rate in the future.

The general rule is: the riskier the investment, the higher the discount rate you should use. A higher discount rate reduces the present value of the projected cash flows, reflecting the increased risk. However, it's important to use a consistent method to match the level of risk with the appropriate discount rate.

What Is the Discount Rate?

The discount rate is a number we use to calculate the current value of money we'll receive in the future. It's like asking, "How much is \$1 we'll get next year worth today?" The discount rate helps adjust the future value for time and risk.

Why Is Risk Important?

When you invest in something, there's always a chance you might not get the money you expect. Riskier investments, like buying a company, have more uncertainty about future cash flows. To account for this, we use a higher discount rate

What If There's No Risk?

If there's no risk, like with government securities (e.g., Treasury bills), we use a low discount rate because we're confident we'll get the expected returns. For example, Treasury bills are very safe because the government guarantees them.

Interest Rate Risk:

Even with safe investments like Treasury bonds, there's something called interest rate risk. This happens when the interest earn can't be reinvested at the same rate. It doesn't mean lose money, but it can lower your overall returns over time.

Higher Risk, Higher Discount Rate:

The riskier the investment, the higher the discount rate. A higher discount rate means the future cash flows are worth less in today's terms because of the uncertainty involved.

Matching Risk to Discount Rate:

It's important to have a clear and consistent way of matching the level of risk with the right discount rate to ensure an accurate valuation.

15.7.1 Cost of Capital and the Discount Rate

The cost of capital is a helpful guide when selecting the right discount rate for a company. In capital budgeting, where we are dealing with only one company, the cost of capital reflects the total cost of the different sources of funds the company uses, like debt and equity.

To calculate the cost of capital, we need to look at the company's capital structure, which is the mix of debt (loans) and equity (ownership). The formula for calculating the cost of capital is:

 $CC = \Sigma$ (wi * ki)

Where:

CC = the company's total cost of capital

wi = the weight of each source of capital (how much that source contributes to the total capital)

ki = the cost or rate associated with that source of capital (e.g., the interest rate for debt or the expected return for equity)

For example, imagine a company with an equal mix of debt and equity. If the debt rate is 9% and the return on equity is 15%, we can calculate the company's cost of capital like this:

CC = 0.50(0.09) + 0.50(0.15) = 0.12, or 12%

This means the company's cost of capital is 12%.

When acquiring another company, it's important to use the target company's cost of capital rather than the acquirer's, as the target may have different risks and financial conditions. The cost of capital helps set the discount rate in the DCF calculation.

If the company has other types of capital, such as preferred stock or different kinds of debt (like secured bonds or bank loans), each of these must also be included separately in the calculation. This ensures that we accurately reflect the true cost of all the capital sources the company uses.

Why is the Target Company's Cost of Capital Important?

When valuing a company through DCF, it's important to use the cost of capital for the target company, not the acquirer. This is because the target company may have a different risk profile—meaning the risks involved in the target's business might be higher or lower than those of the company doing the acquiring. That's why we adjust the discount rate based on the target's cost of capital."

What Happens if There Are More Sources of Capital?

If the company has other forms of capital, like preferred stock or different types of debt (secured bonds, bank loans, etc.), we need to consider each one separately. Each of these has its own cost, and we have to include them all in our calculation of the total cost of capital. This helps ensure that we accurately reflect the true cost of financing for the company."

The cost of capital helps us determine how much it costs for a company to finance its operations using debt and equity. This cost is used as the discount rate when performing DCF analysis. The higher the cost of capital, the higher the discount rate, and the lower the present value of the future cash flows. It's important to match the correct cost of capital to the target company to reflect its risk accurately.

15.7.2: Cost of Debt:

The after-tax cost of debt reflects the true cost a company pays for borrowing money, considering that interest payments on debt are tax-deductible. This means that companies save on taxes by deducting the interest they pay on their debt. To calculate the after-tax cost of debt, we use the following formula:

kt = kd (1 - t)

Where:

 $\mathbf{kt} =$ the after-tax cost of debt

kd = the pretax cost of debt (the interest rate the company pays before taxes)

 \mathbf{t} = the corporate tax rate (the percentage of taxes the company has to pay)

An important question that comes up is which tax rate to use when calculating the after-tax cost of debt. Some analysts use the statutory corporate tax rate, which is the rate set by law. However, the actual tax rate a company pays can be different from this statutory rate, as it may be affected by various factors. John Graham has provided a method to help determine the appropriate tax rate for this calculation.

