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UNIT-I

SYLLABUS

Introduction - Nature - Scope and Objective of Financial Management - Time Value of Money - Risk and Return (including Capital Asset Pricing Model) - Valuation of Securities - Bonds and Equities

INTRODUCTION

Finance is the life blood of business. Without adequate finance, no business can servive and without efficient finance management, no business can prosper and grow. Finance is required for establishing developing and operating the business efficiently. The success of business depends upon supply of finance and its efficient management. Finance is called science of money. It is not only act of making money available, but its administration and control so that it could be properly utilized. The world –Financial Management‖ is the composition of two words ie. „Financial" and „Management". Financial means procuring or raising of money supply (funds) and allocating (using) those resources (funds) on the basis of monetary requirements of the business. The word „Management" means planning, organizing, coordinating and controlling human activities with reference to finance function for achieving goals/ objectives of organization. Besides raising and utilization of funds, finance also includes distribution of funds in the form of dividend to share holders and retention of profit for growth and developments.

DEFINITION

Howard and Upton : Financial management –as an application of general managerial principles to the area of financial decision-making.

NATURE

The nature of financial management refers to its relationship with related disciplines like economics and accounting and other subject matters. The area of financial management has undergone tremendous changes over time as regards its scope and functions. The finance function assumes a lot of significance in the modern days in view of the increased size of business operations and the growing complexities associated thereto.

SCOPE AND OBJECTIVES OF FINANCIAL MANAGEMENT

Introduction

Financial management is that managerial activity which is concerned with the planning and controlling of the firm‟s financial resources. The funds raised from the capital market needs to be procured at minimum cost and effectively utilised to maximise returns on investments. There is a necessity to make the proper balancing of the risk-return trade off.

Objective of Financial Management

Financial Management as the name suggests is management of finance. It deals with planning and mobilization of funds required by the firm. There is only one thing which matters for everyone right from the owners to the promoters and that is money. Managing of finance is nothing but managing of money. Every activity of an organization is reflected in its financial statements. Financial Management deals with activities which have financial implications. The very objective of Financial Management is to maximize the wealth of the shareholders by maximizing the value of the firm. This prime objective of Financial Management is reflected in the EPS (Earning per Share) and the market price of its shares.

The earlier objective of profit maximization is now replaced by wealth maximization. Since profit maximization is a limited one it cannot be the sole objective of a firm. The term profit is a vague phenomenon and if given undue importance problems may arise whereas wealth maximization on the other hand overcomes the drawbacks of profit maximization. Thus the objective of Financial Management is to trade off between risk and return. The objective of Financial Management is to make efficient use of economic resources mainly capital.

The functions of Financial Management involves acquiring funds for meeting short term and long term requirements of the firm, deployment of funds, control over the use of funds and to trade-off between risk and return.

Scope of Financial Management

Financial Management today covers the entire gamut of activities and functions given below. The head of finance is considered to be importantly of the CEO in most organizations and performs a strategic role. His responsibilities include :

a. Estimating the total requirements of funds for a given period.

b. Raising funds through various sources, both national and international, keeping in mind the cost effectiveness;

c. Investing the funds in both long term as well as short term capital needs;

d. Funding day-to-day working capital requirements of business;

e. Collecting on time from debtors and paying to creditors on time;

f. Managing funds and treasury operations;

g. Ensuring a satisfactory return to all the stake holders;

h. Paying interest on borrowings;

i. Repaying lenders on due dates;

j. Maximizing the wealth of the shareholders over the long term;

k. Interfacing with the capital markets;

l. Awareness to all the latest developments in the financial markets;

m. Increasing the firm‟s competitive financial strength in the market; and

n. Adhering to the requirements of corporate governance.

Role of Financial Manager

The traditional role of the finance manager is to confine to the raising of funds in order to meet operating requirements of the business. This traditional approach has been criticized by modern scholars on the following grounds. It was prevalent till the mid-1950s.

1. The traditional approach of raising funds alone is too narrow and thus it is outsider-looking-in approach.

2. It viewed finance as a staff specialty.

3. It has little concern how the funds are utilized.

4. It over-emphasized episodic events and non-recurring problems like the securities

and its markets, incorporation, merger, consolidation, reorganization, recapitalization and liquidation etc.

5. It ignored the importance of working capital management.

6. It concentrated on corporate finance only and ignored the financial problems of sole trader and partnership firms.

7. Traditional approach concentrated on the problems of long-term financing and ignored the problems of short-term financing.

There was a change from traditional approach to the modern concept of finance function since the mid-1950s. the industrialization, technological innovations and inventions and a change in economic and environment factors since the mid-1950s necessitated the efficient and effective utilization of financial resources. Since then, finance has been viewed as an integral part of the management. The finance manager is, therefore, concerned with all financial activities of planning, raising, allocating and controlling the funds in an efficient manner. In addition, profit planning is another important function of the finance manager.

This can be done by decision making in respect of the following areas:

1. Investment Decisions for obtaining maximum profitability after taking the time value of the money into account.

2. Financing decisions through a balanced capital structure of Debt-Equity ratio, sources of finance, EBIT/EPS computations and interest coverage ratio etc.

3. Dividend decisions, issue of Bonus Shares and retention of profits with objective of maximization of market value of the equity share.

4. Best utilization of fixed assets.

5. Efficient working capital management (inventory, debtors, cash marketable securities and current liabilities).

6. Taking the cost of capital, risk, return and control aspects into account.

7. Tax administration and tax planning.

8. Pricing, volume of output, product-mix and cost-volume-profit analysis (CVP Analysis).

9. Cost control.

10. Stock Market— Analyse the trends in the stock market and their impact on the price of Company‟s share and share buy-back.

TIME VALUE OF MONEY

Concept

We know that Rs. 100 in hand today is more valuable than Rs. 100 receivable after a year. We will not part with Rs. 100 now if the same sum is repaid after a year. But we might part with Rs. 100 now if we are assured that Rs. 110 will be paid at the end of the first year. This –additional Compensation‖ required for parting Rs. 100 today, is called –interest‖ or –the time value of money‖. It is expressed in terms of percentage per annum.

Why should money have time value?

Money should have time value for the following reasons :

(a) Money can be employed productively to generate real returns;

(b) In an inflationary period, a rupee today has higher purchasing power than a rupee in the future;

(c) Due to uncertainties in the future, current consumption is preferred to future consumption.

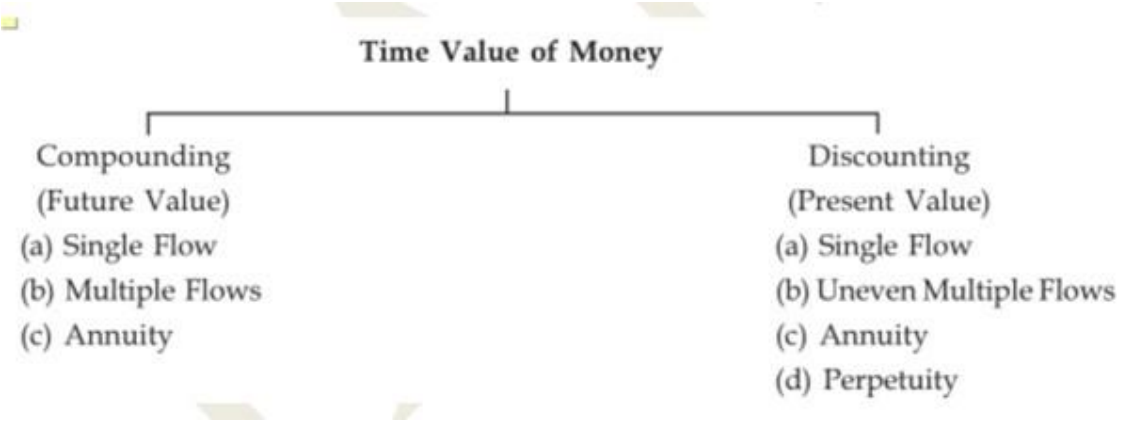
(d) The three determinants combined together can be expressed to determine the rate of interest as follows :

Nominal or market interest rate = Real rate of interest or return (+) Expected rate of inflation (+) Risk premiums to compensate for uncertainty.

Methods of Time Value of Money

(1) Compounding : We find the Future Values (FV) of all the cash flows at the end of the time period at a given rate of interest.

(2) Discounting : We determine the Time Value of Money at Time –O‖ by comparing the initial outflow with the sum of the Present Values (PV) of the future inflows at a given rate of interest.



Future Value of a Single Flow

It is the process to determine the future value of a lump sum amount invested at one point of time.

FV n = PV (1+i) n

Where,

FV n = Future value of initial cash outflow after n years

PV = Initial cash outflow

i = Rate of Interest p.a.

n = Life of the Investment and

(1+i) n = Future Value of Interest Factor (FVIF)

Illustration :

The fixed deposit scheme of Punjab National Bank offers the following interest rates :

Period of Deposit Rate Per Annum

46 days to 179 days 5.0

180 days < 1 year	5.5
1 year and above	6.0

An amount of Rs. 15,000 invested today for 3 years will be compounded to :

FV n = PV (1+i) n

= PV × FVIF (6,3)

= PV × (1.06) 3

= 15,000 (1.191)

= Rs. 17,865

Future Value of Annuity

Annuity is a term used to describe a series of periodic flows of equal amounts. These flows can be inflows or outflows.

The future value of annuity is expressed as :

$$FVA_n = A\left[\frac{(1+i)^n - 1}{i}\right]$$

where, A = Amount of Annuity
i = rate of interest
n = time period
FVA_n = compounded at the end of n years.

and $\left[\frac{(1+i)^n - 1}{i}\right]$ is the Future Value of Interest Factor for Annuity (FVIFA)

Illustration :

Calculation the maturity value of a recurring deposit of Rs. 500 p.a. for 12 months @ 9% compounded quarterly.

Solution :

$$\text{Effective rate of interest per annum} = \left(1+\frac{0.09}{4}\right)^4 - 1$$
$$= 1.0931 - 1 = 0.0931$$

Rate of interest per month

$$= (1+i)^{\frac{1}{n}} - 1$$
$$= (1+0.0931)^{\frac{1}{12}} - 1$$
$$= 1.0074 - 1$$
$$= 0.0074$$
$$= 0.74\%$$

Maturity Value can be calculated as follows :

$$FVAn = A\left\{\frac{(1+i)^n - 1}{i}\right\}$$
$$= 500\left\{\frac{(1+0.0074)^{12} - 1}{0.0074}\right\}$$
$$= 500 \times 12.50 = \text{Rs. } 6250/-$$

Present Value of a Single Flow :

$$PV = \frac{FV_n}{FVIF(i,n)} = \frac{FV_n}{(1+i)^n}$$

Where, PV = Present Value
FV_n = Future Value receivable after n years
i = rate of interest
n = time period

and $\frac{1}{FVIF(i,n)} = PVIF(i,n)$ [Present Value of Interest Factor]

Present Value of Uneven Multiple Flows

Year	Cash Inflows	P.V.F @ 10%	Discounted Cash Flows
1	50,000	0.9091	45,455
2	90,000	0.8264	74,376

3	1,20,000	0.7513	90,156
	2,60,000		2,09,987

∴ The present value of Rs. 2,60,000 discounted @ 10% will be Rs. 2,09,987.

Present Value of Even Cash Inflows

Calculate P.V. of Rs. 50,000 receivable for 3 years @ 10%

P.V. = Cash Flows × Annuity @ 10% for 3 years.

= 50,000 × 2.4868 = Rs. 1,24,340/-

Present Value of an Annuity

The present value of an annuity „A" receivable at the end of every year for a period of n years at the rate of interest „i" is equal to

$$PVA_n = \frac{A}{(1+i)} + \frac{A}{(1+i)^2} + \frac{A}{(1+i)^3} + \frac{A}{(1+i)^n}$$

$$= A\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$$

Where, $\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$ is called the PVIFA (Present Value of Interest Factor Annuity) and it represents the present value of Rs. 1 for the given values of i and n.

