Master of Commerce
Semester - II
Paper Code –

FINANCIAL MANAGEMENT

Index

UNIT -1

Objectives

The objectives of this unit are to

- understand the meaning of financial management, its goal, functions and relationship with other disciplines
- discuss financial planning in terms of meaning, benefits, process and factors affecting it
- explain the concept of time value of money
- to describe concept of cost of capital, cost of various sources of finance and weighted average cost of capital.

Introduction

Role of money and blood is similar in an organization and human body respectively. But money and finance are not same. A currency as long as with a person is money and when he/she lends it to others or invest somewhere it becomes finance. An individual in the capacity to manage three activities in an organization i.e. forecasting money needs, obtaining money and investing money in various productive assets is termed finance manager. That is why finance is called an art and science of managing money. The goal of finance manager is to maximize owners' wealth.

1.1 Approaches to Financial Management

Traditional approach: Under this approach financial management as a discipline focuses primarily on acquiring of funds through different financial sources like equity shares, preference shares debentures and loans.

Modern approach

This approach has widened the scope of financial management by including financing decisions for (raising finance), investment decisions (investment in long term and short term assets) and dividend decisions (how much earning is to be retained in business and how much distributed in the form of dividend).

1.2 Goals of Financial Management

Financial management is concerned with procurement and use of funds. Its basic goal is to use funds in such a manner that the firm's value or income is maximized. There are various alternatives available for investing business funds. Each alternative investment proposal is evaluated minutely before final selection. The basic objective of a firm is to maximize return to the owners. Therefore, the financial manager while taking decisions always keeps forefront economic welfare of owners. There are two basic goals of financial management, namely, Profit maximization and Wealth maximization.

1. **Profit Maximization:** Earning profit is the prime motive of a firm. Business units always strive for profits for their growth and survival and by doing so, they can serve in the best interest of its

stakeholders. Profit is the favorable difference between revenues and costs over a period of time. If a firm is unable to earn desired profit capital invested is eroded and its survival is challenged. Hence, profit maximization principle of a firm cannot be overlooked. In spite of many criticism it is regarded the basic objective of the firm**.** But profit maximization principle most of the time is being criticized because of the following reasons :

1. The word profit is having many connotations and does not indicate specific profit. (gross profit, operating profit, net profit, return on assets or capital etc.)
2. This principle ignores the concept of time value of money which is most significant in business decision making.
3. This objective ignores quality of profits/benefits. It does not distinguish between ethical and unethical profits.

2. Wealth maximization:

Wealth maximization refers to maximizing the net wealth of the owners of business. In case of company wealth maximization is possible only when the company pursues such policies and takes such decisions that would increase the market value of its shares. "On account of the above-discussed criticisms/limitations of profit maximization principle, wealth maximization of shareholders is considered an appropriate goal for financial decision making. It is operationally feasible since it satisfies all the three requirements of a suitable operational objective of financial courses of action, namely exactness, quality of benefits and the time value of money. It provides an unambiguous measure of what financial management should seek to maximize in making investment and financing decisions on behalf of the owners. Wealth maximization means maximizing net present value NPV (or wealth) of a course of action to shareholders. NPV can be derived more explicitly by using the following formula

$$W = \frac{cif1}{(1+r)^1} + \frac{cif_2}{(1+r)^2} + \frac{cif_3}{(1+r)^3} + \frac{cif_n}{(1+r)^n} + \ldots\ldots - IC_0$$

where W = Net present worth *cif* 1 , cif 2 , cif 3 …. cif n represent the stream of cash inflows (benefits) expected to occur from a course of action that is adopted in period 1 2 3 and n. $IC0$ = Initial cash outflow to buy the asset. r = Expected rate of return or appropriate rate of discount. A financial decision that has a positive NPV creates wealth for ordinary shareholders and therefore preferable and vice versa. The wealth will be maximized if this criterion is followed in making financial decisions. From shareholders' point of view, the wealth created by a corporation through financial decisions or any decision is reflected in the market value of its shares".

Source: G Sudarshan Reddy, "Financial Management Principles and Practice" 2010 page14.

1.3 Finance Functions

Finance function is the key to success of any business. To make the function more effective, a sound organization structure is essential. A sound structure defines who is who, who reports to whom and

functions and responsibilities of each individual. The structure also facilitates allocation of resources to carry out the financial activities. It may be pointed out that finance function cannot be outsourced. "There is no tailor-made structure of finance function. The structure of the organization of financial management vary from firm to firm depending on the factors like the size of the firm, nature of business transactions, type of financing operations, capabilities of financial executives and the philosophy of finance function of the firm. The designation (titles) of financial officer also differs from one organisation to another organisation. The different designations are financial manager, Chief Financial Officer (CFO), Director of Finance, Vice-President Finance and financial controller. He/she reports to the top management (President). The financial Vice President's key subordinates are the Treasurer and the Controller; who may be appointed under the supervision (Consent) of Vice-President (finance). In big firms, with modern management there may be Vice-President (finance), Director (finance) usually with both Treasurer and Controller reporting to him. He/she exercises his/her functions through his/her two subordinates known as treasurer and controller.

1. Treasurer: The main concern of the treasurer is mainly financing activities and investment activities, including cash management, relationship management with commercial and investment bankers, credit management, portfolio management, inventory management, insurance/risk management, investors relations and dividend disbursement.

