P6A

FINANCIAL MANAGEMENT

CA INTER | GROUP 2

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CHAPTER 01: TIME VALUE OF MONEY

VALUATION OF EQUITY- (DEFINITE PERIOD AND CONSTANT DIVIDEND)

PROBLEM – 1

Mr Sachin wants to buy shares of MRF Ltd. He intends to hold those shares for 6 years, during which he expects to receive an annual dividend of ₹ 5 per share. According to his estimation, he can sell these shares after 6 years for ₹ 85 per share. His required rate of return is 12% p.a. **Calculate** the Current Market Price of MRF Ltd.

VALUATION OF EQUITY- (DEFINITE PERIOD AND VARIABLE DIVIDEND)

PROBLEM – 2

Mr Dhoni wants to buy shares of India Cements Ltd. He intends to hold those shares for 6 years, during which he expects to receive dividends of ₹ 5, ₹ 3, ₹ 4, ₹ 2, ₹ 9, and ₹ 8 per share at the end of each year. According to his estimation, he can sell these shares after 6 years for ₹ 85 per share. His required rate of return is 12%p.a. **Calculate** the Current Market Price of India Cements Ltd.

VALUATION OF EQUITY- (INDEFINITE PERIOD AND CONSTANT DIVIDEND)

PROBLEM – 3

Mr Hariharan wants to buy shares of ITC Ltd. He intends to hold those shares forever. He expects to receive a dividend of ₹ 5 per share every year. His required rate of return is 12% p.a. **Calculate** the Current Market Price of ITC Ltd.

VALUATION OF EQUITY- (INDEFINITE PERIOD AND GROWING DIVIDEND)

PROBLEM – 4

Mr Ram wants to buy shares of A Ltd. He intends to hold those shares forever. He expects to receive a dividend of ₹ 5 per share in the next year, which will grow@ 4% p.a. forever. His required rate of return is 12% p.a. **Calculate** the Current Market Price.

VALUATION OF REDEEMABLE PREFERENCE SHARES – (EVEN DIVIDEND AND DEFINITE PERIOD)

PROBLEM – 5

Mr X is considering purchasing a 12-year, 10% ₹ 100 par value preference share. The redemption value of the preference share on maturity is ₹ 120. Mr X's required rate of return is 10.5%. **Calculate** the Current Market Price.

VALUATION OF PERPETUAL/IRREDEEMABLE PREFERENCE SHARES – (INDEFINITE PERIOD AND CONSTANT DIVIDEND)

PROBLEM – 6

A preference share pays ₹ 10 as dividend annually up to perpetuity. What is the value of the Preference Share, if the cost of the preference Share is 10%?

VALUATION OF STRAIGHT COUPON BOND – (DEFINITE PERIOD)

PROBLEM – 7

A ₹ 1,000 par value bond bearing a coupon rate of 14% matures after 5 years, the required rate of return on this bond is 13%. **Calculate** the value of the bond. The redemption value at year-end 5 is ₹1000.

VALUATION OF PERPETUAL /IRREDEEMABLE BOND – (CONSTANT INTEREST)

PROBLEM – 8

A bond pays ₹ 90 interest annually upto perpetuity. What is its value? Discount Rate is 10%?

VALUATION OF SELF-AMORTIZATION BOND – (PRINCIPAL REPAYMENT P.A)

PROBLEM – 9

A PSU is proposing to sell 8 years bond of ₹ 1000 at a 10% coupon rate p.a. Bond amount will be amortized equally over its life. If an investor has a minimum required rate of return of 8%, what is the bond's present value?

CHAPTER 02: COST OF CAPITAL

INTRODUCTION

We know that the basic task of a finance manager is procurement of funds and its effective utilization. Whereas objective of financial management is maximizationof wealth. Here wealth or value is equal to performance divided by expectations.

Therefore, the finance manager is required to select such a capital structure in which expectation of investors is minimum hence shareholders' wealth is maximum. For that purpose, first he needs to calculate cost of various sources of finance. In this chapter we will learn to calculate cost of debt, cost of preference shares, cost of equity shares, cost of retained earnings and also overall cost of capital.

MEANING OF COST OF CAPITAL

Cost of capital is the return expected by the providers of capital (i.e., shareholders, lenders and the debt-holders) to the business as a compensationfor their contribution to the total capital. When an entity (corporate or others) procured finances from either source as listed above, it has to pay some additional amount of money besides the principal amount. The additional money paid to these financiers may be either one off payment or regular payment atspecified intervals. This additional money paid is said to be the cost of using the capital and it is called the cost of capital. This cost of capital expressed in rate is used to discount/ compound the cash flow or stream of cash flows. Cost of capitalis also known as 'cut-off' rate, 'hurdle rate', 'minimum rate of return' etc. It is usedas a benchmark for:

- Framing debt policy of a firm.
- Taking Capital budgeting decisions.

SIGNIFICANCE OF COST OF CAPITAL

The cost of capital is important to arrive at correct amount and helps the management or an investor to take an appropriate decision. The correct cost of capital helps in the following decision making:

i. **Evaluation of investment options:** The estimated benefits (future cash flows) from available investment opportunities (business or project) are converted into the present value of benefits by **discounting them with the relevant cost of capital**. Here it is pertinent to mention that every investment option may have different cost of capital hence it is very important to use the cost of capital which is relevant to the options available.

ii. **Financing Decision:** When a finance manager has to choose one of the two sources of finance, he can simply compare their cost and choose the source which has lower cost. Besides cost, he also considers financial risk and control.

iii. **Designing of optimum credit policy:** While appraising the credit period tobe allowed to the customers, the cost of allowing credit period is compared against the benefit/ profit earned by providing credit to customer of segment of customers. Here cost of capital is used to arrive at the present value of cost and benefits received.

DETERMINATION OF COST OF CAPITAL

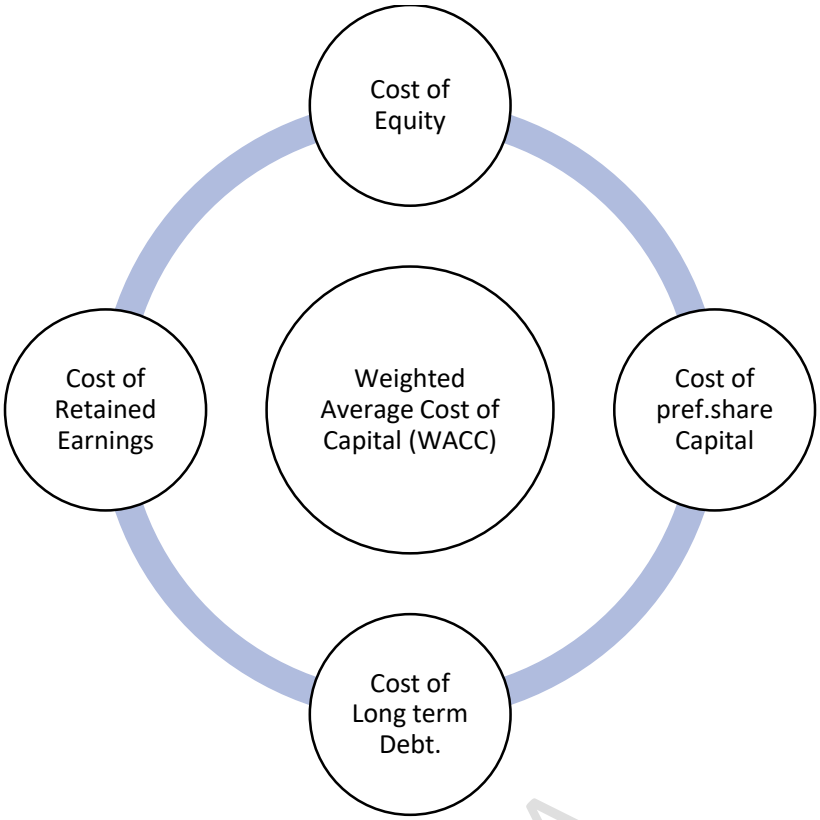
Cost is not the amount which the company plans to pay or actually pays, rather than it is the expectation of stakeholders. Here, stakeholders includes providers of capital (shareholders, debenture holder, money lenders etc.), intermediaries (brokers, underwriters, merchant bankers etc.), and Government (for taxes).

For example, if the company issues 9% coupon debentures but expectation of investors is 10% then investors will subscribe it at discount and not at par. Hence cost to the company will not be 9%, rather than it will be 10%. Besides givingreturn to investors, company will also have to give commission, brokerage, feesetc. to intermediaries for issue of debentures. It will increase cost of capital above 10%. On the other hand, payment of interest is a deductible expense under the Income Tax Act hence, it will reduce cost of capital to the company. Cost of any sources of finance is expressed in terms of percentage per annum. To calculatecost first of all we should identify various cash flows like:

1. Inflow of amount received at the beginning.
2. Outflows of payment of interest, dividend, redemption amount etc.
3. Inflow of tax benefit on interest or Outflow of payment of dividend tax.

Thereafter we can use trial & error method to arrive at a rate where present value of outflows is equal to present value of inflows. That rate is basically IRR. In investment decisions, IRR indicates income because there we have initial outflow followed by series of inflows. In cost of capital chapter, this **IRR represents cost**, because here we have initial inflow followed by series of net outflows.

Alternatively, we can use shortcut formulas. Though these shortcut formulas are easy to use but they give approximate answer and not the exact answer. We will discuss the cost of capital of each source of finance separately.



COST OF LONG-TERM DEBT (KD)

External borrowings or debt instruments do no confers ownership to the providers of finance. The providers of the debt fund do not participate in the affairs of the company but enjoys the charge on the profit before taxes. Longterm debt includes long term loans from the financial institutions, capital fromissuing debentures or bonds etc. (In Chapter-2, we had already discussed in detail about the sources of long-term debt.)

The calculation of cost of loan from a financial institution is similar to that ofredeemable debentures. Here, we will confine our discussion of cost of debt to debentures or bonds only.

Features of Debentures or Bonds

i. **Face Value**: Debentures or bonds are denominated with some value, thisdenominated value is called face value of the debenture. Interest is calculated on the face value of the debenture. E.g. if a company issue 9%non- convertible debentures of ₹100 each, this means the face value is₹100 and the interest @ 9% will be calculated on this face value.

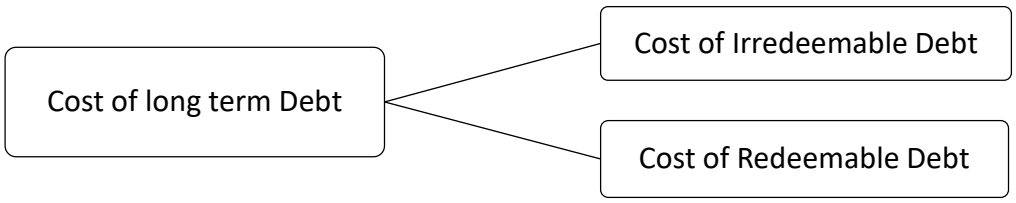
ii. **Interest (Coupon) Rate:** Each debenture bears a fixed interest (coupon) rate (except Zero coupon bond and Deep discount bond). Interest (coupon) rate is applied to face value of debenture to calculate interest, which is payable to the holders of debentures periodically (annually, semi-annually, etc.).

iii. **Maturity period:** Debentures or Bonds has a fixed maturity period for redemption. However, in case of irredeemable debentures maturity period is not defined and it is taken as infinite.

iv. **Redemption Value:** Redeemable debentures or bonds are redeemed on its specified maturity date. Based on the debt covenants, the redemption valueis determined. Redemption value may vary from the face value of the debenture.

Benefit of tax shield: The payment of interest to the debenture holders are allowed as expenses for the purpose of corporate tax determination. Hence, interest paid to the debenture holders save the tax liability of the company. Saving in the tax liability is also known as tax shield.

Based on redemption (repayment of principal) on maturity the debts can becategorized into two types (i) Irredeemable debts and (ii) Redeemable debts.



Cost of Irredeemable Debentures

The debentures which are not redeemed by the issuer of the debentures is knownas irredeemable debentures. Cost of debentures not redeemable during the lifetime of the company is calculated as below:

$$K_d = \frac{I}{NP}(1-t)$$

Where,

K_d = Cost of debt after tax

I = Annual interest payment

NP = Net proceeds of debentures or Current market price

t = Tax rate

Net proceeds means issue price less issue expenses or floatation cost (defined below). If issue price is not given, then students can assume it to be equal to current market price. If issue expenses are not given, then simply assume it to be equal to zero.

Floatation Cost: The new issue of a security (debt or equity) involves some expenditure in the form of underwriting or brokerage fees, legal and administrative charges, registration fees, printing expenses etc. The sum of all these costs is known as floatation cost. This expenditure is incurred to make the securities available to the investors. Floatation cost is adjusted to arrive at net proceeds for the calculation of cost of capital.

Cost of Redeemable Debentures (using approximation method)

The cost of redeemable debentures will be calculated as below:

$$\text{Cost of Redeemable Debenture } (K_d) = \frac{I(1-t)+\frac{(RV-NP)}{n}}{(\frac{RV+NP}{2})}$$

Where,

I= Interest payment

NP=Net proceeds or Current market price

RV=Redemption value of debentures

t=Tax rate applicable to the company

n=Remaining life of debentures

The above formula to calculate cost of debt is used where only interest on debt istax deductible. Sometime, debts are issued at discount and/ or redeemed at a premium. If discount on issue and/ or premium on redemption are tax deductible, the following formula can be used to calculate the cost of debt:

$$\text{Cost of Redeemable Debenture}(k_d) = \frac{I+\frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}(1-t)$$

In absence of any specific information, students may use any of the above formulae to calculate the Cost of Debt (K_d) with logical assumption.

Above formulas give approximate value of cost of debt. In these formulas, higher the difference between RV and NP, lower the accuracy of answer. Therefore, one should not use these formulas if difference between RV and NP is very high. Also, these formulas are not suitable in case of gradual redemption of bonds.

Cost of Debt using Present value method [Yield to maturity (YTM) approach]

The cost of redeemable debt (K_d) is also calculated by discounting the relevant cash flows using Internal rate of return (IRR). (The concept of IRR is discussed in the Chapter 7 - Investment Decisions). Here, YTM is the annual return of an investment from the current date till maturity date. So, YTM is the internal rate of return at which current price of a debt equals to the present value of all cash-flows.

The relevant cash flows are as follows:

Year	Cash flows
0	Net proceeds in case of new issue/ Current market price in case of existing debt (NP or P0)

1 to n	Interest net of tax[I(1-t)]
n	Redemption value (RV)

Steps to calculate relevant cash flows:

Step-1: Identify the cash flows.

Step-2: Calculate NPVs of cash flows as identified above using two discount rates (guessing).

Step-3: Calculate IRR.

Amortization of Bond

A bond may be amortized every year i.e., principal is repaid every year rather thanat maturity. In such a situation, the principal will go down with annual payments and interest will be computed on the outstanding amount. The cash flows of the bonds will be uneven.

The formula for determining the value of a bond or debenture that is amortized every year is as follows:

$$VB = \frac{c_1}{(1+k_d)^1} + \frac{c_2}{(1+k_d)^2} + \ldots + \frac{c_n}{(1+k_d)^n}$$

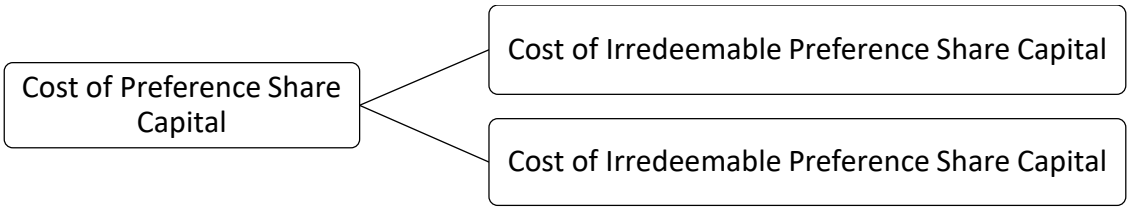
$$VB = \sum_{t=1}^{n} \frac{c_t}{(1+k_d)^t}$$

Cost of Convertible Debentures

The holders of the convertible debentures has the option to either get the debentures redeemed into the cash or get specified numbers of company's shares in lieu of cash. The calculation of cost of convertible debentures are very much similar to that of redeemable debentures. While determining the redemption value of the debentures, it is assumed that all the debenture holders will choose the option which has the higher value and accordingly, it will be considered to calculate the cost of debentures.

COST OF PREFERENCE SHARE CAPITAL (Kp)

The preference shareholders are paid dividend at a specified rate on face value of preference shares. Payment of dividend to the preference shareholders are not mandatory but are given priority over the equity shareholder. The payment of dividend to the preference shareholders are not charged as expenses but treatedas an appropriation of after-tax profit. Hence, dividend paid to preference shareholders does not reduce the tax liability of the company. Like the debentures, Preference share capital can also be categorized as redeemable and irredeemable.



Cost of Irredeemable Preference Shares

The cost of irredeemable preference shares is similar to the calculation of perpetuity. The cost of irredeemable preference share is calculated by dividing the preference dividend with the current market price or net proceeds from the issue. The cost of irredeemable preference share is as below:

Cost of Irredeemable Preference Shares (KP) = $\frac{PD}{P_0}$

Where,

PD = Annual preference dividend

P0= Net proceeds from issue of preference shares

Net proceeds mean issue price less issue expenses or floatation cost. If issue price is not given, then students can assume it to be equal to current marketprice. If issue expenses are not given, then simply assume it to be equal to zero.

Cost of Redeemable Preference Shares

Preference shares issued by a company which are redeemed on its maturity iscalled as redeemable preference shares. Cost of redeemable preference share is similar to the cost of redeemable debentures with the exception that the dividends paid to the preference shareholders are not tax deductible. Cost of preference capital is calculated as follows:

Cost of Redeemable Preference Shares (K_p) = $\frac{PD+\frac{(RV-NP)}{n}}{\frac{(RV+NP)}{2}}$

Where,

PD = Annual preference dividend

RV = Redemption value of preference shares

NP = Net proceeds from issue of preference shares

n = Remaining life of preference shares

Net proceeds mean issue price less issue expenses or floatation cost. If issue priceis not given, then students can assume it to be equal to current market price. Ifissue expenses are not given, then simply assume it to be equal to zero.

The cost of redeemable preference share scan also be calculated as the discount rate that equates the net proceeds of the sale of preference shares with the present value of the future dividends and principal payments.

COST OF EQUITY SHARE CAPITAL (KE)

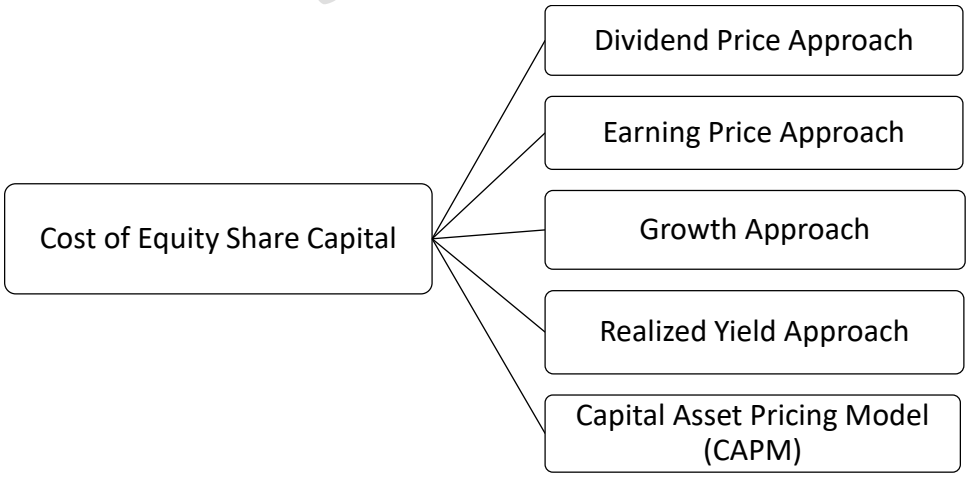
Just like any other source of finance, cost of equity is expectation of equity shareholders. We know that the value is performance divided by expectations. If we know the value and performance, then we can calculate expectation as a balancing figure.

Here, performance means the amount paid by the company to investors, like interest, dividend, redemption price etc. In case of debentures and preference shares, amount of interest or dividend is fixed but in case of equity shares it is uncertain.

Therefore, there is not a single method to calculate cost of equity but different methods which depends on various factors like:

1. If dividend is expected to be constant, then **dividend price approach** should be used.
2. If earning per share is expected to be constant, then **earning price approach** should be used.
3. If dividend and earning are expected to grow at a constant rate, then **growth approach (Gordon's model)** should be used.
4. If it is difficult to forecast future, then **realised yield approach** should beused, which looks into past.
5. All the above methods calculate the cost of equity as a balancing figure. When the cost of equity or expectation of investors is dependent on riski.e., Higher the risk, higher the expectations and vice versa, then **Capital asset pricing model (CAPM)**should be used, which is based on risk.

Different methods employed to compute the cost of equity share capital are:



Dividend Price Approach

This is also known as **Dividend Valuation Model**. This model makes an assumption that the dividend per share is expected to remain constant forever. Here, cost of equity capital is computed by dividing the expected dividend bymarket price per share as follows:

Cost of Equity (Ke)= $\frac{D}{P_0}$

Where,

K_e= Cost of equity

D = Expected dividend (also written as D1)

P_0 = Market price of equity (ex- dividend)

Earnings Price Approach

The advocates of this approach co-relate the earnings of the company with the market price of its share. Accordingly, the cost of equity share capital would be based upon the expected rate of earnings of a company. The argument is thateach investor expects a certain amount of earnings, whether distributed or not from the company in whose shares he invests. Thus, if an investor expects that the company in which he is going to subscribe for shares should have at least a 20%rate of earning, the cost of equity share capital can be construed on this basis.

Earnings Price Approach:

Cost of Equity (K_e) = $\frac{E}{P}$

Where,

E = Current earnings per share

P = Market price per share

This approach assumes that the earnings per share will remain constant forever.The Earning Price Approach is similar to the dividend price approach; only it seeksto nullify the effect of changes in the dividend policy.

Growth Approach or Gordon's Model

As per this approach, the rate of dividend growth remains constant. Where, earnings, dividends and equity share price all grow at the same rate, the cost of equity capital may be computed as follows:

Cost of Equity (K_e)= $\frac{D_1}{P_0} + g$

Where,

D_1 = [D_0 (1+ g)] i.e. next expected dividend

P_0 = Current Market price per share

g = Constant Growth Rate of Dividend

In case of newly issued equity shares where floatation cost is incurred, the cost of equity share with an estimation of constant dividend growth is calculated as below:

Cost of Equity (K_e)= $\frac{D_1}{P_0 - F} + g$

Where, F = Flotation cost per share

Estimation of Growth Rate

The calculation of 'g' (the growth rate) is an important factor in calculating cost of equity share capital. Generally, two methods are used to determine the growth rate, as discussed below:

Average Method

Current Dividend (D_0) = $D_n(1+g)_n$
Or
Growth rate = $\sqrt[n]{\frac{D_0}{D_n}} - 1$

Where,

D_0 = Current dividend,

D_n = Dividend in n years ago

Growth rate can also be found as follows:

Step-I: Divide D_0 by D_n, find out the result, then refer the FVIF table.

Step-II: Find out the result found at Step-I in corresponding year's row.

Step-III: See the interest rate for the corresponding column. This is thegrowth rate.

Gordon's Growth Model

Unlike the Average method, Gordon's growth model attempts to derive a future growth rate. As per this model, increase in the level of investmentwill give rise to an increase in future dividends. This model takes Earnings retention rate (b) and rate of return on investments (r) into account to estimate the future growth rate.

It can be calculated as below:

Growth (g) = b × r

Where,

b = earnings retention rate*

r = rate of return on fund invested

*Proportion of earnings available to equity shareholders which is notdistributed as dividend

Realized Yield Approach

According to this approach, the average rate of return realized in the past few years is historically regarded as 'expected return' in the future**.** It computes costof equity based on the past records of dividends actually realised by the equity shareholders. Though, this approach provides a single mechanism of calculating cost of equity, it has unrealistic assumptions like risks faced by the company remain same; the shareholders continue to expect the same rate of return; andthe reinvestment opportunity cost (rate) of the shareholders is same as the realised yield. If the earnings do not remain stable, this method is not practical.

Capital Asset Pricing Model (CAPM) Approach

CAPM model describes the risk-return trade-off for securities. It describes thelinear relationship between risk and return of securities.

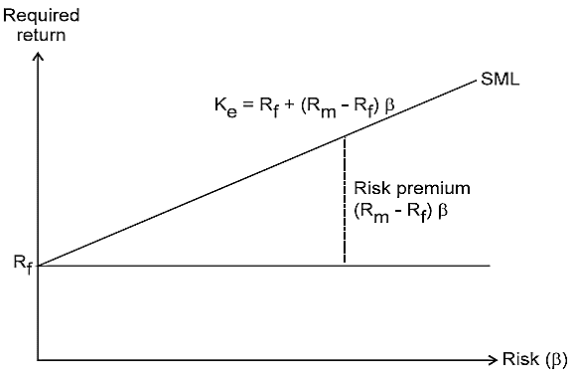
The risk to which a security is exposed, can be classified into two groups:

i. **Unsystematic Risk:** This is also called company specific risk as the risk is related with the company's performance. This type of risk can be reduced or eliminated by diversification of the securities portfolio. This is also known as diversifiable risk.

ii. **Systematic Risk:** It is the macro-economic or market specific risk under which a company operates. This type of risk cannot be eliminated by the diversification hence, it is non-diversifiable. The examples are inflation, Government policy, interest rate etc.

As diversifiable risk can be eliminated by an investor through diversification, the non-diversifiable risk is the risk which cannot be eliminated; therefore, a business should be concerned as per CAPM method, solely with non-diversifiable risk.

The non-diversifiable risks are assessed in terms of beta coefficient (b or β) through fitting regression equation between return of a security and the returnon a market portfolio.



Cost of Equity under CAPM

Thus, the cost of equity capital can be calculated under this approach as:

Cost of Equity (K_e)=R_f+ ß(R_m-R_f)

Where,

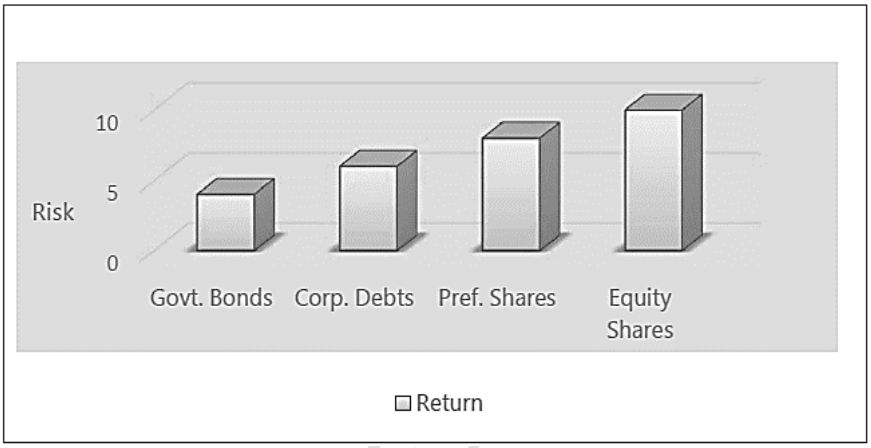
K_e = Cost of equity capital

R_f = Risk free rate of return

ß = Beta coefficient

R_m = Rate of return on market portfolio

(Rm – Rf) = Market risk premium



Risk Return relationship of various securities

Therefore, Required rate of return = Risk free rate + Risk premium

- The idea behind CAPM is that the investors need to be compensated in two ways- (i) Time value of money and (ii) Risk.
- The time value of money is represented by the risk-free rate in the formula and compensates the investors for placing money in any investment over a period of time.
- The other half of the formula represents risk and calculates the amount of compensation the investor needs for taking on additional risk. This is calculated by taking a risk measure (beta) which compares the returns of the asset to the market over a period of time and compares it with the market premium.

The CAPM says that the expected return of a security or a portfolio equals therate on a risk-free security plus risk premium. If this expected return does notmeet or beat the required return, then the investment should not be undertaken.

The shortcomings of this approach are:

a. Estimation of beta with historical data is unrealistic; and

b. Market imperfections may lead investors to unsystematic risk.

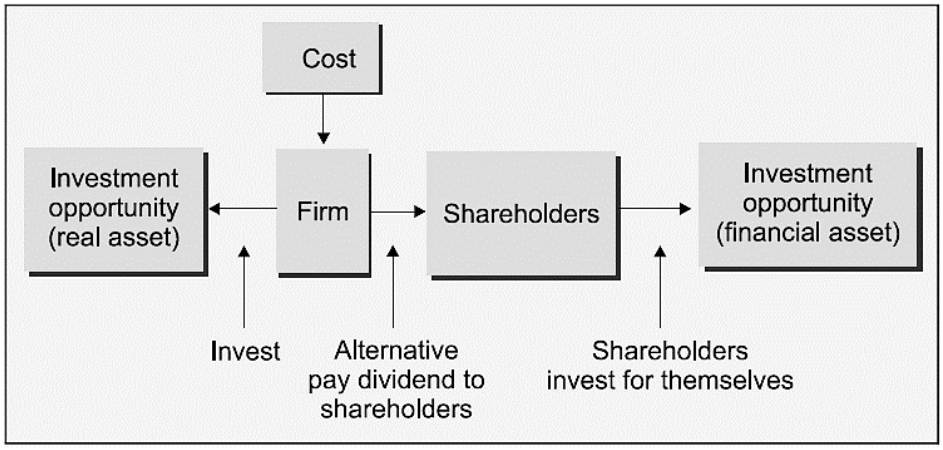
Despite these shortcomings, the CAPM is useful in calculating cost of equity, even when the firm is suffering losses.

The basic factor behind determining the cost of equity share capital is to measure the expectation of investors from the equity shares of that particular company. Therefore, the whole question of determining the cost of equity shares hinges upon the factors which go into the expectations of particular group of investors in a company of a particular risk class.

COST OF RETAINED EARNINGS (KR)

Like other sources of fund, retained earnings also involves cost. It is the opportunity cost of dividends foregone by shareholders.

The given below figure depicts how a company can either keep or reinvest cash or return it to the shareholders as dividends. (Arrows represent possible cash flows or transfers.) If the cash is reinvested, the opportunity cost is the expected rate of return that shareholders could have obtained by investing in financial assets.



Cost of Retained Earnings

The cost of retained earnings is often used interchangeably with the cost of equity, as cost of retained earnings is nothing but the expected return of the shareholders from the investment in shares of the company. However, normally cost of equity remains higher than the cost of retained earnings, due to issue of shares at a price lower than current market price and floatation cost.

Formulas used for calculation of cost of retained earnings are same as formulasused for calculation of cost equity:

Dividend Price method: $k_r = \frac{D}{P}$

Earning Price method: $K_f = \frac{EPS}{P}$
Growth method: $K_f = \frac{D_1}{P_0} + g$

For the calculation of K_e: P = net proceeds realized = issue price less floatation cost. But for calculation of K_r: P = current market price. However, sometimes issue price may also be used. The concept of Floatation cost is not used for the calculation of cost of retained earnings.

WEIGHTED AVERAGE COST OF CAPITAL (WACC)

To balance financial risk, control over the company and cost of capital, a company usually does not procure entire fund from a single source, rather it makes a mix of various sources of finance. Hence, cost of total capital will be equal to weighted average of cost of individual sources of finance.

WACC is also known as the overall cost of capital which includes the cost of different sources of capital as explained above. WACC of a company depends onthe capital structure of a company. It weighs the cost of capital of a particularsource of capital with its proportion to the total capital. Thus, weighted averagecost of capital is the weighted average after-tax costs of the individual components of firm's capital structure. That is, the after-tax cost of each debt and equity is calculated separately and added together to a single overall cost of capital

	The steps to calculate WACC is as follows:
Step 1:	Calculate the total capital from all the sources of capital. (Long-term debt capital + Pref. Share Capital + Equity Share Capital + Retained Earnings)
Step 2:	Calculate the proportion (or %) of each source of capital to the total capital. $\left(\frac{\text{Equity Share Capital (forexample)}}{\text{Total Capital (as calculated in Step1 above)}}\right)$
Step 3:	Multiply the proportion as calculated in Step 2 above with the respective cost of capital. (K_e × Proportion (%) of equity share capital (for example) calculated in Step 2 above)
Step 4:	Aggregate the cost of capital as calculated in Step 3 above. This is the WACC. ($K_e + K_d + K_p + K_s$ as calculated in Step 3 above)

The cost of weighted average method is preferred because the proportions of various sources of funds in the capital structure are different. To be representative, therefore, cost of capital should take into account the relative proportions of different sources of finance.

Securities analysts employ WACC all the time when valuing and selecting investments. In discounted cash flow analysis, WACC is used as the discount rate applied to future cash flows for deriving a business' net present value. WACC can be used as a hurdle rate against which to assess return on investment capital.

Performance. Investors use WACC as a tool to decide whether or not to invest. The WACC represents the minimum rate of return at which a company produces value for its investors. Let's say, if a company produces a return of 20% and has a WACC of 11%. By contrast, the company's return is less than WACC meaning the company is shedding value, which indicates that investors should put their money elsewhere.

Therefore, WACC serves as a useful reality check for investors.

Choice of Weights

There is a choice of weights between the Book Value (BV) and Market Value(MV).

Book Value (BV): Book value weight is operationally easy and convenient. While using BV, reserves such as share premium and retained profits are included in theBV of equity, in addition to the nominal value of share capital. Here, the value of equity will generally not reflect historic asset values, as well as the future prospects of an organization.