Risk and Return

Risk is present in every decision. Assessing risk and incorporating in a final decision is an integral part of financial analysis.

General characteristics of risk;

1. Financial assets are expected to generate cash flows and financial assets are measured in terms of riskiness of cash flows.
2. Riskiness of an asset is measured on standalone basis or in a portfolio context
3. In the context of portfolio, risk is divided into diversifiable and market risk
4. Diversifiable risks arises from Company specific factors and can be mitigated through diversification

5. Market risks depend upon market movements.

Risk and return of a single asset

Rate of return = $\frac{\text{Annual income+ (ending price –beginning price)}}{\text{Beginning price}}$

Illustration:

Price at the beginning of a year : Rs.60

Dividend paid at the end of the year : Rs.2.40

Price at the end of the year : Rs.69

Rate of return= $\frac{2.40+69}{60}$ = 19%

Rate of return can be divided into current yield and capital gains

Current yield + capital gains

$\frac{2.40}{60} + \frac{69-60}{60}$

4% + 15% = 19%

Probability distribution:

The probability of an event represents likelihood of its occurrence.

Eg:

Probability distribution of rate of return on Bharat Foods and Oriental Shipping Stocks are given below:

State of economy	Probability of occurrence	Rate of return %	
		Bharat Foods	Oriental shipping Stocks
Boom	0.30	16	40
Normal	0.50	11	10
Recession	0.20	6	-20

Based on the probability of rate of return, we can compute 2 key parameters viz.

a. Expected rate of return and
b. standard deviation of rate of return

Expected rate of return (EROR)

For Bharat Foods

$E(R_b) = (0.30)(16) + 0.50(11) + 0.20(6) = 11.50\%$

For Oriental Shipping stocks

$E(Ro) = 0.30(40) + 0.50(10) + 0.20(-20) = 13\%$

Hence based on the probability of rate of return, Oriental Shipping Stocks are likely to give better rate of return than Bharat Foods.

Relationship between risk and return

Securities are risky as their returns are variable.

Risk is split into 2 types .

1. Unique
2. Market

Unique risks -
Arise from specific factors. Portfolio diversification drives unique risk. Contibution of a security to the risk of a fully diversified portfolio is measured by its BETA ,which reflects sensitivity to general market conditions.

Market risk
Arise from economy wide factors.

Capital Asset Price Model (CAPM)

Harry Markowitz developed an approach that helps an investor to achieve optimal portfolio positions.

According to CAPM, risk and return are related in a linear fashion.

$$E(Rj) = R_f + \beta j\{E(Rm)-R_f\}$$

Whereas,

$E(Rj)$ - Expected return on security‖(j)

R_f - is risk free return

Bj - Beta of security (–j)

$E(Rm)$ - Expected return on market portfolio _

The above relation is referred to a –Market security Line‖. The rate of return (ROR) consists two parts viz.

a) R_f - is risk free return
b) $\beta j\{E(Rm)-R_f\}$ - is risk premium

Risk premium is the product of level of risk βj and compensation per unit of risk.

Example:

Stock ('j) has a beta of 1.4.If the risk free rate is 10% and expected return on market is 15%,the expected return on Stock ('j) is

$$10+ 1.4 (15-10) = 17\%$$

VALUATION OF SECURITIES

Valuation of bonds and shares

The valuation of any asset, real finance is equivalent to the current value of cash flows estimated from it.

Bond:

A bond is defined as a long-term debt tool that pays the bondholder a specified amount of periodic interest over a specified period of time. In financial area, a bond is an instrument of obligation of the bond issuer to the holders. It is a debt security, under which the issuer owes the holders a debt and, depending on the terms of the bond, is obliged to pay them interest and/or to recompense the principal at a later date, called the maturity date. Interest is generally payable at fixed intervals such as semi-annual, annual, and monthly. Sometimes, the bond is negotiable, i.e. the ownership of the instrument can be relocated in the secondary market. This means that once the transfer agents at the bank medallion stamp the bond, it is highly liquid on the second market.

It can be established that Bonds signify loans extended by investors to companies and/or the government. Bonds are issued by the debtor, and acquired by the lender. The legal contract underlying the loan is called a bond indenture.

Normally, bonds are issued by public establishments, credit institutions, companies and supranational institutions in the major markets. Simple process for issuing bonds is through countersigning. When a bond issue is underwritten, one or more securities firms or banks, forming a syndicate, buy the whole issue of bonds from the issuer and re-sell them to investors. The security firm takes the risk of being unable to sell on the issue to end investors. Primary

issuance is organised by book runners who arrange the bond issue, have direct contact with depositors and act as consultants to the bond issuer in terms of timing and price of the bond issue. The book runner is listed first among all underwriters participating in the issuance in the tombstone ads commonly used to announce bonds to the public. The book-runners' willingness to underwrite must be discussed prior to any decision on the terms of the bond issue as there may be limited demand for the bonds.

On the contrary, government bonds are generally issued in an auction. In some cases both members of the public and banks may bid for bonds. In other cases, only market makers may bid for bonds. The overall rate of return on the bond depends on both the terms of the bond and the price paid. The terms of the bond, such as the coupon, are fixed in advance and the price is determined by the market.

Key Features of Bonds:

1. The par (or face or maturity) value is the amount repaid (excluding interest) by the borrower to the lender (bondholder) at the end of the bond's life.
2. The coupon rate decides the ‒interest‖ payments. Total annual amount = coupon rate x par value.
3. A bond's maturity is its remaining life, which drops over time. Original maturity is its maturity when it is issued. The firm promises to repay the par value at the end of the bond‟s maturity.
4. A sinking fund involves principle repayments (buying bonds) prior to the issue's maturity.
5. Exchangeable bonds can be converted into a pre-specified number of shares of stock. Characteristically, these are shares of the issuer's common stock.
6. The call provision permits the issuer to buy the bonds (repay the loan) prior to maturity for the call price. Calling may not be allowed in the first few years.

Bond valuation:

Valuation of a bond needs an estimate of predictable cash flows and a required rate of return specified by the investor for whom the bond is being valued. If it is being valued for the market, the markets expected rate of return is to be determined or estimated. The bond‟s fair value is the present value of the promised future coupon and principal payments. At the time of issue, the coupon rate is set such that the fair value of the bonds

is very close to its par value. Afterwards, as market conditions change, the fair value may differ from the par value.

At the time of issue of the bond, the interest rate and other conditions of the bond would have been impacted by numerous factors, such as current market interest rates, the length of the term and the creditworthiness of the issuer. These factors are likely to change with time, so the market price of a bond will diverge after it is issued. The market price is expressed as a percentage of nominal value. Bonds are not necessarily issued at par (100% of face value, corresponding to a price of 100), but bond prices will move towards par as they approach maturity (if the market expects the maturity payment to be made in full and on time) as this is the price the issuer will pay to redeem the bond. This is termed as "Pull to Par". At other times, prices can be above par (bond is priced at greater than 100), which is called trading at a premium, or below par (bond is priced at less than 100), which is called trading at a discount.

The market price of a bond is the present value of all expected future interest and principal payments of the bond discounted at the bond's yield to maturity, or rate of return. That relationship is the definition of the redemption yield on the bond, which is expected to be close to the current market interest rate for other bonds with similar characteristics. The yield and price of a bond are inversely related so that when market interest rates rise, bond prices fall and vice versa. The market price of a bond may be cited including the accumulated interest since the last coupon date. The price including accrued interest is known as the "full" or "dirty price". The price excluding accrued interest is known as the "flat" or "clean price".

The interest rate divided by the current price of the bond is termed as current yield. This is the nominal yield multiplied by the par value and divided by the price. There are other yield measures that exist such as the yield to first call, yield to worst, yield to first par call, yield to put, cash flow yield and yield to maturity.

The link between yield and term to maturity for otherwise identical bonds is called a yield curve. The yield curve is a graph plotting this relationship. Bond markets, dissimilar to stock or share markets, sometimes do not have a centralized exchange or trading system. Reasonably, in developed bond markets such as the U.S., Japan and Western Europe, bonds trade in decentralized, dealer-based over-the-counter markets. In such a market, market liquidity is offered by dealers and other market contributors committing risk capital to trading activity. In the bond market, when an investor buys or sells a bond, the counterparty to the trade is almost always a bank or securities firm which act as a dealer. In some cases, when a dealer buys a bond from an investor, the dealer carries the bond "in inventory", i.e. holds it for

his own account. The dealer is then subject to risks of price fluctuation. In other cases, the dealer instantly resells the bond to another investor.

Bond markets can also diverge from stock markets in respect that in some markets, investors sometimes do not pay brokerage commissions to dealers with whom they buy or sell bonds. Rather, the dealers earn income through the spread, or difference, between the prices at which the dealer buys a bond from one investor the "bid" price and the price at which he or she sells the same bond to another investor the "ask" or "offer" price. The bid/offer spread signifies the total transaction cost associated with transferring a bond from one investor to another.

Example of valuation of bond

A bond whose par value of Rs.2000 bear a coupon rate of 12% and has a maturity period of 3 years .The required rate of return on bond is 10%.What is the value of the bond?

$$\text{Value of the bond} = vd = \frac{\text{Interest for year 1}}{(1+\text{required rate of return})^1} + \frac{\text{Interest for year 2}}{(1+\text{required rate of return})^2} + \frac{\text{Interest for year 3}}{(1+\text{required rate of return})^3} + \frac{\text{Maturity value}}{(1+\text{required rate of return})^3}$$

$$\frac{240}{1.10} + \frac{240}{1.21} + \frac{240}{1.331} + \frac{2000}{1.331}$$

Answer : Value of a bond : 218.18+ 198.34+180.31+1502.62 = Rs. 2099.45

Share:

In financial markets, a share is described as a unit of account for different investments. It is also explained as the stock of a company, but is also used for collective investments such

as mutual funds, limited partnerships, and real estate investment trusts. The phrase 'share' is delineated by section 2(46) of the Companies Act 1956 as "share means a share in the share capital of a company includes stock except where a distinction between stock and share is expressed or implied".

Companies issue shares which are accessible for sale to increase share capital. The owner of shares in the company is a shareholder (or stockholder) of the corporation. A share is an indivisible unit of capital, expressing the ownership affiliation between the company and the shareholder. The denominated value of a share is its face value, and the total of the face value of issued shares represent the capital of a company, which may not reflect the market value of those shares. The revenue generated from the ownership of shares is a dividend. The process of purchasing and selling shares often involves going through a stockbroker as a middle man.

Share valuation:

Shares valuation is done according to numerous principles in different markets, but a basic standard is that a share is worth price at which a transaction would be expected to occur to sell the shares. The liquidity of markets is a major consideration as to whether a share is able to be sold at any given time. An actual sale transaction of shares between buyer and seller is usually considered to provide the best prima facie market indicator as to the "true value" of shares at that specific time.

Shares are often promised as security for raising loans. When one company acquires majority of the shares of another company, it is required to value such shares. The survivors of deceased person who get some shares of company made by will. When shares are held by the associates mutually in a company and dissolution takes place, it is important to value the shares for proper distribution of partnership property among the partners. Shares of private companies are not listed on the stock exchange. If such shares are appraisable by the shareholders or if such shares are to be sold, the value of such shares will have to be determined. When shares are received as a gift, to determine the Gift Tax & Wealth Tax, the value of such shares will have to be ascertained.

Values of shares:

1. Face Value: A Company may divide its capital into shares of @10 or @50 or @100 etc. Company‟s share capital is presented as per Face Value of Shares. Face Value of Share = Share Capital / Total No of Share. This Face Value is printed on the share certificate. Share may be issued at less (or discount) or more (or premium) of face value.