2. Controller: On the other hand, the functions of controller are related to the management and control of assets. The main functions include cost accounting, financial accounting, internal audit, financial statement preparation; preparation of budgets, taxation, general ledger (payroll) and data processing."

 Source: G Sudarshan Reddy, "Financial Management Principles and Practice" 2010 page17-19.

1.4 Interface of Financial Management with other Disciplines

 Financial management has close relationship with economics and accounting. But it is also related with all other functional departments of a firm.

a) **Relationship to Economics:** The roots of finance can be traced from micro and macro economics. **Macro economic** variables create external environment that provides opportunities and threats to the firm and is beyond its control. The understanding of macroeconomic factors like inflation, interest rate, GDP, exchange rate, fiscal policies, monetary policies and their impact on the firm's operating performance is must for financial manager's decision making. **Microeconomics** is the firm's specific internal environment and controllable one. Financial managers use micro-economic theories such as demand and supply relationship, profit maximization, pricing strategies, marginal cost-revenue analysis and opportunity cost analysis for efficient operations of business.

b) **Relationship with Accounting:** Finance and Accounting are the two prime domains of chief finance officer are not separable and generally considered his overlapping activities. Accounting prepares, keep records and reporting data for performance measurement and decision making of the firm whereas financial management is concerned with the maximization of value of the firm based on the analysis of accounting information.

c) **Relationship with Human Resources:** Human resource management activities commence from recruitment and terminate on retrenchment or retirement. In between come training, development, wage, salary, incentives, promotion/demotion, and provision for other benefits. All these activities cannot be performed without finance.

d) **Relationship with Production Department:** Production department requires huge investment in fixed assets like equipment and machinery. Hence, production manager and finance manager needs to work closely for efficient and effective capital budgeting decisions.

e) **Relationship with Marketing:** Two primary activities of the marketing department i.e. selection of distribution channels and promotion policies involves huge expenditure. Therefore finance and marketing managers need to work with co-ordination to maximize value of the firm.

1.5 Types of Financial Decisions

a) **Investment Decisions :**These are related to investment of funds in fixed/long term assets like land, building, plant, machinery, patent etc (capital budgeting decisions) and short term assets viz. socks of raw material and finished goods or inventory, receivables(working capital) in the expectation of future benefits in the coming years.

b) **Financing Decisions:** For investment in project or investment in long term and short term assets firm require funds. Funds can be raised by issuing of equity shares, preference shares, debentures, bonds, long term and short term loans. A finance manager has to select a optimum combination of debt and equity source of finance which maximize the return and minimize the cost The important thing to decide here is the proportion of various sources of finance in the total fund requirement of the firm.

c) **Dividend Decisions:** The part of the profit after tax and preference dividend which is distributed among common shareholders by the company is called dividend. It is the reward to equity shareholders for their risky investment in company. A decision regarding whole profits are to be distributed as dividend or retain all these in the business for further expansion/diversification plan or to keep a part of profits in the business and distribute rest among shareholders is called dividend decision.

Inter-relation of Financial Decisions: A fiancé manager has to take all three i.e. investing, financing and dividend decisions to maximize the wealth of shareholders. All three decisions are complimentary not independent. The relationship of all three financial decisions is mentioned in the following lines:

- The prime goal of all three decisions is wealth maximization of shareholders.

- For an investment proposal, finance manager has to ponder required finance for it (funds available and funds required).

- Dividend decision is effected by financing decision and vice versa. When profits are distributed as dividend, then firm has to raise finance from external sources. But if profits are retained there will be less need of external sources of finance.

From the above discussion it is clear that each financial decision is effected by each other. Therefore, financial managers have to consider the joint impact of all the three decisions and effect of each of the decision on the market value of the firm and its shares.

1.6 Financial planning: Finance manger has to formulate the financial plans. The finance function is primarily concern with the economic procurement and efficient use of funds, which is possible only by a well prepared financial plan. Financial planning is systematic approach to attain economic procurement and utilization of funds. Preparation of the financial plan is the responsibility of financial manager. Financial planning pertains to the function of finance and includes the determination financial objectives, formulating and promulgating financial policy and developing financial procedure.

Objectives of Financial Planning: Financial planning is done to achieve the following two objectives:

1. The main objective of financial planning is that sufficient fund should be available in company for different purposes such as for purchase of long term assets, to meet day-to- day expenses, etc. It ensures timely availability of finance through various long and short term sources of finance.
2. To ensure that firm raises optimum funds at least costs. Excess funding is as bad as shortage of funds. If there is surplus fund it must be invested in the best possible manner as keeping funds idle is a great loss to company.

Benefits of Financial Planning:

1. The financial planning helps to anticipate the accurate and precise requirement of funds. Thus it avoids over-capitalization and under capitalization problem..

2. Financial planning serves as guide to decide debt equity ratio in capital structure.

3. Financial planning guides in allocation of funds for various projects.

4. Financial planning controls the financial activities by comparing with bench mark.

5. All business plans depend upon the soundness of financial planning as it is integral part of the corporate plan.

Process of Financial Planning

1. **Projection of Financial Statements:** Projection of financial statements help to analyze the effects of the operating plan on projected profits and various other plans.