Market Value (MV): Market value weight is more correct and represent a firm's capital structure. **It is preferable to use MV weights for the equity.** While using MV, reserves such as share premium and retained profits are ignored as they arein effect incorporated into the value of equity. It represents existing conditions and also take into consideration the impacts of changing market conditions and the current prices of various security. Similarly, in case of debt, MV is better to be used rather than the BV of the debt, though the difference may not be very significant.

There is no separate market value for retained earnings. Market value of equityshares represents both paid up equity capital and retained earnings. But cost of equity is not same as cost of retained earnings. Hence to give market value weights, market value of equity shares should be apportioned in the ratio of book value of paid-up equity capital and book value of retained earnings.

MARGINAL COST OF CAPITAL

The marginal cost of capital may be defined as the cost of raising an additional rupee of capital. Since the capital is raised in substantial amount in practice, marginal cost is referred to as the cost incurred in raising new funds. Marginal cost of capital is derived, when the average cost of capital is **calculated using the marginal weights**.

The marginal weights represent the proportion of funds the firm intends to employ. Thus, the problem of choosing between the book value weights and the **market value weights** does not arise in the case of marginal cost of capital computation.

To calculate the marginal cost of capital, the intended financing proportion should be applied as weights to marginal component costs. The marginal cost of capital should, therefore, be calculated in the composite sense. When a firm raises funds in proportional manner and the component's cost remains unchanged, there will be no difference between average cost of capital (of the total funds)and the marginal cost of capital. The component costs may remain constant upto certain level of funds raised and then start increasing with amount of funds raised.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

A Ltd. issued 30,000, 15% Debenture of ₹ 100 each. The cost of the issue was 30,000. Determine the cost of Debenture Capital if they were issued at

i. Par

ii. Premium of 10%

iii. Discount of 10%

PROBLEM – 2

A Company issues ₹ 10,00,000 12% debentures of ₹ 100 each. The debentures are redeemable after the expiry of a fixed period of 7 years. The Company is in 35% tax bracket.

Required:

i. Calculate the cost of debt after tax, if debentures are issued at:

- **a.** Par
- **b.** 10% Discount
- **c.** 10% Premium

ii. If a brokerage is paid at 2%, what will be the cost of debentures, if the issue is at par?

PROBLEM – 3

If Reliance Energy is issuing preferred stock at ₹ 100 per share, with an expected dividend of ₹12 at year-end 1, and a flotation cost of 3% then, what is the cost of a preference share?

PROBLEM – 4

Preferential Ltd issued 30,000, 15% Preference Shares of ₹ 100 each, redeemable at a 10% premium after 20 years. The Issue Management Expenses were 30,000. Find out the cost of Preference Capital if they were issued at

i. Par

ii. Premium of 10%

iii. Discount of 10%

PROBLEM – 5

A company has paid a dividend of ₹ 1 per share (of face value of ₹ 10 each) last year and it is expected to grow @ 10% next year. Calculate the cost of equity if the market price of the share is ₹ 55.

PROBLEM – 6

Mr Mehra had purchased a share of Alpha Limited for ₹ 1,000. He received dividends for a period of five years at the rate of 10 per cent. At the end of the fifth year, he sold the share of Alpha Limited for ₹ 1,128. You are required to COMPUTE the cost of equity as per realised yield approach.

PROBLEM – 7

Calculate the cost of equity capital of H Ltd., whose risk-free rate of return equals 10%. The firm's beta equals 1.75 and the return on the market portfolio equals to 15%.

PROBLEM – 8

Face value of equity shares of a company is ₹10, while current market price is ₹200 per share. Company is going to start a new project, and is planning to finance it partially by new issue and partially by retained earnings. You are Required to CALCULATE cost of equity shares as well as cost of retained earnings if issue price will be ₹190 per share and floatation cost will be₹5 per share. Dividendat the end of first year is expected to be ₹10 and growth rate will be 5%.

PROBLEM – 9

Determine the cost of capital of Best Luck Limited using the book value (BV) and market value (MV) weights from the following information:

Sources	Book Value (₹)	Market value (₹)
Equity shares	1,20,00,000	2,00,00,000
Retained Earnings	30,00,000	-
Preferences shares	9,00,000	10,40,000
Debentures	36,00,000	33,75,000

Additional information:

I. **Equity:** Equity shares are quoted in past at ₹ 130 per share and a new issue is priced at ₹ 125 per share; floatation costs will be ₹ 5 per share

II. **Dividend:** During the previous 5 years, dividends have steadily increased from ₹ 10.60 to ₹ 14.19 per share. The dividend at the end of the current year is expected to be ₹ 15 per share.

III. **Preference shares:** 15% Preference shares with a face value of ₹ 100 would realise ₹ 105 per share.

IV. **Debentures:** The company proposes to issue 11- year 15% debentures but the yield on debentures of similar maturity and risk class is 16% with an issue price of ₹ 100 and flotation cost @ 2%.

V. **Tax:** Corporate tax rate is 35%. Ignore dividend tax.

PROBLEM – 10

ABC Company provides the following details:

Rf = 7% ß = 1.20 Rm - Rf = 6%

CALCULATE the cost of retained earnings based on CAPM method.

PROBLEM – 11

CALCULATE the WACC using the following data by using:

(a) Book value weights

(b) Market value weights

The capital structure of the company is as under:	**(₹)**
Debentures (₹ 100 per debenture)	5,00,000
Preference shares (₹ 100 per share)	5,00,000
Equity shares (₹ 10 per share)	10,00,000
	20,00,000

The market prices of these securities are:

Debentures ₹ 105 per debenture

Preference shares ₹ 110 per preference share

Equity shares ₹ 24 per equity share

Additional information:

i. ₹ 100 per debenture redeemable at par, 10% coupon rate, 4% floatation costs, 10-year maturity.

ii. ₹ 100 per preference share redeemable at par, 5% coupon rate, 2% floatation cost and 10-year maturity.

iii. Equity shares have ₹ 4 floatation cost and a market price of ₹ 24 per share.

The next year **expected dividend** is ₹ 1 with annual growth of 5%. The firm has practice of paying all earnings in the form of dividend. Corporate tax rate is 30%.

Use YTM method to calculate cost of debentures & preference shares.

PROBLEM – 12

The following is the capital structure of a Company:

Source of capital	Book value	Market value
Equity shares @ ₹ 100 each	80,00,000	1,60,00,000
9 per cent cumulative preference shares @ ₹ 100 each	20,00,000	24,00,000
11 per cent debentures	60,00,000	66,00,000
Retained earnings	40,00,000	-
	2,00,00,000	**2,50,00,000**

The current market price of the company's equity share is ₹ 200. For the last year, the company had paid an equity dividend at 25 per cent and its dividend is likely to grow by 5 per cent every year. The corporate tax rate is 30 per cent and shareholders' personal income tax rate is 20 per cent.

You are required to calculate:

1. Cost of capital for each source of capital.
2. Weighted average cost of capital on the basis of book value weights.
3. Weighted average cost of capital on the basis of market value weights.

PROBLEM – 13

Alpha Ltd. has in issue 5,00,000 ₹ 1 ordinary shares whose current ex-dividend market price is ₹ 1.50 per share. The company has just paid a dividend of 27 paise per share, and dividends are expected to continue at this level for some time. If the company has no debt capital, what is the weighted average cost of capital?

PROBLEM – 14

ABC Ltd. has the following capital structure which is considered to be optimum as on 31st March 2006.

14% Debentures	₹ 30,000
11% Preference shares	₹ 10,000
Equity (10,000 shares)	₹ 1,60,000
	₹ 2,00,000

The company share has a market price of ₹ 23.60. Next year's dividend per share is 50% of year 2006 EPS. The following is the **growth** trend of EPS for the preceding 10 years which is expected to continue in future.

Year	EPS (₹)	Year	EPS (₹)
1997	1.00	**2002**	1.61
1998	1.10	**2003**	1.77
1999	1.21	**2004**	1.95
2000	1.33	**2005**	2.15
2001	1.46	**2006**	2.36

The company issued **new** debentures carrying a 16% rate of interest and the current market price of the debenture is ₹ 96. Preference shares ₹ 9.20 (with an annual dividend of ₹ 1.1 per share) were also issued. The company is in the 50% tax bracket.

A. Calculate:

i. Cost of new debt

ii. Cost of new preference shares

iii. Cost of equity share

B. Calculate the cost of capital using Weights of the Existing Capital Structure.

C. How much needs to be spent for capital investment before **issuing new shares** keeping the weights of the Existing Capital Structure the same? 50% of the 2006 earnings are available as retained earnings for the purpose of capital investment.

D. What will be the marginal cost of capital when the funds exceed the amount calculated in (C), assuming new equity is issued at ₹ 20 per share? The cost of debt and of preference capital is constant.

A company issued 10,000, 15% Convertible debentures of ₹ 100 each with a maturity period of 5 years. At maturity, the debenture holders will have the option to convert the debentures into equity shares of the company in the ratio of 1:10 (10 shares for each debenture). The current market price of the equity shares is ₹ 12 each and historically the growth rate of the shares is 5% per annum. Compute the cost of debentures assuming a 35% tax rate.

PROBLEM – 15

Masco Limited wishes to raise additional finance of ₹10 lakhs for meeting its investment plans. It has ₹2,10,000 in the form of retained earnings availablefor investment purposes. Further details are as following:

1.	Debt / Equity mix	3:7
2.	Cost of debt:	
	Upto₹1,80,000	10% (before tax)
	Beyond ₹1,80,000	16% (before tax)
3.	Earnings per share	₹4
4.	Dividend pay out	50% of earnings
5.	Expected growth rate of dividend	10%
6.	Current market price per share	₹44
7.	Tax rate	50%

You are required to:

a. DETERMINE the pattern for raising the additional finance.

b. DETERMINE the post-tax average cost of additional debt.

c. DETERMINE the cost of retained earnings and cost of equity.

d. COMPUTE the overall weighted average after tax cost of additionalfinance.

PROBLEM – 16

In considering the most desirable capital structure of a company, the following estimates of the cost of debt and equity capital (after tax) have been made at various levels of a debt-equity mix:

Debt as a percentage of total capital employed	**Cost of debt %**	**Cost of equity%**
0	5.0	12.0
10	5.0	12.0
20	5.0	12.5
30	5.5	13.0
40	6.0	14.0
50	6.5	16.0
60	7.0	20.0

PROBLEM – 17

From the following information, determine the appropriate weighted average cost of capital, relevant for evaluating long-term investment projects of the company.

Cost of equity = 0.18

After-tax cost of long-term debt = 0.08

After-tax cost of short-term debt = 0.09

Cost of Reserve = 0.15

Sources of capital	Book Value (BV)	Market Value (MV)
Equity Capital	3,00,000	7,50,000
Reserve	2,00,000	
Long-term Debt	4,00,000	3,75,000
Short-term Debt	1,00,000	1,00,000
	10,00,000	**12,25,000**

PROBLEM – 18

A company issued 10,000, 10% debentures of ₹100 each at par on 1.4.2018to be matured on 1.4.2028. The company wants to know the cost of its existing debt on 1.4.2023when the market price of the debentures is ₹80. COMPUTE the cost ofexisting debentures assuming 35% tax rate.

PROBLEM – 19

A company issues:

- 15% convertible debentures of ₹100 each at par with a maturity periodof 6 years. On maturity, each debenture will be converted into 2 equity shares of the company. The risk-free rate of return is 10%, market risk premium is 18% and beta of the company is 1.25. The company has paid dividend of ₹12.76 per share. Five years ago, it paid dividend of ₹10 per share. Flotation cost is 5% of issue amount.
- 5% preference shares of ₹100 each at premium of 10%. These sharesare redeemable after 10 years at par. Flotation cost is 6% of issue amount.

Assuming corporate tax rate is 40%.

1. CALCULATE the cost of convertible debentures using the approximation method.

2. Use YTM method to CALCULATE cost of preference shares.

Year	1	2	3	4	5	6	7	8	9	10
PVIF 0.03, t	0.971	0.943	0.915	0.888	0.863	0.837	0.813	0.789	0.766	0.744
PVIF 0.05, t	0.952	0.907	0.864	0.823	0.784	0.746	0.711	0.677	0.645	0.614
PVIFA 0.03, t	0.971	1.913	2.829	3.717	4.580	5.417	6.230	7.020	7.786	8.530
PVIFA 0.05, t	0.952	1.859	2.723	3.546	4.329	5.076	5.786	6.463	7.108	7.722

Interest rate	1%	2%	3%	4%	5%	6%	7%	8%	9%
FVIF i, 5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539
FVIF i, 6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677
FVIF i, 7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828

PROBLEM – 20

Annova Ltd is considering raising of funds of about ₹ 250 lakhs by any of two alternative methods, viz., 14% institutional term loan and 13% non-convertible debentures. The term loan option would attract no major incidental cost and can be ignored. The debentures would have to be issued at a discount of 2.5% and would involve a cost of issue of 2% on face value. ADVISE the company as to the better option based on the effective cost of capital in each case. Assume a tax rate of 50%.

PROBLEM – 21

Suppose we are considering investing in a zero-coupon bond that matures in 5 years and has a face value of ₹ 1000. If these bonds are priced to yield 10%, what is the present value of the bonds?

PROBLEM – 22

Institutional Development Bank (IDB) issued Zero interest deep discount bonds of face value of ₹1,00,000 each issued at ₹2,500 & repayable after 25 years. COMPUTE the cost of debt if there is no corporate tax.

PROBLEM – 23

CALCULATE the cost of equity from the following data using realized yield approach:

Year	1	2	3	4	5
Dividend per share	1.00	1.00	1.20	1.25	1.15
Price per share (at the beginning)	9.00	9.75	11.5	11.00	10.60

PROBLEM – 24

ABC Company's equity share is quoted in the market at ₹25 per share currently. The company pays a dividend of ₹2 per share and the investor's market expects a growth rate of 6% per year.

You are required to:

1. CALCULATE the company's cost of equity capital.

2. If the company issues 10% debentures of face value of ₹100 each andrealises ₹96 per debenture while the debentures are redeemable after 12 years at a premium of 12%, CALCULATE cost of debenture using YTM?

Assume Tax Rate to be 50%.

PROBLEM – 25

Today, being 1st January 2019, Ram is considering to purchase an outstanding Corporate Bond having a face value of ₹ 1,000 that was issued on 1st January 2007 which has a 9.5% Annual Coupon and 20 years of original maturity (i.e., maturing on 31st December 2027). Since the bond was issued, the interest rates have been on the downside and it is now selling at a premium of ₹ 125.75 per bond. **Determine** the prevailing interest on the similar type of Bonds if it is held till the maturity which shall be at Par.

PV Factors:

	1	2	3	4	5	6	7	8	9
6%	0.943	0.89	0.84	0.792	0.747	0.705	0.665	0.627	0.592
8%	0.926	0.857	0.794	0.735	0.681	0.63	0.583	0.54	0.5

ADDITIONAL QUESTIONS FOR PRACTICE

QFP 1 (Concept Similar to Problem – 1)

Five years ago, Sona Limited issued 12 per cent irredeemable debentures at ₹103,at ₹3 premium to their par value of ₹100. The current market price of these debentures is ₹94. If the company pays corporate tax at a rate of 35 per centCALCULATE its current cost of debenture capital?

QFP 2 (Concept Similar to Problem – 2)

A company issued 10,000, 10% debentures of ₹100 each at par on 1.4.2018to be matured on 1.4.2028. The company wants to know the cost of its existing debt on 1.4.2023when the market price of the debentures is ₹80. COMPUTE the cost ofexisting debentures assuming 35% tax rate.

QFP 3 (Concept Similar to Problem – 11)

The following details are provided by the GPS Limited:

	(₹)
Equity Share Capital	65,00,000
12% Preference Share Capital	12,00,000
15% Redeemable Debentures	20,00,000
10% Convertible Debentures	8,00,000

The cost of equity capital for the company is 16.30% and income tax rate forthe company is 30%. You are required to CALCULATE the Weighted Average Cost of Capital(WACC) of the company.

QFP 4 (Concept Similar to Problem – 12)

DETERMINE the cost of capital of Best Luck Limited using the book value (BV)and market value (MV) weights from the following information:

Sources	Book Value(₹)	Market Value(₹)
Equity shares	1,20,00,000	2,00,00,000
Retained earnings	30,00,000	-
Preference shares	36,00,000	33,75,000
Debentures	9,00,000	10,40,000

Additional information:

I. Equity: Equity shares are quoted at ₹130 per share and a new issue priced at ₹125 per share will be fully subscribed; flotation costs will be ₹5 per share.

II. Dividend: During the previous 5 years, dividends have steadily increased from ₹10.60 to ₹14.19 per share. Dividend at the end of the current year is expected to be ₹15 per share.

III. Preference shares: 15% Preference shares with face value of ₹100 would realise₹105 per share.

IV. Debentures: The company proposes to issue 11-year 15% debentures but the yield on debentures of similar maturity and risk class is 16%; flotation cost is 2%.

V. Tax: Corporate tax rate is 35%. Ignore dividend tax. Floatation cost would be calculated on face value.

CHAPTER 03: FINANCING DECISIONS – LEVERAGES

INTRODUCTION

Objective of financial management is to **maximize wealth**. Here, wealth means market value. Value is directly related to performance of company and inversely related to expectation of investors. In turn, expectation of investor is dependent on risk of the company. Therefore, to maximize value, company should try to manage its risk. This risk may be business risk, financial risk or both as defined below:

Business Risk: It refers to the risk associated with the firm's operations. It is the uncertainty about the future operating income (EBIT) i.e., how well can the operating income be predicted?

Financial Risk: It refers to the additional risk placed on the firm's shareholders because of use of debt i.e., the additional risk, a shareholder bears when a company uses debt in addition to equity financing. Companies that issue more debt instruments would have higher financial risk than companies financed mostly or entirely by equity.

In this chapter we will discuss factors that influence business and financial risks.

MEANING AND TYPES OF LEVERAGE

Meaning of Leverage

The term leverage represents **influence or power**. In financial analysis, leverage represents the influence of one financial variable over some other related financial variable. These financial variables may be costs, output, sales revenue, Earnings Before Interest and Tax (EBIT), Earning Per Share (EPS) etc.

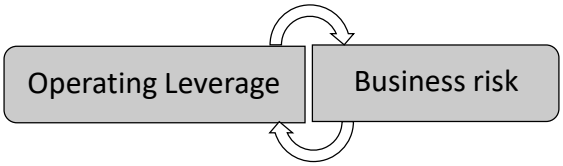
Generally, if we want to calculate the impact of change in variable X on variable Y, it is termed as Leverage of Y with X, and it is calculated as follows:

$$\text{Measurement of Leverage} = \frac{\text{Change in Y} \div Y}{\text{Change in X} \div X}$$

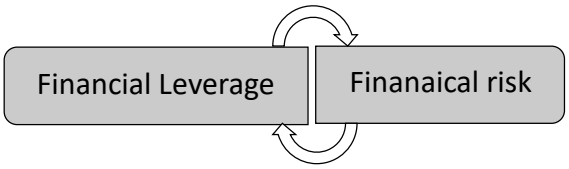
Types of Leverage

There are three commonly used measures of leverage in financial analysis. These are:

i. **Operating Leverage:** It is the relationship between Sales and EBIT and indicates **business risk.**



ii. **Financial Leverage:** It is the relationship between EBIT and EPS and indicates



iii. **Combined Leverage:** It is the relationship between Sales and EPS and indicates **total risk** i.e., both business risk and financial risk.

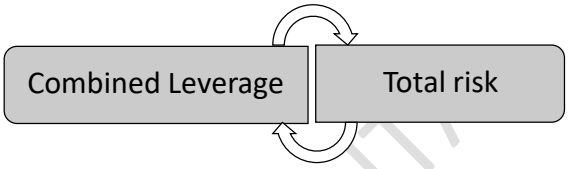


Chart Showing Degree of Operating Leverage, Financial Leverage and Combined leverage

Profitability Statement			
Sales	xxx		
Less: Variable Cost	(xxx)	Degree of Operating Leverage	
Contribution	xxx		
Less: Fixed Cost Operating	(xxx)		
Profit/ EBIT	xxx		Degree of Combined Leverage
Less: Interest	(xxx)		
Earnings Before Tax (EBT)	xxx		
Less: Tax	(xxx)		
Profit After Tax (PAT)	xxx	Degree of Financial Leverage	
Less: Pref. Dividend (if any)	(xxx)		
Net Earnings available to equity shareholders/ PAT	xxx		
No. Equity shares (N)	xxx		
Earnings per Share (EPS) (PAT ÷ N)	xxx		

OPERATING LEVERAGE

Operating Leverage (OL) means tendency of operating income (EBIT) to change disproportionately with change in sale volume. This disproportionate change is caused by operating fixed cost, which does not change with change in sales volume.

In other words, Operating Leverage maybe defined **as the employment of an asset with a fixed cost** so that enough revenue can be generated to cover all the fixed and variable costs.

The use of assets for which a company pays a fixed cost is called operating leverage.

Operating leverage is a function of three factors:

i. Amount of fixed cost,

ii. Variable contribution margin, and

iii. Volume of sales.

Degree of Operating Leverage (DOL)

When we measure magnitude of disproportionate change, it is termed as degree of leverage. **Degree of Operating Leverage (DOL)** may be defined as percentage change in EBIT with respect to percentage change in sales quantity.

$$\text{Degree of Operating Leverage (DOL)} = \frac{\text{Percentage Change in EBIT}}{\text{Percentage Change in Sales}}$$

Mathematically:

$$\text{DOL} = \frac{\Delta \text{EBIT}}{\text{EBIT}} \Big/ \frac{\Delta Q}{Q}$$

Here,

EBIT = Q (S – V) – F

Q = Sales quantity

S = Selling price per unit V = Variable cost per unit

Δ Denotes change

$$\text{DOL} = \frac{\Delta[Q(S-V)-F]/[Q(S-V)-F]}{\Delta Q/Q}$$

Now ΔF is nil because change in fixed cost is nil. Therefore:

$$\text{DOL} = \frac{\Delta[Q(S-V)}{Q(S-V)-F} \Big/ \frac{\Delta Q}{Q} = \frac{\Delta Q(S-V)}{Q(S-V)-F} \times \frac{Q}{\Delta Q} = \frac{Q(S-V)}{Q(S-V)-F}$$

$$DOL = \frac{\text{Contribution}}{Contribution - Fixed\ cos\ t} = \frac{Contribution}{EBIT}$$

Break-Even Analysis and Operating Leverage

Break-even analysis is a generally used to study the Cost Volume Profit analysis. It is concerned with computing the break-even point. At break-even point (BEP) of production level and sales, there will be no profit and loss i.e., total cost is equal to total sales revenue.

$$\text{Break-even point in units } == \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

In brief, the relationship between leverage, break-even point and fixed cost is as under:

Leverage	**Break-even point**
1. Firm with high leverage	**1.** Higher Break-even point
2. Firm with low leverage	**2 .**Lower Break-even point
Fixed cost	**Operating Leverage**
1. High fixed cost	**1.** High degree of operating leverage
2. Lower fixed cost	**2.** Lower degree of operating leverage

Margin of Safety (MOS) and Operating Leverage (OL)

In cost accounting, margin of safety (MOS) may be calculated as follows:

$$MOS = \frac{Sales - BEP\ Sales}{Sales} \times 100$$

Higher margin of safety indicates lower business risk and higher profit and vice versa. MOS is inversely related to OL.

If we both multiply and divide above formula with profit volume (PV) ratio then:

$$MOS = \frac{Sales - BEP\ Sales}{Sales} \times \frac{PV\ ratio}{PV\ ratio} = \frac{\text{(Sales x PV Ratio)- (BEP x PV Ratio)}}{\text{Sales x PV Ratio}}$$

We know that:

$$PV\ ratio = \frac{Contribution}{Sales}\ or\ Sales \times PV\ Ratio = Contribution$$

And

$$\text{BEP } = \frac{\text{Fixed Cost}}{\text{PV ratio}}\ or\ \text{BEP } \times \text{ PV ratio } = \text{ Fixed Cost}$$

So,

$$\text{MOS } = \frac{\text{Contribution - Fixed Cost}}{\text{Contribution}} = \frac{\text{EBIT}}{\text{Contribution}}$$

Further,

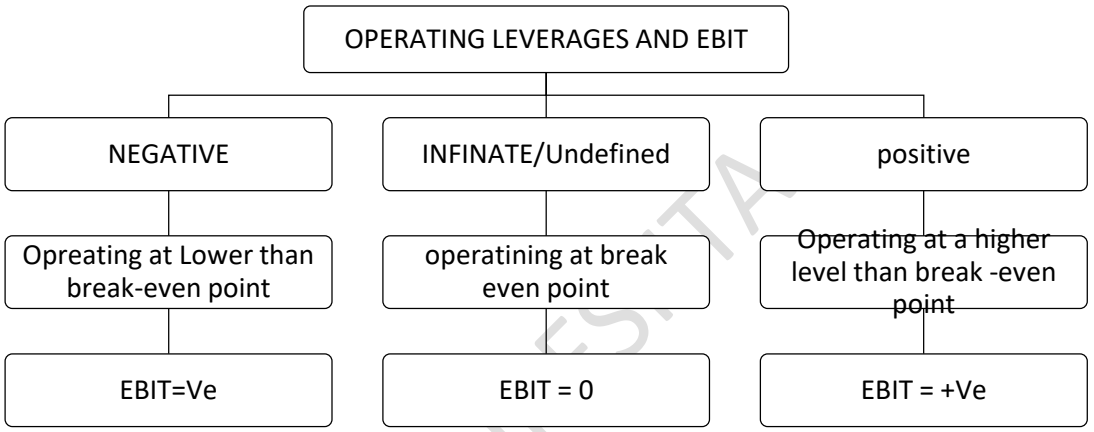
$$DOL = \frac{Contribution}{EBIT}$$

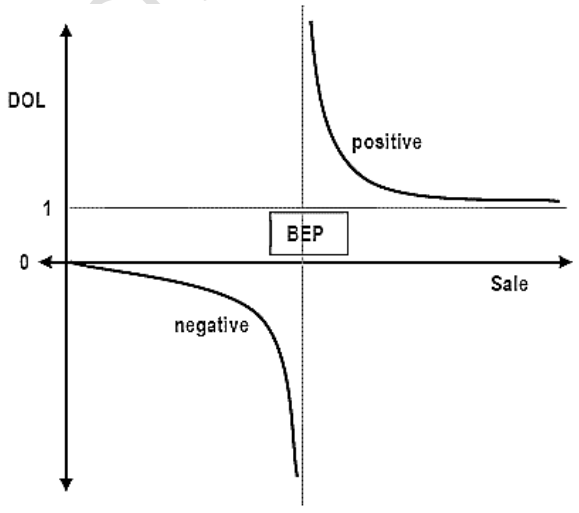
Hence:

$$\text{Degree of Operating leverage} = \frac{1}{\text{Margin of Safety}}$$

Analysis and Interpretation of operating leverage

S. No.	Situation	Result
1	No Fixed Cost	No operating leverage
2.	Higher Fixed cost	Higher Break-even point
3.	Higher than Break-even level	Positive operating leverage
4.	Lower than Break-even level	Negative operating leverage





Note: DOL can never be between zero and one. It can be zero or less or it can be one or more.

When Sales is much higher than BEP sales, DOL will be slightly more than one. With decrease in sales, DOL will increase. At BEP, DOL will be infinite. When sales is slightly less than BEP, DOL will be negative infinite. With further reduction in sale, DOL will move towards zero. At zero sales, DOL will also be zero.

FINANCIAL LEVERAGE

Financial leverage (FL) maybe defined as **'the use of funds with a fixed cost in order to increase earnings per share'.** In other words, it is the use of company funds on which it pays a limited return. Financial leverage involves the use of funds obtained at a fixed cost in the hope of increasing the return to common stockholders.

$$\text{Financial Leverage (FL)} = \frac{\text{Earnings before interest and tax (EBIT)}}{\text{Earnings before tax (EBT)}}$$

Where**,** EBIT = Sales - (Variable cost + Fixed cost) EBT = EBIT - Interest

Degree of Financial Leverage (DFL)

Degree of financial leverage is the ratio of the percentage increase in Earnings per Share (EPS) to the percentage increase in Earnings Before Interest and Taxes (EBIT). Financial Leverage (FL) is also defined as **"the ability of a firm to use fixed financial charges to magnify the effect of changes in EBIT on EPS**

$$\text{Degree of Financial Leverage (DFL)} = \frac{\text{Percentage change in earnings per share (EPS)}}{\text{Percentage change in earnings before interest and tax (EBIT)}}$$

$$DFL = \frac{\Delta EPS}{EPS} \Big/ \frac{\Delta EBIT}{EBIT}$$

ΔEPS means change in EPS and ΔEBIT means change in EBIT.

Now, EPS = [(EBIT - I)(1- t)] - D/No. of Shares Here,

T = Tax Rate

D = Dividend on Preference Shares (inclusive of dividend tax if any)

On simplifying the above we get,

$$\text{DFL} = \frac{\text{EBIT}(1\text{-t})}{(\text{EBIT-Int.})(1\text{-t}) - D_P}$$

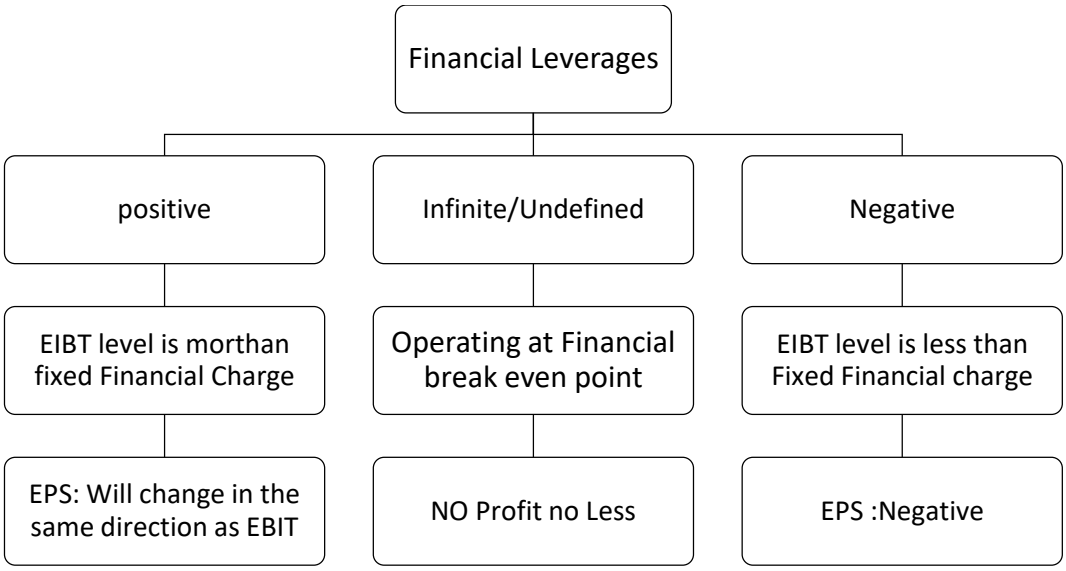
$$\text{DFL} = \frac{\text{EBIT}}{(\text{EBIT-Int.}) - \frac{D_P}{1\text{-t}}}$$

If the company has not issued preference shares, then:

$$\text{DFL} = \frac{\text{EBIT}}{(\text{EBIT-Int.})} = \frac{EBIT}{PBT}$$

When DFL is more than one (1), financial leverage exists. More is DFL, higher is financial leverage.

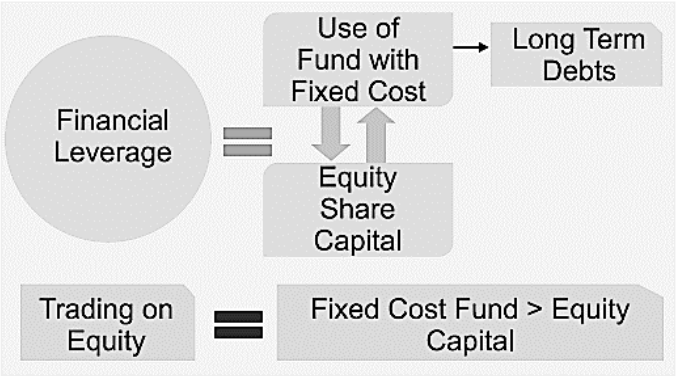
A positive DFL/ FL means firm is operating at a level higher than break-even point and EBIT and EPS moves in the same direction. Negative DFL/ FL indicates the firm is operating at lower than break-even point and EPS is negative.



Analysis and Interpretation of Financial leverage

Sl. No.	Situation	Result
1	No Fixed Financial Cost	No Financial leverage
2.	Higher Fixed Financial cost	Higher Financial Leverage
3.	When EBIT is higher than Financial Break-even point	Positive Financial leverage
4.	When EBIT is less then Finance Break-even point	Negative Financial leverage

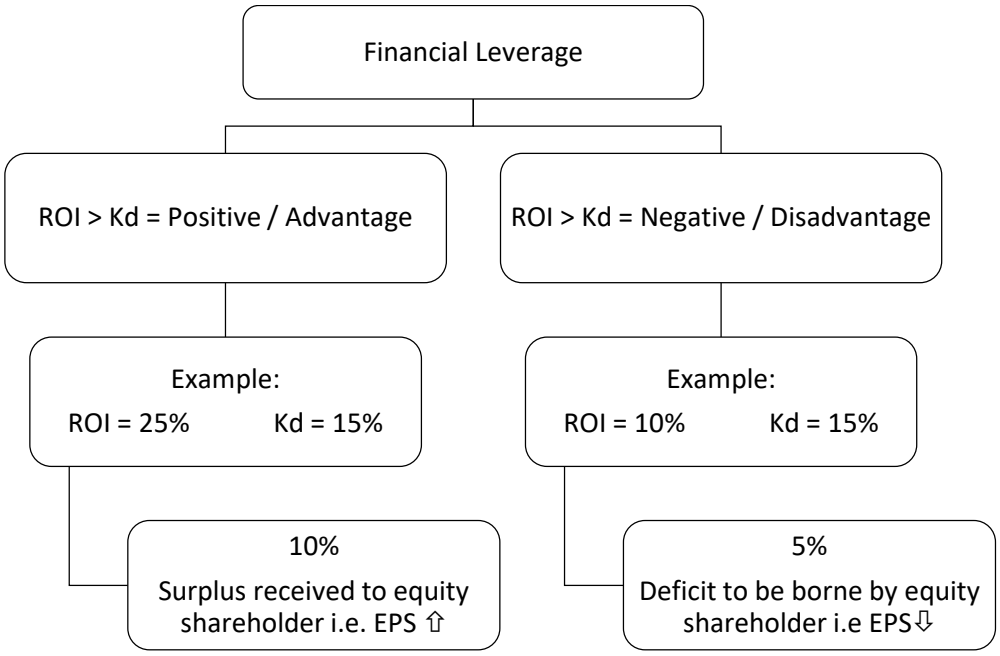
Financial Leverage as 'Trading on Equity'



Financial leverage indicates the use of funds with fixed cost like long term debts and preference share capital along with equity share capital which is known as trading on equity. The basic aim of financial leverage is to increase the earnings available to equity shareholders using fixed cost fund.