2. Book Value: Book value is the value of an asset according to its balance sheet account balance. For assets, the value is based on the original cost of

the asset less any devaluation, amortization or impairment costs made against the asset.

3. Cost Value: Cost value is represented as price on which the shares are purchased with purchase expenses such as brokerage, commission.

4. Market Value: This values is signified as price on which the shares are purchased or sold. This value may be more or less or equal than face value.

5. Capitalised Value:

$$\text{Capitalised Value of share} = \frac{\text{Capitalised Value of profit}}{\text{Total no. of shares}}$$

6. Fair Value: This value is the price of a share which agreed in an open and unrestricted market between well-informed and willing parties dealing at arm‟s length who are fully informed and are not under any compulsion to transact.

7. Yield Value: This value of a share is also called Capitalised value of Earning Capacity. Normal rate of return in the industry and actual or expected rate of return of the firm are taken into consideration to find out yield value of a share.

Need for Valuation:

1. When two or more companies merge
2. When absorption of a company takes place.
3. When some shareholders do not give their approval for reconstruction of the company, there shares are valued for the purpose of acquisition.
4. When shares are held by the associates jointly in a company and dissolution takes place, it becomes essential to value the shares for proper distribution of partnership property among the partners.
5. When a loan is advanced on the security of shares.
6. When shares of one type are converted in to shares of another type.
7. When some company is taken over by the government, compensation is paid to the shareholders of such company and in such circumstances, valuation of shares is made.

8. When a portion of shares is to be given by a member of proprietary company to another member, fair price of these shares has to be made by an auditor or accountant.

Methods of valuation:

1. Net Assets Value (NAV) Method: This method is called intrinsic value method or breakup value method (Naseem Ahmed, 2007). It aims to find out the possible value of share in at the time of liquidation of the company. It starts with calculation of market value of the company. Then amount pay off to debenture holders, preference shareholders, creditors and other liabilities are deducted from the realized amount of assets. The remaining amount is available for equity shareholders. Under this method, the net value of assets of the company are divided by the number of shares to arrive at the value of each share. For the determination of net value of assets, it is necessary to estimate the worth of the assets and liabilities. The goodwill as well as non-trading assets should also be included in total assets. The following points should be considered while valuing of shares according to this method:

- Goodwill must be properly valued
- The fictitious assets such as preliminary expenses, discount on issue of shares and debentures, accumulated losses etc. should be eliminated.
- The fixed assets should be taken at their realizable value.
- Provision for bad debts, depreciation etc. must be considered.
- All unrecorded assets and liabilities (if any) should be considered. o Floating assets should be taken at market value.
- The external liabilities such as sundry creditors, bills payable, loan, debentures etc. should be deducted from the value of assets for the determination of net value.

The net value of assets, determined so has to be divided by number of equity shares for finding out the value of share. Thus the value per share can be determined by using the following formula:

Value per Share = (Net Assets-Preference Share Capital)/Number Of Equity Shares

Net asset method is useful in case of amalgamation, merger, acquisition, or any other form of liquidation of a company. This method determines the rights of various types of shares in an efficient manner. Since all the assets and liabilities are values properly including ambiguous and intangibles, this method creates no problem for valuation of preference or

equity share. However it is difficult to make proper valuation of good will and estimate net realisation value of various other assets of the company. Such estimates are likely to be influenced by personal factors of valuers. This method is suitable in case of companies likely to be liquidated in near future or future maintainable profits cannot be estimated properly or where valuation of shares by this method is required statutorily (Naseem Ahmed, 2007).

2. Yield-Basis Method: Yield is the effective rate of return on investments which is invested by the investors. It is always expressed in terms of percentage. Since the valuation of shares is made on the basis of Yield, it is termed as Yield-Basis Method.

Yield may be calculated as under:

$$\text{Yield} = \frac{\text{Normal profit}}{\text{Capital Employed}} \times 100$$

Under Yield-Basis method, valuation of shares is made on;

I. Profit Basis: Under this method, profit should be determined on the basis of past average profit; subsequently, capitalized value of profit is to be determined on the basis of normal rate of return, and, the same (capitalized value of profit) is divided by the number of shares in order to find out the value of each share.

Following procedure is adopted:

$$\text{Capitalised value of profit} = \frac{\text{Profit}}{\text{Normal rate of return}} \times 100$$

$$\text{Value of each share} = \frac{\text{Capitalised value of profit}}{\text{Number of shares}}$$

(or)

$$\text{Value of each share} = \frac{\text{Profit}}{\text{Normal rate of return} \times \text{Number of shares}}$$

Example 1:

Calculate the value of share for the following Company:

Profit : Rs.60,00,000

Normal rate of return : 120%

Number of shares : 25,00,000

$$\text{Capitalised value of profit} = \frac{6000000 \times 100}{120}$$

- = 60,00,00,00,000 / 120

Capitalised value of profit = Rs.50,00,000

Value of each share = Capitalised value of profit / Number of shares

Rs.50,00,000 / 25,00,000

Value of each share = Rs.2.00

Example 2:

Following is the structure of M/S Sundar & Company

Equity share capital	Rs.5000000
Share premium	Rs.2000000
Reserves	Rs.500000
Net worth	Rs. 7500000
Profit after tax	Rs.6000000
Face value of the share	Rs.2

Find out the Profit earnings ratio (P/E) and value of shares

- No. of equity shares = 6000000/2 =2500000
- P/E ratio = 2500000/6000000 = 2.4
- Value of the share = 2500000*2.4 = 6000000

Example :3

Calculate the price of an equity share from the following data.
Earnings per share (EPS) : Rs.40
Internal rate of return: 15%
Equity capitalization rate (Ke): 15%
Value of equity share : EPS/Ke
= 40/15%
= 266.60
Price of an equity share : Rs.266.60

II. Dividend Basis: In this type of valuation, shares are valued on the basis of expected dividend and normal rate of return. The value per share is calculated through following formula:

Expected rate of dividend = (profit available for dividend/paid up

equity share capital) X 100

Value per share = (Expected rate of dividend/normal rate of return) X

100

valuation of shares may be made either (a) on the basis of total amount of dividend, or (b) on the basis of percentage or rate of dividend

3. Earning Capacity (Capitalisation) Method: In this valuation procedure, the value per share is calculated on the basis of disposable profit of the company. The disposable profit is found out by deducting reserves and taxes from net profit (Naseem Ahmed, 2007). The following steps are applied for the determination of value per share under earning capacity:

Step 1: To find out the profit available for dividend

Step 2: To find out the capitalized value

Capitalized Value = (Profit available for equity dividend/Normal rate of return) X 100

Step 3: To find out value per share

Value per share = Capitalized Value/Number of Shares

In this method, profit available for equity shareholders, as calculated under capitalization method, are capitalized on the basis of normal rate of return. Then the value of equity share is ascertained by dividing the capitalized profit by number of equity share as shown under (Naseem Ahmed, 2007):

$$\text{Capitalised value of profits} = \frac{\text{Future maintainable profits}}{\text{Normal rate of return}} \times 100$$

$$\text{Value of Equity Share} = \frac{\text{Capitalised value of profits}}{\text{No. of equity shares}}$$

Appraisal of Earning Capacity: This method is suited only when maintainable profit and normal rate of return (NRR) can be ascertained clearly. It is possible when market information is easily available. However, while calculating NRR, risk factors must be taken into consideration (Naseem Ahmed, 2007).

4. Average (Fair Value) Method: In order to overcome the inadequacy of any single methodof valuation of shares, Fair Value Method of shares is considered as the most appropriate process. It is simply an average of intrinsic value and yield value or earning capacity method. For valuing shares of investment companies for wealth tax purposes, Fair Value Method of shares is recognized by government. It is well suited to manufacturing and other companies. The fair value can be calculated by following formula (Naseem Ahmed, 2007):

$$\text{Fair value of share} = \frac{\text{Intrinsic Value} + \text{Yield Value}}{2}$$

$$\text{OR} = \frac{\text{Intrinsic Value} + \text{Capitalised Value / Earning Capacity}}{2}$$

To summarize, bonds and their alternatives such as loan notes, debentures and loan stock, are IOUs issued by governments and companies in order to increase finance. They are often called fixed income or fixed interest securities, to differentiate them from equities, in that they often make known returns for the investors (the bond holders) at regular intervals. These interest payments, paid as bond coupons, are fixed, unlike dividends paid on equities, which can be variable. Most corporate bonds are redeemable after a specified period of time. Valuation of share involves the use of financial and accounting data. It depends on valuer‟s judgement experience and knowledge.

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UNIT-I

SYLLABUS

Introduction - Nature - Scope and Objective of Financial Management - Time Value of Money - Risk and Return (including Capital Asset Pricing Model) - Valuation of Securities - Bonds and Equities

INTRODUCTION

Finance is the life blood of business. Without adequate finance, no business can servive and without efficient finance management, no business can prosper and grow. Finance is required for establishing developing and operating the business efficiently. The success of business depends upon supply of finance and its efficient management. Finance is called science of money. It is not only act of making money available, but its administration and control so that it could be properly utilized. The world –Financial Management‖ is the composition of two words ie. „Financial" and „Management". Financial means procuring or raising of money supply (funds) and allocating (using) those resources (funds) on the basis of monetary requirements of the business. The word „Management" means planning, organizing, coordinating and controlling human activities with reference to finance function for achieving goals/ objectives of organization. Besides raising and utilization of funds, finance also includes distribution of funds in the form of dividend to share holders and retention of profit for growth and developments.

DEFINITION

Howard and Upton : Financial management –as an application of general managerial principles to the area of financial decision-making.

NATURE

The nature of financial management refers to its relationship with related disciplines like economics and accounting and other subject matters. The area of financial management has undergone tremendous changes over time as regards its scope and functions. The finance function assumes a lot of significance in the modern days in view of the increased size of business operations and the growing complexities associated thereto.

SCOPE AND OBJECTIVES OF FINANCIAL MANAGEMENT

Introduction

Financial management is that managerial activity which is concerned with the planning and controlling of the firm‟s financial resources. The funds raised from the capital market needs to be procured at minimum cost and effectively utilised to maximise returns on investments. There is a necessity to make the proper balancing of the risk-return trade off.

Objective of Financial Management

Financial Management as the name suggests is management of finance. It deals with planning and mobilization of funds required by the firm. There is only one thing which matters for everyone right from the owners to the promoters and that is money. Managing of finance is nothing but managing of money. Every activity of an organization is reflected in its financial statements. Financial Management deals with activities which have financial implications. The very objective of Financial Management is to maximize the wealth of the shareholders by maximizing the value of the firm. This prime objective of Financial Management is reflected in the EPS (Earning per Share) and the market price of its shares.

The earlier objective of profit maximization is now replaced by wealth maximization. Since profit maximization is a limited one it cannot be the sole objective of a firm. The term profit is a vague phenomenon and if given undue importance problems may arise whereas wealth maximization on the other hand overcomes the drawbacks of profit maximization. Thus the objective of Financial Management is to trade off between risk and return. The objective of Financial Management is to make efficient use of economic resources mainly capital.

The functions of Financial Management involves acquiring funds for meeting short term and long term requirements of the firm, deployment of funds, control over the use of funds and to trade-off between risk and return.

Scope of Financial Management

Financial Management today covers the entire gamut of activities and functions given below. The head of finance is considered to be importantly of the CEO in most organizations and performs a strategic role. His responsibilities include :

a. Estimating the total requirements of funds for a given period.

b. Raising funds through various sources, both national and international, keeping in mind the cost effectiveness;

c. Investing the funds in both long term as well as short term capital needs;

d. Funding day-to-day working capital requirements of business;

e. Collecting on time from debtors and paying to creditors on time;

f. Managing funds and treasury operations;

g. Ensuring a satisfactory return to all the stake holders;

h. Paying interest on borrowings;

i. Repaying lenders on due dates;

j. Maximizing the wealth of the shareholders over the long term;

k. Interfacing with the capital markets;

l. Awareness to all the latest developments in the financial markets;

m. Increasing the firm‟s competitive financial strength in the market; and

n. Adhering to the requirements of corporate governance.