2. **Determinations of Funds Required**: Estimate the needed funds to invest in proposed projects.

3. **Forecast the Availability of Funds:** The required funds may be generated from internal and external sources.

4. **Establish and Maintain Systems of Controls:** Makes sure the basic financial plan is implemented properly.

5. **Develop Procedure:** Procedures should be developed for adjusting the basic plan if the economic forecasts upon which the plan was based do not materialize.

Factors influencing Financial Planning

1. **Nature of the industry:**

    Consideration of nature of the industry is very important in financial planning. Here, nature of industry refers to whether the industry is capital – intensive or labour-intensive. The nature of industry helps to decide the quantum of capital and the sources of procurement. Generally, labour intensive industries require less amount of capital in comparison to the capital intensive industry.

2. **Status of Company in Industry:**

    Status of the company is considered by the investors while investing in equities or debentures. Hence, a financial manager needs to assess his company's status in terms of size, age, goodwill, area of operation and the promoters and management's goodwill, because these affects financial planning. A company, which is having goodwill in the market or public may be able to raise funds easily when compared to firms that are new.

3. **Evaluation of Alternative Sources of Finance:**

    Procurement of needed funds at minimum cost is possible only when there is debt and equity combination. For determination of optimum debt-equity or finance mix, the financial manager needs to evaluate various sources of finance in the light of cost, availability, contractual conditions, limitations etc. before going to formulate the financial planning.

4. **Attitude of Management towards Control:**

    Management's attitude towards control is another factor that should be considered while formulating a financial plan. Any firm or management that is interested in retaining the control, would not like to raise funds by issue of equity shares to the public, if at all they issue, they would purchase a majority of the issues to hold control.

5. **Capital Structure:**

    Construction of capital structure is a part of financial structure. Capital structure should be determined with a combination of debt and equity, but financial manager should try to minimize fixed charge. This is possible only when the firm is able to raise long-term finances by means of equity source.

6. **Government Policy:** Government policies, financial controls and other statutory provisions should also be taken into consideration while formulation of a firm's financial plan.

1.7 Capitalization

Capitalization of a firm is the layout of its long-term sources of funds. Capitalization means the total value of long term sources of finance of a firm which includes both debt and equity. Sometimes we call it capital structure also. The two theories of Capitalization are

a) Cost Theory: According to this school of thought capitalization is the sum of monetary cost of fixed and long term assets (land and building, plant and machinery etc), the amount of working capital required to operate the business, cost of establishing and promoting company. Cost theory states that if funds raised are sufficient to meet the initial costs and working capital, the company is said to be

adequately capitalized. This theory is significant for new companies as it helps to compute the amount of funds to be raised initially. It cannot be applied to the existing firms because it does not suggest whether the capital invested justifies the earnings or not.

b) Earnings Theory: According to this theory, the true value (capitalization) depends upon the company's earnings. Thus, the capitalization of the company is equal to the capitalized value of its expected profits. To estimate initial capital needs a company has to prepare a projected profit and loss account to estimate of its profit/earnings. After knowing estimated earnings, the financial manager will compare these with the actual earnings of other companies of similar size and business with necessary adjustments. After this, the rate at which other companies in the same industry are earnings on their capital is known. This rate is then applied to the company's estimated earnings for determining its capitalization. For example if a company is capable of making net profit of Rs. 30,000 annually and the rate of earnings is 10%, the capitalization of the company will be 3,00,000 (i.e. 30,000 x 100/ 10).

1.8 Over-Capitalization: A company faces a problem of overcapitalized when the true value of its assets are less than the total capital. Overcapitalization is diagnosed by the earning power of the firm. The signal of overcapitalization is given when the company is earning less than market expectation.

Symptoms of Over-Capitalization

- Earnings of the company fall

- Dividend rates fall

- Fall in the market price of share and investors lose confidence

- Company may go for winding up

Remedies for Over-Capitalization

An over-capitalized company has been rightly compared with a overweight person who is likely to suffer from various diseases unless he takes steps to immediately reduce his weight. Likewise, an over-capitalised company must cut its dead weight before it becomes deep rooted and almost impossible to get rid of. In this regard, various remedial measures are suggested to tackle the problem of overcapitalization such as,

 i) Increasing the efficiency of management

 ii) Reduction of high rate of interest debt.

 iii) Lending institutions are approached for reduction in interest payments

iv) Internal reconstruction of company initiated through a scheme of capital reduction.

vi) Negotiation are made to merge overcapitalized company with well managed and profit making companies.

1.9 Under-Capitalization

Under-capitalisation is the reverse phenomenon of over-capitalisation. But under-capitalisation does not mean that the company is having inadequate capital. According to Gersrtenberg, "A company may be

under-capitalised when the rate of profits it is making on the total capital is exceptionally high in relation to the return enjoyed by similarly situated companies in the same industry, or when it has too little capital with which to conduct its business". For example, the capitalisation of a company is Rs. 25 lakhs and the average rate of return of the industry is 10%. But if the company is earning 25% on the capital investment, it is a case of under-capitalisation.

Causes of Under-Capitalisation

• When future earnings are under estimated by promoters at initial stage of formation of company

• Due to change in macro economic variables firm's earnings increased abnormally.

• Total funds requirements are underestimated

• Company maintains a high level of efficiency in its production of goods and services

• When company is conservative in payment of dividends

• When assets are purchased at exceptionally low prices.