A firm is known to have a positive/favourable leverage when its earnings are more than the cost of debt. If earnings are equal to or less than cost of debt, it will be an negative/unfavourable leverage. When the quantity of fixed cost fund is relatively high in comparison to equity capital it is said that the firm is **"trading on equity".**

Financial Leverage as a 'Double edged Sword'



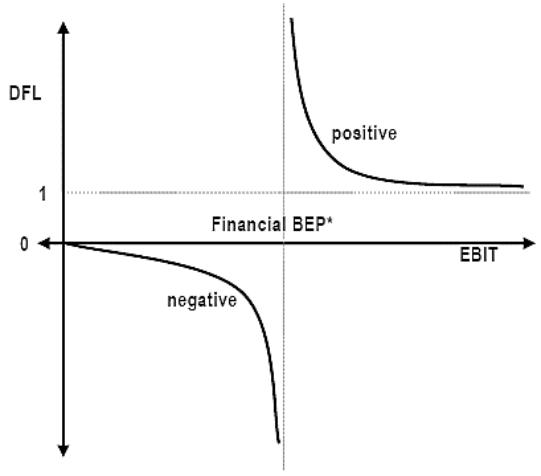
When the cost of 'fixed cost fund' is less than the return on investment, financial leverage will help to increase return on equity and EPS. The firm will also benefit from the saving of tax on interest on debts etc. However, when cost of debt will be more than the return it will affect return of equity and EPS unfavourably and as a result firm can be under financial distress. Therefore, financial leverage is also known as "**double edged sword".**

Effect on EPS and ROE:

When, ROI > Interest – Favourable – Advantage When, ROI < Interest – Unfavourable – Disadvantage

When, ROI = Interest – Neutral – Neither advantage nor disadvantage

Note: DFL can never be between zero and one. It can be zero or less or it can be one or more.



*Financial BEP is the level of EBIT at which earning per share is zero. If a company has not issued preference shares, then Financial BEP is simply equal to amount of Interest.

When EBIT is much higher than Financial BEP, DFL will be slightly more than one. With decrease in EBIT, DFL will increase. At Financial BEP, DFL will be infinite. When EBIT is slightly less than Financial BEP, DFL will be negative infinite. With further reduction in EBIT, DFL will move towards zero. At zero EBIT, DFL will also be zero.

COMBINED LEVERAGE

Combined leverage may be defined as the potential use of fixed costs, both operating and financial, **which magnifies the effect of sales volume change on the earning per share of the firm.**

Combined Leverage (CL) = Operating Leverage (OL) × Financial Leverage (FL)

$$= \frac{C}{EBIT} \times \frac{EBIT}{EBT}$$

$$= \frac{C}{EBT}$$

Degree of Combined Leverage (DCL)

Degree of combined leverage (DCL) is the ratio of percentage change in earning per share to the percentage change in sales. **It indicates the effect the changes in sales will have on EPS.**

$$DCL = DOL \times DFL$$

$$= \frac{\%\text{Changein EBIT}}{\%\text{Changein Sales}} \times \frac{\%\text{Changein EPS}}{\%\text{Changein EBIT}}$$

$$= \frac{\%\text{Changein EPS}}{\%\text{Changein Sales}}$$

Like operating leverage and financial leverage, combined leverage can also be positive and negative combined leverage.

Analysis of Combined Leverage

Combine leverage measures total risk. It depends on combination of operating and financial risk.

DOL	DFL	Comments
Low	Low	Lower total risk. Cannot take advantage of trading on equity.
High	High	Higher total risk. Very risky combination.
High	Low	Moderate total risk. Not a good combination. Lower EBIT due to higher DOL and lower advantage of trading on equity due to low DFL.

Low	High	Moderate total risk. **Best combination**. Higher financial risk is balanced by lower total business risk.

SUMMARY

DOL	DFL	DCL
Shows level of business risk.	Shows level of financial risk.	Shows level of total or combined risk.
It is dependent upon fixed cost.	It is dependent upon interest and preference dividend	It is dependent upon fixed cost, interest & preference dividend.
Measures % change in EBIT which results from a 1% change in Sales.	Measures % change in EPS which results from a 1% change in EBIT.	Measures % change in EPS which results from a 1% change in Sales.
For example, if DOL is 3 and there is 8% increase in output then EBIT will increase by 24% & if there is a 8% decrease in output then EBIT will decrease by 24%.	For example, if DFL is 2 and there is 5% increase in EBIT then EPS will increase by 10% and if there is a 5% decrease in EBIT then EPS will decrease by 10%.	For example, if DCL is 6 and there is a 8% increase in sales then EPS will increase by 48% and if there is a 8% decrease in sales then EPS will decrease by 48%.
There is a unique DOL for each level of output.	There is a unique DFL for each level of EBIT.	There is a unique DCL for each level of sales.
It is undefined at Operating B.E.P.	It is undefined at Financial B.E.P.	It is undefined at Financial B.E.P.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

A firm's details are as under:

Sales (@100 per unit): ₹ 24,00,000; Variable Cost: 50%; Fixed Cost: ₹ 10,00,000.

It has borrowed ₹ 10,00,000 @ 10% p.a. and its equity share capital is ₹ 10,00,000 (₹ 100 each). Tax Rate: 50%

Calculate:

a. Operating Leverage

b. Financial Leverage

c. Combined Leverage

d. Return on (Equity) Investment

e. If the sales increase by ₹ 6,00,000; what will be the new EBIT?

PROBLEM – 2

From the following information extracted from the books of accounts of Imax Ltd., CALCULATE percentage change in earnings per share, if sales increase by 10% and Fixed Operating cost is ₹1,57,500.

Particulars	**(₹)**
EBIT (Earnings before Interest and Tax)	31,50,000
Earnings before Tax (EBT)	14,00,000

PROBLEM – 3

From the following, **prepare** the Income Statements of Companies A, B and C.

Briefly comment on each company's performance:

Company	**A**	**B**	**C**
Financial leverage	3:1	4:1	2:1
Interest	₹ 200	₹ 300	1,000
Operating leverage	4: 1	5:1	3:1
Variable Cost as a Percentage to Sales	$66\frac{2}{3}\%$	75%	50%
Income tax Rate	45%	45%	45%

PROBLEM – 4

The Capital structure of RST Ltd. is as follows:

Equity Share of 10 each	8,00,000
10% Preference Share of 100 each	5,00,000
12% Debentures of 100 each	7,00,000
	20,00,000

Additional Information:

Profit after tax (Tax Rate 30%) is 2,80,000;

Operating Expenses (including Depreciation of 96,800) are 1.5 times of EBIT;

Equity Dividend paid is 15%;

Market price of Equity Share is ₹ 23

Calculate:

i. Operating and Financial Leverage

ii. Cover for preference and equity dividend

iii. The Earning Yield Ratio and Price Earnings Ratio

iv. The Net Fund Flow Note: All operating expenses (excluding depreciation) are variable

PROBLEM – 5

Calculate the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:

Installed Capacity	4,000 units
Actual Production and Sales	75% of the Capacity
Selling Price	₹ 30 Per Unit
Variable Cost	₹ 15 Per Unit

Fixed Cost:

Under Situation I	₹ 15,000
Under Situation-II	₹ 20,000

Capital Structure:

Financial Plan	A	B
Equity	10,000	15,000
Debt (Rate of Interest at 20%)	10,000	5,000
	20,000	**20,000**

PROBLEM – 6

Betatronics Ltd. has the following balance sheet and income statement information:

Balance Sheet

Liabilities	(₹)	Assets	(₹)
Equity capital (₹ 10 per share)	8,00,000	Net fixed assets	10,00,000
10% Debt	6,00,000	Current assets	9,00,000
Retained earnings	3,50,000		
Current liabilities	1,50,000		
	19,00,000		**19,00,000**

Income Statement for the year

Particulars	(₹)
Sales	3,40,000
Operating expenses (including ₹ 60,000 depreciation)	1,20,000
EBIT	2,20,000
Less: Interest	60,000
Earnings before tax	1,60,000
Less: Taxes	56,000
Net Earnings (EAT)	1,04,000

a. DETERMINE the degree of operating, financial and combined leverages at the current sales level, if all operating expenses, other than depreciation, are variable costs.

b. If total assets remain at the same level, but sales (i) increase by 20 percent and (ii) decrease by 20 percent, COMPUTE the earnings per share at the new sales level?

PROBLEM – 7

X corporation has estimated that for a new product, its break-even point is 2,000 units if the item is sold for ₹ 14 per unit; the cost accounting department has currently identified a variable cost of ₹ 9 per unit. Calculate the degree of operating leverage for sales volume of 2,500 units and 3,000 units.

What do you infer from the Operating Leverage at the sales volumes of 2500 units and 3000 units and their difference if any?

PROBLEM – 8

The capital structure of PS Ltd. at the end of the current Financial Year consisted as follows:

Particulars	(₹)
Equity shares capital (face value ₹ 100 each)	10,00,000
10% debentures (₹ 100 each)	10,00,000

During the year, sales decreased to 1,00,000 units as compared to 1,20,000 units in the previous year. However, the selling price stood at ₹ 12 per unit and variable cost at ₹ 8 per unit for both the years. The fixed expenses were at ₹ 2,00,000 p.a. and the income tax rate is 30%. You are required to CALCULATE the following:

i. The degree of financial leverage at 1,20,000 units and 1,00,000 units.

ii. The degree of operating leverage at 1,20,000 units and 1,00,000 units.

iii. The percentage change in EPS.

PROBLEM – 9

Calculate the operating leverage for each of the four firms. A, B, C and D from the following price and cost data:

Firms	**A (₹)**	**B (₹)**	**C (₹)**	**D (₹)**
Sale price per unit	20	32	50	70
Variable cost per unit	6	16	20	50
Fixed operating cost	80,000	40,000	2,00,000	Nil

What calculations can you draw with respect to levels of fixed cost and the degree of operating leverage result? Explain. Assume number of units sold is 5,000.

PROBLEM – 10

From the following information, prepare the Income Statements of Company A & B:

Particulars	**Company A**	**Company B**
Margin of safety	0.20	0.25

Interest	₹ 3000	₹ 2000
Profit volume ratio	25%	33.33%
Financial Leverage	4	3
Tax rate	45%	45%

PROBLEM – 11

A company had the following Balance Sheet at the end of the current Financial Year:

Liabilities	(₹) in crores	Assets	(₹) in crores
Equity Share Capital (50 lakhs shares of ₹ 10 each)	5	Fixed Assets (Net)	12.5
Reserves and Surplus	1	Current Assets	7.5
15% Debentures	10		
Current Liabilities	4		
	20		20

The additional information given is as under:

Fixed cost per annum (excluding interest)	₹ 4 crores
Variable operating cost ratio	65%
Total assets turnover ratio	2.5
Income Tax rate	30%

Required:

CALCULATE the following and comment:

I. Earnings Per Share

II. Operating Leverage

III. Financial Leverage

IV. Combined Leverage

PROBLEM – 12

The following details of a company for the year ended 31st March are given below:

Operating leverage	2:1
Combined leverage	2.5:1

Fixed Cost excluding interest	₹ 3.4 lakhs
Sales	₹ 50 lakhs
8% Debentures of ₹ 100 each	₹ 30.25 lakhs
Equity Share Capital of ₹ 10 each	34 lakhs
Income Tax Rate	30%

CALCULATE:

1. Financial Leverage
2. P/V ratio and Earning per Share (EPS)
3. If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets turnover?
4. At what level of sales, the Earning before Tax (EBT) of the company will be equal to zero?

PROBLEM – 13

The Sale revenue of TM excellence Ltd. @ ₹ 20 Per unit of output is ₹ 20 lakhs and Contribution is ₹ 10 lakhs. At the present level of output, the DOL of the company is 2.5. The company does not have any Preference Shares. The number of Equity Shares are 1 lakh. Applicable corporate Income Tax rate is 50% and the rate of interest on Debt Capital is 16% p.a. CALCULATE the EPS (at sales revenue of ₹ 20 lakhs) and amount of Debt Capital of the company if a 25% decline in Sales will wipe out EPS.

PROBLEM – 14

Find out of financial leverage from the following data:

Net Worth ₹ 25,00,000; Debt/Equity 3: 1; Interest rate 12%; Operating Profit ₹ 20,00,000

PROBLEM – 15

The following particulars relating to Navya Ltd. for the year ended 31 st March is given:

Output	1,00,000 units at normal capacity
Selling price per unit	₹40
Variable cost per unit	₹20
Fixed cost	₹10,00,000

The capital structure of the company as on 31st March is as follows:

Particulars	₹
Equity shares capital (1,00,000 shares of ₹10 each)	10,00,000
Reserves and surplus	5,00,000
7% debentures	10,00,000
Current liabilities	5,00,000
Total	**30,00,000**

Navya Ltd. has decided to undertake an expansion project to use the market potential, that will involve ₹10 lakhs. The company expects an increase in output by 50%. Fixed cost will be increased by ₹5,00,000 and variable cost per unit will be decreased by 10%. The additional output can be sold at the existing selling price without any adverse impact on the market.

The following alternative schemes for financing the proposed expansion programme are planned:

i. Entirely by equity shares of ₹ 10 each at par.

ii. ₹ 5 lakh by issue of equity shares of ₹ 10 each and the balance by issue of 6% debentures of ₹ 100 each at par.

iii. Entirely by 6% debentures of ₹ 100 each at par.

FIND out which of the above-mentioned alternatives would you recommend for Navya Ltd. with reference to the risk and return involved, assuming a corporate tax of 40%.

ADDITIONAL QUESTIONS FOR PRATICE

QFP 1 (Concept Similar to Problem – 1)

You are given the following information of 5 firms of the same industry:

Name of the Firm	Change in Revenue	Change in Operating Income	Change in Earning per share
M	28%	26%	32%
N	27%	34%	26%
P	25%	38%	23%
Q	23%	43%	27%
R	25%	40%	28%

You are required to CALCULATE for all firms:

i. Degree of operating leverage and

ii. Degree of combined leverage.

QFP 2 (Concept Similar to Problem – 3)

Following are the selected financial information of A Ltd. and B Ltd. for the current Financial Year:

	A Ltd.	B Ltd.
Variable Cost Ratio	60%	50%
Interest	₹ 20,000	₹ 1,00,000
Operating Leverage	5	2
Financial Leverage	3	2
Tax Rate	30%	30%

You are required to FIND out:

i. EBIT

ii. Sales

iii. Fixed Cost

iv. Identify the company which is better placed with reasons based on leverages.

QFP 3 (Concept Similar to Problem – 4)

Consider the following information for Mega Ltd.:

Production level	2,500 units

Contribution per unit	₹ 150
Operating leverage	6
Combined leverage	24
Tax rate	30%

Required:

COMPUTE its earnings after tax.

QFP 4 (Concept Similar to Problem – 4)

The following data have been extracted from the books of LM Ltd:

Sales - ₹ 100 lakhs

Interest Payable per annum - ₹ 10 lakhs

Operating leverage - 1.2

Combined leverage - 2.16

You are required to calculate:

i. The financial leverage,

ii. Fixed cost and

iii. P/V ratio

QFP 5 (Concept Similar to Problem – 12)

The following information is related to Yizi Company Ltd. for the current Financial Year:

Equity shares capital (of ₹ 10 each)	₹ 50 lakhs
12% Bonds of ₹ 1,000 each	₹ 37 lakhs
Sales	₹ 84 lakhs
Fixed cost (excluding interest)	₹ 6.96 lakhs
Financial leverage	1.49
Profit-volume Ratio	27.55%
Income Tax Applicable	40%

You are required to CALCULATE:

i. Operating Leverage;

ii. Combined leverage; and

iii. Earnings per share.

Show calculations up-to two decimal points.

CHAPTER 04: FINANCING DECISIONS – CAPITAL STRUCTURE

MEANING OF CAPITAL STRUCTURE

Capital structure is the combination of capitals from different sources of finance. The capital of a company consists of equity share holders' fund, preference share capital and long-term external debts. The source and quantum of capital is decided keeping in mind the following factors:

i. **Control**: Capital structure should be designed in such a manner that existing shareholders continue to hold majority stake.
ii. **Risk**: Capital structure should be designed in such a manner that financial risk of a company does not increase beyond tolerable limit.
iii. **Cost**: Overall cost of capital remains minimum.

Practically, it is difficult to achieve all of the above three goals together, hence, a finance manager has to make a balance among these three objectives.

However, the objective of a company is to maximise the value of the company and it is prime objective while deciding the optimal capital structure. Capital Structure decision refers to deciding the forms of financing (which sources to be tapped); their actual requirements (amount to be funded) and their relative proportions (mix) in total capitalization.

$$\text{Value of the firm} = \frac{\text{EBIT}}{\text{Overall cost of capital / Weighted average cost of capital}}$$

K_o = (Cost of debt × weight of debt) + (Cost of equity × weight of equity)

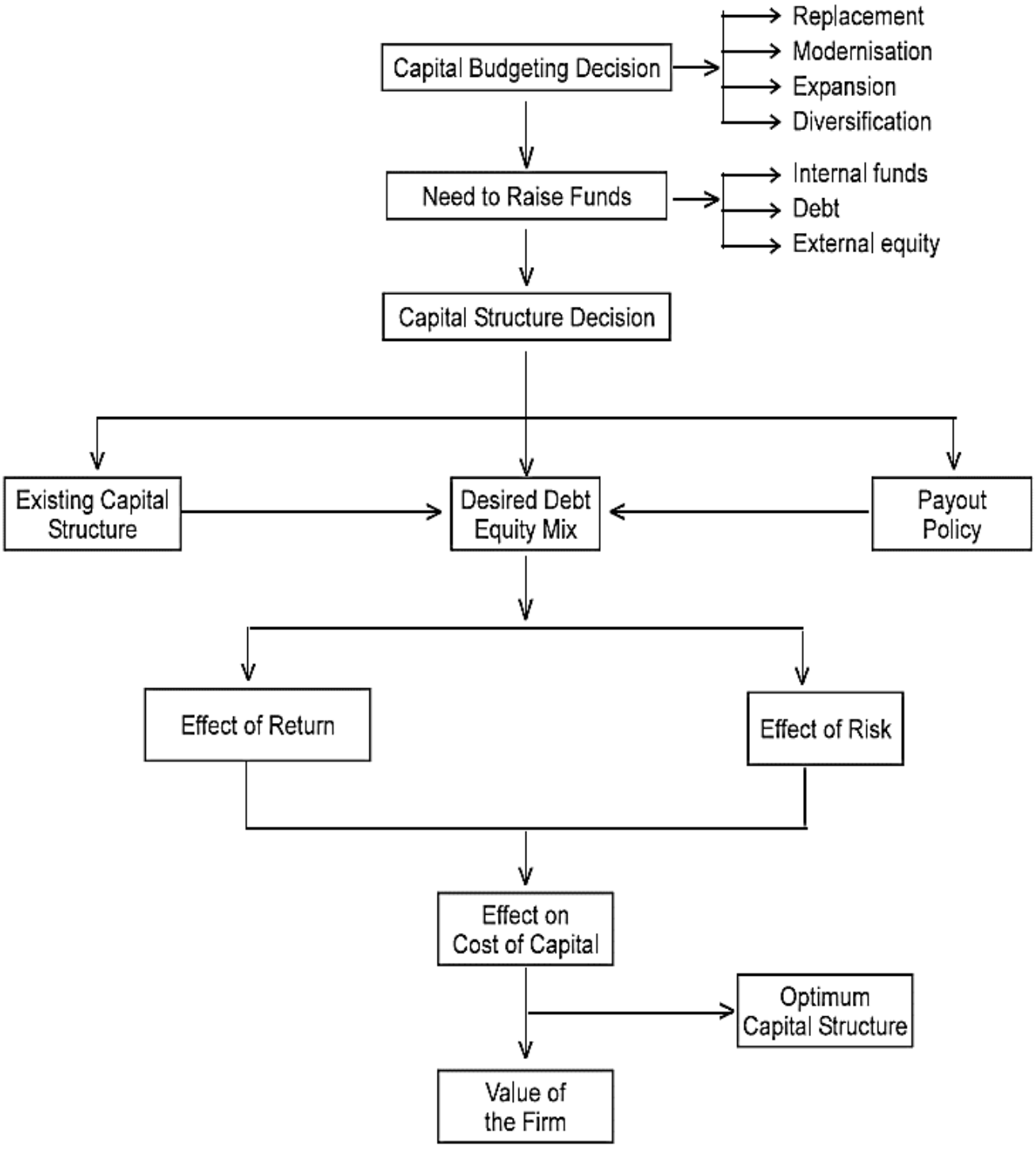
$K_o = [\{K_d \times D/ (D+S)\} + \{K_e \times S/(D+S)\}]$

Where:

- K_o is the weighted average cost of capital (WACC)
- K_d is the cost of debt
- D is the market value of debt
- S is the market value of equity
- K_e is the cost of equity

Capital structure decision will decide weight of debt and equity and ultimately overall cost of capital as well as Value of the firm. So capital structure is relevant in maximizing value of the firm and minimizing overall cost of capital.

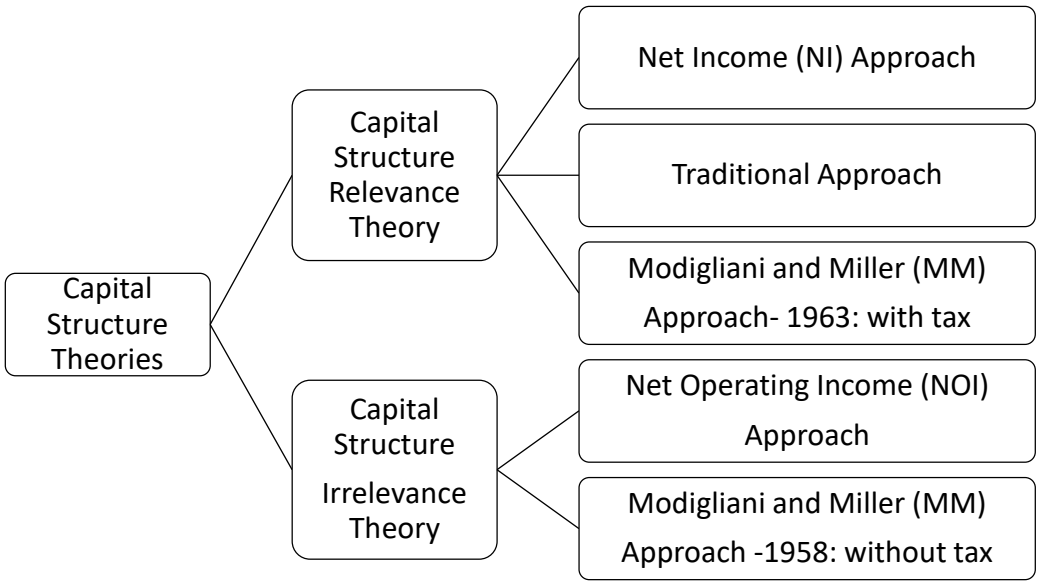
Whenever funds are to be raised to finance investments, capital structure decision is involved. A demand for raising funds generates a new capital structure since a decision has to be made as to the quantity and forms of financing. The process of financing or capital structure decision is depicted in the figure below.



Financing Decision Process

CAPITAL STRUCTURE THEORIES

The following approaches explain the relationship between cost of capital, capital structure and value of the firm:



a. Net Income (NI) approach

b. Traditional approach.

c. Net Operating Income (NOI) approach

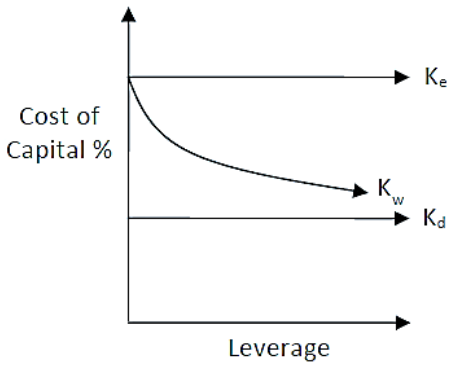
d. Modigliani-Miller (MM) approach

However, the following assumptions are made to understand this relationship:

- There are only two kinds of funds used by a firm i.e., debt and equity.
- The total assets of the firm are given. The degree of leverage can be changed by selling debt to purchase shares or selling shares to retire debt.
- Taxes are not considered.
- The dividend payout ratio is 100%.
- The firm's total financing remains constant.
- Business risk is constant over time.
- The firm has perpetual life.

Net Income (NI) Approach

According to this approach, capital structure decision is relevant to the value of the firm. An increase in financial leverage will lead to decline in the weighted average cost of capital (WACC), while the value of the firm as well as market price of ordinary share will increase. Conversely, a decrease in the leverage will cause an increase in the overall cost of capital and a consequent decline in the value as well as market price of equity shares.



Where, Ke is Cost of Equity, Kw is Weighted Average Cost of Capital and Kd is Cost of Debt.

From the above diagram, Ke and Kd are assumed not to change with leverage. As debt increases, it causes weighted average cost of capital (WACC) to decrease.

The value of the firm on the basis of Net Income (NI) Approach can be ascertained as follows:

Value of Firm (V) = S + D

Where,

V = Value of the firm

S = Market value of equity

D = Market value of debt

Market value of equity (S) = $\frac{NI}{K_e}$

Where,

N_I = Earnings available for equity shareholders

K_e = Equity Capitalization rate

Under NI approach, the value of the firm will be maximum at a point where weighted average cost of capital (WACC) is minimum. Thus, the theory suggests total or maximum possible debt financing for minimizing the cost of capital. The overall cost of capital under this approach is:

Thus, according to this approach, the firm can increase its total value by decreasing its overall cost of capital through increasing the degree of leverage. The significant conclusion of this approach is that it pleads for the firm to employ as much debt as possible to maximize its value.

Traditional Approach

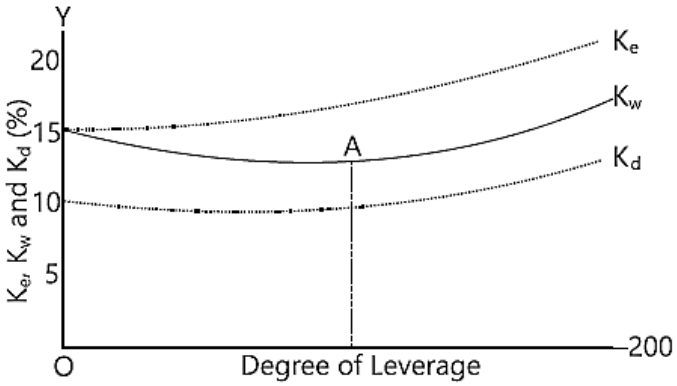
This approach favours that as a result of financial leverage up to some point, cost of capital comes down and value of firm increases. However, beyond that point, reverse trends emerges. The principle implication of this approach is that the cost of capital is dependent on the capital structure and there is an optimal capital structure which minimizes cost of capital.

Under this approach:

i. The rate of interest on debt remains constant for a certain period and thereafter with an increase in leverage, it increases.

ii. The expected rate by equity shareholders remains constant or increase gradually. After that, the equity shareholders starts perceiving a financial risk and then from the optimal point, the expected rate increases speedily.

iii. As a result of the activity of rate of interest and expected rate of return, the WACC first decreases and then increases. The lowest point on the curve is optimal capital structure.



Optimum capital structure occurs at the point where value of the firm is highest and the cost of capital is the lowest.

According to net operating income approach, capital structure decisions are totally irrelevant. Modigliani-Miller supports the net operating income approach but provides behavioral justification. The traditional approach strikes a balance between these extremes.

Main Highlight of Traditional Approach

The firm should strive to reach the optimal capital structure and its total valuation through a judicious use of both the debt and equity in capital structure. At the optimal capital structure, the overall cost of capital will be minimum and the value of the firm will be maximum.

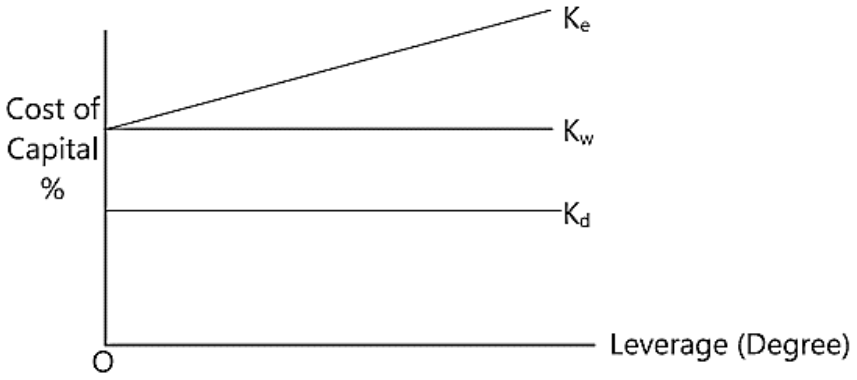
Net Operating Income (NOI) Approach

NOI means Earnings before interest and tax (EBIT). According to this approach, capital structure decisions of the firm are irrelevant.

Any change in the leverage will not lead to any change in the total value of the firm and the market price of shares, as the overall cost of capital is independent of the degree of leverage. As a result, the division between debt and equity is irrelevant.

As per this approach, an increase in the use of debt which is apparently cheaper is offset by an increase in the equity capitalization rate. This happens because equity investors seek higher compensation as

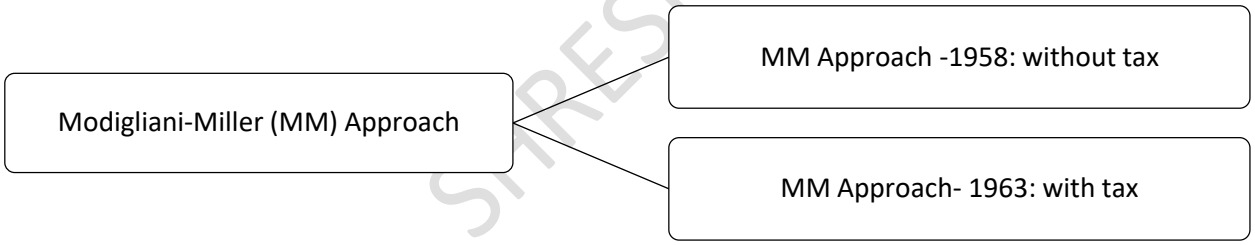
they are opposed to greater risk due to the existence of fixed return securities in the capital structure.



The above diagram shows that Kw (Weighted Average Cost of Capital) and Kd (debt capitalization rate) are constant and Ke (Cost of equity) increases with leverage.

Modigliani-Miller (MM) Approach

The NOI approach is definitional or conceptual and lacks behavioural significance. It does not provide operational justification for irrelevance of capital structure. However, Modigliani-Miller (MM) approach provides behavioural justification for constant overall cost of capital and therefore, total value of the firm.



MM Approach – 1958: without tax:

This approach describes, in a perfect capital market where there is no transaction cost and no taxes, the value and cost of capital of a company remain unchanged irrespective of change in the capital structure. This approach is based on further following additional assumptions:

- Capital markets are perfect. All information is freely available and there are no transaction costs.
- All investors are rational.
- Firms can be grouped into 'Equivalent risk classes' on the basis of their business risk.
- Non-existence of corporate taxes.

Based on the above assumptions, Modigliani-Miller approach derived the following three propositions:

i. Total market value of a firm is equal to its expected net operating income divided by the discount rate appropriate to its risk class decided by the market.

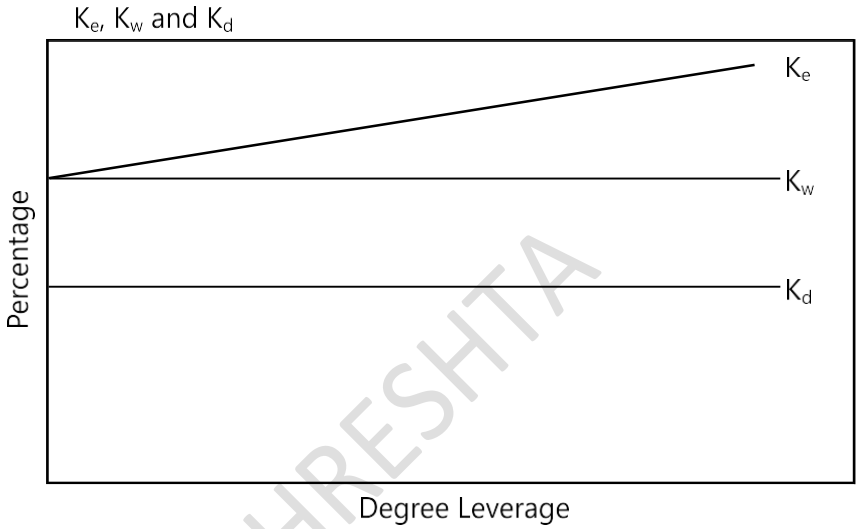
Value of levered firm (Vg) = Value of unlevered firm (Vu)

$$\text{Value of a firm } = \frac{\text{Net Operating Income (NOI)}}{K_0}$$

ii. A firm having debt in its capital structure has higher cost of equity than an unlevered firm. The cost of equity will include risk premium for the financial risk. The cost of equity in a levered firm is determined as under:

$$K_e = K_0 + (K_0 - K_d)\frac{Debt}{Equity}$$

iii. The structure of the capital (financial leverage) does not affect the overall cost of capital. The cost of capital is only affected by the business risk.