15.7.3: Cost of Preferred Stock

Preferred stock is similar to debt in that it usually pays fixed dividends, making it a type of fixedincome security. The cost of preferred stock for the company can be determined by looking at the dividends it has to pay relative to the net amount the company receives from issuing the stock (after subtracting flotation costs).

For example, let's say a company issues preferred stock with an 8% dividend rate, and the par value of each share is \$100. If flotation costs (the costs of issuing the stock) are 2% of the par value, the company only receives \$98 per share. The annual dividend is \$8, which is 8% of the \$100 par value. To calculate the cost of the preferred stock, we divide the dividend by the net proceeds from the issue:

Cost of preferred stock = Dividends / Net proceeds Cost of preferred stock = \$8 / \$98 = 8.16%

This means the cost of the preferred stock is 8.16%. Flotation costs should be considered for all publicly issued securities, but in this example, we're only focusing on preferred stock for simplicity.

15.7.4: Cost of Common Stock

The cost of common stock refers to the return that investors expect for investing in a company's equity. There are several ways to calculate this cost, depending on the availability of data and the specific circumstances of the company.

1. Historical Rate of Return Method:

One simple way to determine the cost of common stock is to calculate the company's historical return on equity over a period of 5 to 10 years. This time frame provides a good estimate if it reflects the company's current and expected growth. For newer companies with little historical data, analysts use "proxy firms," which are similar companies with

more historical information. These proxy firms' rate of return on equity serves as a substitute.

2. Capital Asset Pricing Model (CAPM):

Another method uses the Capital Asset Pricing Model (CAPM), which incorporates the company's risk through a measure called "beta." Beta compares the volatility of a company's stock to the overall market. The formula for CAPM is:

$Ri = RRF + \beta i (RM - RRF)$

Where:

Ri = Expected return on equity

RRF = Risk-free rate (usually the rate on Treasury bills)

 βi = Beta of the stock

RM = Expected market return

(RM - RRF) = Market risk premium

Beta is calculated through statistical regression analysis, comparing the stock's performance to the market's performance. It helps in understanding how much risk a specific stock carries compared to the market.

3. Leveraged vs. Unleveraged Beta:

A company's beta can either be "leveraged" (reflecting the company's debt and equity structure) or "unleveraged" (excluding the impact of debt). Leveraged beta shows both business and financial risk, while unleveraged beta focuses only on the company's business risk. Analysts use formulas like the Hamada equation to convert leveraged beta into unleveraged beta:

Bu = BL / [1 + (1 - t)(Wd/We)]

Where:

Bu = Unleveraged beta

BL = Leveraged beta

 $\mathbf{t} = Tax rate$

Wd = Proportion of debt in capital structure

We = Proportion of equity in capital structure

4. Dividend Discount Model (DDM):

For companies that pay dividends, the cost of equity can also be calculated using the Dividend Discount Model (DDM). The formula is:

ke = (Di / P0) + g
Where:
ke = Cost of equity
Di = Expected dividend in the next period
P0 = Current stock price
g = Growth rate of dividends

5. Debt vs. Equity Risk Premiums:

Another approach to estimate the cost of equity is to add a risk premium to the company's cost of debt. Generally, the cost of equity is 4% to 6% higher than the cost of debt. Alternatively, analysts consider the long-term risk premium, which is the historical difference between returns on risk-free government bonds and equities. Historically, this premium has ranged from 6% to 7%.

These methods help determine the cost of common stock, which represents the return investors expect for the risks associated with owning equity in a company. Each method provides insights into how much it costs a company to finance itself through equity capital.

15.8: ACQUIRER'S HURDLE RATE

When analyzing the cost of capital in an acquisition, we usually focus on the target company's cost of capital. However, the buyer (or acquirer) might also want to evaluate the investment using its own "hurdle rate." The hurdle rate is the minimum return the buyer expects to earn from its investments. This rate is often the same as the buyer's cost of capital.

A potential issue arises when the target company has higher risk or more unpredictable cash flows compared to the buyer. In such cases, using the buyer's hurdle rate may not fully account for the extra risk involved in the acquisition. However, this concern is less relevant if both the buyer and target operate in the same industry and share a similar risk profile.

15.9 HOW THE MARKET DETERMINES DISCOUNT RATES

Discount rates are not fixed or standard; instead, they vary based on different interest rates available in the market. The capital market is made up of multiple smaller submarkets, each with its own supply and demand dynamics for capital. These submarkets are differentiated by their level of risk. For example, in the debt market, there are various categories of debt, each with different levels of risk. Secured debt generally has a lower interest rate compared to unsecured debt because it is less risky. Within these categories, there are further levels, each with its own specific interest rate.