Effects of Under-Capitalization

• Competitors are increased/new firm enter in the industry

• Manipulation in the price of share encourages

• More tax burden on company

• Workers demand higher wages

• Consumers under impression that the company charges high prices for its product/service

Remedies: Company should increase its capital by issue of fresh equity shares/bonus shares or increase the par value of shares.

1.10 Time Value of Money

Profit maximization principle is criticized as it ignores the time value of money, magnitude and timings of earnings. A sound financial decision requires bringing cash inflows and outflows together to the same point of time for the purpose of comparison. Comparison of cash inflows and outflows can be meaningful only when these are adjusted for their differences in timing and risk. Firms can maximize wealth only when it is able to recognize the time value of money and risk. So it is imperative to understand the techniques of compounding (future value) and discounting (present value) which is required in almost financial decisions. Concept of time value of money states that money which is received today, is more valuable than money receivable in future. The amount of money that is received early can be further reinvested to earn income in the form of interest. That is why; people prefer to receive money at an earliest. It is also termed as an individual's **time preference for money**. The time preference for money is generally expressed by an interest rate. For example if interest rate is 6% it means that an individual can sacrifice the opportunity of receiving Rs.100 today if he is offered Rs 106 after one year.

Three reasons are responsible for individual's time preference for money:

- Uncertainty: Future leads to uncertainty and uncertainty involves risk. When an individual is uncertain about future cash inflows/benefits, obviously he/she would prefer to receive money toady instead of future.

- Current consumption: It has been observed that majority of people want to spent the present money for buying goods and services to satisfy their current needs.

- Possibility of investment opportunity: If an individual receive money today/earlier, he/she reinvest that to earn additional income.

1.11 Techniques of Time Value of Money

1) Compounding Technique: Under compounding technique future value of cash flows is computed by calculating compound interest on the original principal and on interest earned but not withdrawn during investment period. Compound interest is the function of principle, time and interest rate.

a) Compounding Value of a Single Cash Flow: "Compound value or future value of a single cash flow can be calculated by the following formula.

CV = Po (1 + I) n

Where,

CV = Compound value, Po = Principal amount, I = Interest per
annum, n = Number of years for which compound is done

(1 + I) n = CVIF I…..n or future value inter factor for interest and 'n' years."

Source: G Sudarshan Reddy, "Financial Management Principles and Practice" 2010 page119-120.

For example Mr X has invested Rs.20,00,000 today with ABC Ltd. for five years, which pay 8 % compound interest. Find the future value of above investment.

Solution: CV = Po (1 + I) n

CV5 = 20, 00,000(1+0.08)5

= 20, 00,000 (1.469)

CV5 = Rs. 29, 38,000

You can refer the compounding factor (1.469) in Future Value Table of one rupee for 5 years at 8 %."

Variable Compounding Periods: Compounding of interest may be done once in a year or it may take place for variable periods (like semi-annual, quarterly etc). Following equation is used to compute compound value with variable compound periods:

$$CVn = Po \left[1 + \frac{I}{M}\right]^{mxn}$$

"CVn = Compound value at the end of year 'n', Po = Principal amount at the year '0', I = Interest per annum, m = Number of times per year compounding is done n = Maturity period

You have deposited Rs. 40,000 with a company for 10 year at the rate of 6% compound interest and compounding is done half yearly. The compound value of this deposit at the end of 10 years will be:

$$Rs.\,40,000 \left[1 + \frac{0.06}{2}\right]^{2x10} = Rs.\,40,000\,[1.86] = Rs.\,72,240"$$

Refer compound factor 1.86 of one rupee in Future Value Table for 20 years at 3 % rate of interest

Source: G Sudarshan Reddy, "Financial Management Principles and Practice"2010 page 120.

Calculation of Compound Growth Rate: "Compound growth rate can be calculated with the following formula: Gr: $Vo\,(1 + r)^n = Vn$

Where Gr= Growth rate in percentage

V= Variable for which the growth rate is needed to found (i.e. sales, revenue, dividend at the end of year '0')

Vo = Variable value at the end of year 1

Vn = Variable value (amount) at the end of year 'n'

$(1 + r)^n = $ Growth rate

The following information regarding dividend payment from 2001 to 2006 of Rex Ltd are given to calculate compound growth rate of dividend

Year	2001	2002	2003	2004	2005	2006
Dividend per share (Rs.)	21	22	25	26	28	31

Solution: $21(1 + r)^5 = 31$

$(1 + r)^5 = \frac{31}{21} = 1.476$

Gr= 8%.

Refer compound/growth rate 8% in Future Value Table for 5 years (total years– one year) till you find closest value to the compound factor 1.476."