It is evident from the above diagram that the average cost of the capital (K_w) is constant and is not affected by leverage.

The operational justification of Modigliani-Miller hypothesis is explained through the functioning of the arbitrage process and substitution of corporate leverage by personal leverage. Arbitrage refers to buying asset or security at lower price in one market and selling it at a higher price in another market. As a result, equilibrium is attained in different markets. This is illustrated by taking two identical firms of which one has debt in the capital structure while the other does not. Investors of the firm whose value is higher will sell their shares and instead buy the shares of the firm whose value is lower. They will be able to earn the same return at lower outlay with the same perceived risk or lower risk. They would, therefore, be better off.

The value of the levered firm can neither be greater nor lower than that of an unlevered firm according to this approach. The two must be equal. There is neither advantage nor disadvantage in using debt in the firm's capital structure.

This approach considers capital structure of a firm as a whole pie divided into equity, debt and other securities. No matter how the capital structure of a firm is divided (among debt, equity etc.), there is a conservation of investment value. Since the total investment value of a corporation depends upon its underlying profitability and risk, it is invariant with respect to relative changes in the firm's financial capitalization.

According to MM hypothesis, since the sum of the parts must be equal to the whole, therefore, regardless of the financing mix, the total value of the firm stays the same.

The shortcoming of this approach is that the suggested arbitrage process will fail to work because of imperfections in capital market, existence of transaction cost and presence of corporate income taxes.

MM Approach-1963: with tax

In 1963, MM model was amended by incorporating tax, they recognized that the value of the firm will increase, or cost of capital will decrease where corporate taxes exist. As a result, there will be some difference in the earnings of equity and debt-holders in levered and unlevered firm and value of levered firm will be greater than the value of unlevered firm by an amount equal to amount of debt multiplied by corporate tax rate.

MM has developed the following formulae for computation of cost of capital (Ko), cost of equity (Ke) for the levered firm.

i. Value of a levered company = Value of an unlevered company + Tax benefit

Or, $V_g = V_u + TB$

ii. Cost of equity in a levered company (K_{eg}) = $K_{eu} + (K_{eu} - K_d) \frac{Debt}{Debt+Equity}$

Where,

K_{eg} = Cost of equity in a levered company

K_{eu} = Cost of equity in an unlevered company

K_d = Cost of debt

T_B = Present Value of Tax Shields

iii. WACC in a levered company (K_{og}) = K_{eu} (1 - tL)

Where,

K_{og} = WACC of a levered company

K_{eu} = Cost of equity in an unlevered company t = Tax rate

L = $\frac{Debt}{Debt+Equity}$

The Trade-off Theory

The trade-off theory of capital structure refers to the idea that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits. Trade-off theory of capital structure basically entails offsetting the costs of debt against the benefits of debt.

Trade-off theory of capital structure primarily deals with two concepts - cost of financial distress and agency costs. An important purpose of the trade-off theory of capital structure is to explain the fact that corporations usually are financed partly with debt and partly with equity.

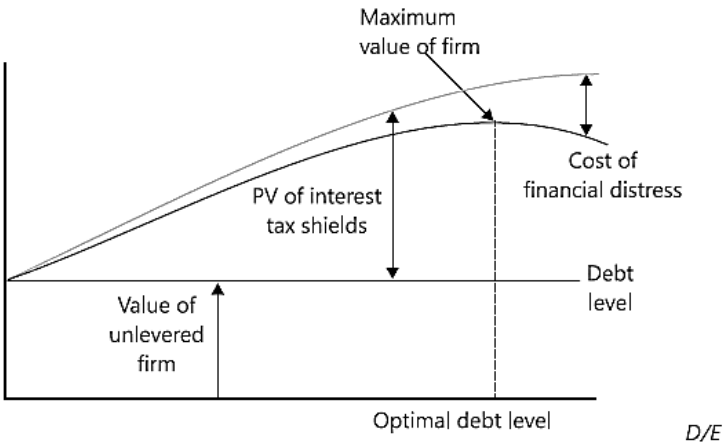
It states that there is an **advantage** to financing with debt, the **tax benefits** of debt and there is a **cost** of financing with debt, the costs of **financial distress** including bankruptcy costs of debt and non-bankruptcy costs (e.g., staff leaving, suppliers demanding disadvantageous payment terms, bondholder/ stockholder infighting, etc.).

The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing. Modigliani and Miller in 1963 introduced the tax benefit of debt. Later work led to an optimal capital structure which is given by the trade-off theory. According to Modigliani and Miller, the attractiveness of debt decreases with the personal tax on the interest income. A firm experiences financial distress when the firm is unable to cope with the debt holders' obligations. If the firm continues to fail in making payments to the debt holders, the firm can even be insolvent.

The first element of Trade-off theory of capital structure, considered as the cost of debt is usually the financial distress costs or bankruptcy costs of debt. The **direct cost of financial distress** refers to the cost of insolvency of a company. Once the proceedings of insolvency start, the assets of the firm may be needed to be sold at **distress price**, which is generally much lower than the current values of the assets. A huge amount of administrative and **legal costs** is also associated with the insolvency. Even if the company is not insolvent, the financial distress of the company may include a number of **indirect costs** like - cost of employees, cost of customers, cost of suppliers, cost of investors, cost of managers and cost of shareholders.

The firms may often experience a dispute of interests among the management of the firm, debt holders and shareholders. These disputes generally give birth to agency problems that in turn give rise to the agency costs. The agency costs may affect the capital structure of a firm. There may be two types of conflicts - shareholders-managers conflict and shareholders-debt holder's conflict. The introduction of a dynamic Trade-off theory of capital structure makes the predictions of this theory a lot more accurate and reflective of that in practice.

Value of Firm



As the Debt-equity ratio (i.e., leverage) increases, there is a trade-off between the interest tax shield and bankruptcy, causing an optimum capital structure.

Pecking Order Theory

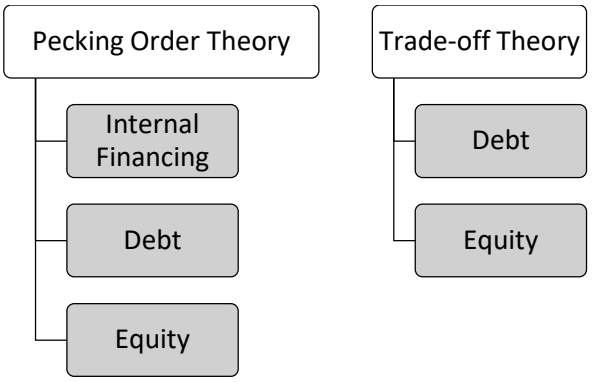
This theory is based on Asymmetric information, which refers to a situation in which different parties have different information. In a firm, managers will have better information than investors. This theory states that firms prefer to issue debt when they are positive about future earnings. Equity is issued when they are doubtful and internal finance is insufficient.

The pecking order theory argues that the capital structure decision is affected by manager's choice of a source of capital that gives higher priority to sources that reveal the least amount of information.

Myers has given the name 'PECKING ORDER' theory as here is no well-defined debt-equity target and there are two kind of equity internal and external. Now Debt is cheaper than both internal and external equity because of interest. Further internal equity is less than external equity particularly because of no transaction/issue cost, no tax etc.

Pecking order theory suggests that managers may use various sources for raising of fund in the following order:

1. Managers first choice is to use **internal finance.**
2. In absence of internal finance, they can use secured **debt**, unsecured debt, hybrid debt etc.
3. Managers may issue new **equity** shares as a last option.



Financial Hierarchy

FACTORS DETERMINING CAPITAL STRUCTURE

Choice of source of funds

A firm has the choice to raise funds for financing its investment proposals from different sources in different proportions. It can:

a. Exclusively use debt (in case of existing company), or

b. Exclusively use equity capital, or

c. Exclusively use preference share capital (in case of existing company), or

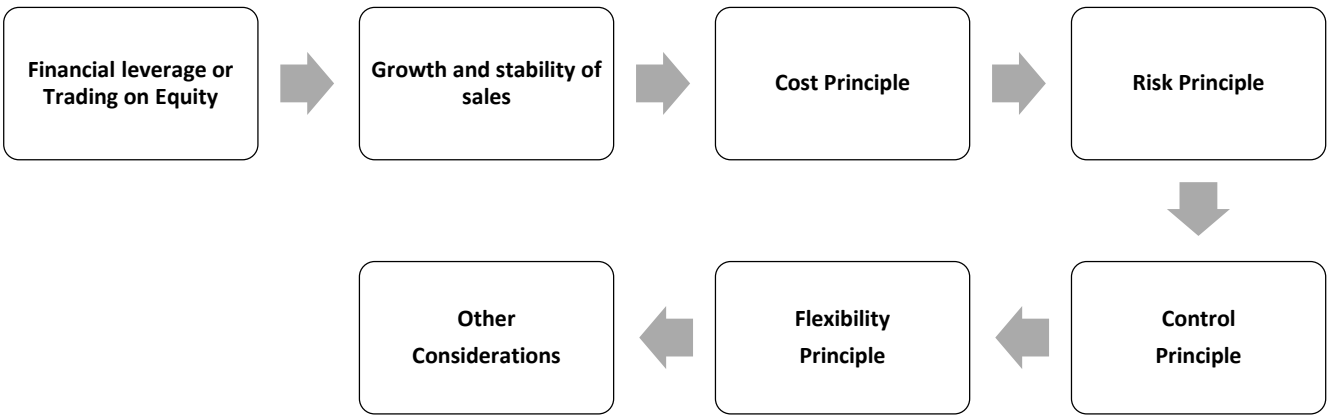
d. Use a combination of debt and equity in different proportions, or

e. Use a combination of debt, equity and preference capital in different proportions, or

f. Use a combination of debt and preference capital in different proportion (in case of existing company).

The choice of the combination of these sources is called capital structure mix. But the question is which of the pattern should the firm choose?

Factors affecting capital structure



While choosing a suitable financing pattern, certain fundamental principles should be kept in mind, to design capital structure, which are discussed below:

1. **Financial leverage or Trading on Equity**: The use of long-term fixed interest bearing debt and preference share capital along with equity share capital is called financial leverage or trading on equity. The use of long-term debt increases the earnings per share if the firm yields a return higher than the cost of debt. The earnings per share also increase with the use of preference share capital but due to the fact that interest is allowed to be deducted while computing tax, the leverage impact of debt is much more. However, leverage can operate adversely also if the rate of interest on long- term loan is more than the expected rate of earnings of the firm. Therefore, it needs caution to plan the capital structure of a firm.
2. **Growth and stability of sales:** The capital structure of a firm is highly influenced by the growth and stability of its sales. If the sales of a firm are expected to remain fairly stable, it can raise a higher level of debt. Stability of sales ensures that the firm will not face any difficulty in meeting its fixed commitments of interest repayments of debt. Similarly, the rate of the growth in sales also affects the capital structure decision. Usually, greater the rate of growth of sales, greater can be the use of debt in the financing of firm. On the other hand, if the sales of a firm are highly fluctuating or declining, it should not employ, as far as possible, debt financing in its capital structure.
3. **Cost Principle:** According to this principle, an ideal pattern or capital structure is one that minimizes cost of capital structure and maximizes earnings per share (EPS). For e.g. Debt capital is cheaper than equity capital from the point of its cost and interest being deductible for income tax purpose, whereas no such deduction is allowed for dividends.
4. **Risk Principle:** According to this principle, reliance is placed more on common equity for financing capital requirements than excessive use of debt. Use of more and more debt means higher commitment in form of interest payout. This would lead to erosion of shareholders' value in unfavorable business situation. With increase in amount of Debt, financial risk increase and vice versa.
5. **Control Principle**: While designing a capital structure, the finance manager may also keep in mind that existing management control and ownership remains undisturbed. Issue of new equity will dilute existing control pattern and it also involves higher cost. Issue of more debt causes no dilution in control but causes a higher degree of financial risk.
6. **Flexibility Principle**: By flexibility, it means that the management chooses such a combination of sources of financing which it finds easier to adjust according to changes in need of funds in future too. While debt could be interchanged (If the company is loaded with a debt of 18% and funds are available at 15%, it can return old debt with new debt, at a lesser interest rate), but the same option may not be available in case of equity investment.

7. **Other Considerations**: Besides above principles, other factors such as nature of industry, timing of issue and competition in the industry should also be considered. Industries facing severe competition also resort to more equity than debt.

   Thus, a finance manager in designing a suitable pattern of capital structure must bring about satisfactory compromise between the above principles. The compromise can be reached by assigning weights to these principles in terms of various characteristics of the company.

OPTIMAL CAPITAL STRUCTURE

Objective of financial management is to **maximize wealth**. Therefore, one should choose a capital structure which maximizes wealth. For this purpose, following analysis should be done:

1. EBIT-EPS-MPS analysis: Chose a capital structure which maximizes market price per share. For that, start with same EBIT for all capital structures and calculate EPS. Thereafter, either multiply EPS by price earnings ratio or divide it by cost of equity to arrive at MPS.
2. Indifference Point analysis: In above analysis, we have considered value at a given EBIT only. What will happen if EBIT changes? Will it change your decision also? To answer this question, you can do indifference point analysis.
3. Financial Break-Even Point (BEP) analysis: With change in capital structure, financial risk also changes. Though this risk has already been considered in PE ratio or in cost of equity in point one above, but one may calculate and consider it separately also by calculating Financial BEP.

EBIT-EPS-MPS ANALYSIS

Relationship between EBIT-EPS-MPS

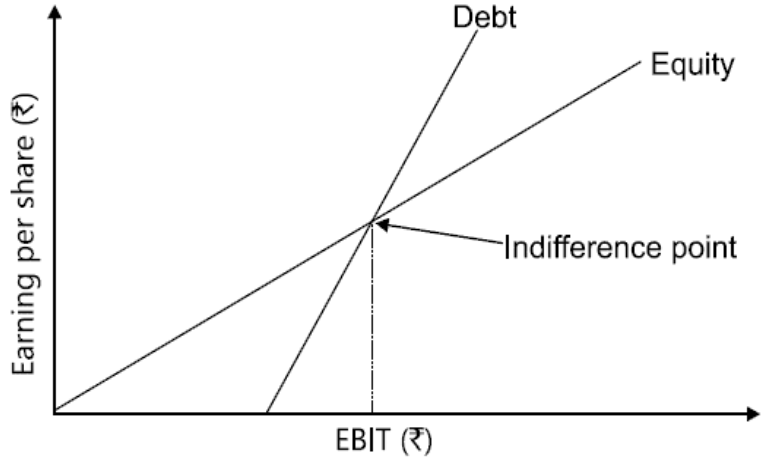
The basic objective of financial management is to design an appropriate capital structure which can provide the highest wealth, i.e., highest MPS, which in turn depends on EPS.

Given a level of EBIT, EPS will be different under different financing mix depending upon the extent of debt financing. The effect of leverage on the EPS emerges because of the existence of fixed financial charge i.e., interest on debt, financial fixed dividend on preference share capital. The effect of fixed financial charge on the EPS depends upon the relationship between the rate of return on assets and the rate of fixed charge. If the rate of return on assets is higher than the cost of financing, then the increasing use of fixed charge financing (i.e., debt and preference share capital) will result in increase in the EPS. This situation is also known as favourable financial leverage or Trading on Equity. On the other hand, if the rate of return on assets is less than the cost of financing, then the effect may be negative and, therefore, the increasing use of debt and preference share capital may reduce the EPS of the firm.

The fixed financial charge financing may further be analysed with reference to the choice between the debt financing and the issue of preference shares. Theoretically, the choice is tilted in favour of debt financing for two reasons: (i) the explicit cost of debt financing i.e., the rate of interest payable on debt instruments or loans is generally lower than the rate of fixed dividend payable on preference shares, and (ii) interest on debt financing is tax-deductible and therefore the real cost (after-tax) is lower than the cost of preference share capital.

Thus, the analysis of the different types of capital structure and the effect of leverage on the expected EPS and eventually MPS will provide a useful guide to selection of a particular level of debt financing. The EBIT-EPS analysis is of significant importance and if undertaken properly, can be an effective tool in the hands of a financial manager to get an insight into the planning and designing of the capital structure of the firm.

Financial Break-Even Point (BEP) and Indifference Point Analysis



Financial break-even point is the minimum level of EBIT needed to satisfy all the fixed financial charges i.e., interests and preference dividends. It denotes the level of EBIT for which the company's **EPS equals zero**.

Financial breakeven point (BEP) can be calculated as:

Financial Break-even point = Interest + Preference dividend/ (1 - tax rate)

If the EBIT is less than the financial break-even point, then the EPS will be negative but if the expected level of EBIT is more than the break-even point, then more fixed costs financing instruments can be taken in the capital structure, otherwise, equity would be preferred.

EBIT-EPS break-even analysis is used for determining the appropriate amount of debt a company might carry.

Another method of considering the impact of various financing alternatives on earnings per share is to prepare the EBIT chart or the range of Earnings chart. This chart shows the likely EPS at various

probable EBIT levels. Thus, under one particular alternative, EPS may be ₹2 at a given EBIT level. However, the EPS may go down if another alternative of financing is chosen even though the EBIT remains at the same level. At a given EBIT, earnings per share under various alternatives of financing may be plotted. A straight line representing the EPS at various levels of EBIT under the alternative may be drawn. Wherever this line intersects, it is known as **break-even point**. This point is a useful guide in formulating the capital structure. This is known as EPS equivalency point or indifference point since this shows that, between the two given alternatives of financing (i.e., regardless of leverage in the financial plans), EPS would be the same at the given level of EBIT.

The equivalency or indifference point can also be calculated algebraically in the following manner:

$$\frac{(EBIT - I_1)(1-t)}{E_1} = \frac{(EBIT - I_2)(1-t)}{E_2}$$

Where,

EBIT = Indifference point

E_1 = Number of equity shares in Alternative 1

E_2 = Number of equity shares in Alternative 2

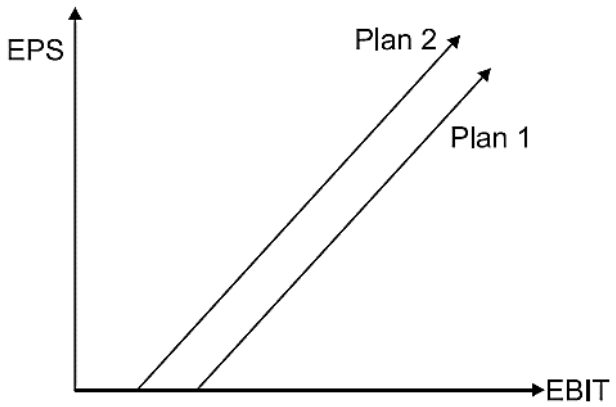
I_1 = Interest charges in Alternative 1

I_2 = Interest charges in Alternative 2

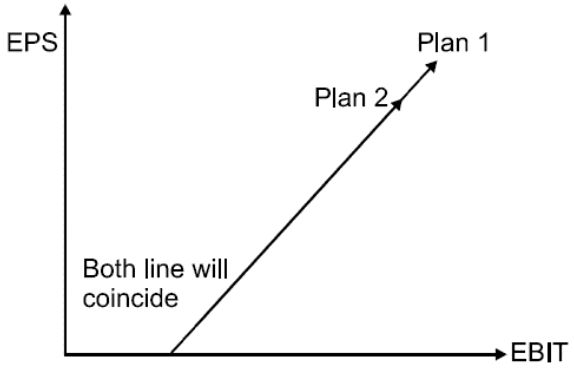
t = Tax-rate

Just keep in mind that if amount of equity share capital is same under two financial plans, then one of the following two situations will arise:

1. **No indifference point**: If after tax cost of the source other than equity shares is **not same** under both plans then there will be no indifference point between the two. Because one plan will be better than other at all levels of EBIT. For example, if two plans have equity shares of ₹1,00,000 each. Plan 1 has 10% debentures of ₹50,000 while plan 2 has 8% Term loan of ₹50,000. Then plan 2 will be better than plan 1 at any level of EBIT and there will be no indifference point.



2. **Many indifference points**: If after tax cost of the source other than equity shares is **same** under both plans then each EBIT will be an indifference point.



Debt-Equity Indifference Point

OVER-CAPITALIZATION AND UNDER-CAPIT ALISATION

Over-Capitalization

It is a situation where a firm has more capital than it needs or in other words assets are worth less than its issued share capital, and earnings are insufficient to pay dividend and interest. This situation mainly arises when the existing capital is not effectively utilized on account of fall in earning capacity of the company while company has raised funds more than its requirements. The chief sign of over-capitalization is the fall in payment of dividend and interest leading to fall in value of the shares of the company.

Causes of Over-Capitalization

Over-capitalization arises due to following reasons:

i. Raising more money through issue of shares or debentures than company can employ profitably.

ii. Borrowing huge amount at higher rate than rate at which company can earn.

iii. Excessive payment for the acquisition of fictitious assets such as goodwill etc.

iv. Improper provision for depreciation, replacement of assets and distribution of dividends at a higher rate.

v. Wrong estimation of earnings and capitalization.

Consequences of Over-Capitalization

Over-capitalization results in the following consequences:

i. Considerable reduction in the rate of dividend and interest payments.

ii. Reduction in the market price of shares.

iii. Resorting to “window dressing”.

iv. Some companies may opt for reorganization. However, sometimes the matter gets worse and the company may go into liquidation.

Remedies for Over-Capitalization: Following steps may be adopted to avoid the negative consequences of over-capitalization:

i. Company should go for thorough reorganization.

ii. Buyback of shares.

iii. Reduction in claims of debenture-holders and creditors.

iv. Value of shares may also be reduced. This will result in sufficient funds for the company to carry out replacement of assets.

Under-Capitalization

It is just reverse of over-capitalization. It is a state, when its actual capitalization is lower than its proper capitalization as warranted by its earning capacity. This situation normally happens with companies which have insufficient capital but large secret reserves in the form of considerable appreciation in the values of the fixed assets not brought into the books.

Consequences of Under-Capitalization

Under-capitalization results in the following consequences:

i. The dividend rate will be higher in comparison to similarly situated companies.

ii. Market value of shares will be higher than value of shares of other similar companies because their earning rate being considerably more than the prevailing rate on such securities.

iii. Real value of shares will be higher than their book value.

Effects of Under-Capitalization

Under-capitalization has the following effects:

i. It encourages acute competition. High profitability encourages new entrepreneurs to come into same type of business.

ii. High rate of dividend encourages the workers' union to demand high wages.

iii. Normally common people (consumers) start feeling that they are being exploited.

iv. Management may resort to manipulation of share values.

v. Invite more government control and regulation on the company and higher taxation also.

Remedies for Under-Capitalization

Following steps may be adopted to avoid the negative consequences of under-capitalization:

i. The shares of the company should be split up. This will reduce dividend per share, though EPS shall remain unchanged.

ii. Issue of Bonus Shares is the most appropriate measure as this will reduce both dividend per share and the average rate of earning.

iii. By revising upward, the par value of shares in exchange of the existing shares held by them.

Over-Capitalization vis-à-vis Under-Capitalization

From the above discussion it can be said that both over-capitalization and under- capitalization are not good. However, over-capitalization is more dangerous to the company, shareholders and the society than under-capitalization. The situation of under-capitalization can be handled more easily than the situation of over-capitalization. Moreover, under-capitalization is not an economic problem but a problem of adjusting capital structure. Thus, under-capitalization should be considered less dangerous but both situations are bad and every company should strive to have a proper capitalization.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

Calculate the level of earnings before interest and tax (EBIT) at which the EPS indifference point between the following financing alternatives will occur.

i. Equity shares capital of ₹ 6,00,000 & 12% debentures of ₹ 4,00,000 Or

ii. Equity share capital of ₹ 4,00,000,14% preference share capital of ₹ 2,00,000 & 12% debentures of ₹ 4,00,000. Assume the tax rate is 35% & par value of the equity share is ₹ 10 in each case.

PROBLEM – 2

Aaina Ltd. is considering a new project which requires a capital investment of ₹9 crores. Interest on term loan is 12% and Corporate Tax rate is 30%. CALCULATE the point of indifference for the project considering the Debt Equity ratio insisted by the financing agencies being 2 : 1.

PROBLEM – 3

Xylo Ltd. Is considering two alternative financing plans as follows:

Particulars	**Plan - A (₹)**	**Plan B (₹)**
Equity shares of ₹ 10 each	8,00,000	8,00,000
Preference Shares of ₹ 100 each	-	4,00,000
12% Debentures	4,00,000	-
	12,00,000	**12,00,000**

The indifference point between the plans is ₹ 4,80,000. The corporate tax rate is 30%.

CALCULATE the rate of dividend on preference shares.

PROBLEM – 4

Yoyo Limited presently has ₹ 36,00,000 in debt outstanding bearing an interest rate of 10 per cent. It wishes to finance a ₹ 40,00,000 expansion programme and is considering three alternatives:

1. Additional debt at 12 per cent interest,

2. Preference shares with an 11% dividend

3. The issue of equity shares at ₹ 16 per share.

The company has 8,00,000 shares outstanding and is in the 40 per cent tax bracket.

a. If earnings before interest and taxes are presently ₹ 15,00,000, what would be earnings per share for the three alternatives, assuming no immediate increase in profitability?

b. Develop an indifference chart for these alternatives by giving a rough sketch of the Graph. What is the indifference point between various plans mathematically?

c. Which alternative do you prefer? How much would EBIT need to increase before the next alternative would be best?

PROBLEM – 5

Gamma Ltd. is considering three financing plans. The key information is as follows:

a. Total investment to be raised ₹ 2,00,000

b. Plans of Financing Proportion:

Plans	Equity	Debt	Preference Shares
A	100%	-	-
B	50%	50%	-
C	50%	-	50%

c. Cost of debt 8%; Cost of preference shares 8%

d. Tax rate 50%

e. Equity shares of the face value of ₹ 10 each will be issued at a premium of 10 per share.

f. Expected EBIT is 80,000.

You are required to determine for each plan:

i. Earnings Per Share (EPS)

ii. The Financial Break-Even Point.

iii. Indicate if any of the plans dominate and compute the EBIT range among the plans for indifference.

PROBLEM – 6

Delta Ltd. currently has an equity share capital of ₹ 10,00,000 consisting of 1,00,000 Equity shares of ₹ 10 each. The company is going through a major expansion plan requiring to raise funds to the tune of ₹ 6,00,000. To finance the expansion the management has the following plans:

Plan I: Issue 60,000 Equity shares of ₹ 10 each

Plan II: Issue 40,000 Equity shares of 10 each and the balance through long-term borrowing at 12% interest p.a.

Plan III: Issue 30,000 Equity shares of ₹ 10 each and 3,000 ₹ 100, 9% Debentures.

Plan IV: Issue 30,000 Equity shares of ₹ 10 each and the balance through 6% preference shares.

The EBIT of the company is expected to be 4,00,000 p.a. Assume a corporate tax rate of 40%.

Required:

i. Calculate EPS in each of the above plans.

ii. Ascertain the degree of financial leverage in each plan.

PROBLEM – 7

X Ltd. a widely held company is considering a major expansion of its production facilities and the following alternatives are available:

	Alternatives (₹ in lakhs)		
	A	**B**	**C**
Share Capital	50	20	10
14% Debentures	-	20	15
Loan from a Financial Institution @ 18% p.a. rate of Interest.	-	10	25

The expected rate of return before tax is 25%. The rate of dividend of the company is not less than 20%. The company at present has low debt. Corporate taxation 50%. Which of the alternatives you would choose on the basis of ROE?

PROBLEM – 8

The following data are presented in respect of Quality Automation Ltd.:

	(₹)
Profit before interest and tax	52,00,000
Less: Interest on debentures @ 12%	12,00,000
Profit before tax	40,00,000
Less: Income tax @ 50%	20,00,000
Profit After tax	20,00,000
No. of equity shares (of ₹10 each)	8,00,000
EPS	2.5
PE Ratio	10
Market price per share	25

The company is planning to start a new project requiring a total capital outlay of ₹40,00,000. You are informed that a debt equity ratio (D/D+E) higher than 35%, pushes the Ke up to 12.5%, means reducing the PE ratio to 8 and rises the interest rate on additional amount borrowed to 14%.

FIND OUT the probable price of share if:

i. the additional funds are raised as a loan.

ii. the amount is raised by issuing equity shares. (Note: Retained earnings of the company is ₹1.2 crore)

PROBLEM – 9

Shahji Steel Limited requires ₹25,00,000 for a new plant. This plant is expected to yield earnings before interest and taxes of ₹5,00,000. While deciding about the financial plan, the company considers the objective of maximizing earnings per share. It has three alternatives to finance the project - by raising debt of ₹2,50,000 or ₹10,00,000 or ₹15,00,000 and the balance, in each case, by issuing equity shares. The company's share is currently selling at ₹150 but is expected to decline to ₹125 in case the funds are borrowed in excess of ₹10,00,000. The funds can be borrowed at the rate of 10 percent upto ₹2,50,000, at 15 percent over ₹2,50,000 and upto ₹10,00,000 and at 20 percent over ₹10,00,000. The tax rate applicable to the company is 50 percent. ANALYSE which form of financing should the company choose?

PROBLEM – 10

Rupa Ltd.'s EBIT is ₹5,00,000. The company has 10%, ₹20 lakh debentures. The equity capitalization rate (Ke) is 16%.

You are required to CALCULATE:

i. Market value of equity and value of firm

ii. Overall cost of capital

PROBLEM – 11

A Ltd. is financed entirely with 1,00,000 shares of common stock selling at 50 per share. The firm's EBIT is expected to be ₹ 4,00,000.

a. Using the NI approach, compute the total value of firm, cost of equity and overall cost of capital.

b. The company has decided to retire (replace) 1 million of common stock (equity), replacing it with 6% Long- term debt. Compute the total value of firm and the overall cost of capital after refinancing.

PROBLEM – 12

A Ltd. is expecting earnings before interest & tax of ₹ 4,00,000 and Ko is 10%. **You are required to find out** the value of firm & cost of equity capital according to NOI approach if it employs 8% debt to the extent of 20%, 35% of 50% of the total financial requirement of ₹ 20,00,000.

PROBLEM – 13

A Ltd. is expecting an EBIT of ₹3,00,000. The company presently raised its entire fund requirement of ₹ 20 lakhs by the issue of equity with equity capitalization rate of 16%. The firm is now contemplating to redeem a part of capital by introducing debt financing. The firm has two options- to raise debt to the extent of 30% or 50% of total funds. It is expected that for debt financing up to 30% the rate of interest will be 10% and equity rate is expected to increases to 17%. However, if firm opts for 50% debt, then interest rate will be 12% and equity rate will be 20%. **You are required to compute** value of firm and its overall cost of capital under Present situation and under two different options if the traditional approach is held valid. Also suggest which is the best Option.

PROBLEM – 14

One-third of the total market value of Gamma Ltd. consists of loan stock, which has a cost of 10 percent. Another company, XYZ Ltd., is identical in every respect to Gamma Ltd., except that its capital structure is all-equity, and its cost of equity is 16 per cent. According to Modigliani and Miller, if we ignored taxation and tax relief on debt capital, **what** would be the cost of equity of Gamma Ltd.?

PROBLEM – 15

Company X and Company Y are in the same risk class and are identical in every manner except that company X used debt while company Y does not. The levered firm has ₹ 9,00,000 debenture carrying 10% rate of interest. Both the firm earn 20% before interest and taxes on their total assets of ₹ 15 lakhs. Assume perfect capital market rational investor and so on; a tax rate of 50% & capitalisation rate 15% for an all-equity company. **Compute** the Value of each firm using the Net Operating Income (NOI) Approach or MM Approach?

PROBLEM – 16

RES Ltd. is an all equity financed company with a market value of ₹ 25,00,000 and cost of equity Ke = 21%. The company wants to buyback equity shares worth ₹ 5,00,000 by issuing and raising 15% perpetual debt of the same amount. Rate of tax may be taken as 30%. After the capital restructuring and applying MM Model (with taxes),

You are required to calculate:

i. Market value of RES Ltd. after buyback

ii. Cost of Equity Ke after buyback

iii. Weighted Average cost of capital after buyback and comment on it.

PROBLEM – 17

There are two firms N and M, having same earnings before interest and taxes i.e. EBIT of ₹ 20,000. Firm M is levered company having a debt of ₹ 1,00,000 @ 7% rate of interest. The cost of equity of N company is 10% and of M company is 11.50%.

Find out how arbitrage process will be carried on?

PROBLEM – 18

There are two firms U and L having same NOI (Net Operating Income) of ₹ 20,000 except that the firm L is a levered firm having a debt of ₹ 1,00,000 @ 7% and cost of equity of U & L are 10% and 18% respectively. **Show** how arbitrage process will work.

PROBLEM – 19

Company P and Q are identical in all respects including risk factors except for debt/equity, company P having issued 10% debentures of ₹ 18 lakhs while company Q is unlevered. Both the companies earn 20% before interest and taxes on their total assets of ₹ 30 lakhs. Assuming a tax rate of 50% and capitalization rate of 15% from an all- equity company.

Required:

CALCULATE the value of companies' P & Q using

i. Net Income Approach.

ii. Net Operating Income Approach.

PROBLEM – 20

Zordon Ltd has net operating income of ₹ 5,00,000 and total capitalization of ₹ 50,00,000 during the current year. The company is contemplating to introduce debt financing in capital structure and has various options for the same.