15.9.1 Discount Rate and Risk

The level of risk associated with future earnings or cash flows determines the discount rate. If the earnings or cash flows are considered very reliable or low risk, a lower discount rate is applied. However, if the cash flows are uncertain or high-risk, a risk premium is added to the discount rate, making it higher. A higher discount rate reduces the present value of future cash flows or income, reflecting the greater uncertainty or risk involved. In summary, higher risk leads to a higher discount rate, while lower risk results in a lower discount rate.

15.10: REAL OPTIONS IN VALUATION

Over the past decade, traditional Discounted Cash Flow (DCF) analysis has faced criticism for its rigidity and inability to account for flexibility in decision-making. Capital investments often come with various options or choices that can impact their value over time. These choices, referred to as *real options*, allow companies to modify the course of an investment based on changing circumstances. Common examples of real options include delaying or postponing a project, expanding or growing an investment, or abandoning it altogether. In mergers and acquisitions (M&A), these options might involve postponing an acquisition or selling off a division of a business.

For example, some projects offer growth opportunities where a company can decide to invest additional resources to accelerate or manage the growth of cash flows. In an M&A context, this might involve allocating capital to improve the growth potential of an acquired business.

An *option* in general gives its holder the right, but not the obligation, to buy or sell an asset within a specific timeframe. While financial options like calls and puts are more familiar to many, *real*

options relate to physical or intangible assets. These might include property, equipment, intellectual property (like licenses or trademarks), or even entire businesses. Real options in M&A decisions could involve expanding operations, leveraging synergies from combined businesses, or discontinuing unprofitable ventures.

The issue with using only DCF analysis is that it typically creates a single projection of future cash flows without considering the different strategic alternatives available over the life of the investment. This approach gives a limited view of potential outcomes. In contrast, real options provide a more flexible framework to evaluate decisions and opportunities as they arise.

Experts like Smith and Triantis argue that traditional DCF models fail to fully capture the potential value of synergies in M&A transactions. They suggest that real options analysis is better suited to account for these dynamic possibilities, offering a clearer picture of the full range of potential benefits.

15.11: VALUATION OF THE TARGET'S EQUITY

When valuing a public company, calculating the value of its debt is usually straightforward. However, determining the value of the target's equity is more complex. For public companies, the stock market provides a reference for the value of the company's shares. These market prices can help estimate the value of the equity for an acquisition.

However, the bidder does not simply use the current stock price as the offer price. Adjustments are often necessary. One key adjustment is for time variation, which considers that the current stock price may not reflect the company's typical long-term performance. For instance, if the market is temporarily down, the stock price may be unusually low. While a bidder might prefer to use this lower price, the seller is unlikely to agree. A more realistic approach would involve looking at the average stock price over a recent period.

Another important factor is the *control premium*. This is an additional amount a buyer pays above the market price to acquire control of the company, as the current stock price does not account for this. These adjustments create room for negotiation between the buyer and the seller in determining a fair price for the equity.

15.12: VALUATION EFFECTS OF MERGERS AND ACQUISITIONS

Studies on the valuation effects of mergers and acquisitions (M&As) have led to several key conclusions, even though the results vary depending on the period and type of transaction. Generally, research indicates that target shareholders tend to benefit from M&As. In friendly, negotiated mergers, target shareholders often receive significant positive returns due to premiums. In hostile tender offers, target shareholders can receive even higher returns because the competitive

bidding process drives up the offer price. Additionally, target bondholders and preferred stockholders also gain from being acquired, as the larger bidder firm typically reduces the risk for these securities. However, acquiring firm shareholders usually experience either neutral or negative returns, as the market often doubts whether the acquisition will result in sufficient synergies to justify the premium paid. Moreover, after hostile bids, acquiring firm shareholders tend to see low or negligible returns.

1. Target Shareholders Earn Positive Returns:

In friendly mergers, target shareholders usually earn significant positive returns, mainly due to the premiums they receive for their shares in the acquisition deal.

2. Target Shareholders May Earn Higher Returns in Hostile Bids:

In hostile tender offers, target shareholders can receive even higher returns. The competitive nature of the hostile bidding process often pushes the acquirer to offer a higher bid, increasing the target shareholders' returns compared to a friendly transaction.

3. Target Bondholders and Preferred Stockholders Gain:

Target bondholders and preferred stockholders also benefit from being acquired. Since bidders are often larger and financially stronger, their acquisition lowers the risk associated with the target's debt, making it more valuable.