Source: G Sudarshan Reddy, "Financial Management Principles and Practice"2010 page 121.

b) Compound Value of Series of Uneven Cash Flows: Compound value of a series of cash flows can be calculated by the following formula

$$CV_n = P_1(1 + I)^{n-1} + P_2(1 + I)^{n-2} + \cdots P_{n-1}(1 + I) + P_n$$

Where CVn= Compound value at the end of' 'n' year

P1 = Payment at the end of year 1, P2 = Payment at the end of year 2

Pn = Payment at the end of year 'n', I = Interest rate

$CVn = P1 \, (CVIF \, I.1) + P2 \, (CVIF \, I.2) + \ldots\ldots\ldots Pn \, (1+I \, I.n)$

Suppose you want to deposit Rs. 5,000, Rs. 10,000, Rs. 15,000, Rs. 20,000 and Rs. 25,000 in your savings bank account in year 1,2,3,4 and 5 respectively. If rate of interest is 6%, the future value of your deposits at the end of 5 years will be"

Solution: $CV_n = 5{,}000(1+0.06)^4 + 10{,}000(1+0.06)^3 +$
$15{,}000(1+0.06)^2 + 20{,}000(1+0.06)^1 + 25{,}000(1+0.06)^0$

$CV_5 = 5{,}000(1.262) + 10{,}000(1.191) + 15{,}000\,(1.124) + 20{,}000\,(1.060)$
$\qquad + 25{,}000(1.00)$

= 6,610 + 11,910 + 16,860 + 21,200 + 25,000

= Rs. 81,280

Source: G Sudarshan Reddy, "Financial Management Principles and Practice"2010 page 121.

c) Compound Value of Annuity (Even Cash Flow)

"Annuity is a series of even cash flows for a specified duration. It involves a regular cash outflow or inflow. For instance like the payment of LIC premium, depositing in a recurring deposit account, and the like. Cash flows may happen either at the end of year or beginning of the year. If cash flows happen at the beginning of the year, it is called as an annuity due, where as when the cash flows happen at the end it is called as a regular or deferred annuity."

A) Compound Value of Deferred Annuity

For example you are depositing Rs. 500 at the end of every year for 6 years at 6 % interest. The future value of your deposits at the end of 6 years will be:

Solution: $CV_n = P_1(1+I)^{n-1} + P_2(1+I)^{n-2} + \cdots P_{n-1}(1+I) + P_n$
$CV_6 = 500(1+0.06)^5 +$
$500(1+0.06)^4 + 500(1+0.06)^3 + 500(1+0.06)^2 + 500(1+0.06)^1 + 500(1+0.06)^0$

= 500(1.338) + 500(1.262) + 500(1.191) + 500(1.124) + 500(1.060) + 500(1.00)

= 669 + 631 + 595.5 + 562 + 530 + 500

= Rs. 3487.5

Source: G Sudarshan Reddy, "Financial Management Principles and Practice"2010 page 122.

B) Compound Value of Annuity Due When the cash flows involves at the beginning of the year compound value of annuity is calculated with the following formula:

OR
$$CV_{n1} = P\left[\frac{(1+I)^n - 1}{I}\right](1+I)$$
$$CV_n = P_1(1+I)^n + P_2(1+I)^{n-1} + \cdots P_n(1+I)^n$$

Suppose you depositing Rs. 2,500 at the beginning of year for 6 years in a saving bank account at 6 % compound interest. The future value of your money at the end of 6 years will be:

Solution: $CV_6 = 2,500\left[\frac{(1+0.06)^6 - 1}{0.06}\right](1+0.06)$

= 2,500 (6.975) (1+0.06)

= Rs.18, 483.75

Source: G Sudarshan Reddy, "Financial Management Principles and Practice"2010 page 122.

Doubling Period: Doubling period means the time period in which the investment amount will be twice at a given rate of interest. Rules for calculating doubling period

Rule of 72: To get doubling period, 72 is dividend by interest rate.

Doubling period (DP) = 72 ÷ I

Where I = Interest rate, (%)

 For example in how many years Rs.1500 will be doubled at 10 % rate of interest?

Solution: DP = 72÷ I = 72 ÷ 10 = 7.2 years (approx.)

Rule of 69: Rule 69 provide a better accurate doubling period. The formula to calculate doubling period is DP =0.35 + 69/I

Years required Rs.1500 to double   at 10 % rate of interest under rule 69

Solution: 035+ 69/10 = 7.25 years

II) Discounting Technique: Under discounting technique interest rate is used to discount the future cash flows to find out their present values. The present value of a future cash inflow (or outflow) is the amount of current cash that is of equivalent value to the present value.

a) Present Value of a Single Cash Flow:

 Present value can be calculated by the following formula:

$$PV = FV_n\left[\frac{1}{(1+I)}\right]^n \text{ OR } FV_n\left[PVIF_{I,n}\right]$$

PV = Present value

FV_n = Future value receivable at the end of 'n' years

I = Interest rate or discounting factor or cost of capital

n = Duration of the cash flow

$PVIF_{I,n}$ = present value interest facts at 'I' interest and for 'n' years

For example the present value of $ 40,000 receivable after three year at 10% interest rate will be

Solution: $PV = FV_3 \left[\frac{1}{(1+I)}\right]^3$

= $ 40,000   [1/1+0.10]3

= $ 40,000 (0.751)

= $ 30,040

Refer present value factor .751 in PV Table at 3 years for at 10 % rate.

b) Present Value of a Series of Cash Flows: Cash inflow`s from the project occurs year after year till its life. These cash inflows may be even or uneven. Separate formulas are used to compute the present value of even and uneven cash inflows

i) Present Value of Uneven Cash Flows

$PV = \sum_{t=1}^{n} \frac{CIF_t}{(1+I)^t}$ OR $PV = \frac{CIF_1}{(1+I)^1} + \frac{CIF_2}{(1+I)^2} + \ldots\ldots + \frac{CIF_n}{(1+I)^n}$

PV = Present value

I = Interest rate or discounting factor or cost of capital

n= Duration of the cash inflows stream

t= Year in which cash inflows are receivable

CIF= Cash inflows

Example

"From the following information, calculate the present value at 10% interest rate.