The following information is available at different levels of debt value:

Debt value (₹)	Interest rate (%)	Equity capitalization rate (%)
0	-	10.00

5,00,000	6.0	10.50
10,00,000	6.0	11.00
15,00,000	6.2	11.30
20,00,000	7.0	12.40
25,00,000	7.5	13.50
30,00,000	8.0	16.00

Assuming no tax and that the firm always maintains books at book values,

You are REQUIRED to calculate:

i. Amount of debt to be employed by firm as per traditional approach.

ii. Equity capitalization rate, if MM approach is followed.

PROBLEM – 21

C Ltd and Z Ltd are identical except for capital structures. C Ltd has 50 per cent debt and 50 per cent equity, whereas Z Ltd has 20 percent debt and 80 percent equity. (All percentages are in market-value terms). The borrowing rate for both companies is 8 per cent in a no-tax world, and capital markets are assumed to be perfect.

a. i. If you own 2 per cent of the stock of C Ltd, what is your return if the company has net operating income of ₹ 3,60,000 and the overall capitalisation rate of the company, Ko is 18 per cent?

ii. What is the implied required rate of return on equity?

b. Z Ltd has the same net operating income as C Ltd

i. What is the implied required equity return of Z Ltd?

ii. Why does it differ from that of C Ltd?

PROBLEM – 22

Blue Ltd., an all equity financed company is considering the repurchase of ₹275 lakhs equity shares and to replace it with 15% debentures of the same amount. Current market value of the company is ₹1,750 lakhs with its cost of capital of 20%. The company's Earnings before Interest and Taxes (EBIT) are expected to remain constant in future years. The company also has a policy of distributing its entire earnings as dividend.

Assuming the corporate tax rate as 30%, you are required to CALCULATE the impact on the following on account of the change in the capital structure as per Modigliani and Miller (MM) Approach:

i. Market value of the company

ii. Overall Cost of capital

iii. Cost of equity

PROBLEM – 23

Axar Ltd. has a Sales of ₹68,00,000 with a Variable cost Ratio of 60%.

The company has fixed cost of ₹16,32,000. The capital of the company comprises of 12% long term debt, ₹1,00,000 Preference Shares of ₹10 each carrying dividend rate of 10% and 1,50,000 equity shares.

The tax rate applicable for the company is 30%.

At current sales level, DETERMINE the Interest, EPS and amount of debt for the firm if a 25% decline in Sales will wipe out all the EPS.

PROBLEM – 24

The financial advisor of Sun Ltd. is confronted with following two alternative financing plans for raising ₹10 lakhs that is needed for plant expansion and modernization

Alternative I: Issue 80% of funds with 14% Debenture [Face value (FV) ₹100] at par and redeem at a premium of 10% after 10 years and balance by issuing equity shares at 33 1/3 % premium.

Alternative II: Raise 10% of funds required by issuing 8% Irredeemable Debentures [Face value (FV) ₹100] at par and the remaining by issuing equity shares at current market price of ₹125.

Currently, the firm has an Earnings per share (EPS) of ₹21

The modernization and expansion programme is expected to increase the firm's Earnings before Interest and Taxation (EBIT) by ₹200,000 annually.

The firm's condensed Balance Sheet for the current year is given below:

Balance Sheet as on 31.3.20x2

Liabilities	(₹)	Assets	(₹)
Current Liabilities	5,00,000	Current Assets	16,00,000
10% Long Term Loan	15,00,000	Plant & Equipment (Net)	34,00,000
Reserves & Surplus	10,00,000		
Equity Share Capital (FV: ₹100 each)	20,00,000		
TOTAL	**50,00,000**	**TOTAL**	**50,00,000**

However, the finance advisor is concerned about the effect that issuing of debt might have on the firm. The average debt ratio for firms in industry is 35%. He believes if this ratio is exceeded, the P/E ratio of the company will be 7 because of the potentially greater risk.

If the firm increases its equity capital by more than 10 %, he expects the P/E ratio of the company will increase to 8.5 irrespective of the debt ratio.

Assume Tax Rate of 25%. Assume target dividend pay-out under each alternative to be 60% for the next year and growth rate to be 10% for the purpose of calculating Cost of Equity.

SUGGEST with reason which alternative is better on the basis of each of the below given criteria:

I. Earnings per share (EPS) & Market Price per share (MPS)

II. Financial Leverage

III. Weighted Average Cost of Capital & Marginal Cost of Capital (using Book Value weights)

PROBLEM – 25

Kalyanam Ltd. has an operating profit of 34,50,000 and has employed Debt which gives total Interest Charge of ` 7,50,000. The firm has an existing Cost of Equity and Cost of Debt as 16% and 8% respectively. The firm has a new proposal before it, which requires funds of 75 Lakhs and is expected to bring an additional profit of 14,25,000. To finance the proposal, the firm is expecting to issue an additional debt at 8% and will not be issuing any new equity shares in the market. Assume no tax culture.

ADDITIONAL QUESTIONS FOR PRATICE

QFP 1 (Concept Similar to Problem – 1)

Ganesha Limited is setting up a project with a capital outlay of ₹60,00,000. It has two alternatives in financing the project cost.

Alternative-I: 100% equity finance by issuing equity shares of ₹10 each

Alternative-II: Debt-equity ratio 2:1 (issuing equity shares of ₹10 each)

The rate of interest payable on the debts is 18% p.a. The corporate tax rate is 40%. CALCULATE the indifference point between the two alternative methods of financing.

QFP 2 (Concept Similar to Problem – 1)

Alpha Limited requires funds amounting to ₹80 lakh for its new project. To raise the funds, the company has following two alternatives:

i. To issue Equity Shares of ₹100 each (at par) amounting to ₹60 lakh and borrow the balance amount at the interest of 12% p.a., or

ii. To issue Equity Shares of ₹100 each (at par) and 12% Debentures in equal proportion.

The Income-tax rate is 30%.

IDENTIFY the point of indifference between the available two modes of financing and state which option will be beneficial in different situations.

QFP 3 (Concept Similar to Problem – 6)

Suppose that a firm has an all equity capital structure consisting of 1 ,00,000 ordinary shares of ₹10 per share. The firm wants to raise ₹2,50,000 to finance its investments and is considering three alternative methods of financing – (i) to issue 25,000 ordinary shares at ₹10 each, (ii) to borrow ₹2,50,000 at 8 per cent rate of interest, (iii) to issue 2,500 preference shares of ₹100 each at an 8 per cent rate of dividend. If the firm's earnings before interest and taxes after additional investment are ₹3,12,500 and the tax rate is 50 per cent, FIND the effect on the earnings per share under the three financing alternatives.

QFP 4 (Concept Similar to Problem – 6)

Best of Luck Ltd., a profit-making company, has a paid-up capital of ₹100 lakhs consisting of 10 lakhs ordinary shares of ₹10 each. Currently, it is earning an annual pre-tax profit of ₹60 lakhs. The company's shares are listed and are quoted in the range of ₹50 to ₹80. The management wants to

diversify production and has approved a project which will cost ₹50 lakhs and which is expected to yield a pre-tax income of ₹40 lakhs per annum. To raise this additional capital, the following options are under consideration of the management:

a. To issue equity share capital for the entire additional amount. It is expected that the new shares (face value of ₹10) can be sold at a premium of ₹15.

b. To issue 16% non-convertible debentures of ₹100 each for the entire amount.

c. To issue equity capital for ₹25 lakhs (face value of ₹10) and 16% non- convertible debentures for the balance amount. In this case, the company can issue shares at a premium of ₹40 each.

ADVISE which option is the most suitable to raise the additional capital, keeping in mind that the management wants to maximize the earnings per share to maintain its goodwill. The company is paying income tax at 50%.

QFP 5 (Concept Similar to Problem – 13)

Indra Ltd. has an EBIT of ₹1,00,000. The company makes use of both the debt and equity capital. The firm has 10% debentures of ₹5,00,000 and the firm's equity capitalization rate is 15%.

You are required to COMPUTE:

i. Total value of the firm

ii. Overall cost of capital.

QFP 6 (Concept Similar to Problem – 14 & 15)

The following data relates to two companies belonging to the same risk class:

Particulars	A Ltd.	B Ltd.
Expected Net Operating Income	₹18,00,000	₹18,00,000
12% Debt	₹54,00,000	-
Equity Capitalization Rate	-	18

REQUIRED:

a. Determine the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming no taxes as per M.M. Approach.

b. Determine the total market value, Equity capitalization rate and weighted average cost of capital for each company assuming 40% taxes as per M.M. Approach.

QFP 7 (Concept Similar to Problem – 17)

Following data is available in respect of two companies having same business risk: Capital employed = ₹2,00,000, EBIT = ₹30,000

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,00,000	Nil
Equity	1,00,000	2,00,000
Ke	20%	12.5%

An investor is holding 15% shares in Unlevered company. CALCULATE the increase in annual earnings of investor if he switches his holding from Unlevered to Levered Company.

QFP 8 (Concept Similar to Problem – 18)

Following data is available in respect of two companies having same business risk: Capital employed = ₹2,00,000, EBIT = ₹30,000 and Ke = 12.5%

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@10%)	1,00,000	Nil
Equity	1,00,000	2,00,000

An investor is holding 15% shares in levered company. CALCULATE the increase in annual earnings of investor if he switches his holding from Levered to Unlevered company.

CHAPTER 05: INVESTMENT DECISIONS

INTRODUCTION

In the first chapter, we had discussed the three important functions of financial management which are Investment Decisions, Financing Decisions and Dividend Decisions. So far, we have studied Financing decisions in previous chapters. In this chapter, we will discuss the second important decision area of financial management which is Investment Decision. Investment decision is concerned with **optimum utilization of fund to maximize the wealth of the organization** and in turn the wealth of its shareholders. Investment decision is very crucial for an organization to fulfil its objectives; in fact, it generates revenue and ensures longterm existence of the organization. Even the entities which exist not for profit arealso required to make investment decision though not to earn profit but to fulfil its mission.

As we have seen in the Financing Decision chapter, each rupee of capital raised by an entity bears some cost, commonly known as cost of capital. It is necessary that each rupee raised is to be invested in a very prudent manner. It requires a proper planning for capital, and it is done through a proper budgeting. A proper budgeting requires all the characteristics of budget. Due to this feature, investment decisionsare very popularly known as Capital Budgeting, which means applying the principles of budgeting for capital investment.

In simple terms, Capital Budgeting involves:

- **Identification** of investment projects that are strategic to business' overallobjectives;
- **Estimating and evaluating** post-tax incremental cash flows for each of the investment proposals; and
- **Selection** of an investment proposal that maximizes the return to theinvestors.

PURPOSE OF CAPITAL BUDGETING

The capital budgeting decisions are important, crucial and critical business decisions due to the following reasons:

i. **Substantial Investment:** Investment decisions are related with fulfilment of long-term objectives and existence of an organization. To invest in a project(s), a substantial capital investment is required. Based on size of capital and timing of cash flows, sources of finance are selected. Due to huge capital investments and associated costs, it is therefore necessary for an entity to make such decisions after a thorough study and planning.

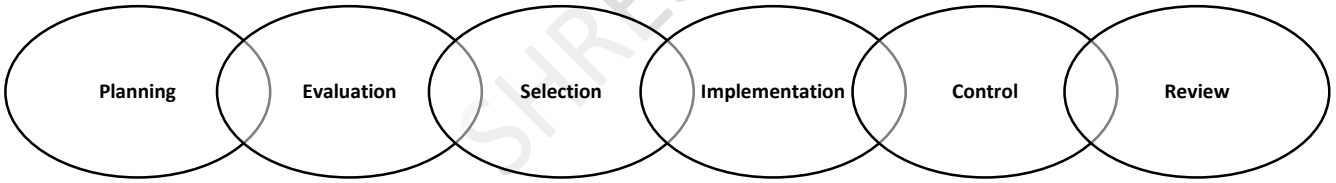
ii. **Long time period:** The capital budgeting decision has its effect over a long period of time. These decisions not only affect the future benefits and costs of the firm but also influence the rate and direction of growth of the firm.

iii. **Irreversibility:** Most of the investment decisions are irreversible. Once the decision is implemented, it is very difficult and reasonably and economically not possible to reverse the decision. The reason may be upfront payment of amount, contractual obligations, technological impossibilities etc.

iv. **Complex decisions:** The capital investment decision involves an assessment of future events, which in fact is difficult to predict. Further, it is quite difficult to estimate in quantitative terms, all the benefits or the costs relating to a particular investment decision.

CAPITAL BUDGETING PROCESS

The extent to which the capital budgeting process needs to be formalised and systematic procedures to be established depends on the size of the organisation; number of projects to be considered; direct financial benefit of each project considered by itself; the composition of the firm's existing assets and management's desire to change that composition; timing of expenditures associated with the projects that are finally accepted.



i. **Planning:** The capital budgeting process begins with the **identification of potential investment opportunities.** The opportunity then enters the planning phase when the potential effect on the firm's fortunes is assessed and the ability of the management of the firm to exploit the opportunity is determined. Opportunities having little merit are rejected and promising opportunities are advanced in the form of a proposal to enter the evaluation phase.

ii. **Evaluation:** This phase involves the **determination of proposal** and its investments, inflows and outflows. Investment appraisal techniques, ranging from the simple payback method and accounting rate of return to the more sophisticated discounted cash flow techniques, are used to appraise the proposals. The technique selected should be the one that enables the manager to make the best decision in the light of prevailing circumstances.

iii. **Selection:** Considering the returns and risks associated with the individual projects as well as the cost of capital to the organisation, the organisation will **choose among the projects** which maximises the shareholders' wealth.

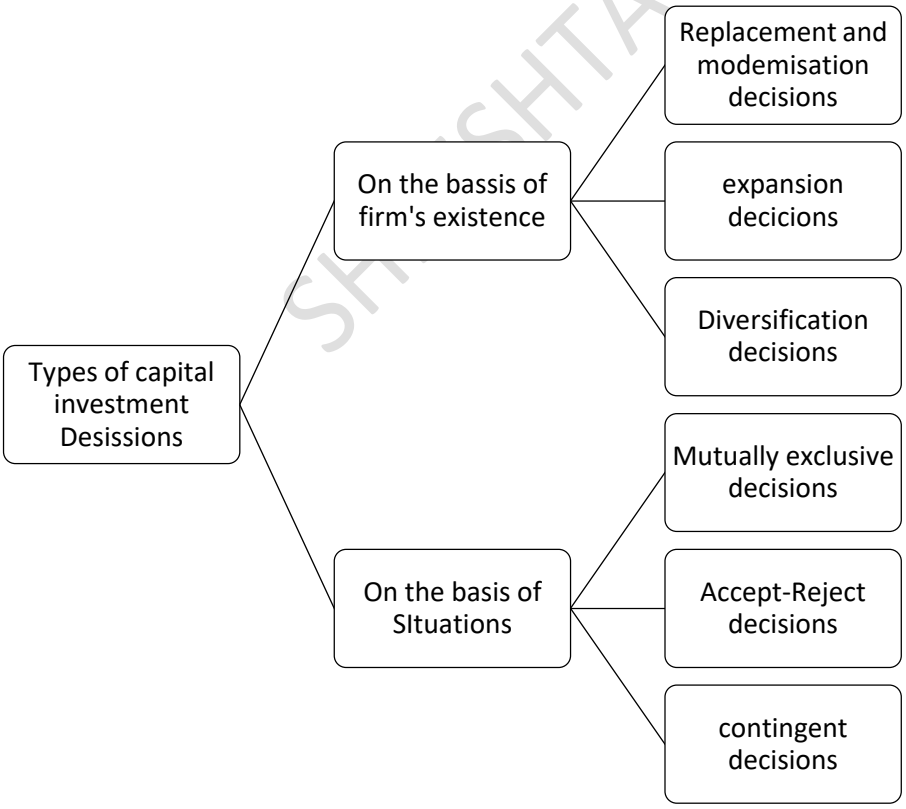
iv. **Implementation:** When the final selection is made, the firm must acquire the necessary funds, purchase the assets, and begin the **implementation of the project.**

v. **Control:** The **progress of the project is monitored** with the aid of feedback reports. These reports will include capital expenditure progress reports, performance reports comparing actual performance against plans set and post completion audits.

vi. **Review:** When a project terminates, or even before, the organisation should **review the entire project** to explain its success or failure. This phase may haveimplication for firm's planning and evaluation procedures. Further, the review may produce ideas for new proposals to be undertaken in the future.

TYPES OF CAPITAL INVESTMENT DECISIONS

There are many ways to classify the capital budgeting decision. Generally capital investment decisions are classified in two ways. One way is to classify them on the basis of firm's existence. Another way is to classify them on the basis of decision situation.



On the basis of firm's existence

The capital budgeting decisions are taken by both newly incorporated firms as wellas by existing firms. The new firms may require decision making in respect of selection of a plant to be installed. Whereas the existing firm may require taking decisions to meet the requirement of new environment or to face the challenges of competition. These decisions may be classified as follows:

i. **Replacement and Modernisation decisions:** The replacement and modernisation decisions aims to improve operating efficiency and reduce cost. Generally, all types of plant and machinery require replacement either because the economic life of the plant or machinery is over or because it has become technologically outdated. The former decision is known as replacement decisionand latter is known as modernisation decision. Both replacement and modernisation decisions are called as cost reduction decisions.

ii. **Expansion decisions:** Existing successful firms may experience growth in demand of their product line. If such firms experience shortage or delay in the delivery of their products due to inadequate production facilities, they may consider proposal to add capacity to existing product line.

iii. **Diversification decisions:** These decisions require evaluation of proposals to diversify into new product lines, new markets etc. for reducing the risk of failureby dealing in different products or by operating in several markets.

Both expansion and diversification decisions are called revenue expansion decisions.

On the basis of situations

The capital budgeting decisions on the basis of situations are classified as follows:

i. **Mutually exclusive decisions:** The decisions are said to be mutually exclusive iftwo or more alternative proposals are such that the **acceptance of one proposal**will exclude the acceptance of the other alternative proposals. For instance, a firm may be considering proposal to install a semi-automatic or highly automaticmachine. If the firm installs a semi-automatic machine, it excludes the acceptance of proposal to install highly automatic machine.

ii. **Accept-Reject decisions:** The accept-reject decisions occur when **proposals areindependent** and do not compete with each other. The firm may accept or rejecta proposal on the basis of a minimum return on the required investment. All those proposals which give a higher return than certain desired rate of return are accepted and the rest are rejected.

iii. **Contingent decisions:** The contingent decisions are made when the proposals are **dependable** proposals. The investment in one proposal requires investmentin one or more other proposals. For example, if a company accepts a proposal to set up a factory in remote area, it will have to invest in infrastructure, like building of roads, houses for employees etc. also.

Steps of Capital Budgeting Procedure

1. **Estimation** of Cash flows over the entire life for each of the projects underconsideration.
2. **Evaluate** each of the alternative, using different decision criteria.
3. **Determining** the minimum required rate of return (i.e., WACC) to be used asdiscount rate.

Accordingly, this chapter is divided into two sections:

1. Estimation of Cash Flows

2. Capital Budgeting Techniques

ESTIMATION OF PROJECT CASH FLOWS

Capital Budgeting analysis considers only **incremental cash flows** from an investment likely to result due to acceptance of any project. Therefore, one of the most important tasks in capital budgeting is estimating future cash flows for a project. Though one of the techniques i.e., Accounting Rate of Return (ARR) evaluates profitability of a project on the basis of accounting profit, but accounting profit has its own limitations. Timings of cash flow may not match with the periodof profit. Further, non-cash items like depreciation have no immediate cash outflow.

The cash flows are estimated on the basis of inputs provided by various departments such as Production department, Finance department, Marketing department, etc. he project cash flow stream consists of cash outflows and cash inflows. The costs are denoted as "cash outflows" whereas the benefits are denoted as "cash inflows".

An investment decision implies the choice of an objective, an appraisal techniqueand the project's life. The objective and technique must be related to definite period of time. The life of the project may be determined by taking into consideration the following factors:

i. Technological obsolescence;

ii. Physical deterioration; and

iii. Decline in demand for the product

No matter how good a company's maintenance policy, technological or demand forecasting abilities are, uncertainty will always be there.

Calculating Cash Flows: Before we analyze how cash flow is computed in capital budgeting decision, following items needs consideration:

Depreciation: As mentioned earlier, depreciation is a **non-cash item** anditself does not affect the cash flow. However, we must consider tax shield or benefit from depreciation in our analysis. Since this benefit reduces cash outflow for taxes,it is considered as cash inflow.

Example -1

X Ltd. manufactures electronic motors fitted in desert coolers. It has an annual turnover of ₹30 crore and cash expenses to generate this much of sale is ₹25 crore. Suppose applicable tax rate is 30% and depreciation is ₹1.50 crore p.a.

The table below is showing Tax shield due to depreciation under two scenarios i.e., with and without depreciation:

	No Depreciation is Charged (₹Crore)	**Depreciation is Charged (₹Crore)**
Total Sales	30.00	30.00
Less: Cost of Goods Sold	(25.00)	(25.00)
	5.00	5.00
Less: Depreciation	-	1.50
Profit before tax	5.00	3.50
Less: Tax @ 30%	1.50	1.05
Profit after Tax	3.50	2.45
Add: Depreciation*	-	1.50
Cash Flow	3.50	3.95

* Being non- cash expenditure depreciation has been added back while calculatingthe cash flow.

As we can see in the above table that due to depreciation under the second scenario, a tax saving of ₹0.45 crore (₹1.50 – ₹1.05) was made. This is called tax shield. The tax shield is considered while estimating cash flows.

a. **Opportunity Cost:** Opportunity cost is **foregoing of a benefit** due to choosing an alternative investment option. For example, if a company owns a piece of land acquired 10 years ago for ₹1 crore can be sold for ₹10 crore in today's value. If the company uses this piece of land for a project, then its sale value i.e. ₹10 crore forms the part of initial outlay as by using the land the company has foregone ₹10 crore which could be earned by selling it. This opportunity cost can occur both at the time of initial outlay and during the tenure of the k

b. **Sunk Cost:** Sunk cost is an outlay of cash that has **already been incurred** inthe past and cannot be reversed in present. Therefore, these costs do not have any impact on decision making, hence should be excluded from capital budgeting analysis. For example, if a company has paid a sum of ₹1,00,000 for consultancy fees to a firm to prepare a Project Report for analyzing a particular project ie. Feasibility study or viability study. Then the consultancy fee paid is irrelevant and is not considered for estimating cash flows as it has already been paid and shall not affect our decision whether project should be undertaken or not.

c. **Working Capital:** Every big project requires working capital because, for every business, investment in working capital is must. Therefore, while evaluatingthe projects, **initial working capital requirement** should be treated as **cash outflow and at the end of the project its release should be treated as cash inflow.** It is important to note that no depreciation is provided on

working capital though it might be possible that at the time of its release its value might have been reduced. Further there may be also a possibility that additional working capital may be required during the life of the project. In such cases the additional working capital required is treated as cash outflow at that period of time. Similarly, any reduction in working capital shall be treated as cash inflow. It may be noted that, if nothing has been specifically mentioned for the release of working capital it is assumed that full amount has been realized at the end of the project. However, adjustment on account of increase or decrease in working capital needs to beincorporated.

d. Allocated Overheads: As discussed in the subject of Cost and Management Accounting, allocated overheads are charged on the basis of some **rational basis** such as machine hour, labour hour, direct material consumption etc. Since, expenditures already incurred are allocated to new proposal, they should not be considered as cash flows. However, if it is expected that overhead cost shall increase due to acceptance of any proposal then incremental overhead cost shall be treated as cash outflow.

e. Additional Capital Investment: It is not necessary that capital investmentshall be required in the beginning of the project. It can also be required during the continuance of the project. In such cases, it shall be treated as cash outflows at that period of time.

Categories of Cash Flows

It is helpful to place project cash flows into three categories:

a. Initial Cash Outflow: The initial cash outflow for a project depends upon the type of capital investment decision as follows:

i. If decision is related to investment in a **fresh proposal** or an expansion decision,then initial cash outflow shall be calculated as follows:

		Amount	**Amount**
	Cost of new Asset(s)		xxx
Add:	Installation/Set-Up Costs	xxx	
Add:	Investment in Working Capital	xxx	xxx
	Initial Cash Outflow		**xxx**

ii. If decision is related to **replacement decision,** then initial cash outflow shall becalculated as follows:

		Amount	**Amount**
	Cost of new Asset(s)		xxx
Add:	Installation/Set-Up Costs	xxx	
Add/(less):	Increase (Decrease) in netWorking Capital level	xxx	

Less:	Net Proceeds from sale ofold assets	(xxx)	
Add/(less):	Tax expense (saving/ loss)due to sale of Old Asset	xxx	xxx
	Initial Cash Outflow		**xxx**

b. Interim Cash Flows: After making the initial cash outflow that is necessary to begin implementing a project, the firm hopes to get benefit from the future cash inflows generated by the project. The initial cash outflow for a project depends upon the type of capital investment decision as follows:

i. If analysis is related to a fresh or completely a **new project** then interim cash flow is calculated as follows:

		Amount	**Amount**
	Profit after Tax (PAT)		xxx
Add:	Non-Cash expenses (e.g.,Depreciation)	xxx	
Add/(less):	Net decrease (increase) inWorking Capital	xxx	xxx
	Interim net cash flow for theperiod		**xxx**

ii. Similarly, interim cash flow in case of replacement decision shall be calculated asfollows:

		Amount	**Amount**
	Net increase (decrease) inOperating Revenue		xxx
Add/(less):	Net decrease (increase) inoperating expenses		xxx
	Net changes in income beforetaxes		xxx
Add/(less):	Net decrease (increase) in taxes		xxx
	Net change in income after taxes		xxx
Add/(less):	Net decrease (increase) indepreciation charges		xxx
	Incremental net cash flow forthe period		**xxx**

c. Terminal-Year Net Cash Flow: For calculating the net cash flow at the terminal year, we will first calculate the incremental net cash flow for the period as calculated in point (b) above and further, we will make adjustments to it as follows:

		Amount	**Amount**
	Final salvage value (disposal costs) ofasset		xxx
Add:	Interim Cash Flow	xxx	
Add/(less):	Tax savings (tax expenses) due to saleor disposal of asset (Includingdepreciation)	xxx	
Add:	Release of Net Working Capital	xxx	xxx
	Terminal Year net cash flow		**xxx**

BASIC PRINCIPLES FOR MEASURING PROJECT CASH FLOWS

For developing the project cash flows, the following principles must be kept in mind.

Block of Assets and Depreciation

From above discussion, it is clear that tax shield/ benefit from depreciation is considered while calculating cash flows from the project. Taxable income is calculated as per the provisions of Income Tax or similar Act of a country. The treatment of deprecation is based on the concept of "Block of Assets", which meansa group of assets falling within a particular class of assets. This class of assets canbe building, machinery, furniture etc. in respect of which depreciation is charged at same rate. The treatment of tax depends on the fact whether block of asset consist of one asset or several assets.

Example- 2

Suppose A Ltd. acquired new machinery for ₹1,00,000, depreciable at 20% as per written down value (WDV) method. The machine has an expected life of 5 years with salvage value of ₹10,000. The treatment of depreciation/ short term capital loss in the 5th year in two cases shall be as follows:

Depreciation for initial 4 years shall be common and WDV at the beginning of the 5th year shall be computed as follows:

	₹
Purchase Price of Machinery	1,00,000
Less: Depreciation @ 20% for year 1	20,000
WDV at the end of year 1	80,000
Less: Depreciation @ 20% for year 2	16,000
WDV at the end of year 2	64,000
Less: Depreciation @ 20% for year 3	12,800
WDV at the end of year 3	51,200
Less: Depreciation @ 20% for year 4	10,240
WDV at the end of year 4	**40,960**

Case 1 - There is no other asset in the Block: When there is only one asset in the block and block shall cease to exist at the end of 5th year, then no deprecationshall be charged in 5th year and tax benefit/loss on short term capital loss/ gain shall be calculated as follows:

	₹
WDV at the beginning of year 5	40,960
Less: Sale value of Machine	10,000

Short Term Capital Loss (STCL)	30,960
Tax Benefit on STCL @ 30%	9,288

i. **Case 2 - More than one asset exists in the Block:** When more than one asset exists in the block, then deprecation shall be charged in the terminal year (5th year) in which asset is sold. The WDV on which depreciation be charged shall becalculated by deducting sale value from the WDV in the beginning of that year.Tax benefit on depreciation shall be calculated as follows:

	₹
WDV at the beginning of year 5	40,960
Less: Sale value of Machine	10,000
WDV	30,960
Depreciation @ 20%	6,192
Tax Benefit on Depreciation @ 30%	**1,858**

Now suppose if in above two cases, sale value of machine is ₹50,000, then no depreciation shall be provided in Case 2 because the WDV at the beginning of 5th year is only ₹40,960 i.e., less than sale value of ₹50,000 and tax loss on STCG in Case 1 shall be computed as follows:

	₹
WDV at the beginning of year 5	40,960
Less: Sale value of Machine	50,000
Short Term Capital Gain (STCG)	9,040
Tax outflow on STCG @ 30%	**2,712**

Exclusion of Financing Costs Principle

When cash flows relating to long-term funds are being defined, financing costs of long-term funds (interest on long-term debt and equity dividend) should be excluded from the analysis. The interest and dividend payments are reflected in the weighted average cost of capital. Hence, if interest on long-term debt and dividend on equity capital are deducted in defining the cash flows, the cost of long- term funds will be counted twice.

The **exclusion** of financing costs principle means that:

i. **The interest on long-term debt** is ignored while computing profits and taxes.

ii. **The expected dividends** are deemed irrelevant in cash flow analysis.

While dividends pose no difficulty as they come only from profit after taxes, interest needs to be handled properly. Since interest is usually deducted in the process of arriving at profit after tax, an amount equal to 'Interest (1 - Tax rate)' should be added back to the figure of Profit after Tax as shown below:

= Profit Before Interest and Tax × (1 - Tax rate)

= (Profit Before Tax + Interest) (1 - Tax rate)

= (Profit Before Tax) (1 - Tax rate) + (Interest) (1 - Tax rate)

= Profit After Tax + Interest (1 - Tax rate)

Thus, whether the tax rate is applied directly to the profit before interest and tax figure or whether the tax - adjusted interest, which is simply interest (1 - tax rate), is added to profit after tax, we get the same result only.

Example- 3

Suppose XYZ Ltd.'s expected profit for the forthcoming 4 years is as follows:

	Year 1	**Year 2**	**Year 3**	**Year 4**
Profit before Interest and Tax	₹10,000	₹20,000	₹40,000	₹50,000

If interest payable is ₹5,000 and tax rate is 30%, then the profit after tax excluding financing cost shall be as follows:

	Year 1 (₹)	**Year 2 (₹)**	**Year 3 (₹)**	**Year 4 (₹)**
Profit before Interest and Tax	10,000	20,000	40,000	50,000
Less: Interest	(5,000)	(5,000)	(5,000)	(5,000)
	5,000	15,000	35,000	45,000
Less: Tax @ 30%	(1,500)	(4,500)	(10,500)	(13,500)
Profit after Tax (PAT)	3,500	10,500	24,500	31,500
Add: Interest (1- t)	3,500	3,500	3,500	3,500
PAT excluding financing cost	7,000	14,000	28,000	35,000

Alternatively

	Year 1 (₹)	**Year 2 (₹)**	**Year 3 (₹)**	**Year 4 (₹)**
Profit before Interest and Tax	10,000	20,000	40,000	50,000
Less: Tax @ 30%	3,000	6,000	12,000	15,000
PAT excluding financing cost	7,000	14,000	28,000	35,000

Post-tax Principle

Tax payments like other payments must be properly deducted in deriving the cash flows. That is, cash flows must be defined in post-tax terms. It is always better toavoid using pre-tax cash flows and using pre-tax discounting rate. The discounting rate and the cash flows, both must be post-tax only.

Statement showing the calculation of Cash Inflow After Tax (CFAT)

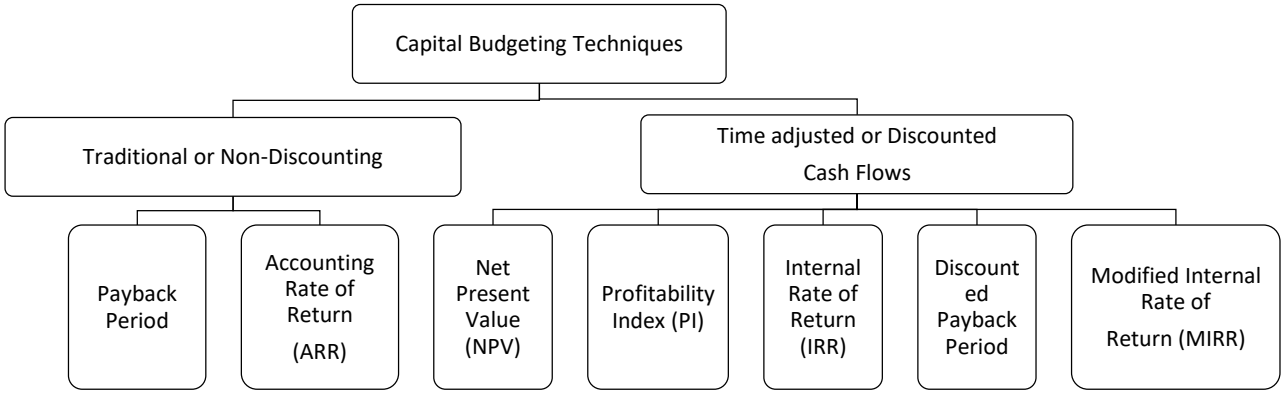
Particulars	(₹)	(₹)
Sales value		xxx
Less: Variable Cost		xxx
Contribution		xxx
Less: Fixed Cost		
(a) Fixed Cash Cost (excluding Interest)	xxx	
(b) Depreciation	xxx	xxx
Earning Before Tax (EBT)		xxx
Less: Tax		xxx
Earning After Tax (EAT)		xxx
Add: Depreciation		xxx
Cash Inflow After Tax (CFAT)		xxx

SECTION 2

CAPITAL BUDGETING TECHNIQUES

In order to maximize the return to the shareholders of a company, it is importantthat the best or most profitable investment projects are selected. Results of makinga bad long-term investment decision can be devastating in both financial and strategic terms. Proper care is required for investment project selection and evaluation.