Role of Financial Manager

The traditional role of the finance manager is to confine to the raising of funds in order to meet operating requirements of the business. This traditional approach has been criticized by modern scholars on the following grounds. It was prevalent till the mid-1950s.

1. The traditional approach of raising funds alone is too narrow and thus it is outsider-looking-in approach.

2. It viewed finance as a staff specialty.

3. It has little concern how the funds are utilized.

4. It over-emphasized episodic events and non-recurring problems like the securities

and its markets, incorporation, merger, consolidation, reorganization, recapitalization and liquidation etc.

5. It ignored the importance of working capital management.

6. It concentrated on corporate finance only and ignored the financial problems of sole trader and partnership firms.

7. Traditional approach concentrated on the problems of long-term financing and ignored the problems of short-term financing.

There was a change from traditional approach to the modern concept of finance function since the mid-1950s. the industrialization, technological innovations and inventions and a change in economic and environment factors since the mid-1950s necessitated the efficient and effective utilization of financial resources. Since then, finance has been viewed as an integral part of the management. The finance manager is, therefore, concerned with all financial activities of planning, raising, allocating and controlling the funds in an efficient manner. In addition, profit planning is another important function of the finance manager.

This can be done by decision making in respect of the following areas:

1. Investment Decisions for obtaining maximum profitability after taking the time value of the money into account.

2. Financing decisions through a balanced capital structure of Debt-Equity ratio, sources of finance, EBIT/EPS computations and interest coverage ratio etc.

3. Dividend decisions, issue of Bonus Shares and retention of profits with objective of maximization of market value of the equity share.

4. Best utilization of fixed assets.

5. Efficient working capital management (inventory, debtors, cash marketable securities and current liabilities).

6. Taking the cost of capital, risk, return and control aspects into account.

7. Tax administration and tax planning.

8. Pricing, volume of output, product-mix and cost-volume-profit analysis (CVP Analysis).

9. Cost control.

10. Stock Market— Analyse the trends in the stock market and their impact on the price of Company‟s share and share buy-back.

TIME VALUE OF MONEY

Concept

We know that Rs. 100 in hand today is more valuable than Rs. 100 receivable after a year. We will not part with Rs. 100 now if the same sum is repaid after a year. But we might part with Rs. 100 now if we are assured that Rs. 110 will be paid at the end of the first year. This –additional Compensation‖ required for parting Rs. 100 today, is called –interest‖ or –the time value of money‖. It is expressed in terms of percentage per annum.

Why should money have time value?

Money should have time value for the following reasons :

(a) Money can be employed productively to generate real returns;

(b) In an inflationary period, a rupee today has higher purchasing power than a rupee in the future;

(c) Due to uncertainties in the future, current consumption is preferred to future consumption.

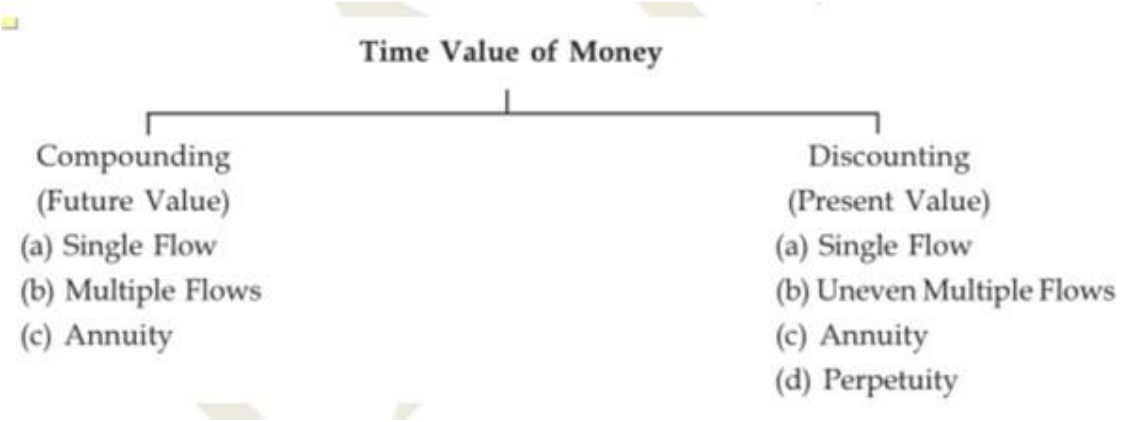
(d) The three determinants combined together can be expressed to determine the rate of interest as follows :

Nominal or market interest rate = Real rate of interest or return (+) Expected rate of inflation (+) Risk premiums to compensate for uncertainty.

Methods of Time Value of Money

(1) Compounding : We find the Future Values (FV) of all the cash flows at the end of the time period at a given rate of interest.

(2) Discounting : We determine the Time Value of Money at Time –O‖ by comparing the initial outflow with the sum of the Present Values (PV) of the future inflows at a given rate of interest.



Future Value of a Single Flow

It is the process to determine the future value of a lump sum amount invested at one point of time.

FV n = PV (1+i) n

Where,

FV n = Future value of initial cash outflow after n years

PV = Initial cash outflow

i = Rate of Interest p.a.

n = Life of the Investment and

(1+i) n = Future Value of Interest Factor (FVIF)

Illustration :

The fixed deposit scheme of Punjab National Bank offers the following interest rates :

Period of Deposit Rate Per Annum

46 days to 179 days 5.0

180 days < 1 year	5.5
1 year and above	6.0

An amount of Rs. 15,000 invested today for 3 years will be compounded to :

FV n = PV (1+i) n

= PV × FVIF (6,3)

= PV × (1.06) 3

= 15,000 (1.191)

= Rs. 17,865

Future Value of Annuity

Annuity is a term used to describe a series of periodic flows of equal amounts. These flows can be inflows or outflows.

The future value of annuity is expressed as :

$$FVA_n = A\left[\frac{(1+i)^n - 1}{i}\right]$$

where, A = Amount of Annuity
i = rate of interest
n = time period
FVA_n = compounded at the end of n years.

and $\left[\frac{(1+i)^n - 1}{i}\right]$ is the Future Value of Interest Factor for Annuity (FVIFA)

Illustration :

Calculation the maturity value of a recurring deposit of Rs. 500 p.a. for 12 months @ 9% compounded quarterly.

Solution :

$$\text{Effective rate of interest per annum} = \left(1+\frac{0.09}{4}\right)^4 - 1$$
$$= 1.0931 - 1 = 0.0931$$

Rate of interest per month

$$= (1+i)^{\frac{1}{n}} - 1$$
$$= (1+0.0931)^{\frac{1}{12}} - 1$$
$$= 1.0074 - 1$$
$$= 0.0074$$
$$= 0.74\%$$

Maturity Value can be calculated as follows :

$$FVAn = A\left\{\frac{(1+i)^n - 1}{i}\right\}$$
$$= 500\left\{\frac{(1+0.0074)^{12} - 1}{0.0074}\right\}$$
$$= 500 \times 12.50 = \text{Rs. } 6250/-$$

Present Value of a Single Flow :

$$PV = \frac{FV_n}{FVIF(i,n)} = \frac{FV_n}{(1+i)^n}$$

Where, PV = Present Value
FV_n = Future Value receivable after n years
i = rate of interest
n = time period

and $\frac{1}{FVIF(i,n)} = PVIF(i,n)$ [Present Value of Interest Factor]

Present Value of Uneven Multiple Flows

Year	Cash Inflows	P.V.F @ 10%	Discounted Cash Flows
1	50,000	0.9091	45,455
2	90,000	0.8264	74,376

3	1,20,000	0.7513	90,156
	2,60,000		2,09,987

∴ The present value of Rs. 2,60,000 discounted @ 10% will be Rs. 2,09,987.

Present Value of Even Cash Inflows

Calculate P.V. of Rs. 50,000 receivable for 3 years @ 10%

P.V. = Cash Flows × Annuity @ 10% for 3 years.

= 50,000 × 2.4868 = Rs. 1,24,340/-

Present Value of an Annuity

The present value of an annuity „A" receivable at the end of every year for a period of n years at the rate of interest „i" is equal to

$$PVA_n = \frac{A}{(1+i)} + \frac{A}{(1+i)^2} + \frac{A}{(1+i)^3} + \frac{A}{(1+i)^n}$$

$$= A\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$$

Where, $\left[\frac{(1+i)^n - 1}{i(1+i)^n}\right]$ is called the PVIFA (Present Value of Interest Factor Annuity) and it represents the present value of Rs. 1 for the given values of i and n.

Risk and Return

Risk is present in every decision. Assessing risk and incorporating in a final decision is an integral part of financial analysis.

General characteristics of risk;

1. Financial assets are expected to generate cash flows and financial assets are measured in terms of riskiness of cash flows.
2. Riskiness of an asset is measured on standalone basis or in a portfolio context
3. In the context of portfolio, risk is divided into diversifiable and market risk
4. Diversifiable risks arises from Company specific factors and can be mitigated through diversification

5. Market risks depend upon market movements.

Risk and return of a single asset

Rate of return = $\frac{\text{Annual income+ (ending price –beginning price)}}{\text{Beginning price}}$

Illustration:

Price at the beginning of a year : Rs.60

Dividend paid at the end of the year : Rs.2.40

Price at the end of the year : Rs.69

Rate of return= $\frac{2.40+69}{60}$ = 19%

Rate of return can be divided into current yield and capital gains

Current yield + capital gains

$\frac{2.40}{60} + \frac{69-60}{60}$

4% + 15% = 19%

Probability distribution:

The probability of an event represents likelihood of its occurrence.

Eg:

Probability distribution of rate of return on Bharat Foods and Oriental Shipping Stocks are given below:

State of economy	Probability of occurrence	Rate of return %	
		Bharat Foods	Oriental shipping Stocks
Boom	0.30	16	40
Normal	0.50	11	10
Recession	0.20	6	-20

Based on the probability of rate of return, we can compute 2 key parameters viz.

a. Expected rate of return and
b. standard deviation of rate of return

Expected rate of return (EROR)

For Bharat Foods

$E(R_b) = (0.30)(16) + 0.50(11) + 0.20(6) = 11.50\%$

For Oriental Shipping stocks

$E(Ro) = 0.30(40) + 0.50(10) + 0.20(-20) = 13\%$

Hence based on the probability of rate of return, Oriental Shipping Stocks are likely to give better rate of return than Bharat Foods.

Relationship between risk and return

Securities are risky as their returns are variable.

Risk is split into 2 types .

1. Unique
2. Market

Unique risks -
Arise from specific factors. Portfolio diversification drives unique risk. Contibution of a security to the risk of a fully diversified portfolio is measured by its BETA ,which reflects sensitivity to general market conditions.

Market risk
Arise from economy wide factors.

Capital Asset Price Model (CAPM)

Harry Markowitz developed an approach that helps an investor to achieve optimal portfolio positions.

According to CAPM, risk and return are related in a linear fashion.

$$E(Rj) = R_f + \beta j\{E(Rm)-R_f\}$$

Whereas,

$E(Rj)$ - Expected return on security‖(j)

R_f - is risk free return

Bj - Beta of security (–j)

$E(Rm)$ - Expected return on market portfolio _

The above relation is referred to a –Market security Line‖. The rate of return (ROR) consists two parts viz.

a) R_f - is risk free return
b) $\beta j\{E(Rm)-R_f\}$ - is risk premium

Risk premium is the product of level of risk βj and compensation per unit of risk.

Example:

Stock ('j) has a beta of 1.4.If the risk free rate is 10% and expected return on market is 15%,the expected return on Stock ('j) is

$$10+ 1.4 (15-10) = 17\%$$

VALUATION OF SECURITIES

Valuation of bonds and shares

The valuation of any asset, real finance is equivalent to the current value of cash flows estimated from it.