Year	0	1	2	3	4	5
Cash inflow (Rs.)	2,000	3,000	4,000	5,000	4,500	5,500

Solution: $\frac{2,000}{(1+0.10)^0} + \frac{3,000}{(1+0.10)^1} + \frac{4,000}{(1+0.10)^2} + \frac{5,000}{(1+0.10)^3} + \frac{4,500}{(1+0.10)^4} + \frac{5,500}{(1+0.10)^5}$

= 2,000+ 2,727 + 3,304 + 3,755 + 3,073.5 + 3,415.5

= Rs. 18,275"

Source: G Sudarshan Reddy, "Financial Management Principles and Practice" 2010 page 126.

ii) Present Value of Even Cash Flows (Annuity)

$$PVA_n = CIF \left[\frac{(1+I)^n - 1}{I(1+I)^n} \right]$$

PVA = Present value of annuity

I = Interest rate or discounting factor

n = Duration of the annuity

CIF=   Cash inflows

Mr. X want to know the present value of $ 40,000 per annum which he will receive for 6 years. Assume discount is 10 %.

Solution: $PVA_n = CIF_n \left[\frac{(1+I)^n - 1}{I(1+I)^n} \right]$

= $,40000 X $PVIFA_{I,n}$

= $ 40000 X 4.355 = $ 1,74,200

Refer   Present Value Annuity Table for PVFA 4.355 at 10% for 3 year

Equated Monthly Installment: "A fixed payment amount made by a borrower to a lender at a specified date each calendar month. Equated monthly installments are used to pay off both interest and principal each month, so that over a specified number of years, the loan is fully paid off along with interest."

The formula for EMI (in arrears) EMI = [P x R x (1+R)^N]/[(1+R)^N-1],

Where

 P= is the loan amount or principal,

R= is the interest rate per **month** [if the interest rate per annum is 10.5%, then the rate of interest will be 10.5/(12 x 100)]=.00875

N= is the number of monthly installments.

For example, if you borrow Rs.10,000,000 from a bank at 10.5% annual interest for a period of 10 years (i.e., 120 months), then EMI =   10,000,000 * 0.00875 * (1 + 0.00875)^120 / ((1 + 0.00875)^120 – 1) = Rs.134,935. i.e., you will have to pay Rs. 134,935 for 120 months to repay the entire loan amount. The total amount payable will be 134,935 * 120 = Rs. 16,192,200 that includes Rs. 6,192,200 as interest toward the loan.

Source: https://en.wikipedia.org/wiki/Equated_monthly_installment

1.12 Cost of Capital

Generally an enterprise arrange finance from owners and creditors. Funds supplied by owners and creditors are called equity and debt respectively and sum of the two termed total capital of business. In other way owners and creditors are supplying funds to business at some cost/expected return. Now the

business has to earn that much profit/return on total capital that it can pay the cost of total capital. Technically cost of capital is the minimum required rate of return needed to justify the use of capital. Cost of capital for a project is the discount rate for calculating the present value of cash flows. It is one type of interest rate (called also as cut-off rate, target rate, hurdle rate and required rate of return) used to discount future cash inflows associated with projects to find out their present values. A firm uses different sources of finance, so firstly the cost of each source of finance is computed separately to find weighted average cost of capital/composite/combined cost of capital.

Cost of Capital Concept: The meaning of cost of capital can be understood from different point of views

• Investors view point: "The measurement of the sacrifice made by the individual for capital formation."

• Firm's view point: "It is the minimum required rate of return needed to justify the use of capital".

• Capital Expenditure view point: "The cost of capital is the minimum required rate of return/the cut off rate/hurdle rate/discount rate used to value cash flows".

Source G Sudarshan Reddy, "Financial Management Principles and Practice" 2010 page 193.

Importance of Cost of Capital

Knowledge of cost of capital is significant for financial decisions. Following paragraphs throw light on the importance of cost of capital:

i) Project/Investment Evaluation: The basic purpose of measuring the cost of capital is its use as a bench mark for evaluating the investment projects. Different discounting techniques of capital budgeting like NPV, IRR and Profitability Index use the cost of capital as discounting rate to evaluate the cost and benefits of investment decisions.

ii) Helpful in Designing Capital Structure: Cost of capital is helpful in formulating a sound and economical capital structure for a firm. By comparing various sources of finance's specific cost a financial manager select the best and most economical source of finance and succeed in designing a sound and viable capital structure.

iii) A Tool of Financial Performance Appraisal: Cost of capital can be used to evaluate financial performance of management. Financial performance evaluation involves a comparison of actual profitability of the project with the project's overall cost of capital. .