There are number of techniques available for the appraisal of investment proposals and can be classified as presented below



Organizations may use one or more of capital investment evaluation techniques from above. Some organizations use different methods for different types of projects while others may use multiple methods for evaluating each project. The techniques discussed below are Payback Period, Accounting Rate of Return (ARR), Net Present Value (NPV), Profitability Index (PI), Internal Rate of Return (IRR), Discounted Payback Period and Modified Internal Rate of Return (MIRR).

TRADITIONAL OR NON-DISCOUNTING TECHNIQUES

These techniques of capital Budgeting does not discount the future cash flows. There are two such traditional techniques namely Payback Period and Accounting Rate of Return.

Payback Period

Time required to recover the initial cash-outflow is called pay-back period. The payback period of an investment is the length of time required for the cumulative total net cash flows from the investment to equal the total initial cash outlays. At that point in time (payback period), the investor has recovered all the money invested in the project.

Steps in Payback period technique:

a. The first step in calculating the payback period is determining the total initial capital investment (cash outflow).

b. The second step is calculating/estimating the annual expected after-tax cash flows over the useful life of the project.

1. Uniform Cash Flows: When the cash inflows are uniform over the useful life ofthe project, the number of years in the payback period can be calculated using the following equation:

$$\text{Payback period} = \frac{\text{Total initial capital investment}}{\text{Annual expected after - tax net cash flow}}$$

Example- 4

Suppose a project costs ₹20,00,000 and yields annually a profit of ₹3,00,000after depreciation @ 12½% (straight line method) but before tax at 50%.

The first step would be to calculate the cash inflow from this project. The cashinflow is calculated as follows:

Particulars	(₹)
Profit before tax	3,00,000
Less: Tax @ 50%	1,50,000
Profit after tax	1,50,000

Add: Depreciation written off	2,50,000
Total cash inflow	4,00,000

While calculating cash inflow, depreciation is added back to profit after tax sinceit does not result in cash outflow. The cash generated from a project therefore isequal to profit after tax plus depreciation. The payback period of the project shallbe:

Payback period $= \frac{₹20,00,000}{4,00,000}$ = 5 Years

Some Accountants calculate payback period after discounting the cash flowsby a predetermined rate and the payback period so calculated is called as 'Discounted payback period' (discussed later on in the chapter).

Non-Uniform Cash Flows: When the annual cash inflows are not uniform,the cumulative cash inflow from operations must be calculated for each year. The payback period shall be corresponding period when total of cumulative cash inflows is equal to the initial capital investment. However, if exact sum does not match, then the period in which it lies should be identified. Afterthat we need to compute the fraction of the year.

Example- 5

Suppose XYZ Ltd. is analyzing a project requiring an initial cash outlay of ₹2,00,000and is expected to generate cash inflows as follows:

Year	Annual Cash Inflows (₹)
1	80,000
2	60,000
3	60,000
4	20,000

It's payback period shall be computed by using cumulative cash flows as follows:

Year	Annual CashInflows (₹)	Cumulative CashInflows (₹)
1	80,000	80,000
2	60,000	1,40,000
3	60,000	2,00,000
4	20,000	2,20,000

In 3rd year, cumulative cash inflows equal to initial cash outlay i.e., ₹2,00,000. Hence,payback period is 3 year.

Suppose if in above example, the initial outlay is ₹2,05,000, then:

Payback period shall lie between 3 to 4 years. Since up to 3 years, a sum of ₹2,00,000 shall be recovered and balance of ₹5,000 shall be recovered in the part(fraction) of 4th year, computation is as follows:

Part of 4th year = $\frac{\text{Balance Cash outlay}}{\text{Commulative Cash Inflow at 4}^{\text{th}}\text{ year}} = \frac{Rs.5{,}000}{Rs.20{,}000} = \frac{1}{4year}$

Thus, total cash outlay of ₹2,05,000 shall be recovered in 3¼ years' time.

Advantages of Payback period

- It is **easy to compute.**
- It is easy to understand as it **provides a quick estimate of the time** needed for the organization to recoup the cash invested.
- The length of the payback period can also **serve as an estimate of a project's risk;** the longer the payback period, the riskier the project as long-term predictions are less reliable. In some industries with high obsolescence risklike software industry or in situations where an organization is short on cash, short payback periods often become the determining factor for investments.

Limitations of Payback period

- It **ignores the time value of money**. As long as the payback periods for two projects are the same, the payback period technique considers them equal as investments, even if one project generates most of its net cash inflows in the early years of the project while the other project generates most of its netcash inflows in the latter years of the payback period.
- A second limitation of this technique is its failure to consider an investment's total profitability; it only considers cash inflows up-to the period in whichinitial investment is fully recovered and **ignores cash flows after the payback period**.
- Payback technique places much emphasis on short payback periods thereby **ignoring long-term projects**.

Payback Reciprocal

As the name indicates, it is the reciprocal of payback period. A major drawback of the payback period method of capital budgeting is that it does not indicate any cut off period for the purpose of investment decision. It is, however, argued that the reciprocal of the payback would be a close approximation of the Internal Rate of Return (later discussed in detail) if the life of the project is at least twice the payback period and the project generates equal amount of the annual cash inflows. In practice, the payback reciprocal is a helpful tool for quick estimation of rate ofreturn of a project provided its life is at least twice the payback period.

The payback reciprocal can be calculated as follows:

$$\text{Payback Reciprocal} = \frac{\text{Average annual cash in flow}}{\text{Initial investment}}$$

Example- 6

Suppose a project requires an initial investment of ₹20,000 and it would give annual cash inflow of ₹4,000. The useful life of the project is estimated to be 10 years.

In this example, payback reciprocal = ₹4,000×100 / ₹20,000= = 20%

The above payback reciprocal provides a reasonable approximation of the internal rate of return, i.e. 20%.

Accounting (Book) Rate of Return (ARR) or Average Rate of Return (ARR)

The accounting rate of return of an investment measures the **average annual netincome** of the project (incremental income) as a percentage of the investment.

$$\text{Accounting Rate of Return (ARR)} = \frac{\text{Average annual net income}}{\text{Investment}}$$

The numerator is the average annual net income generated by the project over its useful life. The denominator can be either the initial investment (including installation cost) or the average investment over the useful life of the project. Average investment means the average amount of fund remained blocked during the lifetime of the project under consideration.

Example- 7

Suppose Times Ltd. is going to invest in a project a sum of ₹3,00,000 having a life span of 3 years. Salvage value of machine is ₹90,000. The profit before depreciation for each year is ₹1,50,000.

The Profit after Tax and value of Investment in the Beginning and at the End of each year shall be as follows:

Year	Profit Before Depreciation(₹)	Depreciation(₹)	Profit after Depreciation(₹)	Value of Investment in (₹)	
				Beginning	End
1	1,50,000	70,000	80,000	3,00,000	2,30,000
2	1,50,000	70,000	80,000	2,30,000	1,60,000
3	1,50,000	70,000	80,000	1,60,000	90,000

The ARR can be computed by following methods as follows:

a. Version 1: Annual Basis

$$ARR = \frac{\text{ProfitafterDepreciation}}{\text{Investment in the beginning of the year}} \times 100$$

Year	
1	$\frac{80,000}{3,00,000} = 26.67\%$
2	$\frac{80,000}{2,30,000} = 34.78\%$
3	$\frac{80,000}{1,60,000} = 50\%$

Average ARR = $\frac{26.67\%+34.78\%+50.00\%}{3} = 37.15\%$

b. Version 2: Total Investment Basis

$$ARR = \frac{\text{Average Annual Profit}}{\text{Investment in the beginning}} \times 100$$

$$= \frac{(80,000 + 80,000 + 80,000) \,/\, 3}{3,00,000} \times 100 = 26.67\%$$

c. Version 3: Average Investment Basis

$$ARR = \frac{\text{Average Annual Profit}}{\text{Average Investment}} \times 100\text{t}$$

Average Investment = (₹3,00,000 + ₹90,000)/2 = ₹1,95,000

Or, Average Investment = ½ (Initial Investment – Salvage Value) + Salvage Value

= ½ (₹3,00,000 – ₹90,000) + ₹90,000 = ₹1,95,000

$$ARR = \frac{80,000}{1,95,000} \times 100 = 41.03\%$$

Further, it is important to note that project may also require additional working capital during its life in addition to initial working capital. In such situation, formula for the calculation of average investment shall be modified as follows:

½(Initial Investment – Salvage Value) + Salvage Value + Additional Working Capital

Continuing above example, suppose a sum of ₹45,000 is required as additional working capital during the project life, then average investment shall be:

= ½ (₹3,00,000 – ₹90,000) + ₹90,000 + ₹45,000 = ₹2,40,000 and

$$ARR = \frac{80,000}{2,40,000} \times 100 = 33.33\%$$

Some organizations prefer the initial investment because it is objectively determined and is not influenced by either the choice of the depreciation methodor the estimation of the salvage value. Either of these amounts is used in practice but it is important that the same method be used for all investments under consideration.

Advantages of ARR

- This technique **uses readily available data** that is routinely generated for financial reports and does not require any special procedures to generate data.
- This method may also mirror the method used to **evaluate performance** on theoperating results of an investment and management performance. Using the same procedure in both decision-making and performance evaluation ensures consistency.
- Calculation of the accounting rate of return method **considers all net incomesover the entire life of the project** and provides a measure of the investment'sprofitability.

Limitations of ARR

- The accounting rate of return technique, like the payback period technique, **ignores the time value of money** and considers the value of all cash flows to be equal.
- The technique uses accounting numbers that are dependent on the organization's **choice of accounting procedures,** and different accounting procedures, e.g., depreciation methods, can lead to substantially different amounts for an investment's net income and book values.
- The method **ignores cash flows**; while net income is a useful measure of profitability, the net cash flow is a better measure of an investment's performance.
- Furthermore, inclusion of only the book value of the invested asset **ignores** thefact that a project can require **commitments of working capital** and other outlays that are not included in the book value of the project.

DISCOUNTING TECHNIQUES

Discounting techniques consider time value of money and discount the cash flowsto their Present Value. These techniques are also known as Present Value techniques. These are namely Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index (PI), Discounted Payback Period. First, let us discuss about Determination of Discount rate and it will be followed by the four techniques.

Determining Discount Rate

Theoretically, the discount rate or **desired / expected rate of return** on an investment is the rate of return the firm would have earned by investing the same funds in the best available alternative

investment that has the same risk.Determining the best alternative opportunity available is difficult in practical terms so rather than using the true opportunity cost, organizations often use an alternative measure for the desired rate of return. An organization may establish a minimum rate of return that all capital projects must meet; this minimum could be based on an industry average or the cost of other investment opportunities. Many organizations choose to use the overall cost of capital or Weighted Average Cost of Capital (WACC) that an organization has incurred in raising funds or expects to incur in raising the funds needed for an investment.

Net Present Value Technique (NPV)

The net present value technique is a discounted cash flow method that considersthe time value of money in evaluating capital investments. An investment has cash flows throughout its life, and it is assumed that an amount of cash flow in the early years of an investment is worth more than an amount of cash flow in a later year.

The net present value method uses a specified discount rate to bring all subsequent cash inflows after the initial investment to their present values (the time of theinitial investment is year 0). The net present value of a project is the amount, in current value of amount, the investment earns after paying cost of capital in each period.

Net present value = Present value of net cash inflow - Total net initial investment

Since it might be possible that some additional investment may also be required during the life time of the project, then appropriate formula shall be:

Net present value = Present value of cash inflows - Present value of cash outflow It can be expressed as below:

$$NPV = \left(\frac{C_1}{(1+k)} + \frac{C_2}{(1+k)^2} + \frac{C_3}{(1+k)^3} + \ldots\ldots + \frac{C_n}{(1+k)^n}\right) - I$$

$$NPV = \sum_{t=1}^{n} \frac{C_t}{(1+k)^t} - I$$

Where,

C = Cash flow of various yearsk = Discount rate

N = Life of the project

I = Investment

Steps for calculating Net Present Value (NPV):

The steps for calculating net present value are:

1. **Determine** the net cash inflow in each year of the investment.
2. **Select** the desired rate of return or discounting rate or Weighted Average Cost of Capital.
3. **Find** the discount factor for each year based on the desired rate of return selected.
4. **Determine** the present values of the net cash flows by multiplying the cash flowsby respective discount factors of respective period called Present Value (PV) of Cash flows
5. Total the amounts of all **PVs of Cash Flows.**

Decision Rule:

If NPV ≥ 0	Accept the Proposal
If NPV ≤ 0	Reject the Proposal

The NPV method can be used to select between mutually exclusive projects; theone with the higher NPV should be selected.

Advantages of NPV

- NPV method takes into account the **time value of money**.
- The whole stream of **cash flows is considered.**
- The net present value can be seen as the addition to the wealth of shareholders. The criterion of NPV is thus in conformity with basic financial objectives.
- The NPV uses the **discounted cash flows** i.e., expresses cash flows in terms of current rupees. The NPVs of different projects therefore can be compared.It implies that each project can be evaluated independent of others on itsown merit.

Limitations of NPV

- It involves **difficult calculations**.
- The application of this method necessitates forecasting cash flows and the discount rate. Thus, **accuracy of NPV depends on accurate estimation** of these two factors which may be quite difficult in practice.
- The decision under NPV method is based on absolute measure. It **ignoresthe difference in initial outflows**, size of different proposals etc. while evaluating mutually exclusive projects.

Profitability Index/Desirability Factor/Present Value Index Method (PI)

The students may have seen how with the help of discounted cash flow technique, the two alternative proposals for capital expenditure can be compared. In certain cases, we have to compare a number of proposals, each involving different amounts of cash inflows.

One of the methods of comparing such proposals is to work out what is known asthe 'Desirability factor', or 'Profitability Index' or 'Present Value Index Method'.

Mathematically:

The Profitability Index (PI) is calculated as below:

$$\text{Profitability Index (PI)} = \frac{\text{Sum of discounted cash in flows}}{\text{Initial cash outlay or Total discounted cash outflow (as the case may)}}$$

Decision Rule:

If PI ≥ 1	Accept the Proposal
If PI ≤ 1	Reject the Proposal

In case of mutually exclusive projects, project with higher PI should be selected.

Advantages of PI

- The method also uses the **concept of time value of money**.
- In the PI method, since the present value of cash inflows is divided by thepresent value of cash outflow, it is a **relative measure** of a project's profitability.

Limitations of PI

- Profitability index **fails as a guide** in resolving capital rationing where **projects are indivisible.**
- Once a single large project with high NPV is selected, possibility of accepting several small projects which together may have higher NPV than the **single project is excluded**.
- Also, situations may arise where a project with a lower profitability index selected may generate cash flows in such a way that another project can be taken up one or two years later, the total NPV in such case being more thanthe one with a project with highest Profitability Index.

The Profitability Index approach thus **cannot be used indiscriminately** but all other type of alternatives of projects will have to be worked out.

Internal Rate of Return Method (IRR)

The internal rate of return method considers the time value of money, the initial cash investment, and all cash flows from the investment. But unlike the net present value method, the internal rate of return method does not use the desired rate of return but estimates the discount rate that makes the present value of subsequent cash inflows equal to the initial investment. This discount rate is called IRR.

IRR Definition: Internal rate of return for an investment proposal is **the discount rate that equates the present value of the expected cash inflows with theinitial cash outflow.**

This IRR is then compared to a criterion rate of return that can be the organization'sdesired rate of return for **evaluating capital investments**.

Calculation of IRR

The procedures for computing the internal rate of return varywith the pattern of net cash flows over the useful life of an investment.

Scenario 1: For an investment with uniform cash flows over its life, the followingequation is used:

Step 1: Total initial investment = Annual cash inflow × Annuity discount factor ofthe discount rate for the number of periods of the investment's useful life

If A is the annuity discount factor, then:

$$A = \frac{\text{Total initial cash disbursements and commitments for the investment}}{\text{Annual (equal) cash inflows from the investment}}$$

Step 2: Once A is calculated, the interest rate corresponding to project's life, the value of A is searched in Present Value Annuity Factor (PVAF) table. If exact valueof 'A' is found the respective interest rate shall be IRR. However, it rarely happens therefore we follow the steps discussed below:

Step 1: Compute approximate payback period also called fake payback period.

Step 2: Locate this value in PVAF table corresponding to period of life of the project.The value may be falling between two discounting rates.

Step 3: Discount cash flows using these two discounting rates.

Step 4: Use following Interpolation Formula:

$$LR + \frac{\text{NPV at LR}}{\text{NPV at LR - NPV at HR}} \times (HR - LR)$$

$$or$$

$$LR + \frac{\text{PV at LR-CI}}{\text{PV at LR - PV at HR}} \times (HR - LR)$$

Where,

LR = Lower Rate

HR = Higher Rate

CI = Capital Investment

Acceptance Rule

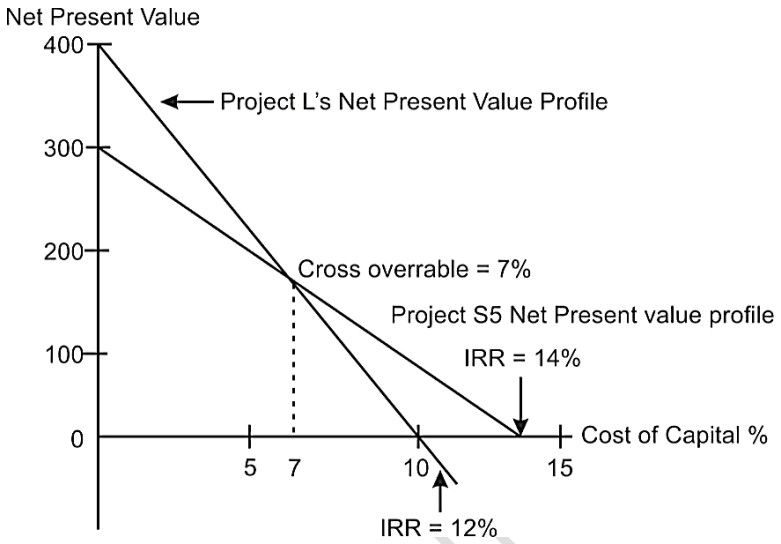
The use of IRR, as a criterion to accept capital investment decision involves a comparison of IRR with the required rate of return known as cut-off rate. Theproject should the accepted if IRR is greater than cut-off rate. If IRR is equal to cut-off rate the firm is indifferent. If IRR less than cut off rate the project is rejected.Thus,

If IRR ≥ Cut-off Rate or WACC	Accept the Proposal
If IRR ≤ Cut-off Rate or WACC	Reject the Proposal

Internal Rate of Return (IRR) and Mutually Exclusive Projects

Projects are called mutually exclusive, when the selection of one precludes the selection of others e.g., in case a company owns a piece of land which can be putto use either for project S or L, such projects are mutually exclusive to each other

i.e., the selection of one project necessarily means the rejection of the other. Referto the figure below:



As long as the cost of capital is greater than the crossover rate of 7%, (1) NPV_S is larger than NPV_L and (2) IRR_S exceeds IRR_L. Hence, if the cut- off rate or the cost of capital is greater than 7%, both the methods shall lead to selection of project S. However, if the cost of capital is less than 7%, the NPV method ranks Project Lhigher, but the IRR method indicates that the Project S is better.

As can be seen above, mutually exclusive projects can create problem with the IRR technique as IRR is expressed in percentage and does not take into account the scale of investment or the quantum of money earned.

Example - 8

Cash flows

	Year 0	**Year 1**	**IRR**	**NPV at 10%**
Project A	(₹1,00,000)	₹1,50,000	50%	₹36,360
Project B	(₹5,00,000)	₹6,25,000	25%	₹68,180

Project A earns a return of 50% which is more than what Project B earns; however, the NPV of Project B is more than of Project A. Acceptance of Project A means rejection of Project B since the two Projects are mutually exclusive. Acceptance of Project A also implies that the total investment will be ₹4,00,000 less had the Project B been accepted, ₹4,00,000 being the difference between the initial

investment of the two projects. Assuming that the funds are freely available at 10%, the total capital expenditure of the company should ideally be equal to sum totalof all outflows provided they earn more than 10% return along with the chosen mutually exclusive project. Selection of Project A implies rejection of an opportunity to earn an additional amount of ₹31,820 (₹68,180 - ₹36,360) for the shareholders, thus reduction in the shareholders' wealth.

In the above example, the larger project had lower IRR, but maximizes the shareholders' wealth. It is not safe to assume that a choice can be made between mutually exclusive projects using IRR in cases where the larger project also happens to have the higher IRR. Consider the following two Projects A and B with theirrelevant cash flows:

Year	Project A	Project B
	(₹)	(₹)
0	(9,00,000)	(8,00,000)
1	7,00,000	62,500
2	6,00,000	6,00,000
3	4,00,000	6,00,000
4	50,000	6,00,000

In this case, Project A has the larger investment and also has a higher IRR as shown below,

Year	(₹)	r = 46%	PV (₹)	(₹)	r = 35%	PV (₹)
0	(9,00,000)	1.0000	(9,00,000)	(8,00,000)	1.0000	(8,00,000)
1	7,00,000	0.6849	4,79,430	62,500	0.7407	46,294
2	6,00,000	0.4691	2,81,460	6,00,000	0.5487	3,29,220
3	4,00,000	0.3213	1,28,520	6,00,000	0.4064	2,43,840
4	50,000	0.2201	11,005	6,00,000	0.3011	1,80,660
			415			14
IRR of Project A = 46%						
IRR of Project B = 35%						

However, in case the relevant discounting factor is taken as 5%, the NPV of the two projects provides a different picture as follows:

Year	Project A (₹)			Project B (₹)		
	(₹)	r= 5%	PV (₹)	(₹)	r= 5%	PV (₹)
0	(9,00,000)	1.0	(9,00,000)	(8,00,000)	1.0	(8,00,000)

1	7,00,000	0.9524	6,66,680	62,500	0.9524	59,525
2	6,00,000	0.9070	5,44,200	6,00,000	0.9070	5,44,200
3	4,00,000	0.8638	3,45,520	6,00,000	0.8638	5,18,280
4	50,000	0.8227	41,135	6,00,000	0.8227	4,93,620
NPV			6,97,535			8,15,625

It can be seen from the above, Project B should be the one to be selected even though its IRR is lower than that of Project A. This decision shall need to be takenin spite of the fact that Project A has a larger investment coupled with a higher IRRas compared with Project B. **This type of anomalous situation arises due toreinvestment assumptions implicit in the two evaluation methods of NPV and IRR.**

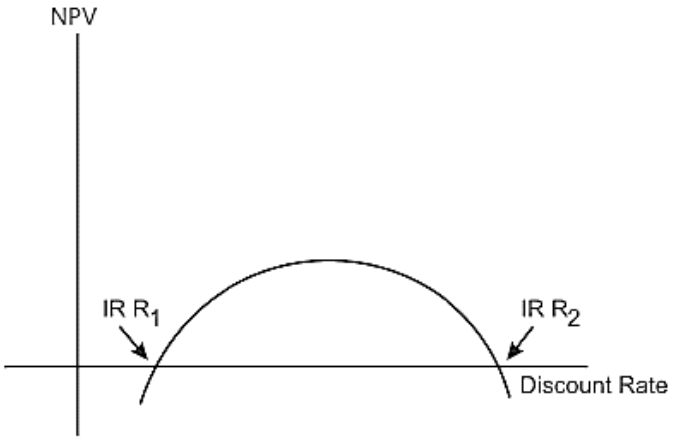
The Reinvestment Assumption

The Net Present Value technique assumes that all **cash flows can be reinvested** at the discount rate used for calculating the NPV. This is a logical assumption since the use of the NPV technique implies that all projects which provide a higher return than the discounting factor are accepted.

In contrast, IRR technique assumes that all cash flows are reinvested at project'sIRR. This assumption means that projects with heavy cash flows in the early yearswill be favoured by the IRR method vis-à-vis projects which have larger cash flows in the later years. This implicit reinvestment assumption means that Projects likeA, with cash flows concentrated in the earlier years of life will be preferred by the method relative to Projects such as B.

Multiple Internal Rate of Return

In cases, where project cash flows change signs or reverse during the life of a project e.g. an initial cash outflow is followed by cash inflows and subsequently followed by a major cash outflow, there may be more than one IRR. The following graph of discount rate versus NPV may be used as an illustration:



In such situations. if the cost of capital is less than the two IRR's, a decision can be made easily, however otherwise the IRR decision rule may turn out to be misleading as the project should only be invested if the cost of capital is between IRR1 and IRR2.To understand the concept of multiple IRR, it is necessary to understand the implicit re-investment assumption in both NPV and IRR techniques.

Advantages of IRR

- This method makes use of the concept of **time value of money**.
- **All the cash flows** in the project **are considered**.
- **IRR is easier to use** as instantaneous understanding of desirability can bedetermined by comparing it with the cost of capital
- IRR technique **helps in achieving the objective** of maximisation ofshareholder's wealth.

Limitations of IRR

- The calculation **process is tedious** if there is more than one cash outflow interspersed between the cash inflows; there can be multiple IRR, the interpretation of which is difficult.
- The IRR approach **creates a peculiar situation** if we compare two projects with different inflow/outflow patterns.
- It is assumed that under this method all the future cash inflows of a proposal arereinvested at a rate equal to the IRR. **It ignores a firm's ability to re-invest** in portfolio of different rates.
- If mutually exclusive projects are considered as investment options which have considerably different cash outlays. A project with a larger fund commitment but lower IRR contributes more in terms of absolute NPV and increases the shareholders' wealth. In such situation **decisions based only on IRR criterion may not be correct**.

Discounted Payback Period Method

This is similar to Payback period as discussed in 7.8.1 under the non-discounting method except that the cash flows here are discounted at predetermined rate and the payback period so calculated is called **Discounted payback period**. One of the most popular economic criteria for evaluating capital projects is the payback period. Payback period is the time required for cumulative cash inflows to recoverthe cash outflows of the project.

This technique is considered superior to simple payback period method because it takes into account time value of money.

Example- 10

For example, a ₹30,000 cash outlay for a project with annual cash inflows of ₹6,000 would have a payback period of 5 years (₹30,000 / ₹6,000).

The problem with the Payback Period is that it ignores the time value of money. In order to correct this, we can use discounted cash flows in calculating the payback period. Referring back to our example, if we discount the cash inflows at 15%required rate of return, we have:

Year	Cash Flow (₹)	PVF@15%	PV (₹)	Cumulative PV (₹)
1	6,000	0.870	5,220	5,220
2	6,000	0.756	4,536	9,756
3	6,000	0.658	3,948	13,704
4	6,000	0.572	3,432	17,136
5	6,000	0.497	2,982	20,118
6	6,000	0.432	2,592	22,710
7	6,000	0.376	2,256	24,966
8	6,000	0.327	1,962	26,928
9	6,000	0.284	1,704	28,632
10	6,000	0.247	1,482	30,114

The cumulative total of discounted cash flows after ten years is ₹30,114. Therefore, our discounted payback is approximately 10 years as opposed to 5 years under simple payback. It should be noted that **as the required rate of return increases, the distortion between simple payback and discounted payback grows**.

Modified Internal Rate of Return (MIRR)

As mentioned earlier, there are several limitations attached with the concept of the conventional Internal Rate of Return (IRR). The MIRR addresses some of these deficiencies e.g., it eliminates multiple IRR rates; it addresses **the reinvestmentrate issue** and produces results which are consistent with the Net Present Value method. **This method is also called Terminal Value method**. Under this method, all cash flows, apart from the initial investment, are brought to the terminal value using an appropriate discount rate (usually the Cost of Capital). This results in a single stream of cash inflow in the terminal year. **The MIRR is obtained by assuming a single outflow in the zeroth year and the terminal cash inflow** as mentioned above. **The discount rate which equates the present value of the terminal cash inflow to the zero year outflow is called the MIRR**.

The decision criterion of MIRR is same as IRR i.e. you accept an investment if MIRRis larger than required rate of return and reject if it is lower than the required rateof return.

Comparison of Net Present Value and Internal Rate of Return Methods

Similarity

- Both the net present value (NPV) and the internal rate of return (IRR) methods arediscounted cash flow methods which consider the time value of money.
- Both the techniques consider all cash flows over the expected useful life of theinvestment.

Different conclusion in the following scenarios

There are circumstances/scenarios under which the net present value method andthe internal rate of return methods will reach different conclusions. Let us discuss these scenarios:

Scenario 1 – Scale or Size Disparity

Being **IRR a relative measure** and **NPV an absolute measure** in case of disparityin scale or size both may give contradicting ranking.

Scenario 2 – Time Disparity in Cash Flows

It might be possible that overall cash flows may be more or less same in the projects but there may be disparity in their flows i.e., larger part of cash inflows may be occurred in the beginning or end of the project. In such situation there may be difference in the ranking of projects as per two methods.

Scenario 3 – Disparity in life of Proposals (Unequal Lives)

Conflict in ranking may also arise if we are comparing two projects (especially mutually exclusive) having unequal lives.

SUMMARY OF DECISION CRITERIA OF CAPITAL BUDGETING TECHNIQUES

Techniques		**For Independent Project**	**For MutuallyExclusive Projects**
Non-Discounted	**Pay Back**	**i.** When Payback period ≤ Maximum Acceptable Payback period: **Accepted** **ii.** When Payback period ≥ Maximum Acceptable Payback period:**Rejected**	Project with least Payback periodshould be selected
	Accounting Rate of Return (ARR)	**i.** When ARR≥ Minimum Acceptable Rate of Return: **Accepted** **ii.** When ARR ≤ Minimum	Project with the maximum ARR should be selected.

		Acceptable Rate of Return: **Rejected**	
Discounted	**Net Present Value (NPV)**	**i.** When NPV> 0: **Accepted** **ii.** When NPV< 0: **Rejected**	Project with thehighest positiveNPV should be selected
	Profitability Index (PI)	**i.** When PI > 1: **Accepted** **ii.** When PI < 1: **Rejected**	When Net PresentValue is sameproject with Highest PI should be selected
	Internal Rate ofReturn (IRR)	**i.** When IRR >K: **Accepted** **ii.** When IRR <K: **Rejected**	Project with the maximum IRR should be selected

SPECIAL CASES

Capital Budgeting under Capital Rationing

As discussed earlier, if project has positive NPV, it should be accepted with an objective of maximisation of wealth of shareholders. However, there may be a situation due to resource (capital) constraints (rationing) a firm may have to select some projects among various projects, all having positive NPVs. Broadly two scenarios may influence the method of evaluation to be adopted.

i. **Projects are independent of each other and are divisible in nature:** In such situation, NPV rule should be modified and accordingly projects should be ranked on the basis of 'NPV per rupee of Capital 'method.
ii. **Projects are not divisible:** In such situation, projects shall be ranked on the basisof absolute NPV and should be mixed up to the point available resources are exhausted.

Projects with unequal lives

Sometimes firm may be faced with any of the following problems:

i. **Retaining** an old asset **or replace** it with new one.
ii. Choosing one proposal among two proposals (**Mutually Exclusive**).

Although, while evaluating the proposals in the above scenarios, do not pose any special problem if they have same life period. But problem arises in case projects have unequal lives. In such situations we can deal with the problem by followingany of the following method:

i. Replacement Chain Method
ii. Equivalent Annualized Criterion

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

ABC Ltd is evaluating the purchase of a new machinery with a depreciable base of 1,00,000; expected economic life of 4 years and change in earnings before taxesand depreciation of ₹45,000 in year 1, ₹30,000 in year 2, ₹25,000 in year 3 and ₹35,000 in year 4. Assume straight-line depreciation and a 20% tax rate. You arerequired to COMPUTE relevant cash flows.

PROBLEM – 2

A project requiring an investment of ₹10,00,000 and it yields profit after tax and depreciation which is as follows:

Years	Profit after tax and depreciation (₹)
1	50,000
2	75,000
3	1,25,000
4	1,30,000
5	80,000
Total	4,60,000

Suppose further that at the end of the 5th year, the plant and machinery of the project can be sold for ₹80,000. DETERMINE Average Rate of Return.

PROBLEM – 3

COMPUTE the net present value for a project with a net investment of ₹1,00,000 andnet cash flows for year one is ₹55,000; for year two is ₹80,000 and for year three is ₹15,000. Further, the company's cost of capital is 10%.

[PVIF @ 10% for three years are 0.909, 0.826 and 0.751]

PROBLEM – 4

ABC Ltd. is a small company that is currently analysing capital expenditure proposals for the purchase of equipment; the company uses the net present value technique to evaluate projects. The capital budget is limited to ₹500,000 which ABC Ltd. believesis the maximum capital it can raise. The initial investment and projected net cash flows for each project are shown below. The cost of capital of ABC Ltd is 12%. Youare required to COMPUTE the NPV of the different projects.

	Project A (₹)	Project B (₹)	Project C (₹)	Project D (₹)
Initial Investment	200,000	190,000	250,000	210,000
Project Cash Inflows:				
Year 1	50,000	40,000	75,000	75,000
2	50,000	50,000	75,000	75,000
3	50,000	70,000	60,000	60,000
4	50,000	75,000	80,000	40,000
5	50,000	75,000	100,000	20,000

PROBLEM – 5

Cello Limited is considering buying a new machine which would have a useful economic life of five years, a cost of ₹1,25,000 and a scrap value of ₹30,000, with80 per cent of the cost being payable at the start of the project and 20 per cent atthe end of the first year. The machine would produce 50,000 units per annum of anew product with an estimated selling price of ₹3 per unit. Direct costs would be ₹1.75 per unit and annual fixed costs, including depreciation calculated on a straight- line basis, would be ₹40,000 per annum.