Bond:

A bond is defined as a long-term debt tool that pays the bondholder a specified amount of periodic interest over a specified period of time. In financial area, a bond is an instrument of obligation of the bond issuer to the holders. It is a debt security, under which the issuer owes the holders a debt and, depending on the terms of the bond, is obliged to pay them interest and/or to recompense the principal at a later date, called the maturity date. Interest is generally payable at fixed intervals such as semi-annual, annual, and monthly. Sometimes, the bond is negotiable, i.e. the ownership of the instrument can be relocated in the secondary market. This means that once the transfer agents at the bank medallion stamp the bond, it is highly liquid on the second market.

It can be established that Bonds signify loans extended by investors to companies and/or the government. Bonds are issued by the debtor, and acquired by the lender. The legal contract underlying the loan is called a bond indenture.

Normally, bonds are issued by public establishments, credit institutions, companies and supranational institutions in the major markets. Simple process for issuing bonds is through countersigning. When a bond issue is underwritten, one or more securities firms or banks, forming a syndicate, buy the whole issue of bonds from the issuer and re-sell them to investors. The security firm takes the risk of being unable to sell on the issue to end investors. Primary

issuance is organised by book runners who arrange the bond issue, have direct contact with depositors and act as consultants to the bond issuer in terms of timing and price of the bond issue. The book runner is listed first among all underwriters participating in the issuance in the tombstone ads commonly used to announce bonds to the public. The book-runners' willingness to underwrite must be discussed prior to any decision on the terms of the bond issue as there may be limited demand for the bonds.

On the contrary, government bonds are generally issued in an auction. In some cases both members of the public and banks may bid for bonds. In other cases, only market makers may bid for bonds. The overall rate of return on the bond depends on both the terms of the bond and the price paid. The terms of the bond, such as the coupon, are fixed in advance and the price is determined by the market.

Key Features of Bonds:

1. The par (or face or maturity) value is the amount repaid (excluding interest) by the borrower to the lender (bondholder) at the end of the bond's life.
2. The coupon rate decides the ‒interest‖ payments. Total annual amount = coupon rate x par value.
3. A bond's maturity is its remaining life, which drops over time. Original maturity is its maturity when it is issued. The firm promises to repay the par value at the end of the bond‟s maturity.
4. A sinking fund involves principle repayments (buying bonds) prior to the issue's maturity.
5. Exchangeable bonds can be converted into a pre-specified number of shares of stock. Characteristically, these are shares of the issuer's common stock.
6. The call provision permits the issuer to buy the bonds (repay the loan) prior to maturity for the call price. Calling may not be allowed in the first few years.

Bond valuation:

Valuation of a bond needs an estimate of predictable cash flows and a required rate of return specified by the investor for whom the bond is being valued. If it is being valued for the market, the markets expected rate of return is to be determined or estimated. The bond‟s fair value is the present value of the promised future coupon and principal payments. At the time of issue, the coupon rate is set such that the fair value of the bonds

is very close to its par value. Afterwards, as market conditions change, the fair value may differ from the par value.

At the time of issue of the bond, the interest rate and other conditions of the bond would have been impacted by numerous factors, such as current market interest rates, the length of the term and the creditworthiness of the issuer. These factors are likely to change with time, so the market price of a bond will diverge after it is issued. The market price is expressed as a percentage of nominal value. Bonds are not necessarily issued at par (100% of face value, corresponding to a price of 100), but bond prices will move towards par as they approach maturity (if the market expects the maturity payment to be made in full and on time) as this is the price the issuer will pay to redeem the bond. This is termed as "Pull to Par". At other times, prices can be above par (bond is priced at greater than 100), which is called trading at a premium, or below par (bond is priced at less than 100), which is called trading at a discount.

The market price of a bond is the present value of all expected future interest and principal payments of the bond discounted at the bond's yield to maturity, or rate of return. That relationship is the definition of the redemption yield on the bond, which is expected to be close to the current market interest rate for other bonds with similar characteristics. The yield and price of a bond are inversely related so that when market interest rates rise, bond prices fall and vice versa. The market price of a bond may be cited including the accumulated interest since the last coupon date. The price including accrued interest is known as the "full" or "dirty price". The price excluding accrued interest is known as the "flat" or "clean price".

The interest rate divided by the current price of the bond is termed as current yield. This is the nominal yield multiplied by the par value and divided by the price. There are other yield measures that exist such as the yield to first call, yield to worst, yield to first par call, yield to put, cash flow yield and yield to maturity.

The link between yield and term to maturity for otherwise identical bonds is called a yield curve. The yield curve is a graph plotting this relationship. Bond markets, dissimilar to stock or share markets, sometimes do not have a centralized exchange or trading system. Reasonably, in developed bond markets such as the U.S., Japan and Western Europe, bonds trade in decentralized, dealer-based over-the-counter markets. In such a market, market liquidity is offered by dealers and other market contributors committing risk capital to trading activity. In the bond market, when an investor buys or sells a bond, the counterparty to the trade is almost always a bank or securities firm which act as a dealer. In some cases, when a dealer buys a bond from an investor, the dealer carries the bond "in inventory", i.e. holds it for

his own account. The dealer is then subject to risks of price fluctuation. In other cases, the dealer instantly resells the bond to another investor.

Bond markets can also diverge from stock markets in respect that in some markets, investors sometimes do not pay brokerage commissions to dealers with whom they buy or sell bonds. Rather, the dealers earn income through the spread, or difference, between the prices at which the dealer buys a bond from one investor the "bid" price and the price at which he or she sells the same bond to another investor the "ask" or "offer" price. The bid/offer spread signifies the total transaction cost associated with transferring a bond from one investor to another.

Example of valuation of bond

A bond whose par value of Rs.2000 bear a coupon rate of 12% and has a maturity period of 3 years .The required rate of return on bond is 10%.What is the value of the bond?

$$\text{Value of the bond} = vd = \frac{\text{Interest for year 1}}{(1+\text{required rate of return})^1} + \frac{\text{Interest for year 2}}{(1+\text{required rate of return})^2} + \frac{\text{Interest for year 3}}{(1+\text{required rate of return})^3} + \frac{\text{Maturity value}}{(1+\text{required rate of return})^3}$$

$$\frac{240}{1.10} + \frac{240}{1.21} + \frac{240}{1.331} + \frac{2000}{1.331}$$

Answer : Value of a bond : 218.18+ 198.34+180.31+1502.62 = Rs. 2099.45

Share:

In financial markets, a share is described as a unit of account for different investments. It is also explained as the stock of a company, but is also used for collective investments such

as mutual funds, limited partnerships, and real estate investment trusts. The phrase 'share' is delineated by section 2(46) of the Companies Act 1956 as "share means a share in the share capital of a company includes stock except where a distinction between stock and share is expressed or implied".

Companies issue shares which are accessible for sale to increase share capital. The owner of shares in the company is a shareholder (or stockholder) of the corporation. A share is an indivisible unit of capital, expressing the ownership affiliation between the company and the shareholder. The denominated value of a share is its face value, and the total of the face value of issued shares represent the capital of a company, which may not reflect the market value of those shares. The revenue generated from the ownership of shares is a dividend. The process of purchasing and selling shares often involves going through a stockbroker as a middle man.

Share valuation:

Shares valuation is done according to numerous principles in different markets, but a basic standard is that a share is worth price at which a transaction would be expected to occur to sell the shares. The liquidity of markets is a major consideration as to whether a share is able to be sold at any given time. An actual sale transaction of shares between buyer and seller is usually considered to provide the best prima facie market indicator as to the "true value" of shares at that specific time.

Shares are often promised as security for raising loans. When one company acquires majority of the shares of another company, it is required to value such shares. The survivors of deceased person who get some shares of company made by will. When shares are held by the associates mutually in a company and dissolution takes place, it is important to value the shares for proper distribution of partnership property among the partners. Shares of private companies are not listed on the stock exchange. If such shares are appraisable by the shareholders or if such shares are to be sold, the value of such shares will have to be determined. When shares are received as a gift, to determine the Gift Tax & Wealth Tax, the value of such shares will have to be ascertained.

Values of shares:

1. Face Value: A Company may divide its capital into shares of @10 or @50 or @100 etc. Company‟s share capital is presented as per Face Value of Shares. Face Value of Share = Share Capital / Total No of Share. This Face Value is printed on the share certificate. Share may be issued at less (or discount) or more (or premium) of face value.

2. Book Value: Book value is the value of an asset according to its balance sheet account balance. For assets, the value is based on the original cost of

the asset less any devaluation, amortization or impairment costs made against the asset.

3. Cost Value: Cost value is represented as price on which the shares are purchased with purchase expenses such as brokerage, commission.

4. Market Value: This values is signified as price on which the shares are purchased or sold. This value may be more or less or equal than face value.

5. Capitalised Value:

$$\text{Capitalised Value of share} = \frac{\text{Capitalised Value of profit}}{\text{Total no. of shares}}$$

6. Fair Value: This value is the price of a share which agreed in an open and unrestricted market between well-informed and willing parties dealing at arm‟s length who are fully informed and are not under any compulsion to transact.

7. Yield Value: This value of a share is also called Capitalised value of Earning Capacity. Normal rate of return in the industry and actual or expected rate of return of the firm are taken into consideration to find out yield value of a share.

Need for Valuation:

1. When two or more companies merge
2. When absorption of a company takes place.
3. When some shareholders do not give their approval for reconstruction of the company, there shares are valued for the purpose of acquisition.
4. When shares are held by the associates jointly in a company and dissolution takes place, it becomes essential to value the shares for proper distribution of partnership property among the partners.
5. When a loan is advanced on the security of shares.
6. When shares of one type are converted in to shares of another type.
7. When some company is taken over by the government, compensation is paid to the shareholders of such company and in such circumstances, valuation of shares is made.

8. When a portion of shares is to be given by a member of proprietary company to another member, fair price of these shares has to be made by an auditor or accountant.

Methods of valuation:

1. Net Assets Value (NAV) Method: This method is called intrinsic value method or breakup value method (Naseem Ahmed, 2007). It aims to find out the possible value of share in at the time of liquidation of the company. It starts with calculation of market value of the company. Then amount pay off to debenture holders, preference shareholders, creditors and other liabilities are deducted from the realized amount of assets. The remaining amount is available for equity shareholders. Under this method, the net value of assets of the company are divided by the number of shares to arrive at the value of each share. For the determination of net value of assets, it is necessary to estimate the worth of the assets and liabilities. The goodwill as well as non-trading assets should also be included in total assets. The following points should be considered while valuing of shares according to this method:

- Goodwill must be properly valued
- The fictitious assets such as preliminary expenses, discount on issue of shares and debentures, accumulated losses etc. should be eliminated.
- The fixed assets should be taken at their realizable value.
- Provision for bad debts, depreciation etc. must be considered.
- All unrecorded assets and liabilities (if any) should be considered. o Floating assets should be taken at market value.
- The external liabilities such as sundry creditors, bills payable, loan, debentures etc. should be deducted from the value of assets for the determination of net value.

The net value of assets, determined so has to be divided by number of equity shares for finding out the value of share. Thus the value per share can be determined by using the following formula:

Value per Share = (Net Assets-Preference Share Capital)/Number Of Equity Shares

Net asset method is useful in case of amalgamation, merger, acquisition, or any other form of liquidation of a company. This method determines the rights of various types of shares in an efficient manner. Since all the assets and liabilities are values properly including ambiguous and intangibles, this method creates no problem for valuation of preference or

equity share. However it is difficult to make proper valuation of good will and estimate net realisation value of various other assets of the company. Such estimates are likely to be influenced by personal factors of valuers. This method is suitable in case of companies likely to be liquidated in near future or future maintainable profits cannot be estimated properly or where valuation of shares by this method is required statutorily (Naseem Ahmed, 2007).