1.13 Cost of Different Sources of Finance: A company uses different sources of finance like equity shares, preference shares, debentures, long term loans, retained earnings etc. The finance manager has to compute the cost of each source of funds required in the capital formation of a company. Calculation of specific source of finance is discussed below:

A) **Cost of Equity**: In the balance sheet of a company you find equity capital under the head equity share capital and retained earnings. The cost of equity is same in both the cases as the equity shareholders are fund provider. Retention of earnings involves an opportunity cost. But the company

has to bear the expenses of new issue of equity shares in the name of flotation costs where as there is no such types costs for retained earnings.

i) Cost of Retained Earnings

Retained earnings are that part of net profits that is hold by the firm in the form of reserve and surplus by not distributing as dividends to owners. The opportunity cost of retained earnings is the sacrifice in the form of income by equity shareholders by not investing their share of profit elsewhere. The following formula is applied to compute the cost of retained earning

$$Kre = Ke \left(\frac{(1 - Ti)}{(1 - Tb)} \right)$$

Where, Ke = Cost of equity capital [D ÷ P or (E/P) + g]

Ti = Marginal tax rate applicable to the individuals concerned

Tb = Cost of purchase of new securities

D = Expected dividend per share P/NP = Market Price/Net proceeds of equity share

g = Growth rate (%)

For Example "A company paid a dividend of Rs.2 Per share, market price per share is Rs. 20, income tax rate is 60% and brokerage is expected to be 2%. Cost of retained earnings will be"

Solution: $Kre = Ke \left(\frac{(1 - Ti)}{(1 - Tb)} \right) X\ 100$

$= \frac{2}{20} \left[\frac{(1 - 0.60)}{(1 - 0.02)} \right] X\ 100$

= 0.10 X 0.408 X 100 = 4.1 %

Source G Sudarshan Reddy, " Financial Management Principles and Practice"2010 page 197.

b) The Cost of Issue of Equity Shares (Ke): "The cost of equity capital (Ke) may be defined as the minimum rate of return that a firm must earn on the equity financed portions of an investment project in order to leave unchanged the market price of the shares. The cost of equity is not the out-of-pocket cost of using equity capital as the equity shareholders are not paid dividend at a fixed rate every year."

(i) Dividend/Price Ratio Method: Common public invest in equity shares in the expectation of dividend and capital appreciation. Under this method cost of equity share is computed on the basis of present value of expected stream of dividend income. The formula is

Cost of Equity Share capital (K$_e$) = D/P , Where **D**= dividend per share

P= current market price per share. If dividends are expected to grow at a constant growth rate of 'g' then cost of equity share capital will be K$_e$ = D/P + g.

For example the market price of a company's is Rs.300 and it is paying Rs.15 dividend per share. Further it may grow at a rate of 10% per year. The cost of equity capital will be

Ke=D/P+g   or   Rs.15/Rs.300+.10   or = 15%

(ii) Earnings/Price Ratio Method: Under this method two variables earning per share and market price of share are used to compute cost of equity capital. Expected rate of earning is the base for calculation of cost of equity capital whether it is retained or distributed as dividend no matter. Formula for cost of equity capital **is** $K_e = E/P$

where E = Current earnings per share,

 P = Market price per share. If the future earnings per share will grow at a constant growth rate 'g' then cost of equity share capital (K_e) will be

$K_e = E/P+ g.$

After adjustment of flotation costs (f) formula is further extended i.e.

$K_e = E / P (1 – f) + g$

For example Siska Ltd. is planning to issue 200,000 additional new Equity Shares of Rs. 10 each. The estimated floatation cost is 5%. Currently its share is quoted at Rs. 40 and earnings per share are Rs.8 and it may grow 6% per year. Its cost of equity will be: $K_e = E / P (1 – f) + g$

Ke = 8/40(1-.05)+.06 or 0.25 or 25%

iii) Capital Asset Pricing Model Approach (CAPM) :

William F.Sharpe propounded CAPM approach and suggested the following formula to compute the cost of equity capital considering risk-return relationship

$$Ke = R_f + (R_{mf} - R_{f)})\beta$$

Where, Ke = Cost of equity capital, Rf = Risk free rate of return (%) β= Beta, market risk coefficient, Rmf= Required market return, .

Disha Ltd. provides the following information to compute its cost of equity capital: Risk free rate 8%, Beta equals 1.5 and the return on market portfolio equals 13.5 %.

Solution: $Ke = R_f + (R_{mf} - R_{f)})\beta$

Ke = 8+(13.5-8)1.5   or 16.25%

B) Cost of Preference Shares: A preference shareholder gets first priority over equity shareholder in payment of dividend and in the payment of capital at the time of winding up of company.

i) Cost of Irredeemable Preference Shares: Preference shares that can be paid only at the winding up of company are called irredeemable preference shares. The cost of these shares is computed by applying the following formula:

Kp (without dividend tax) = D/CPM or NP

Kp (with tax) = D(1+Dt)/CMP or NP

Where, Kp = Cost of preference share

D= Dividend per share

CMP = Current market price per share

NP = Net proceeds

Dt.= Tax on preference dividend

ii) Cost of Redeemable Preference Share: These shares are redeemed at end of specified period or their maturity date. The issue and redemption expenses are also considered to find the cost of redeemable preference shares. Formula used to find their cost is:

Kp=D+(f+d+pr-pi/)Nm ÷ (Rv +Np)/2

where Kp= Cost of preference share Np = Net proceeds realized f=Flotation cost d= Discount on issue pr = Premium on redemption pi= Premium on issue