4. Acquiring Firm Shareholders Earn Zero or Negative Returns:

Shareholders of the acquiring firm tend to earn low or negative returns after an acquisition. This is because markets often doubt whether the acquisition will generate enough synergies to outweigh the premium the acquirer paid for the target. Following a hostile takeover, acquiring firm shareholders typically see little to no positive returns. In some cases, the returns may even be slightly negative, reflecting the skepticism surrounding the potential benefits of the acquisition.

15.13 SUMMARY

- 1. **Benchmarks of Value**: Understanding various valuation benchmarks like Book Value, Equity Value, Enterprise Value, and Liquidation Value.
- 2. **Discounted Future Cash Flows (DCF)**: Using the Net Present Value approach for valuation based on future cash flows.
- 3. **Continuing or Terminal Value**: Calculating the long-term value of a business beyond the forecast period.

- 4. Adjustments to DCF Enterprise Value: Transitioning from enterprise value to equity value.
- 5. **Defining Free Cash Flows**: Identifying cash flows available for distribution to stakeholders.
- 6. Choice of the Discount Rate: Selecting an appropriate discount rate based on cost of capital components.
- 7. Acquirer's Hurdle Rate: Evaluating the minimum acceptable rate of return for the acquirer.
- 8. Market-Determined Discount Rates: Exploring how risk and market conditions influence discount rates.
- 9. **Real Options in Valuation**: Incorporating flexibility and strategic decision-making in valuation.
- 10. Valuation of the Target's Equity: Determining the equity value of the target company.
- 11. Valuation Effects of Mergers and Acquisitions: Assessing the financial impacts of M&A transactions.

15.14 CHECK YOUR PROGRESS

1 Mark Questions

- 1. Define Book Value.
- 2. What does Equity Value represent in valuation?
- 3. Mention the formula for calculating Enterprise Value.
- 4. What is Liquidation Value?
- 5. State the purpose of the Discounted Future Cash Flows (DCF) approach.
- 6. What is meant by Terminal Value?
- 7. Define Free Cash Flows in valuation.
- 8. What is the significance of the **Discount Rate** in valuation?
- 9. Explain the term **Real Options** in valuation.
- 10. What is the primary goal of determining the target's Equity Value?

2 Marks Questions

- 1. Differentiate between Book Value and Equity Value.
- 2. Explain the significance of Enterprise Value in valuation.
- 3. Why is Liquidation Value important in financial distress scenarios?
- 4. Briefly explain the **DCF approach** to valuation.
- 5. What is the importance of calculating Terminal Value in the DCF method?
- 6. List two key components required to define Free Cash Flows.
- 7. Why is **Cost of Capital** considered in determining the discount rate?
- 8. Explain the role of Acquirer's Hurdle Rate in M&A transactions.

- 9. How do market conditions influence the discount rate?
- 10. What are Real Options, and how do they enhance valuation accuracy?

5 Marks Questions

- 1. Elaborate on the steps involved in calculating Enterprise Value.
- 2. Discuss the relationship between **Discount Rate** and **Risk** in valuation.
- 3. Explain the Net Present Value (NPV) Approach in Discounted Future Cash Flows (DCF).
- 4. Illustrate how Terminal Value is derived and why it is crucial in DCF valuation.
- 5. Discuss the adjustments needed to arrive at **Equity Value** from **Enterprise Value**.
- 6. Highlight the components of Free Cash Flows and their relevance in valuation.
- 7. Describe the factors influencing the choice of **Discount Rate**.
- 8. Explain the concept of **Real Options** in the context of valuation.
- 9. Analyze the process of valuing the **Target's Equity** in mergers and acquisitions.
- 10. What are the financial effects of mergers and acquisitions on the valuation of a company?

10 Marks Questions

- 1. Compare and contrast Book Value, Equity Value, and Enterprise Value, with examples.
- 2. Analyze the process and assumptions of the **Discounted Future Cash Flows (DCF)** method in detail.
- 3. Discuss the importance and calculation of **Terminal Value** in business valuation.
- 4. Explain the adjustments required in the DCF Enterprise Value approach to derive Equity Value.
- 5. Define and discuss the significance of Free Cash Flows in valuation, with an example.
- 6. Evaluate the components of **Cost of Capital** and their role in determining the **Discount Rate**.
- 7. Discuss how **Real Options** can be applied in the valuation process and their impact on decision-making.
- 8. Explain the valuation process for a target company's equity in the context of mergers and acquisitions.
- 9. Describe the market's role in determining **Discount Rates**, and discuss the influence of risk factors.
- 10. Analyze the Valuation Effects of Mergers and Acquisitions, focusing on financial synergies and value creation.

15.15 REFERENCE

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