2. Yield-Basis Method: Yield is the effective rate of return on investments which is invested by the investors. It is always expressed in terms of percentage. Since the valuation of shares is made on the basis of Yield, it is termed as Yield-Basis Method.

Yield may be calculated as under:

$$\text{Yield} = \frac{\text{Normal profit}}{\text{Capital Employed}} \times 100$$

Under Yield-Basis method, valuation of shares is made on;

I. Profit Basis: Under this method, profit should be determined on the basis of past average profit; subsequently, capitalized value of profit is to be determined on the basis of normal rate of return, and, the same (capitalized value of profit) is divided by the number of shares in order to find out the value of each share.

Following procedure is adopted:

$$\text{Capitalised value of profit} = \frac{\text{Profit}}{\text{Normal rate of return}} \times 100$$

$$\text{Value of each share} = \frac{\text{Capitalised value of profit}}{\text{Number of shares}}$$

(or)

$$\text{Value of each share} = \frac{\text{Profit}}{\text{Normal rate of return} \times \text{Number of shares}}$$

Example 1:

Calculate the value of share for the following Company:

Profit : Rs.60,00,000

Normal rate of return : 120%

Number of shares : 25,00,000

$$\text{Capitalised value of profit} = \frac{6000000 \times 100}{120}$$

- = 60,00,00,00,000 / 120

Capitalised value of profit = Rs.50,00,000

Value of each share = Capitalised value of profit / Number of shares

Rs.50,00,000 / 25,00,000

Value of each share = Rs.2.00

Example 2:

Following is the structure of M/S Sundar & Company

Equity share capital	Rs.5000000
Share premium	Rs.2000000
Reserves	Rs.500000
Net worth	Rs. 7500000
Profit after tax	Rs.6000000
Face value of the share	Rs.2

Find out the Profit earnings ratio (P/E) and value of shares

- No. of equity shares = 6000000/2 =2500000
- P/E ratio = 2500000/6000000 = 2.4
- Value of the share = 2500000*2.4 = 6000000

Example :3

Calculate the price of an equity share from the following data.
Earnings per share (EPS) : Rs.40
Internal rate of return: 15%
Equity capitalization rate (Ke): 15%
Value of equity share : EPS/Ke
= 40/15%
= 266.60
Price of an equity share : Rs.266.60

II. Dividend Basis: In this type of valuation, shares are valued on the basis of expected dividend and normal rate of return. The value per share is calculated through following formula:

Expected rate of dividend = (profit available for dividend/paid up

equity share capital) X 100

Value per share = (Expected rate of dividend/normal rate of return) X

100

valuation of shares may be made either (a) on the basis of total amount of dividend, or (b) on the basis of percentage or rate of dividend

3. Earning Capacity (Capitalisation) Method: In this valuation procedure, the value per share is calculated on the basis of disposable profit of the company. The disposable profit is found out by deducting reserves and taxes from net profit (Naseem Ahmed, 2007). The following steps are applied for the determination of value per share under earning capacity:

Step 1: To find out the profit available for dividend

Step 2: To find out the capitalized value

Capitalized Value = (Profit available for equity dividend/Normal rate of return) X 100

Step 3: To find out value per share

Value per share = Capitalized Value/Number of Shares

In this method, profit available for equity shareholders, as calculated under capitalization method, are capitalized on the basis of normal rate of return. Then the value of equity share is ascertained by dividing the capitalized profit by number of equity share as shown under (Naseem Ahmed, 2007):

$$\text{Capitalised value of profits} = \frac{\text{Future maintainable profits}}{\text{Normal rate of return}} \times 100$$

$$\text{Value of Equity Share} = \frac{\text{Capitalised value of profits}}{\text{No. of equity shares}}$$

Appraisal of Earning Capacity: This method is suited only when maintainable profit and normal rate of return (NRR) can be ascertained clearly. It is possible when market information is easily available. However, while calculating NRR, risk factors must be taken into consideration (Naseem Ahmed, 2007).

4. Average (Fair Value) Method: In order to overcome the inadequacy of any single methodof valuation of shares, Fair Value Method of shares is considered as the most appropriate process. It is simply an average of intrinsic value and yield value or earning capacity method. For valuing shares of investment companies for wealth tax purposes, Fair Value Method of shares is recognized by government. It is well suited to manufacturing and other companies. The fair value can be calculated by following formula (Naseem Ahmed, 2007):

$$\text{Fair value of share} = \frac{\text{Intrinsic Value} + \text{Yield Value}}{2}$$

$$\text{OR} = \frac{\text{Intrinsic Value} + \text{Capitalised Value / Earning Capacity}}{2}$$

To summarize, bonds and their alternatives such as loan notes, debentures and loan stock, are IOUs issued by governments and companies in order to increase finance. They are often called fixed income or fixed interest securities, to differentiate them from equities, in that they often make known returns for the investors (the bond holders) at regular intervals. These interest payments, paid as bond coupons, are fixed, unlike dividends paid on equities, which can be variable. Most corporate bonds are redeemable after a specified period of time. Valuation of share involves the use of financial and accounting data. It depends on valuer‟s judgement experience and knowledge.

UNIT II

Capital Budgeting

Investment Decisions - The Capital Budgeting Process - Cash Flow Estimation - Payback Period Method, Accounting Rate of Return - Net Present Value (NPV) - Net Terminal Value - Internal Rate of Return (IRR) - Profitability Index, Capital Budgeting under Risk - Certainty Equivalent Approach and Risk- Adjusted Discount Rate.

CAPITAL BUDGETING:

Introduction: Capital Budgeting is the process of making investment decision in capital expenditure. It involves the planning and control of capital expenditure. It is the process of deciding whether or not to commit resources to particular long-term projects whose benefits are to be realized over a period of time.

According To Charles T Horngreen: —Capital Budgeting is the long term planning for making and financing proposed capital outlays‖

According To Lynch: —Capital Budgeting consists in planning development of available capital for the purpose of maximizing the long term profitability of the concern‖

From the above definition, it may be concluded that it is the process by which the companies allocate funds to various investment projects designs to ensure profitability and growth.

Features of Capital Budgeting

1. Exchange of funds for future benefits:
2. The future benefits are expected to be realized over a period of time.
3. The funds are invested vested in long-term activities.
4. They have a long term and significant effect on the profitability of the concern,
5. They involve huge funds.

Importance of Capital Budgeting

1. **Large Investment:** Capital budgeting decision involves large investment of funds. But the funds available with the firm are always limited and the demand for funds far exceeds the resources. Hence it is very important for a firm to plan and control its capital expenditure.
2. **Long Term Commitment of Funds:** capital expenditures involves not only large amount of funds but also funds for long term or permanent basis. The long tern commitments of funds increases, the financial risk involved in the investment decision. Greater the risk involved, greater is need for careful planning of capital expenditure i.e. Capital Budgeting.
3. **Irreversible Nature:** The Capital expenditure decision is of irreversible nature. Once the decision for acquiring a permanent asset is taken, it becomes very difficult to dispose of these assets without incurring heavy losses.
4. **Long term Effect on profitability:** Capital budgeting decisions have a long term and significant effect on the profitability of a concern. Not only the present earnings of the firm are effected by the investments in capital asserts but also the future growth and profitability of the firm depends upon the investment decision taken today. An unwise decision may prove disastrous and fatal to the very existence of the concern.
5. **Difficulties of investment Decisions:** The long tern investment decision are difficult to be taken because decision extends to a series of years beyond the current accounting period, uncertainties of future, higher degree of risk.
6. **National Importance:** Investment decision though taken by individual concern is of national importance because it determines employment, economic activities and growth.

EVALUATIONS TECHNIQUES OF PROJECTS

The commonly used methods are following:

1. **Traditional Method**

a. Pay backs period method or pay out or pay off method

b. Rate of return Method or Accounting Method

2. **Time adjusted Method or discounted method**

a. Net present value method

b. Internal rate of return method

c. Profitability Index

Traditional Method

Pay Back Period Method: It represents the period in which the total investments in permanent assts pay backs itself. This method is based on the principal that every capital expenditures pays itself back within a certain period out of the additional earnings generated from the capital assets thus it measures the period of time for the original cost of a project to be recovered from the additional earnings of the project itself.

In case of evaluation of a single project, it is adopted if it pays back itself within a period specified by the management and if the project does not pay back itself within the period specified by the management than it is rejected.

The payback period can be ascertained in the following manner: Calculate annual net earning (profit) before depreciation and after taxes; these are called the annual cash flows.

Where the annual cash inflows are equal, Divide the initial outlay (cost) of the project by annual cash flows, where the project generates constant annual cash inflows.

Where the annual cash inflows are unequal, the pat back period can be found by adding up the cash inflows until the total is equal to the initial cash outlay of project or original cost of the asset.

$$\text{Payback period} = \frac{\text{Cash outlay of the project or original cost of the asset}}{\text{Annual cash Inflows}}$$

Illustration 1. A project costs Rs1, 00,000 and yields annual cash inflow of Rs. 20,000 for 8 years. Calculate its pay back period.

Solution:

Pay back period = Cash outlay of the project or original cost of the asset

Annual cash Inflows

= 1, 00,000 = 5 years

20,000

Advantages of Pay Back Period

1. It is simple to understand and easy to calculate.
2. It saves in cost; it requires lesser time and labor as compared to other methods of capital budgeting.
3. This method is particularly suited to firm, which has shortage of cash or whose liquidity position is not particularly good.

Disadvantages of Pay Back Period

1. It does not take into account the cash inflows earned after the pay back period and hence the true profitability of the project cannot be correctly assessed.
2. It ignores the time value of moneyand does not consider the magnitude and timing of cash inflows. it treats all cash flows as equal though they occur in different time periods.
3. It does not take into consideration the cost of capital, which is very important; factor in making sound investment decision.
4. It treats each asset individually in isolation with other asset, which is not feasible in real practice.
5. It does not measure the true profitability of the project, as the period considered under this method is limited to a short period only and not the full life of the asset.

Rate of Return Method: This method take into account the earnings expected from the investment over their whole life. It is known as accounting rate if Return method for the reasons

that under this method, the accounting Concept of profit is used rather than cash inflows. According

to this method, various projects are ranked in order of the rate of earnings or rate of return. The project with the higher rate of return is selected as compared to the one with the lower rate of return. This method can be used to make decisions as to accepting or rejecting a proposal. The expected return is determined and the project with a higher rate of return than the minimum rate specified by the firm called cut-off rate, is accepted and the one which gives a lower expected rate of return than the minimum rate is rejected.

The return in investment can be used in several ways as follows:

Average rate of return method (ARR): Under this method average profit after tax and deprecation is calculated and than it is divided by the total capital outlay or total investment in the project.

$$\frac{\text{Total Profits (after dep. \& taxes)}}{\text{Net Investment in project x No. Of years of profits}} \times 100$$

Or

$$\frac{\text{Average annual profit}}{\text{Net investment in the Project}} \times 100$$

Illustration 2. A project requires an investment of Rs.5, 00,000 and has a scrap value of Rs.20, 000 After 5 years. It is expected to yield profits after depreciation and taxes during the 5 years amounting to Rs. 40,000. Rs. 60,000, Rs. 70,000, Rs. 50,000 and Rs.20, 000. Calculate the average rate of return on the investment.