R_V = Redeemable value of preference shares

D = dividend per share

 Nm= Maturity period

For example Visa Ltd. planning to issue 200,000, 10% Preference shares of Rs.100 each redeemable after 10 years Expected issue cost is 10% of issue price. Cost of preference share will be

 Kp=D+(f+d+pr-pi/Nm ÷ (Rv +Np)/2

= 10+(10+0+0-0)/10 ÷ (100+90)/2 or = 10+1/95 or 11.58%

C) Cost of Debt: Borrowed funds are named as debt and includes bonds/debentures and long term loan on the left side of balance sheet of a company. The interest payable on debt is considered as cost of debt capital (K_d). Cost of debt capital is cheaper than the cost of other sources, because interest paid on debt is tax deductible**.**

i) **Cost of Irredeemable Debt**

Irredeemable debts are a payable only on the liquidation of company and considered permanent funds. The following formula is used to compute cost of irredeemable debentures , debt or bond.

Pre-tax cost = $Kdi = \dfrac{I}{P \text{ or } NP}$

Post-tax cost = $Kd = \dfrac{I(1-t)}{P \text{ or } NP}$

Where, Kdi = Pre-tax cost of debentures,

I = Interest,

P = Principle amount or face value

NP = Net sales proceeds, t = Tax rate

For example A company is having 500,000, 12%, Perpetual Debentures of Rs. 100 each. The company falls in 50% tax bracket. The cost of these debentures in both cases will be:

Pre-tax cost

$$Kdi = \frac{Rs.12}{100} = 12\%$$

Post-tax cost $\quad Kd = \frac{12(1-0.5)}{100} = 6\%$

ii) Cost of Redeemable Debt The amount of these debentures are payable by company on the expiry/maturity period for which these were issued

Kd=   I (1-t)+(f+d+pr-pi)/Nm ÷ (Rv +Np)/2

where Kd= Cost of debenture

I= Interest amount
 t= Tax rate
f=Flotation cost
d= Discount on issue
 pr = Premium on redemption
pi= Premium on issue
Np = Net proceeds realized
R_V = Redeemable value of preference shares
 Nm= Maturity period

For example Bharat Ltd. wants to issue 15% Debentures at par value of Rs. 100 to raise Rs. 80 lakh for its expansion. The interest is payable annually and the debentures are redeemable at a premium of 2% after 7 years. The cost of issue is 3% and tax rate is 35%. Cost of debenture will be

Kd=   I (1-t)+(f+d+pr-pi)/Nm ÷ (Rv +Np)/2   = 15(1- 0.35) +(3+0+2-0)/7 ÷ (102+97)/2

=9.75+.72 ÷99.50 = 10.47/99.50 or 10.52%

1.14 Weighted Average Cost of Capital (WACC)

A company to meet its financial requirement raises funds from various sources as discussed in previous paragraphs. The overall/composite cost of all sources of funds is called average cost of capital. When specific cost of each source of fund is combined according to their market value weight or book value weight it is called weighted average cost of capital.

Steps involved in computation in WACC

  1. Determine the sources of funds to be raised and their individual proportion/share in the total capital of the firm

2. Compute the of cost of each specific source of funds

3. Assign the weight to various sources of funds according to their book value or market value.

4 .Multiply the cost of each source by their respective assigned weight

5. Find the sum of each specific source's cost computed under step 4 to get weighted cost of capital.

Assignment of Weights: The weights to specific funds may be assigned based on the following:

1. **Book values**: The percentage of each source of fund in the total capital of a firm reflected in the balance sheet is called book value weights.

2. **Market value weights**: Under this method, weights are assigned to each source of finance on the basis of their market value. The percentage of market value of each source of fund in the total market capitalization of a firm is called market value weight.

For example Siksha Ltd. has provided following information based on its latest balance sheet to find weighted average cost of capital:

Source of finance	Book Value in Rupees (00,000)	After Tax Cost %
Equity Share Capital	40	11.5
Preference Share Capital	20	8.5
Long term Loans	60	4.0
Retained earnings	80	10.0
Total	**200**	

Solution:

Computation of weighted average cost of capital based on book value

Source of Finance	Weights	Specific Cost (%)	Weighted Cost
Equity	0.20	11.5	2.3
Preference share	0.10	8.5	.85
Debt	0.30	4.0	1.2
Retained earnings	0.40	10.0	4.0
	1.00		8.35

Self Assessment Questions

1. Discuss the goals of financial management.

2. Distinguish between profit maximization and wealth maximization principle.

3. Explain the approaches to financial management.

4. How investment, financial and dividend decisions are interrelated?

5. What is time value of money? Distinguish compounding and discounting techniques of time value of money.

6. Define cost of capital and discuss the formulae to compute cost of equty, preference shares and bonds.

7. What is financial planning and discuss its significance.

8. Write down the symptoms, causes and remedies of over capitalization and undercapitalization.

Suggested Book Readings:

 1. Financial Management:- By M Y Khan and P K Jain, Tata McGraw Hill Education Private Limited.

2. Financial Management:- By I M Pandy, Vikas Publishing House PVT. LTD.

3. Financial Management:- By G Sudarsana Reddy, Himalya Publishing House.

4. Financial Management:- By Shashi K Gupta and R K Sharma, Kalyani Publishers