In the first year and the second year, special sales promotion expenditure, notincluded in the above costs, would be incurred, amounting to ₹10,000 and ₹15,000 respectively.

CALCULATE NPV of the project for investment appraisal, assuming that thecompany's cost of capital is 10 percent.

PROBLEM – 6

XYZ Ltd. is planning to introduce a new product with a project life of 8 years. Initialequipment cost will be ₹3.5 crores. Additional equipment costing ₹25,00,000 willbe purchased at the end of the third year from the cash inflow of this year. At theend of 8 years, the original equipment will have no resale value, but additional equipment can be sold for ₹2,50,000. A working capital of ₹40,00,000 will be needed and it will be released at the end of eighth year. The project will be financed with sufficient amount of equity capital.

The sales volumes over eight years have been estimated as follows:

Year	1	2	3	4 - 5	6 - 8
Units per year	72,000	1,08,000	2,60,000	2,70,000	1,80,000

A sales price of ₹240 per unit is expected and variable expenses will amount to 60% of sales revenue. Fixed cash operating costs will amount ₹36,00,000 per year.The loss of any year will be set off from the profits of subsequent two years. The company is subject to 30 per cent tax rate and considers 12 per cent to be an appropriate after-tax cost of capital for this project. The company follows straightline method of depreciation.

CALCULATE the net present value of the project and advise the management to take appropriate decision.

The PV factors at 12% are

Year	1	2	3	4	5	6	7	8
PV Factor	0.893	0.797	0.712	0.636	0.567	0.507	0.452	0.404

PROBLEM – 7

Elite Cooker Company is evaluating three investment situations: (1) Produce a newline of aluminium skillets, (2) Expand its existing cooker line to include several newsizes, and (3) Develop a new, higher-quality line of cookers. If only the project in question is undertaken, the expected present values and the amounts of investment required are:

Project	Investment required	Present value of FutureCash-Flows
	₹	₹
1	2,00,000	2,90,000
2	1,15,000	1,85,000
3	2,70,000	4,00,000

If projects 1 and 2 are jointly undertaken, there will be no economies; theinvestments required and present values will simply be the sum of the parts. Withprojects 1 and 3, economies are possible in investment because one of themachines acquired can be used in both production processes. The total investmentrequired for projects 1 and 3 combined is ₹4,40,000. If projects 2 and 3 are undertaken, there are economies to be achieved in marketing and producing the products but not in investment. The expected present value of future cash flows forprojects 2 and 3 is ₹6,20,000. If all three projects are undertaken simultaneously,the economies noted will still hold. However, a ₹1,25,000 extension on the plant will be necessary, as space is not available for all three projects.

CALCULATE NPVof the projects and STATE which project or projects should be chosen?

PROBLEM – 8

Suppose we have three projects involving discounted cash outflow of ₹5,50,000, ₹75,000 and ₹1,00,20,000 respectively. Suppose further that the sum of discounted cash inflows for these projects are ₹6,50,000, ₹95,000 and ₹1,00,30,000 respectively.

CALCULATE the desirability factors for the three projects.

PROBLEM – 9

NavJeevani hospital is considering to purchase a machine for medicalprotectional radiography which is priced at ₹2,00,000. The projected life of the machine is 8 years and has an expected salvage value of ₹18,000 at the end of 8th year. The annual operating cost of the machine is ₹22,500. It is expected to generate revenues of ₹1,20,000 per year for eight years. Presently, the hospitalis outsourcing the radiography work to its neighbour Test Center and is earning commission income of ₹36,000 per annum, net of taxes.

Required:

ANALYSE whether it would be profitable for the hospital to purchase the machine. Give your recommendation under:

i. **Net Present Value method**

ii. **Profitability Index method**

Consider tax @30%. PV factors at 10% are given below:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467

PROBLEM – 10

A Ltd. is evaluating a project involving an outlay of ₹10,00,000 resulting in an annual cash inflow of ₹2,50,000 for 6 years. Assuming salvage value of the project is zero;

DETERMINE the IRR of the project.

PROBLEM – 11

CALCULATE the internal rate of return of an investment of ₹1,36,000 which yieldsthe following cash inflows:

Year	Cash Inflows (₹)
1	30,000
2	40,000

3	60,000
4	30,000
5	20,000

PROBLEM – 12

A company proposes to install machine involving a capital cost of ₹3,60,000. The lifeof the machine is 5 years and its salvage value at the end of the life is nil. The machine will produce the net operating income after depreciation of ₹68,000 per annum. The company's tax rate is 45%.

The Net Present Value factors for 5 years are as under:

Discounting rate	14	15	16	17	18
Cumulative factor	3.43	3.35	3.27	3.20	3.13

You are required to COMPUTE the internal rate of return of the proposal.

PROBLEM – 13

Hind lever Company is considering a new product line to supplement its range of products. It is anticipated that the new product line will involve cash investmentsof ₹7,00,000 at time 0 and ₹10,00,000 in year 1. After-tax cash inflows of₹2,50,000 are expected in year 2, ₹3,00,000 in year 3, ₹3,50,000 in year 4 and

₹4,00,000 each year thereafter through year 10. Although the product line mightbe viable even after year 10, the company prefers to be conservative and end all calculations at that time.

a. If the required rate of return is 15 per cent, COMPUTE net present value ofthe project. Is it acceptable?

b. ANALYSE what would be the case if the required rate of return were 10 percent.

c. CALCULATE its internal rate of return.

d. COMPUTE the project's payback period.

PROBLEM – 14

Following data has been available for a capital project:

Annual cash inflows	₹1,00,000
Useful life	4 years
Salvage value	0
Internal rate of return	12%

Profitability index 1.064

You are required to CALCULATE the following for this project:

1. Cost of project

2. Cost of capital

3. Net present value

4. Payback period

PV factors at different rates are given below:

Discount factor	12%	11%	10%	9%
1 year	0.893	0.901	0.909	0.917
2 years	0.797	0.812	0.826	0.842
3 years	0.712	0.731	0.751	0.772
4 years	0.636	0.659	0.683	0.708

PROBLEM – 15

An investment of ₹1,36,000 yields the following cash inflows (profits before depreciation but after tax). DETERMINE MIRR considering 8% as cost of capital.

Year	(₹)
1	30,000
2	40,000
3	60,000
4	30,000
5	20,000
	1,80,000

PROBLEM – 16

Suppose there are two Project A and Project B are under consideration. The cash flows associated with these projects are as follows:

Year	Project A (₹)	Project B (₹)
0	(1,00,000)	(3,00,000)
1	50,000	1,40,000
2	60,000	1,90,000
3	40,000	1,00,000

Assuming Cost of Capital equal to 10%

IDENTIFY which project should be acceptedas per NPV Method and IRR Method.

PROBLEM – 17

Suppose ABC Ltd. is considering two Project X and Project Y for investment. The cash flows associated with these projects are as follows:

Year	Project X (₹)	Project Y (₹)
0	(2,50,000)	(3,00,000)
1	2,00,000	50,000
2	1,00,000	1,00,000
3	50,000	3,00,000

Assuming Cost of Capital be 10%

IDENTIFY which project should be accepted as per NPV Method and IRR Method.

PROBLEM – 18

Suppose MVA Ltd. is considering two Project A and Project B for investment. The cashflows associated with these projects are as follows:

Year	Project A (₹)	Project B (₹)
0	(5,00,000)	(5,00,000)
1	7,50,000	2,00,000
2	0	2,00,000
3	0	7,00,000

Assuming Cost of Capital equal to 12%

ANALYSE which project should be acceptedas per NPV Method and IRR Method?

PROBLEM – 19

Shiva Limited is planning its capital investment programme for next year. It has five projects all of which give a positive NPV at the company cut-off rate of 15 percent,the investment outflows and present values being as follows:

Project	Investment (₹)	NPV @ 15% (₹)
A	(50,000)	15,400
B	(40,000)	18,700

C	(25,000)	10,100
D	(30,000)	11,200
E	(35,000)	19,300

The company is limited to a capital spending of ₹1,20,000.

You are required to ILLUSTRATE the returns from a package of projects within the capitalspending limit. The projects are independent of each other and are divisible (i.e., part- project is possible).

PROBLEM – 20

R Pvt. Ltd. is considering modernizing its production facilities and it has two proposals under consideration. The expected cash flows associated with these projects and their NPV as per discounting rate of 12% and IRR is as follows:

Year	**Cash Flow**	
	Project A (₹)	**Project B (₹)**
0	(40,00,000)	(20,00,000)
1	8,00,000	7,00,000
2	14,00,000	13,00,000
3	13,00,000	12,00,000
4	12,00,000	0
5	11,00,000	0
6	10,00,000	0
NPV @12%	6,49,094	5,15,488
IRR	17.47%	25.20%

IDENTIFY which project should R Pvt. Ltd. accept?

PROBLEM – 21

Alpha Company is considering the following investment projects:

	Cash Flows (₹)			
Projects	**C_0**	**C_1**	**C_2**	**C_3**
A	-10,000	+10,000		

B	-10,000	+7,500	+7,500	
C	-10,000	+2,000	+4,000	+12,000
D	-10,000	+10,000	+3,000	+3,000

a. ANALYSE and rank the projects according to each of the following methods: (i)Payback, (ii) ARR, (iii) IRR and (iv) NPV, assuming discount rates of 10 and 30 per cent.

b. Assuming the projects are independent, which one should be accepted? If theprojects are mutually exclusive, IDENTIFY which project is the best?

PROBLEM – 22

HMR Ltd. is considering replacing a manually operated old machine with a fully automatic new machine. The old machine had been fully depreciated for tax purpose buthas a book value of ₹2,40,000 on 31st March. The machine has begun causing problemswith breakdowns and it cannot fetch more than ₹30,000 if sold in the market at present.It will have no realizable value after 10 years. The company has been offered ₹1,00,000for the old machine as a trade in on the new machine which has a price (before allowancefor trade in) of ₹4,50,000. The expected life of new machine is 10 years with salvage value of ₹35,000.

Further, the company follows straight line depreciation method but for tax purpose, written down value method depreciation @ 7.5% is considering that this is the only machine in the block of assets.

Given below are the expected sales and costs from both old and new machine:

	Old machine (₹)	**New machine (₹)**
Sales	8,10,000	8,10,000
Material cost	1,80,000	1,26,250
Labour cost	1,35,000	1,10,000
Variable overhead	56,250	47,500
Fixed overhead	90,000	97,500
Depreciation	24,000	41,500
PBT	3,24,750	3,87,250
Tax @ 30%	97,425	1,16,175
PAT	2,27,325	2,71,075

From the above information, ANALYSE whether the old machine should be replaced or not if required rate of return is 10%? Ignore capital gain tax.

PV factors @ 10%:

Year	1	2	3	4	5	6	7	8	9	10
PVF	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386

PROBLEM – 23

Lockwood Limited wants to replace its old machine with a new automatic machine.Two models A and B are available at the same cost of ₹5 lakhs each. Salvage valueof the old machine is ₹1 lakh. The utilities of the existing machine can be used if the company purchases model A. Additional cost of utilities to be purchased in thiscase will be ₹1 lakh. If the company purchases B, then all the existing utilities will have to be replaced with new utilities costing ₹2 lakhs. The salvage value of the oldutilities will be ₹0.20 lakhs. The cash flows are expected to be:

Year	Cash inflows of A (₹)	Cash inflows of B (₹)	P.V. Factor@ 15%
1	1,00,000	2,00,000	0.870
2	1,50,000	2,10,000	0.756
3	1,80,000	1,80,000	0.658
4	2,00,000	1,70,000	0.572
5	1,70,000	40,000	0.497
Salvage Value atthe end of Year 5	50,000	60,000	

The targeted return on capital is 15%.

You are required to

i. COMPUTE, for the twomachines separately, net present value, discounted payback period and desirabilityfactor

ii. STATE which of the machines is to be selected?

PROBLEM – 24

Xavly Ltd. has a machine which has been in operation for 3 years. The machine has a remaining estimated useful life of 5 years with no salvage value in the end.Its current market value is ₹2,00,000. The company is considering a proposal to purchase a new model of machine to replace the existing machine. The relevant information is as follows:

	Existing Machine	New Machine
Cost of machine	₹3,30,000	₹10,00,000
Estimated life	8 years	5 years

Salvage value	Nil	₹40,000
Annual output	30,000 units	75,000 units
Selling price per unit	₹15	₹15
Annual operating hours	3,000	3,000
Material cost per unit	₹4	₹4
Labour cost per hour	₹40	₹70
Indirect cash cost per annum	₹50,000	₹65,000

The company uses written down value of depreciation @ 20% and it has several other machines in the block of assets. The Income tax rate is 30 per cent and XavlyLtd. does not make any investment, if it yields less than 12 per cent.

ADVISE Xavly Ltd. whether the existing machine should be replaced or not.PV factors @12%:

Year	**1**	**2**	**3**	**4**	**5**
PVF	0.893	0.797	0.712	0.636	0.567

PROBLEM – 25

Ae Bee Cee Ltd. is planning to invest in machinery, for which it has to make a choice between the two identical machines, in terms of Capacity, 'X' and 'Y'. Despite being designed differently, both machines do the same job. Further, details regarding both the machines are given below:

Particulars	**Machine 'X'**	**Machine 'Y'**
Purchase Cost of the Machine (₹)	15,00,000	10,00,000
Life (years)	3	2
Running cost per year (₹)	4,00,000	6,00,000

The opportunity cost of capital is 9%.

You are required to IDENTIFY the machine which the company should buy?

The present value (PV) factors at 9% are:

Year	**t_1**	**t_2**	**t_3**
PVIF0.09.t	0.917	0.842	0.772

PROBLEM – 26

Alley Pvt. Ltd. is planning to invest in a machinery that would cost ₹1,00,000 at the beginning of year 1. Net cash inflows from operations have been estimated at ₹36,000 per annum for 3 years. The company has two options for smooth functioning of the machinery - one is service, and another is replacement of parts.If the company opts to service a part of the machinery at the end of year 1 at ₹20,000, in such a case, the scrap value at the end of year 3 will be ₹25,000. However, if the company decides not to service the part, then it will have to be replaced at the end of year 2 at ₹30,800, and in this case, the machinery will workfor the 4th year also and get operational cash inflow of ₹36,000 for the 4th year. It will have to be scrapped at the end of year 4 at ₹18,000.

Assuming cost of capital at 10% and ignoring taxes, DETERMINE the purchase of this machinery based on the net present value of its cash flows.

If the supplier gives a discount of ₹10,000 for purchase, what would be your decision?

Note: The PV factors at 10% are:

Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**
PV Factor	1	0.9091	0.8264	0.7513	0.6830	0.6209	0.5645

PROBLEM – 27

A large profit-making company is considering the installation of a machine to process the waste produced by one of its existing manufacturing processes to be converted into a marketable product. At present, the waste is removed by a contractor for disposal on payment by the company of ₹150 lakh per annum for the next four years. The contract can be terminated upon installation of the aforesaid machine on payment of a compensation of ₹90 lakh before the processing operation starts. This compensation is not allowed as deduction for taxpurposes.

The machine required for carrying out the processing will cost ₹600 lakh. At the end of the 4th year, the machine can be sold for ₹60 lakh and the cost of dismantling and removal will be ₹45 lakh.

Sales and direct costs of the product emerging from waste processing for 4 years are estimated as under: (₹In lakh)

Year	**1**	**2**	**3**	**4**
Sales	966	966	1,254	1,254
Material consumption	90	120	255	255
Wages	225	225	255	300
Other expenses	120	135	162	210
Factory overheads	165	180	330	435
Depreciation (as perincome tax rules)	150	114	84	63

Initial stock of materials required before commencement of the processing operations is ₹60 lakh at the start of year 1. The stock levels of materials to be maintained at the end of year 1, 2 and 3 will be ₹165 lakh and the stocks at the end of year 4 will be nil. The storage of materials will utilise space which would otherwise have been rented out for ₹30 lakh per annum. Labour costs include wages of 40 workers, whose transfer to this process will reduce idle time paymentsof ₹45 lakh in the year- 1 and ₹30 lakh in the year- 2. Factory overheads includeapportionment of general factory overheads except to the extent of insurance charges of ₹90 lakh per annum payable on this venture. The company's tax rate is 30%.

Consider cost of capital @ 14%, the present value factors of which is given below for four years:

Year	**1**	**2**	**3**	**4**
PV factors @14%	0.877	0.769	0.674	0.592

ADVISE the management on the desirability of installing the machine for processing the waste. All calculations should form part of the answer.

PROBLEM – 28

A chemical company is presently paying an outside firm ₹1 per gallon to disposeoff the waste resulting from its manufacturing operations. At normal operating capacity, the waste is about 50,000 gallons per year. After spending ₹60,000 on research, the company discovered that the waste couldbe sold for ₹10 per gallon if it was processed further. Additional processing would,however, require an investment of ₹6,00,000 in new equipment, which would havean estimated life of 10 years with no salvage value. Depreciation would be calculated by straight line method.

Except for the costs incurred in advertising ₹20,000 per year, no change in the present selling and administrative expenses is expected, if the new product is sold.The details of additional processing costs are as follows:

Variable : ₹5 per gallon of waste put into process.

Fixed : (Excluding Depreciation) ₹30,000 per year.

There will be no losses in processing, and it is assumed that the total waste processed in a given year will be sold in the same year. Estimates indicate that 50,000 gallons of the product could be sold each year.

The management when confronted with the choice of disposing off the wasteor processing it further and selling it, seeks your ADVICE. Which alternative would you recommend? Assume that the firm's cost of capital is 15% and itpays on an average 50% Tax on its income.

You should consider Present value of Annuity of ₹1 per year @ 15% p.a. for 10 years as 5.019.

PROBLEM – 29

Manoranjan Ltd is a News broadcasting channel having its broadcasting Centre in Mumbai. There are total 200 employees in the organisation including top management. As a part of employee benefit expenses, the company serves tea or coffee to its employees, which is outsourced from a third-party. The company offers tea or coffee three times a day to each of its employees. 120 employees prefer tea all three times, 40 employees prefer coffee all three times and remaining prefer tea only once in a day. The third-party charges ₹10 for each cup of tea and ₹15 for each cup of coffee. The company works for 200 days ina year. Looking at the substantial amount of expenditure on tea and coffee, the finance department has proposed to the management an installation of a master tea and coffee vending machine which will cost ₹10,00,000 with a useful life of five years. Upon purchasing the machine, the company will have to enter into an annual maintenance contract with the vendor, which will require a payment of

₹75,000 every year. The machine would require electricity consumption of 500 units p.m. and current incremental cost of electricity for the company is ₹12 per unit. Apart from these running costs, the company will have to incur the following consumables expenditure also:

1. Packets of Coffee beans at a cost of ₹90 per packet.
2. Packet of tea powder at a cost of ₹70 per packet.
3. Sugar at a cost of ₹50 per Kg.
4. Milk at a cost of ₹50 per litre.
5. Paper cup at a cost of 20 paise per cup.

Each packet of coffee beans would produce 200 cups of coffee and same goesfor tea powder packet. Each cup of tea or coffee would consist of 10g of sugaron an average and 100 ml of milk.

The company anticipate that due to ready availability of tea and coffee through vending machines its employees would end up consuming more tea and coffee.

It estimates that the consumption will increase by on an average 20% for allclass of employees. Also, the paper cups consumption will be 10% more thanthe actual cups served due to leakages in them.

The company is in the 25% tax bracket and has a current cost of capital at 12% per annum. Straight line method of depreciation is allowed for the purpose of taxation. You as a financial consultant is required to ADVISE on the feasibilityof acquiring the vending machine.

PV factors @ 12%:

Year	1	2	3	4	5
PVF	0.8929	0.7972	0.7118	0.6355	0.5674

PROBLEM – 30

A & Co. is contemplating whether to replace an existing machine or to spend money on overhauling it. A & Co. currently pays no taxes. The replacement machine costs ₹90,000 now and requires maintenance of ₹10,000 at the end of every year for eight years. At the end of eight years it would have a salvage valueof ₹20,000 and would be sold. The existing machine requires increasing amounts of maintenance each year and its salvage value falls each year as follows:

Year	Maintenance (₹)	Salvage (₹)
Present	0	40,000
1	10,000	25,000
2	20,000	15,000
3	30,000	10,000
4	40,000	0

The opportunity cost of capital for A & Co. is 15%. REQUIRED:

When should the company replace the machine?

(Note: Present value of an annuity of Re. 1 per period for 8 years at interest rate of 15% : 4.4873; present value of Re. 1 to be received after 8 years at interest rate of 15% : 0.3269).

PROBLEM – 31

XYZ Ltd. is presently all equity financed. The directors of the company have been evaluating investment in a project which will require ₹270 lakhs capital expenditure on new machinery. They expect the capital investment to provide annual cash flowsof ₹42 lakhs indefinitely which is net of all tax adjustments. The discount rate whichit applies to such investment decisions is 14% net.

The directors of the company believe that the current capital structure fails to take advantage of tax benefits of debt and propose to finance the new project with undated perpetual debt secured on the company's assets. The company intends to issue sufficient debt to cover the cost of capital expenditure and the after tax cost of issue.

The current annual gross rate of interest required by the market on corporate undated debt of similar risk is 10%. The after tax costs of issue are expected to be ₹10 lakhs. Company's tax rate is 30%.

You are REQUIRED to:

i. Calculate the adjusted present value of the investment,

ii. Calculate the adjusted discount rate and

iii. Explain the circumstances under which this adjusted discount rate may be usedto evaluate future investments.

ADDITIONAL QUESTIONS FOR PRATICE

QFP 1 (Concept Similar to Problem – 21)

The expected cash flows of three projects are given below. The cost of capital is 10per cent.

a. CALCULATE the payback period, net present value, internal rate of return andaccounting rate of return of each project.

b. IDENTIFY the rankings of the projects by each of the four methods.

(₹in '000)

Period	Project A (₹)	Project B (₹)	Project C (₹)
0	(5,000)	(5,000)	(5,000)
1	900	700	2,000
2	900	800	2,000
3	900	900	2,000
4	900	1,000	1,000
5	900	1,100	
6	900	1,200	
7	900	1,300	
8	900	1,400	
9	900	1,500	
10	900	1,600	

QFP 2 (Concept Similar to Problem – 21)

X Limited is considering purchasing of new plant worth ₹80,00,000. The expected netcash flows after taxes and before depreciation are as follows:

Year	Net Cash Flows (₹)
1	14,00,000
2	14,00,000
3	14,00,000
4	14,00,000
5	14,00,000
6	16,00,000
7	20,00,000
8	30,00,000

9	20,00,000
10	8,00,000

The rate of cost of capital is 10%.

You are required to CALCULATE:

i. Pay-back period

ii. Net present value at 10 discount factors

iii. Profitability index at 10 discount factors

iv. Internal rate of return with the help of 10% and 15% discount factor the following present value table is given for you:

Year	Present value of ₹1 at 10% discount rate	Present value of ₹1 at 15% discount rate
1	0.909	0.87
2	0.826	0.756
3	0.751	0.658
4	0.683	0.572
5	0.621	0.497
6	0.564	0.432
7	0.513	0.376
8	0.467	0.327
9	0.424	0.284
10	0.386	0.247

CHAPTER 06: DIVIDEND DECISIONS

INTRODUCTION

As we had already discussed in Chapter 1 (Scope and Objectives of Financial Management), Financial Management is the process of making financial decisions so as to increase the value of the firm.

Long term Finance function decisions broadly covers three areas:

i. Financing decision
ii. Investment decision
iii. Dividend decision

So far, we had already discussed the first two decisions that are Financing and Investment decisions in earlier chapters. In this chapter, we will discuss the "Dividend decision" which is one of the **most important areas of management decisions.**

Dividend Decision is easy to understand but difficult to implement. Let us understand this with the help of an example, suppose a company, say X limited, which is continuously paying the dividend at a normal growth rate, earns hugeprofits this year. Now the management have to decide whether it should continueto pay dividend at normal rate or to pay at an increasing rate. Why this dilemma? The reason is that, if the management decides to pay higher dividend, then it might be possible that next year, the company will not achieve such higher growth rate, resulting in lower dividend payment in comparison to previous year. However, ifthe company decides to stay on the normal rate of dividend, then surplus amountof retained earnings would remain idle which will result in over capitalization, if no other opportunity exist to utilize the idle funds.

Further, there are some other factors also which will affect the dividend decision(will be discussed later).

Furthermore, there are few Dividend theories which put light on the complexities involved in dividend decision.

These theories have been discussed under the following two categories:

Irrelevance Theory: MM Approach

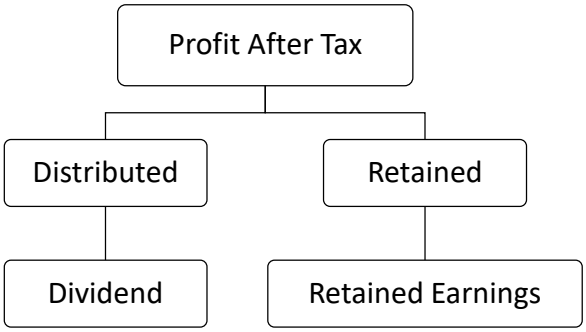
Relevance Theory: Walter's Model & Gordon's Model

MEANING OF DIVIDEND

Dividend is that part of Profit After Tax (PAT) which is **distributed to the shareholders** of the company.

Further, the profit earned by a company after paying taxes can be used for:

i. Distribution of dividend, or
ii. Retaining as surplus for future growth



One of the important terms to understand with regard to dividend is ex- dividend. Ex-dividend refers to shares that no longer carry the right to dividend.Price at which shares trades immediately on next day after declaration of dividend is referred to as Ex-dividend price.

FORMS OF DIVIDEND

Generally, the dividend can be of the following forms (depending upon some factors that will be discussed later):

1. **Cash dividend:** It is the most **common form of dividend**. Cash here means cash, cheque, warrant, demand draft, pay order or directly through Electronic Clearing Service (ECS) but not in kind.
2. **Share repurchases**: A share repurchase is transaction in which company buys back its own shares using corporate cash. This is done by lot of corporates thesedays.

The bought back shares as above can be classified as

a. treasury shares which are kept for re-issuance in future or

b. cancelled shares if they would be retired from issued share capital. Share repurchases are also viewed as one form dividend distribution

Keeping other things same (such as tax considerations etc.), the effect of cashdividend and share repurchases on shareholder's wealth is same.

3. **Stock dividend (Bonus Shares):** It is a **distribution of shares in lieu of cash dividend**. When the company issues new shares to its existing shareholders without any consideration it is called bonus shares. Such shares are distributed proportionately thereby retaining proportionate ownership of the company. If a shareholder owns 100 shares at a time and 10% dividend is declared, then he will have 10 (100 × 10%) additional shares thereby increasing the equity share capitaland reducing reserves and surplus (retained earnings). The total net worth is not affected by bonus issue as retained earnings are only capitalised.

Conditions of Stock Dividend or Bonus Issue

To issue Bonus shares, a Company needs to fulfil all the conditions given by Security Exchange Board of India (SEBI). As per SEBI, the bonus shares are issued not in lieuof cash dividends. A bonus issue should be authorised by Article of Association (AOA) and not to be declared unless all partly paid-up shares have been converted into fully paid-up shares. The Company should not have defaulted in re-paymentof loan, interest and any statutory dues. Bonus shares are to be issued only from share premium and free reserves and not from capital reserve on account of fixed assets revaluation. Bonus shares are used by companies to prevent investors from selling its shares as short term capital gains is 15% and long term capital gains is 10% and the period of holding for bonus shares starts from date of issue of bonus shares. In such a scenarioan investor would not immediately sale bonus shares as they might lose 5% on account of taxation.

This generally helps companies indirectly as their prices would not fall further due selling activity from investor's end.

Advantages of Stock Dividend

There are many advantages both to the shareholders and company. Some of the main advantages are listed as under:

To Shareholders:

a. No tax is payable by shareholders on stock dividend received from domestic company as it is not treated as dividend but capital asset underIncome Tax Act, 1961.

b. Policy of paying fixed dividend per share and its continuation even after declaration of stock dividend will increase total cash dividend of the shareholders in future.

c. Bonus shares improves liquidity in the hands of shareholders as bonus shares leads to breaking down of higher priced shares into lower priced shares and hence give a choice to shareholders to sell some of the lowerpriced shares and get some liquidity.

To Company:

a. Conservation of cash for meeting profitable investment opportunities.

b. Suitable in case of cash deficiency and restrictions imposed by lendersto pay cash dividend.

Limitations of Stock Dividend

Limitations of stock dividend to shareholders and company are as follows:

1. **To Shareholders:** Stock dividend does not affect the wealth of shareholders and therefore it has no value for them. This is because the declaration of stock dividend is a method of capitalizing the past earnings of the shareholders andis a formal way of recognising earnings which the shareholders already own.It merely divides the company's ownership into a large number of share

certificates. James Porterfield regards stock dividends as a division of corporate pie into a larger number of pieces. Stock dividend does not give any extra or special benefit to the shareholder. His proportionate ownership in the company does not change at all. Stock dividend creates a favourable psychological impact on the shareholders and is greeted by them on theground that it gives an indication of the company's growth.

2. **To Company:** Stock dividends are costlier to administer than cash dividends.It is disadvantageous if periodic small stock dividends are declared by the company as earnings.

SIGNIFICANCE OF DIVIDEND POLICY

Dividend policy of a firm is governed by:

i. **Long Term Financing Decision:**

As we know that one of the financing options is 'Equity'. Equity can either be raised externally through issue of new equity shares or can be generatedinternally through retained earnings. For Equity, retained earnings arepreferable because they do not involve any floatation costs (issue expenses).

But whether to retain or distribute the profits, forms the basis of this decision. Further, payment of cash dividend reduces the amount of funds required to finance profitable investment opportunities thereby restricting its financing options.

In this backdrop, the decision is based on the following:

1. Whether the organization has opportunities in hand to invest the profit,if retained?
2. Whether the return on such investment (ROI) will be higher than the expectations of shareholders i.e., K_e?

ii. **Wealth Maximization Decision:**

Under this decision, we are facing the problem as to what amount of dividend shall be distributed i.e., the Dividend Payout ratio (D/P) in relation to Market price of the shares (MPS)? This decision is based on the following:

1. Because of market imperfections and uncertainty, shareholders give more importance to near dividends than future dividends and capital gains. Payment of dividends influences the market price of the share directly. Higher dividends increase the value of shares and low dividends decrease it. A proper balance has to be struck between these two approaches.
2. When the firm increases its retained earnings, shareholders' dividends decreases and consequently market price is affected. Use of retained earnings to finance profitable investments increases the future earnings per share. This is because, shareholders expect that

profitable investments made by the company may lead to higher return for themin future. On the other hand, increase in dividends may cause the firm to forego investment opportunities for lack of funds and thereby decrease the future earnings per share. Thus, management should develop a dividend policy **which divides net earnings into dividends and retained earnings** in an optimum way so as to achieve the objective of wealth maximization for shareholders. Such a policy will be influenced by investment opportunities available to the firm and valueof dividends as against capital gains to shareholders.

RELATIONSHIP BETWEEN RETAINED EARNINGS AND GROWTH

It can be illustrated with the help of the following equation:

Growth (g) = br

Where,

g = Growth rate of the firm

b = Retention ratio

r = Rate of return on investment

DETERMINANTS OF DIVIDEND DECISIONS

The dividend policy is affected by the following factors:

1. **Availability of funds:** If the business is in requirement of funds, then retained earnings could be a good source. The reason being the saving of floatation cost and prevention of dilution of control which happens in case of new issueof equity shares to public.
2. **Cost of capital:** If the financing requirements are to be executed through debt (relatively cheaper source of finance), then it would be preferable to distribute more dividend. On the other hand, if the financing is to be done through fresh issue of equity shares, then it is better to use retained earnings as much as possible.
3. **Capital structure:** An optimum Debt Equity ratio should also be consideredfor the dividend decision.
4. **Stock price:** Stock price here means market price of the shares. Generally, higher dividends increase market value of shares and low dividends decrease the value.
5. **Investment opportunities in hand:** The dividend decision is also affected if there are investment opportunities in hand. In that situation, the company may prefer to retain more earnings.
6. **Trend of industry:** The investors depend on some industries for their regular dividend income. Therefore, in such cases, the firms have to pay dividend in order to survive in the market.

7. **Expectation of shareholders:** The shareholders can be categorised into two categories: (i) those who invests for regular income, & (ii) those who investsfor growth. Generally, the investor prefers current dividend over the future growth.
8. **Legal constraints:** Section 123 of the Companies Act, 2013 which providesfor declaration of dividend sates that Dividend shall be declared or paid by a company for any financial year only:
   a. out of the profits of the company for that year arrived at after providing for depreciation in accordance with the relevant provisions, or
   b. out of the profits of the company for any previous financial year or years arrived at after providing for depreciation in accordance with the relevant provisions and remaining undistributed, or
   c. out of both, or
   d. out of money provided by the Central Government or a State Government for the payment of dividend by the company in pursuanceof a guarantee given by that Government.

   It may be noted that, while computing the profits for payment of dividends any amount representing unrealized gains, notional gains or revaluation of assets and any change in carrying amount of an asset or of a liability on measurement of the asset or the liability at fair valueshall be excluded.
9. **Taxation:** Before 1st April 2020, as per Section 115-O of Income Tax Act, 1961, dividend was subject to dividend distribution tax (DDT) in the hands of the company. Dividend on which DDT was paid, was to be exempted in the hands ofthe shareholder u/s 10(34). However, as per amendment made by the Finance Act2020, the exemption u/s 10(34) shall not apply to dividend received on or after 1st April 2020 and the dividend income from shares held as investment shall be taxable under the head of 'Other income' at the applicable slab rate. In nutshelldividend would be taxable in the hands of investor.