Solution:

Total profits = Rs. 40,000+60,000+70,000+50,000+20,000 = Rs. 2, 40,000

Average Profit = $\frac{\text{Rs. 2, 40,000}}{5}$ = Rs.48, 000

Net Investment in the project = Rs. 5, 00,000 – 20,000(scrap value)

= Rs 4, 80,000

$$\frac{\text{Average annual profit}}{\text{Net investment in the Project}} \times 100$$

$$\frac{48,000}{4,80,000} \times 100 = 10\%$$

Return per unit of investment method: This method is small variation of the average rate of return method. In this method, the total profit after tax and depreciation is divided by the total investment i.e.

$$\text{Return per Unit of Investment} = \frac{\text{Total profit (after depreciation and tax)}}{\text{Net investment in the project}} \times 100$$

Illustration 3. Continuing above illustration, the return per unit of investment shall be:

$$\frac{2,40,000}{4,80,000} \times 100 = 50\%$$

Return on average Investment method: In this method the return on average investment is calculated. Using of average investment for the purpose of return in investment is referred because the original investment is recovered over the life of the asset on account of depreciation charges.

$$\text{Return on Average Investment} = \frac{\text{Total profit (after depreciation and tax)}}{\text{Total Net investment/2}} \times 100$$

Advantages of Rate of Return Method

1. It is very simple to understand and easy to operate.
2. This method is based upon the accounting concept of profits; it can be readily calculated from the

financial data.

3. It uses the entire earnings of the projects in calculating rate of return.

Dis Advantages of Rate of Return Method

1. It does not take into consideration the cash flows, which are more important than the accounting profits.
2. It ignores the time value of money as the profits earned at different points of time are given the equal weighs.

Time Adjusted or Discounted Cash Flows Methods

The traditional methods of capital budgeting suffer from serious limitations that give the equal weights to present and future flow of income. These do not take into accounts the time value of money. Following are the discounted cash flow methods:

Net Present Value Method: This method is the modern method of evaluating the investment proposals. This method takes into consideration the time value of money and attempts to calculate the return in investments by introducing the factor of time element. It recognizes the fact that a rupee earned today is more valuable earned tomorrow. The net present value of all inflows and outflows of cash occurring during the entire life of the project is determined separately for each year by discounting these flows by the firm's cost of capital.

Following are the necessary steps for adopting the net present value method of evaluating investment proposals.

1. Determine appropriate rate of interest that should be selected as the minimum required rate of return called discount rate.
2. Compute the present value of total investment outlay.
3. Compute the present value of total investment proceeds.

4. Calculate the net present value of each project by subtracting the present value of cash inflows from the present value of cash outflows for each project.
5. If the net present value is positive or zero, the proposal mat be accepted otherwise rejected.

Advantages of Net Present Value

1. It recognizes the time value of money and is suitable to be applied in situations with uniform cash outflows and cash flows at different period of time.
2. It takes into account the earnings over the entire life of the projects and the true profitability of the investment proposal can be evaluated.
3. It takes into consideration the on\objective of maximum profitability.

Disadvantages of Net Present Value

1. This method is more difficult to understand and operate.
2. It is not easy to determine an appropriate discount rate.
3. It may not give good results while comparing projects with unequal lives and investment of funds.

Internal Rate of Return Method: It is a modern technique of capital budgeting that takes into account the time value of money. It is also known as ―time adjusted rate of return discounted cash flows‖ ―yield method‖ ―trial and error yield method‖

Under this method, the cash flows of the project are discounted at a suitable rate by hit and trial method, which equates the net present value so calculated to the amount of the investment. Under this method, since the discount rate is determined internally, this method is called as the internal rate of return method. It can be defined as the rate of discount at which the present value of cash inflows is equal to the present value of cash outflows.

Steps required for calculating the internal rate of return.

1. Determine the future net cash flows during the entire economic life of the project. The cash inflows are estimated for future profits before depreciation and after taxes.

2. Determine the rate of discount at which the value of cash inflows is equal to the present value of cash outflows.
3. Accept the proposal if the internal rate of return is higher than or equal to the minimum required rate of return.
4. In case of alternative proposals select the proposals with the highest rate of return as long as the rates are higher than the cost of capital.

Determination of Internal Rate of Return:

1. When the annual net cash flows are equal over the life of the assets.

Present value Factor = Initial Outlay

Annual cash Flows

2. When the annual net cash flows care Unequal over the life of the

assets. Following are the steps

i. Prepare the cash flow table using an arbitrary assumed discount rate to discount the net cash flows to the present value.

ii. Find out the net present value by deducting from the present value of total cash flows calculated in above the initial cost of the investment

iii. If the NPV is positive, apply higher rate of discount.

iv. If the higher discount rate still gives a positive NPV, increase the discount rate further the NPV becomes become negative.

v. If the NPV is negative at this higher rate, the internal rate of return must be between these two rates.

Advantages of Internal Rate of Return Method

1. It takes into account the time value of money and can be usefully applied in situations with even as well as uneven cash flows at different periods of time.
2. It considers the profitability of the project for its entire economic life.

3. It provides for uniform ranking of various proposals due to the % rate of return.

Disadvantages of Internal Rate of Return Method

1. It is difficult to understand.
2. This method is based upon the assumption that the earnings are reinvested at the internal rate of return for the remaining life of the project, which is not a justified assumption particularly when the rate of return earned by the firm is not close ton the internal rate of return.
3. The result of NPV and IRR method may differ when the project under evaluation differ their size.

Profitability Index or PI: This is also known as benefit cost ratio. This is similar to NPV method. The major drawback of NPV method that not does not give satisfactory results while evaluating the projects requiring different initial investments. PI method provides solution to this. PI is calculated as:

$$PI = \frac{\text{Present value of cash Inflows}}{\text{Present value of cash outflows}}$$

If PI > 1project will be accepted, if PI<1 then project is rejected and if PI= 1 then decision is based on non-financial consideration.

Advantages of PI method

1. It considers Time value of money
2. It considers all cash flow during life time of project.
3. More reliable than NPV method when evaluating the projects requiring different initial investments.

Disadvantages of PI method

1. This method is difficult to understand.

2. Calculations under this method are complex

Risk and Uncertainty in Capital Budgeting

All the techniques of capital budgeting require the estimation of future cash inflows and cash outflows. But due to uncertainties about the future, the estimates if demand, production, sales cannot be exact. All these elements of uncertainty have to be taken into account in the form of forcible risk while taking a decision on investment proposals. The following two methods are suggested for accounting for risk in capital budgeting.

1. Risk adjusted cut off rate or method of varying discount rate.
2. Certainty equivalent method.

Risk adjusted cut off rate or method of varying discount rate: The simplest method for accounting for risk in capital budgeting is to increase the cut-off rate or the discount factor by certain % on account of risk. The projects which are more risky and which have greater variability in expected returns should discounted at higher rate as compared to the projects which are less risky and are expected to have lesser variability in returns.

The greater drawback of this method is that it is not possible to determine the risk premium rate appropriately and moreover it is the future cash flow, which is uncertain and requires the adjustment and not the discount rate.

Illustration 4. The Beta Company Is considering the purchase of new investment. Two alternatives investments are available (A and B) Rs.1, 00,000. Cash flows are expected to be as follows:

YEAR	**CASH FLOWS**	
	INVESTMENT A (Rs)	**INVESTMENT B(Rs)**
1	40,000	50,000
2	35,000	40,000

	3	25,000	30,000
	4	20,000	30,000

The company has a target return on capital at 10%. Risk premium rates are 2% and 8%. For investments A and B. which investments should be preferred?

Solution:

The profitability of the investments can be compared on the basis of net present values cash inflows adjusted for risk premiums rate as follows:

Year		**Investment A**			**Investment B**	
	Discount Factor@ 10%+ 2% = 12%	**Cash Inflows Rs.**	**Present Value Rs.**	**Discount Factor@ 10%+ 8% = 18%**	**Cash Inflows Rs.**	**Present Value Rs.**
1	.893	40,000	35,720	.847	50,000	42,350
2	.797	35,000	27,895	.718	40,000	28,720
3	.712	25,000	17,800	.609	30,000	18,270
4	.635	20,000	12,700	.516	30,000	15,480

			94,115			1,04,820
			Investment A			Investment B
			Rs 94,115-1,00,000			Rs. 1,04,820-1,00,000
Net Present Value			= Rs(-) 5,885			= Rs. 4,820

As even at a higher discount rate investment B gives a higher present value, investment B Should be preferred.

Certainty Equivalent Method: Another simple method of accounting foe risk n capital budgeting is to reduce the expected cash flows by certain amounts. It can be employed by multiplying the expected cash flows by certainty equivalent co-efficient as to convert the cash floe to certain cash flows.

Illustration 5. There are two projects X and Y. each involves an investment of Rs40,000. The expected cash flows and the certainty co-efficient are as under:

		Project X		**Project Y**
Year	**Cash Inflows**	**Certainty Coefficient**	**Cash Inflows**	**Certainty Coefficient**
1	25,000	.8	20,000	.9
2	20,000	.7	30,000	.8
3	20,000	.9	20,000	.7

Risk free cut off rate is 10%. Suggest which of the two projects should be preferred?

Solution:

Calculation of cash inflows with certainty

Year flow	Project X Cash Inflows	Certainty Coefficient	Certain Cash Inflow	Project Y Cash Inflows	Certainty Coefficient	Certain Cash
1	25,000	.8	20,000	20,000	.9	18,000
2	20,000	.7	14,000	30,000	.8	24,000
3	20,000	.9	18,000	20,000	.7	14,000

Calculations of Present Values of cash Inflows

		Project X			**Project Y**	
	Year	Discount Factor @10%	Cash inflows Rs.	Present Values Rs.	Cash inflows Rs.	Present Value Rs.
	1	.909	20,000	18,180	18,000	16,362
	2	.826	14,000	11,564	24,000	19,824
	3	.751	18,000	13,518	14,000	10,514
					46,700	
		Project X			Project Y	
		Rs 43,262-40,000			Rs 46,700-40,000	
		Net Present Value		Rs. 3262	Rs.6700	

As the Net present value of project Y is more than that of Project X, Project Y should be preferred.

Illustration 6.A Company is considering a new project for which the investment data are as Follows:

Capital outlay Rs.2, 00,000
Depreciation 20% per annum

Forecasted annual income before charging depreciation, but after all other charges as follows:

Year	Rs.
1	100,000
2	100,000
3	80,000
4	80,000
5	40,000
	400,000

On the basis of available data, set out calculations, illustrating and comparing the following methods of evaluating the return of capital employed a. Pay back method b. Rate of return of original investment. State clearly any assumption you make. Ignore taxation.

Solution:

Annual income before depreciation and after all other charges is equivalent to CFAT.

PB period is 2 years. Capital outlay of Rs.2, 00,000 is recovered in first two years: [(Rs 1, 00,000 (year 1) + Rs 1, 00,000 (year 2)]

Rate of return on original investment

Year	**CFAT (Rs)**	**Depreciation (Rs)**	**Net Income (Rs)**
1	1, 00,000	40,000	60,000
2	1, 00,000	40,000	60,000

3	80,000	40,000	40,000
4	80,000	40,000	40,000
5	40,000	40,000	---
			2, 00,000

Rate of return = Average income x 100
Original investment

Where, Average Income = Rs 2, 00,000 = Rs. 40,000
5

Rate of return = 40,000 x 100 = 20%
2, 00,000

Illustration 7: A project of Rs. 20, 00,000 yielded annually a profit of Rs. 3, 00,000 after depreciation @12.5% and is subject to income tax @ 50%. Calculate pay-back period

Solution: Calculation of Annual Cash Flow

	Rs.
Profit after Depreciation but before tax	3, 00,000
Less: - Tax @ 50%	1, 50,000
Profit after Tax	1, 50,000
Add: - Depreciation	2, 50,000
Cash Flow	4, 00,000

Pay back period = Initial outlay/ Annual Cash Flow 20, 00,000/4, 00,000 = 5 Years

Illustration 8 The Alpha company ltd is considering the purchase of a new machine. Two alternatives machines (A and B) have been suggested each costing

Rs. 4, 00,000. Earnings after taxation are expected to be as follows:

Year	**Cash Flow (Rs.)**	
	Machine A	**Machine B**
1	40,000	1, 20,000
2	1, 20,000	1, 60,000
3	1, 60,000	2, 00,000
4	2, 40,000	1, 20,000
5	1, 60,000	80,000

You are require to suggest which machine should be preferred based on

a) NPV Method and

b) Profitability Index

Note: The present value of Rs. 1 @ 10

% Due in 1 Year = 0.91

Due in 2 Years = 0.83

Due in 3 years = 0.75

Due in 4 years = 0.68

Due in 5 years = 0.62

Solution:

a) Computation of net present value

Year	PVIF	Machine A cash inflow	present value	Machine B cash inflow	present value
1	0.91	40000	36400	120000	109200
2	0.83	120000	99600	160000	132800
3	0.75	160000	120000	200000	150000
4	0.68	240000	163200	120000	81600
5	0.62	160000	99200	80000	49600
Total Present value of Cash inflow			518400		5, 23,200
Less: Cash Outflow			4, 00,000		4, 00,000
Net present Value			118400		1, 23,200

b) Computation of Profitability Index

Present value of cash inflow	5, 18,400	5, 23,200
Present value of cash outflow	4, 00,000	4, 00,000
Profitability index	1.3	1.31

Since net present value and profitability index of Machine B is higher. Machine B is therefore recommended.

Illustration9. One of the two machines A and B is to be purchased. Form the following information find out which of the two will be more profitable? The average rate of tax may be taken at 50%.

	Machine A (Rs.)	**Machine B (Rs.)**
Cost of machine	50000	80000
Machine Life	4 years	6 years
Earnings Before Tax		

1st year	10000	8000
2nd year	15000	14000
3rd year	20000	25000
4th year	15000	30000
5th year		18000
6th year		13000

Solution:

Machine A

year	EBT	Tax@ 50%	EAT	Cash flows	Cumulative cash flows
1	10000	5000	5000	17500	17500
2	15000	7500	7500	20000	37500
3	20000	10000	10000	22500	60000
4	15000	7500	7500	20000	80000

a) Pay back period:

Investment = 50000

Recovery up to 2nd year is 37,500

Balance 12500 in 3rd year = 12500/22500 = 0.55 years i.e. 2.55 years

b) Average rate of returns:

(on original investment basis)

= Average earnings/net investment x 100

= 30000 x 4 / 50000 x 100 = 15%

Machine B

year	EBT	Tax@	EAT	Cash flows	Cumula

		50%			**tive cash flows**
1	8000	4000	4000	17333	17333
2	14000	7000	7000	20333	37666
3	25000	12500	12500	25833	63499
4	30000	15000	15000	28333	91832
5	18000	9000	9000	22333	141165
6	13000	6500	6500	19833	133498

(a) P

ay back

period

Investme

nt = Rs.

80,000

Cumulative Cash Flows shows that the recovery up to 3rd year = 63499 therefore for the balance of Rs. 16501 will be recovered in 4th year.

i.e. 16501/28333 = 0.58 year therefore payback period is 3.58 years

b) Average rate of return (based on original investment) = Average Profits/net investment x 100

= 54000/6 x

100 = 11.25%

Machine A is profitable in both the cases Note: - It has been assumed that Earnings Before tax in the problem is after considering depreciation on straight line basis.

Illustration 10. No Project is acceptable unless the yield is 10%. Cash inflows of a certain project along with cash outflows are given below:

Year	Outflow (Rs.)	Inflow(Rs.)
0	150000	-
1	30000	20000
2	-	30000
3	-	60000
4	-	80000
5	-	70000

Calculate net present value

Solution:

Calculation of Net Present Value

Year	PVIF	Outflows		Inflows	
		Amount (rs.)	Present Value (Rs.)	Amount (Rs.)	Present Value(Rs.)
0	1.000	150000	150000		
1	0.909	30000	27270	20000	18180
2	0.826			30000	24780
3	0.751			60000	45060
4	0.683			80000	54640
5	0.621			70000	43470
			177270		186130

Net present value = Present value of Inflows - Present value of Inflows

= Rs.186130 – Rs.

177270 =Rs 8860

CONVENTIONAL TECHNIQUES :

There are several conventional techniques which attempt to incorporate the risk in capital

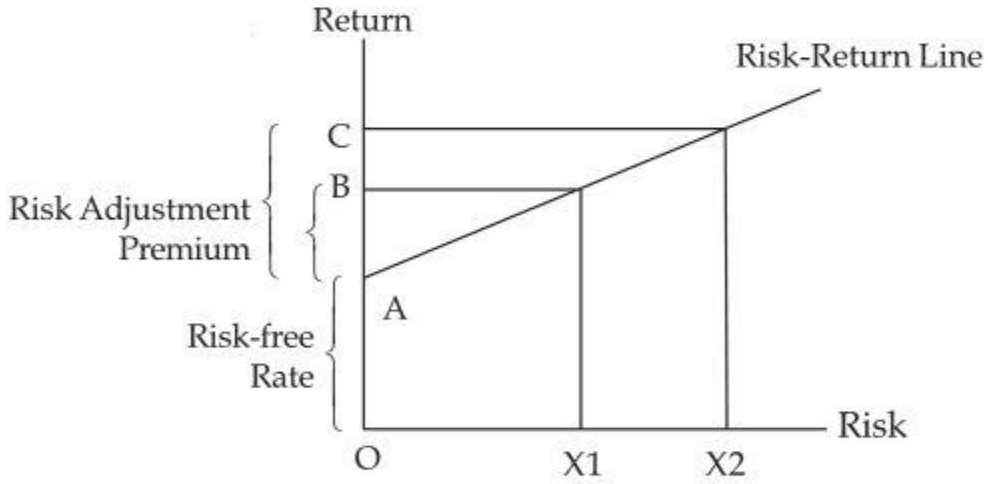
budgeting proposals. Some of these techniques have been discussed hereunder. 1. Risk Adjusted Discount Rate (RADR)

Every firm is basically risk averse and tries to avoid risk. However, it may be ready to take risk provided it is rewarded for undertaking risk by higher returns. So, more risky the investment is, the greater would be the expected return. The expected return is expressed in terms of discount rate which is also termed as the minimum required rate of return generated by a proposal if it isto be accepted. Therefore, there is a positive correlation between risk of a proposal and the discount rate. A firm at any point of time has a risk level emanating from the existing investment. The firm also has a discount rate to reflect that level of risk. In case, there is no risk of the existing investment, then the discount rate may be known as the risk free discount rate. If the risk level of the new proposal is higher than the risk level of the existing investment, then the discount rate to be applied to find out the present values of the cash flows of the proposals having varying degrees of risk should be evaluated at different discount rates. The difference between the discount rate applied to a riskless proposal and to a risky proposal is known as risk premium.

RADR attempts to incorporate risk by modifying the discount rate. A risk premium is added to the riskless discount rate, to reflect the risk inherent in the project. The reasoning behind adding the risk premium is quite simple. i.e., the greater the risk, the higher should be the desired return from a proposal. The RADR approach to handle risk in a capital budgeting decision process is a

more direct method. The RADR is based on the premise that riskiness of a proposal may be taken care of, by adjusting the discount rate. The cash flows from a more risky proposal should be discounted at a relatively higher discount rate as compared to other proposals whose cash flows are less risky. The RADR may be expressed in terms of Equation RADR = Risk Free Return + Premium for facing the Risk The risk free discount rate is described as the rate of return on the government securities.

Since all the business proposals have higher degree of risk as computed to zero degree of risk of government securities, the RADR is always greater than the risk free rate. Moreover, as the risk of a proposal increases, the risk adjustment premium also increases. The relationship between the risk free rate, the risk premium, the RADR and the risk return line has been explained in the figure below :



Risk-free rate, Risk Premium and Risk-return relationship

The figures reflects that if the risk of proposal is zero, then the minimum required rate of return, i.e., the discount rate will be just equal to the risk free rate,

i.e., OA. However, as the risk increases, say, up to X1, then the required rate of return also increases from OA to OB.

The component AB is known as the risk adjustment premium. Similarly, if the level of risk of a proposal is X2, then the risk premium may be AC and the discount rate for such proposal

will be equal to OC. The risk premium being added to the risk free rate reflects the greater

risk attached to a proposal. As the risk increases, the risk premium also increases and the

RADR also increases. The RADR is used to find out the risk adjusted NPV of the proposal as

per Equation

RANPV = Risk adjusted NPV

CF 1 = Cash inflows occurring at different points of

time C 0 = Initial cash outflow

R a = Risk adjusted discount rate.

Difference between the NPV method, discussed in the previous chapter, and the RADR is that the rate of discount used in RADR, i.e., Ra is higher than the original discount rate, i.e., R. The RADR reflects the return that must be earned by a proposal to compensate the firm for undertaking the risk. The higher the risk of a proposal, the higher the RADR would be and therefore the lower the NPV of a given set of cash flows. The decision rule of RADR is that a firm should select the proposal if the RANPV is positive or even zero and reject the proposal if it is negative. In case of mutually exclusive proposals, the rule may be : select the

alternative which has the highest positive RANPV. In case, the firm is applying the IRR technique for evaluation of capital budgeting proposals, then IRR of the project can be compared with the RADR, i.e., the minimum required rate of return to accept or reject the proposal.

Evaluation of RADR Approach— The RADR approach considers the time value of money and explicitly incorporates the risk involved in the project by making the discount rate as a function of the proposal's risk. The RADR helps finding out the expected future wealth generated by a risk project over and above the RADR, However, the RADR suffers from the basic shortcoming relating to the determination of the risk adjustment premium or the RADR

itself. Moreover, the RADR does not adjust the future cash flows which are risky and uncertain.

2. Certainty Equivalents (CE)

The CE approach to incorporate the risk is to adjust the cash flows of a proposal to reflect the riskiness. The CE approach attempts at adjusting the future cash flows instead of adjusting the discount rates. The expected future cash flows which are taken as risky and uncertain are converted into certainty cash flows. Initiatively, more risky cash flows will be adjusted down lower than the less risky cash flows. The extent of adjustment will vary and it can be either subjective or based on a risk return model. These adjusted cash flows are then discounted at risk free discount rate to find out the NPV of the proposal. The procedure for the CE approach can be explained as follows:

1. Estimate the future cash flows from the proposal. These cash flows do have some degree of risk involved.

2. Calculate the CE factors for different years. These CE factors reflect the proportion of the future cash flow a finance manager would be ready to accept now in exchange for the future cash flow. For example, cash inflow of Rs. 10,000 is receivable after 2 years.

However, if the inflow is available right now, the firm may be ready to accept even 70% of Rs. 10,000, i.e., Rs.7,000 only. This 70% or 0.7 is the CE factor. The CE factor will be different from year to year. The higher the riskiness of cash flow, the lower would be the CE factor.

3. The expected cash flows for different years as calculated in step 1 above are multiplied by the respective CE factors and the resultant figures are described as certainty equivalent cash flows.

4. Once all the cash flows are reduced to CE cash flows, then these CE cash flows are discounted at risk free rate to find out the NPV of the proposal. The CE approach may be described in terms of Equation

In the above equation, the value of a 1 i.e., the CE factors will vary between 0 and 1, and will vary inversely to risk. The greater the risk involve (may be due to time factor or otherwise), the lower will be the value of a.

The decision rule associated with the CE approach is that accept a proposal with positive CE NPV. In case of mutually exclusive proposals, the rule is that the proposal having the highest positive CE NPV is accepted. If a firm is using IRR technique to evaluate the capital budgeting proposals, then the IRR of the CE cash flows can be calculated and computed with the minimum required rate of return to make an appropriate decision.

Evaluation of CE Approach— The CE approach explicitly recognises the risk and incorporates it by deflating the cash flows to CE cash flows. This approach

seems to be conceptually superior to the RADR and does not assume that risk increases over time at a constant rate.

But the CE approach involves the determination of CE factors which is a tedious job.