PRACTICAL CONSIDERATIONS IN DIVIDEND POLICY

A discussion on internal financing ultimately turns to practical considerations which determine the dividend policy of a company. The formulation of dividend policy depends upon answers to the following questions:

- Whether there should be a stable pattern of dividends over the years? or
- Whether the company should treat each dividend decision completely independent?

The practical considerations in dividend policy of a company are briefly discussed below:

a. Financial Needs of a Company: Retained earnings can be a source of finance for creating profitable investment opportunities. As we discussed earlier, when rate of return of a company is greater than return required by shareholders, it would beadvantageous for the shareholders to re-invest their earnings.

Risk and financial obligations increase if a company raises capital through issue ofnew shares where floatation costs are involved.

In this respect, a comparison between growth companies and mature companieshas been given as follows:

Mature Companies	Growth Companies
1. Mature companies having few investment opportunities will show high payout ratios;	**1.** Growth companies have low payout ratios. They are in need of funds to finance fast growing fixed assets.
2. Share prices of such companies are sensitive to any changes in dividend payout.	**2.** Distribution of earnings reduces the funds of the company. They retain all the earnings and declare bonus shares to offset the dividend requirements of the shareholders.
3. A small portion of the earnings iskept to meet emergent and occasional financial needs.	**3.** These companies increase the amount of dividends gradually as theprofitable investment opportunitiesstart falling.

b. Constraints on Paying Dividends

i. Legal: under the heading, "Determinants of Dividend Decisions".

ii. Liquidity: Payment of dividends means outflow of cash. Ability to pay dividendsdepends on cash and liquidity position of the firm. A mature company does nothave much investment opportunities, nor its funds tied up in permanent workingcapital and, therefore has a sound cash position. A growth-oriented company inspite of having good profits need funds to expand its operations and permanentworking capital and therefore it is less likely to declare dividends.

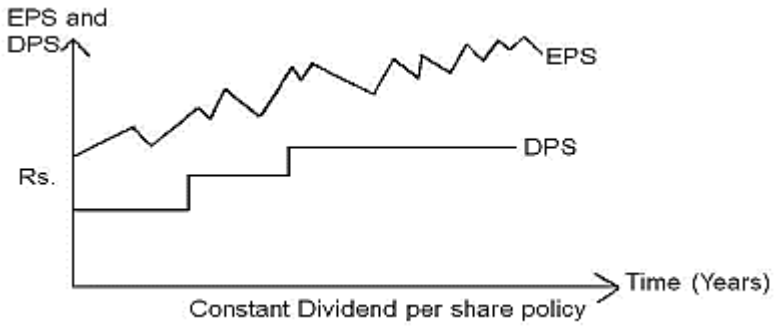
iii. Access to the Capital Market: By paying large dividends, cash position is affected. So, if new shares have to be issued to raise funds for financinginvestment programmes and if the existing shareholders cannot buy additional shares, then their control is diluted. In such a situation,

payment of dividends may be withheld and earnings are utilised for financing firm's investment opportunities.

iv. **Investment Opportunities**: If investment opportunities are inadequate, it is better to pay dividends and raise external funds whenever necessary for such opportunities.

c. **Payout policies:** Payout policies can be maintained by fixing the amount or rate of dividend irrespective of the earnings of the company. The policies may include:

i. **Constant Dividend Policy:** Shareholders are given fixed amount of dividend irrespective of actual earnings. The amount of dividend may increase or decrease later on depending upon the financial health of the company but it is generally maintained for a considerable period of time.



To maintain a constant dividend amount, it is necessary to create a reserve like Dividend Equalization Reserve Fund earmarked by marketable securitiesfor accumulation of surplus earnings and to use it for paying dividends in those years where the company's performance is not good. This policy treats common shareholders at par with preference shareholders without giving them any preferred opportunities within the firm. It is preferred by persons and institutions that depend on dividend income to meet their living and operating expenses.

Companies that use constant dividend policy, their dividend fluctuate with earnings in short term.

ii. **Stable Dividend Policy:** The ratio of dividend to earnings is known as Payout ratio. Some companies follow a policy of constant Payout ratio i.e. paying fixed percentage on net earnings every year. To quote from Page 74 of the annual report 2011 of Infosys Technologies Limited, "The Dividend Policy is to distribute up to 30% of the Consolidated Profit after Tax (PAT) of the Infosys Group as Dividend."

Contrary to this, Warren Buffet (amongst the richest persons of the world)says:

"We will either pay large dividends or none at all if we can't obtain moremoney through re-investment (of those funds). There is no logic to regularly paying out 10% or 20% of earnings as dividends every year."

Such a policy (as mentioned by Warren Buffet) envisages that the amount of dividend fluctuates in direct proportion to earnings. If a company adopts 40% payout ratio, then 40% of every rupee of net earnings will be paid out. If a company earns ₹2 per share, dividend per share will be 80 paise and if it earns ₹1.50 per share, dividend per share will be 60 paise.

Hence, such a policy is related to company's ability to pay dividends. For losses incurred, no dividend shall be paid. Internal financing with retained earnings is automatic. At any given payout ratio, amount of dividend and any addition to retained earnings increase with increased earnings and decrease with decreased earnings. This policy has a conservative approach and provides a guarantee against over/underpayment.

Company that uses a stable dividend policy base dividend on a long-term forecast of sustainable earnings and increase dividends when earnings have increased to a substantially higher level.

The detailed explanation of target payout ratio is covered under the Linter's model as below:

Linter's Model

Linter's model has two parameters:

i. The target payout ratio,

ii. The spread at which current dividends adjust to the target.

John Linter based his model on a series of interviews which he conducted with corporate managers in the mid 1950's. While developing the model, he considers the following assumptions:

1. Firms have a **long-term dividend payout ratio**. They maintain a fixed dividendpayout over a long term. Mature companies with stable earnings may havehigh payouts and growth companies usually have low payouts.
2. Managers are more concerned with changes in dividends than the absolute amounts of dividends. A manager may easily decide to pay a dividend of ₹2 per share if last year too it was ₹ 2 but paying ₹ 3 dividend if last year dividendwas ₹2 is an important financial management decision.
3. Dividend changes follow changes in long run sustainable earnings.
4. Managers are **reluctant to affect dividend changes** that may have to be reversed.Under Linter's model, the current year's dividend is dependent on current year'searnings and last year's dividend.

$$D_1 = D_o + [(EPS \times \text{Target payout}) - D_o] \times Af$$

Where,

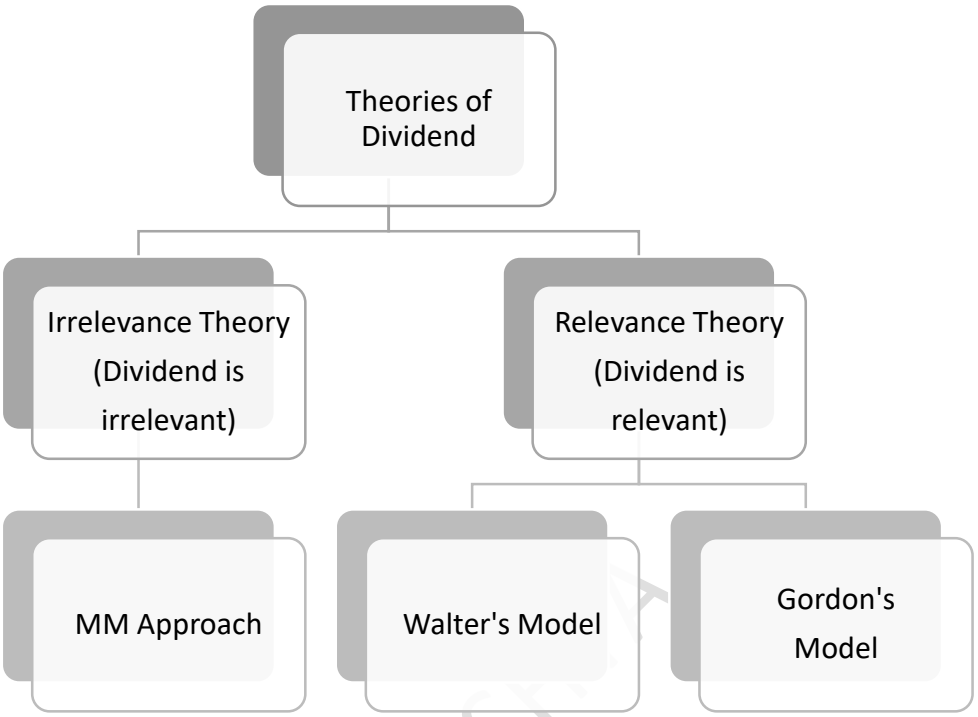
D_1 = Dividend in year 1

D_0 = Dividend in year 0 (last year dividend)

EPS= Earnings per share

Af = Adjustment factor or Speed of adjustment

THEORIES OF DIVIDEND



Dividend's Irrelevance Theory

MODIGLIANI and MILLER (MM) HYPOTHESIS:

Modigliani – Miller theory was proposed by Franco Modigliani and Merton Millerin 1961. MM approach is in support of the irrelevance of dividends i.e., firm's dividend policy has no effect on either the price of a firm's stock or its cost of capital.

According to MM Hypothesis

- Market value of equity shares of a firm depends solely on its earning power and is not influenced by the manner in which its earnings are split between dividends and retained earnings.
- Market value of equity shares is not affected by dividend size.
- Under MM hypothesis there is no meaningful distinction between dividend and share repurchases. They both are ways for a company to return cash to shareholders.

Assumptions of MM Hypothesis

MM hypothesis is based on the following assumptions:

- **Perfect capital markets:** The firm operates in a market in which all investorsare rational and information is freely available to all.

- **No taxes:** There are no taxes or no tax discrimination between dividend income and capital appreciation (capital gain). It means there is no difference in taxation of dividend income or capital gain. This assumption is necessary for the universal applicability of the theory, since the tax rates may be different in different countries.
- **Fixed investment policy:** It is necessary to assume that all investment shouldbe financed through equity only, since implication after using debt as a sourceof finance may be difficult to understand. Further, the impact will be differentin different cases.
- **No floatation or transaction cost:** Similarly, these costs may differ from country to country or market to market.
- **Risk of uncertainty does not exist**. Investors are able to forecast future prices and dividend with certainty and one discount rate is appropriate for all securities and all time periods.

Situations under MM Hypothesis

Keeping in mind assumptions under MM Hypothesis, firms may have three possible situations regarding the payment of dividend as follows:

1. **Firm pays cash dividends from Reserve & Surplus:** In this situation, the shareholders receive cash (dividend) from the firm, thereby, reducing the cash balance of the firm. There is only transfer of asset (cash) from one pocket to another pocket of the shareholders with no net gain or loss. So, payment of cash dividend will not affect the value of the firm.
2. **Firm pays cash dividends from new issue of shares:** If the firm does not have sufficient cash available for dividend, it will issue new shares and therefore will use the amount received for the payment of dividend. Here, shareholders receive cash (dividend) but suffer an equal amount of capitalloss due to dilution of control over the assets of the company and dilution in earning per share. With the increase in the total number of shares, earning per share will also reduce. Thus, there is no change in the wealth of shareholders.
3. **Firm does not pay any dividend:** When the firm doesn't pay any dividend, but shareholder want to receive cash, then shareholder may sell part of his/her shareholding in market. Therefore, the cash received in the hands ofthe shareholder may be known as "home-made dividend". In this situationalso, the shareholder receives cash (capital receipt) but lose in the form of capital loss due to dilution of control over the assets of the company among the existing and new shareholders. Hence, there will be no gain or loss andthe value of the firm will remain unchanged.

   In all the above 3 cases, any new additional investment requirement as well as earnings done for the year are taken into account for assessing the financing needs for issue of new shares.

MM hypothesis is primarily based on the arbitrage argument. Through the arbitrage process, MM hypothesis discusses how the value of the firm remains same whether the firm pays dividend or not. Here, **market price of shares can be calculated as follows:**

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,

P_0 = Price in the beginning of the period

P_1 = Price at the end of the period

D_1 = Dividend at the end of the period

K_e = Cost of equity/ rate of capitalization/ discount rate

As per MM hypothesis, the value of firm will remain unchanged due to dividenddecision. This can be computed with the help of the following formula:

$$V_f or nP_0 = \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)}$$

Where,

Vf = Value of firm in the beginning of the period

n = Number of shares in the beginning of the period

Δn = Number of shares issued to raise the funds required

I = Amount required for investment

E = Total earnings during the period

For Understanding purpose:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

The above equation is for one share. Let's multiply it with n i.e., existing number ofshares on both sides:

$$nP_0 = \frac{nP_1 + nD_1}{1 + K_e}$$

Now add ΔnP_1 and subtract ΔnP_1 at numerator of the right-hand side equation

$$nP_0 = \frac{nP_1 + nD_1 + \Delta nP_1 - \Delta nD_1}{1 + K_e}$$

Further, retained earnings could be represented with the help of following:

$$\text{Retained earnings} = E - nD_1$$

Δn i.e. number of shares issued to raise the funds required can be represented asfollows:

$$\Delta n = \frac{\text{Funds required}}{\text{Price at end (P1)}} = \frac{I - (E - nD_1)}{P_1}$$

$$\text{Or, } \Delta np_1 = \text{I - (E - nD}_1\text{)}$$

Now putting value of ΔnP1 in the equation:

$$nP_0 = \frac{nD_1 + (nP_1 + \Delta nP_1) - [I - (E - nD_1)}{1 + K_e}$$

$$nP_0 = \frac{nD_1 + (n + \Delta n)P_1 - I + E - nD_1}{1 + K_e}$$

$$nP_0 = \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)}$$

Advantages of MM Hypothesis

a. This model is **logically consistent.**

b. It provides a **satisfactory framework** on dividend policy with the concept ofArbitrage process.

Limitations of MM Hypothesis

a. Validity of various **assumptions is questionable.**

b. This model **may not be valid under uncertainty**.

WALTER'S MODEL

Assumptions of Walter's Model

Walter's approach is based on the following assumptions:

- All investment proposals of the firm are to be financed **through retainedearnings** only.
- **'r'** rate of return & **'Ke'** cost of capital are **constant.**
- **Perfect capital markets**: The firm operates in a market in which all investors are rational and information is freely available to all.
- **No taxes or no tax discrimination** between dividend income and capital appreciation (capital gain). It means there is no difference in taxation of dividend income or capital gain. This assumption is necessary for the universal applicability of the theory, since, the tax rates may be different in different countries.
- **No floatation or transaction cost**: Similarly, these costs may differ countryto country or market to market.
- The firm has **perpetual life**

The relationship between dividend and share price based on Walter's formula isshown below:

$$Market\ Pr\ i\ ce(P) = \frac{D + \frac{r}{K_e}(E - D)}{K_e}$$

Where,

P = Market Price of the share.

E = Earnings per share.

D = Dividend per share.

K_e = Cost of equity/ rate of capitalization/ discount rate.

r = Internal rate of return/ return on investment

The above formula is given by Prof. James E. Walter which shows how dividend canbe used to maximize the wealth of equity holders. He argues that in the long run, share prices reflect only the present value of expected dividends. Retentions influence stock prices only through their effect on further dividends.

A close study of the formula indicates that Professor Walter emphasizes two factors which influence the market price of a share which are:

1. Dividend per share
2. Relationship between Internal Rate of Return (IRR) and Cost of capital (K_e) [i.e., Market capitalization rate]

If the internal return of retained earnings is higher than market capitalization rate,the value of ordinary shares would be high even if dividends are low. However, ifthe internal return within the business is lower than what the market expects, the value of the share would be low. In such a case, shareholders would prefer a higher dividend so that they can utilize the funds so obtained elsewhere in more profitable opportunities.

Walter's Model explains why market prices of shares of growing companies arehigh even though the dividend paid out is low. It also explains why the market price of shares of certain companies which pay higher dividends and retain very low profits is also high.

As explained above, market price is dependent upon two factors; firstly, the quantum of dividend and secondly, profitable opportunities available to the company in investing the earnings retained. It is obvious that when a company retains a part of its profits, it has to think in terms of the cost of such retention. Retention of profits depends upon whether it is cheaper and more profitable for shareholders of the company to have corporate earnings retained in the business or get the same in the form of cash dividend. This involves a comparison betweenthe cost of retained earnings and the cost of distributing them. The cost of retained earnings, therefore, involves an opportunity cost, i.e., the benefits which shareholders forego in terms of leaving the funds in the business.

IRR, Ke and optimum payout

As we know that Walter's approach considers two factors, following can be concluded from this model:

Company	Condition of r vs Ke	Correlation between Size of Dividend and Market Price of share	Optimum payout dividend ratio
Growth	r > Ke	Negative	Zero
Constant	r = Ke	No correlation	Every payout ratio is optimum
Decline	r < Ke	Positive	100%

Growth Oriented Company: In this condition, a company is able to invest/utilize the fund in a better manner. Therefore, shareholders can accept low dividend because their value of share would be higher.

Declining Company: In this condition, a company is not in a position to cover the cost of capital. Therefore, shareholders would prefer a higher dividend so that they can utilize their funds elsewhere in more profitable opportunities.

Advantages of Walter's Model

1. The formula is **simple to understand** and easy to compute.
2. It can envisage **different possible market prices** in different situations and considers internal rate of return, market capitalisation rate and dividend payout ratio in the determination of market value of shares.

Limitations of Walter's Model

1. The formula **does not consider all the factors** affecting dividend policy and share prices. Moreover, determination of market capitalisation rate is difficult.
2. Further, the formula **ignores such factors as taxation,** various legal and contractual obligations, management policy and attitude towards dividendpolicy and so on.

GORDON'S MODEL

According to Gordon's model, dividend is relevant and dividend policy of a company affects its value.

Assumptions of Gordon's Model

This model is based on the following assumptions:

- Firm is an all-equity firm i.e., **no debt.**

- **IRR will remain constant**, because change in IRR will change the growth rate and consequently the value will be affected. Hence this assumption is necessary.
- **Ke will remain constant**, because change in discount rate will affect the present value.
- **Retention ratio** (b), once decide upon, is **constant** i.e., constant dividendpayout ratio will be followed.
- **Growth rate** (g = br) is also **constant**, since retention ratio and IRR willremain unchanged and growth, which is the function of these two variables will remain unaffected.
- Ke > g, this assumption is necessary and based on the principles of series of sum of geometric progression for 'n' number of years.
- All investment proposals of the firm are to be **financed through retained earnings** only.

The following formula is used by Gordon to find out price per share:

$$P_o = \frac{E_1(1-b)}{K_e - br}$$

Where,

P_0 = Price per share

E_1 = Earnings per share

b = Retention ratio; (1 - b = Payout ratio)

K_e = Cost of capital

r = IRR

br = Growth rate (g)

According to Gordon's model, when **IRR is greater than cost of capital, the price per share increases and dividend pay-out decreases**. On the other hand, whenIRR is lower than the cost of capital, the price per share decreases and dividend pay-out increases.

Following is the conclusion of Gordon's model:

Company	Condition of r vs Ke	Optimum dividend payout ratio
Growth	r > Ke	Zero
Constant	r = Ke	There is no optimum ratio
Declining	r < Ke	100%

The "Bird-in-hand theory" – Gordon's Revised Model

Myron Gordon revised his dividend model and considered the risk and uncertaintyin his model. The Bird-in-hand theory of Gordon has two arguments:

i. Investors are **risk averse** and

ii. Investors put a **premium on certain return** and discount on uncertain return.

Gordon argues that what is available at present is preferable to what may be available in the future. As investors are rational, they want to avoid risk and uncertainty. They would prefer to pay a higher price for shares on which current dividends are paid. Conversely, they would discount the value of shares of a firm which postpones dividends. The discount rate would vary with the retention rate.

The relationship between dividend and share price on the basis of Gordon's formulais shown as:

Market price per share(P_0) = $= \left[\frac{D_0(1+g)}{K_e - g}\right]$

Where,

P_0 = Market price per share (ex-dividend)

D_O = Current year dividend

g = Constant annual growth rate of dividends

K_e = Cost of equity capital (expected rate of return).

The formula given by Gordon shows that when the rate of return (r) is greater than the discount rate (K_e), the price per share increases as the dividend ratio decreases and the vice-versa. On the other hand, if the rate of return (r) is less than discountrate (K_e), the price per share increases as the dividend ratio increases and the vice- versa. The price per share remains unchanged where the rate of return and discount rate are equal.

Dividend Discount Model (DDM)

It is a financial model that values shares at the discounted value of the futuredividend payments. Under this model, the price of a share that will be traded is calculated by the PV of all expected future dividend payment discounted by an appropriate risk- adjusted rate. The dividend discount model price is the intrinsic value of the stock i.e.

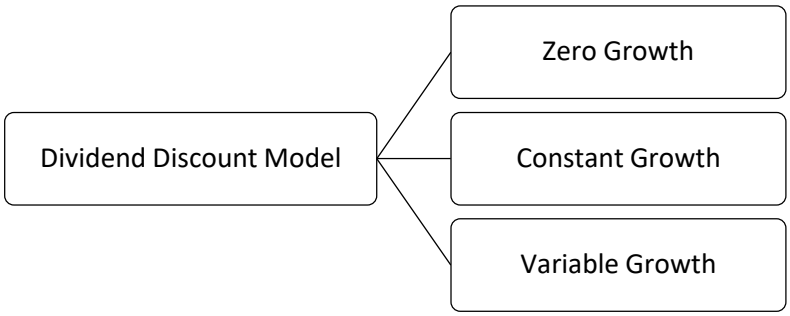
Intrinsic value = Sum of PV of future cash flows

Intrinsic value = Sum of PV of Dividends + PV of Stock Sale Price

Stock Intrinsic Value = $\frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \ldots\ldots\ldots\ldots + \frac{D_n}{(1+K_e)^n} + \frac{RV_n}{(1+K_e)^n}$

In the above equation, it is assumed that dividend is paid at the end of each yearand that the stock is sold at the end of the nth year.

There can three possible situations:



(a) Zero Growth Rate: assumes all dividend paid by a stock remains same. Inthis case the stock price would be equal to:

$$\text{Stock's intrinsic Value} = \frac{\text{Annual dividend}}{\text{Required rate of return}}$$

$$i.e. P_0 = \frac{D}{K_e}$$

Where,

D = Annual dividend

K_e = Cost of capital

P_0 = Current Market price of share

Advantages of Gordon's Model

1. The dividend discount model is a **useful heuristic model** that relates the present stock price to the present value of its future cash flows.
2. This Model is **easy to understand.**

Limitations of Gordon's Model

1. The dividend discount model **depends** on projections about company growth rate and future capitalization rates of the remaining cash flows, which may be **difficult to calculate accurately.**
2. The **true intrinsic value** of a stock is **difficult to determine** realistically.

Important considerations for Gordon's Model

1. With dividends growing at constant rate of g, the share price also grows at g.

$P_0 = D_1/(r-g)$

Multiplying both sides by (1+g) gives as follows:

$P_0 (1+g) = D_1 (1+g)/(r-g)$

$P_1 = D_2/(r-g)$

So, both dividend and price have grown at the rate of g given r is constant.

2. Growth rate g is also referred to as capital appreciation or capital yield.
3. The dividend yield which is D_1/P_0 at t=0 will be constant as both dividend and price are expected to grow at the same rate, leaving dividend yield unchanged.

STOCK SPLITS

Meaning of Stock Split

Stock split means splitting **one share into many,** say, one share of ₹ 500 into 5 shares of ₹ 100. Stock splits is a tool used by the companies to regulate the prices of shares i.e. if a share price increases beyond a limit, it may become less tradable, for e.g. suppose a company's share price increases from ₹ 50 to ₹ 1000 over the years, it is possible that it might goes out of range of many investors.

Advantages of Stock Splits

1. It makes the **share affordable** to small investors.
2. **Number of shares may increase** the number of shareholders; hence the potential of investment may increase.

Limitations of Stock Splits

1. **Additional expenditure** needs to be incurred on the process of stock split.
2. **Low share price may attract speculators** or short-term investors, which are generally not preferred by any company.

SHARE BUYBACK

Meaning of Share Buyback

Share buyback, in simple terms, means buying/repurchasing own shares by the company resulting into decrease in share capital of the company. Thus, the shares bought back are cancelled leading reduction in outstanding number of shares.

Share buyback is also a form of shareholders' dividend. As the number of circulating shares in the market fall, amount of dividend per share in the future increases.

There are two main types of buyback that can be performed by the companies. One is through an open market, and another is through tender offer. While company intending to buyback through open market, it need to go through secondary market. However, in case of tender offer, company offers a fixed price where all the shareholders can participate or sell their shares.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

XYZ Ltd. earns ₹ 10/ share. Capitalization rate and return on investment are 10% and12% respectively.

DETERMINE the optimum dividend payout ratio and the price of the share at the payout.

PROBLEM – 2

The following information pertains to M/s XY Ltd.

Earnings of the Company	₹ 5,00,000
Dividend Payout ratio	60%
No. of shares outstanding	1,00,000
Equity capitalization rate	12%
Rate of return on investment	15%

CALCULATE:

i. Market value per share as per Walter's model.

ii. Optimum dividend payout ratio according to Walter's model and the market value of Company's share at that payout ratio.

PROBLEM – 3

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	₹ 30 lakhs
Outstanding 12% preference shares	₹ 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

COMPUTE the approximate dividend pay-out ratio so as to keep the share price at ₹ 42 by using Walter's model?

PROBLEM – 4

The following information is supplied to you:

	₹
Total Earnings	2,00,000
No. of equity shares (of ₹ 100 each)	20,000
Dividend paid	1,50,000
Price/ Earnings ratio	12.5

Applying Walter's Model:

i. ANALYSE whether the company is following an optimal dividend policy.

ii. COMPUTE P/E ratio at which the dividend policy will have no effect onthe value of the share.

iii. Will your decision change, if the P/E ratio is 8 instead of 12.5? ANALYSE.

PROBLEM – 5

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	₹ 30 lakhs
Outstanding 12% preference shares	₹ 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is

i. 25%

ii. 50%

iii. 100%.

PROBLEM – 6

Taking an example of three different firms i.e., growth, normal and declining,CALCULATE the share price using Gordon's model.

Factors	**Growth**	**Normal**	**Declining**
	Firm $r > K_e$	**Firm** $r = K_e$	**Firm** $r < K_e$
r (rate of return on retained earnings)	15%	10%	8%
K_e (Cost of Capital)	10%	10%	10%
E (Earning Per Share)	₹ 10	₹ 10	₹ 10
b (Retained Earnings)	0.6	0.6	0.6
1- b (Dividend Payout)	0.4	0.4	0.4

PROBLEM – 7

The annual report of XYZ Ltd. provides the following information:

Particulars	**Amount (₹)**
Net Profit	50 lakhs
Outstanding 15% preference shares	100 lakhs
No. of equity shares	5 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is:

i. 25%;

ii. 50%;

iii. 100%.

PROBLEM – 8

With the help of following figures CALCULATE the market price of a share of acompany by using:

1. Walter's formula

2. Dividend growth model (Gordon's formula)

Earnings per share (EPS)	₹ 10
Dividend per share (DPS)	₹ 6
Cost of capital (K_e)	20%
Internal rate of return on investment	25%
Retention Ratio	40%

PROBLEM – 9

X Ltd. is a no growth company, pays a dividend of ₹ 5 per share. If the cost of capitalis 10%, COMPUTE the current market price of the share?

PROBLEM – 10

XYZ is a company having share capital of ₹ 10 lakhs of ₹ 10 each. It distributed current dividend of 20% per annum. Annual growth rate in dividend expected is 2%. The expected rate of return on its equity capital is 15%. CALCULATE price of share applying Gordon's growth Model.

PROBLEM – 11

In the month of May of the current Financial Year, shares of RT Ltd. were sold for ₹ 1,460 per share. A long-term earnings growth rate of 7.5% is anticipated. RT Ltd. is expected to pay dividend of ₹ 20 per share.

1. CALCULATE rate of return an investor can expect to earn assuming that dividends are expected to grow along with earnings at 7.5% per year in perpetuity?
2. It is expected that RT Ltd. will earn about 10% on retained earnings and shall retain 60% of earnings. In this case, STATE whether, there would be any change in growth rate and cost of Equity?

PROBLEM – 12

A firm had paid dividend at ₹ 2 per share last year. The estimated growth of the dividends from the company is estimated to be 5% p.a. DETERMINE the estimated market price of the equity share if the estimated growth rate of dividends (i) rises to8%, and (ii) falls to 3%. Also FIND OUT the present market price of the share, given that the required rate of return of the equity investors is 15%.

PROBLEM – 13

A&R Ltd. is a large-cap multinational company listed in BSE in India with a face value of ₹ 100 per share. The company is expected to grow @ 15% p.a. for next four years then 5% for an indefinite period. The shareholders expect 20% return on their share investments. Company paid ₹ 120 as dividend per share for the current Financial Year. The shares of the company traded at an average price of ₹ 3,122 on last day. FIND out the intrinsic value per share and state whether shares are overpriced or underpriced.

PROBLEM – 14

The following information is given below in case of Aditya Ltd.:

Earnings per share = ₹ 60

Capitalisation rate = 15%

Return on investment = 25%

Dividend payout ratio = 30%

1. COMPUTE price per share using Walter's Model.
2. WHAT would be optimum dividend payout ratio per share under Gordon's Model.

PROBLEM – 15

AB Engineering Ltd. belongs to a risk class for which the capitalization rate is 10%. It currently has outstanding 10,000 shares selling at ₹ 100 each. The firm is contemplating the declaration of a dividend of ₹ 5 share at the end of the current financial year. It expects to have a net income of ₹ 1,00,000 and has a proposal for making new investments of ₹ 2,00,000. CALCULATE the value of the firm when dividends (i) are not paid (ii) are paid.

PROBLEM – 16

RST Ltd. has a capital of ₹ 10,00,000 in equity shares of ₹ 100 each. The shares are currently quoted at par. The company proposes to declare a dividend of ₹ 10 per share at the end of the current financial year. The capitalization rate for the risk classof which the company belongs is 12%. COMPUTE market price of the share at the end of the year, if

i. dividend is not declared

ii. dividend is declared

Assuming that the company pays the dividend and has net profits of ₹ 5,00,000 and makes new investments of ₹ 10,00,000 during the period, CALCULATE number of new shares to be issued? Use the MM model.

PROBLEM – 17

M Ltd. belongs to a risk class for which the capitalization rate is 10%. It has 25,000 outstanding shares and the current market price is ₹100. It expects anet profit of ₹2,50,000 for the year and the Board is considering dividend of ₹5 per share.

M Ltd. requires to raise ₹ 5,00,000 for an approved investment expenditure.

ILLUSTRATE, how the MM approach affects the value of M Ltd. if dividends are paid or not paid.

PROBLEM – 18

Aakash Ltd. has 10 lakh equity shares outstanding at the start of the accounting year. The existing market price per share is ₹ 150. Expected dividend is ₹ 8 per share. The rate of capitalization appropriate to the risk class to which the company belongs is 10%.

i. CALCULATE the market price per share when expected dividends are: (a) declared, and (b) not declared, based on the Miller – Modigliani approach.

ii. CALCULATE number of shares to be issued by the company at the end of the accounting year on the assumption that the net income for the year is ₹ 3 crore, investment budget is ₹ 6 crores, when (a) Dividends are declared, and (b) Dividends are not declared.

iii. PROOF that the market value of the shares at the end of the accounting year will remain unchanged irrespective of whether (a) Dividends are declared, or (ii) Dividends are not declared.

PROBLEM – 19

Mr H is currently holding 1,00,000 shares of HM ltd, and currently the share of HMltd is trading on Bombay Stock Exchange at ₹ 50 per share. Mr A have a policy to re-invest the amount of any dividend received into the shared back again of HM ltd. If HM ltd has declared a dividend of ₹ 10 per share, please determine the no ofshares that Mr A would hold after he re-invests dividend in shares of HM ltd.

PROBLEM – 20

Following information is given pertaining to DG ltd

No of shares outstanding	1 lakh shares
Earnings Per share	25 per share
P/E Ratio	20
Book Value per share	400 per share

If company decides to repurchase 5,000 shares, at the prevailing market price, what is the resulting book value per share after repurchasing.

CHAPTER 07: FINANCIAL ANALYSIS AND PLANNING –RATIO ANALYSIS

INTRODUCTION

The basis for financial analysis, planning and decision making is financial statements which mainly consist of Balance Sheet and Profit and Loss Account. The profit & loss account shows the operating activities of the concern over a period of time and the balance sheet depicts the balance value of the acquired assets and of liabilities or in other words, financial position of an organization at a particular point of time.

However, the above statements do not disclose all of the necessary and relevant information. For the purpose of obtaining the material and relevant information necessary for ascertaining the financial strengths and weaknesses of an enterprise, it is necessary to analyze the data depicted in the financial statement.

The financial manager has certain analytical tools which help in financial analysis and planning. One of the main tools is Ratio Analysis. Let us discuss the Ratio Analysis in this chapter.

RATIO AND RATIO ANALYSIS

Let us first understand the definition of ratio and meaning of ratio analysis.

Definition of Ratio

A ratio is defined as **"the indicated quotient of two mathematical expressions and as the relationship between two or more things."** Here, ratio means financial ratio or accounting ratio which is a mathematical expression of the relationship between two accounting figures.

Ratio Analysis

The term financial ratio can be explained by defining how it is calculated and what the objective of this calculation is?

a. Calculation Basis (Basis of Calculation):

- A relationship expressed in mathematical terms
- Between two individual figures or group of figures
- Connected with each other in some logical manner
- Selected from financial statements of the concern

b. Objective for financial ratios is that all stakeholders (owners, investors, lenders, employees etc.) can draw conclusions about the:

- Performance (past, present and future)
- Strengths & weaknesses of a firm
- Can take decisions in relation to the firm

Ratio analysis is based on the fact that a single accounting figure by itself may not communicate any meaningful information but when expressed relative to some other figure, it may definitely provide some significant information.

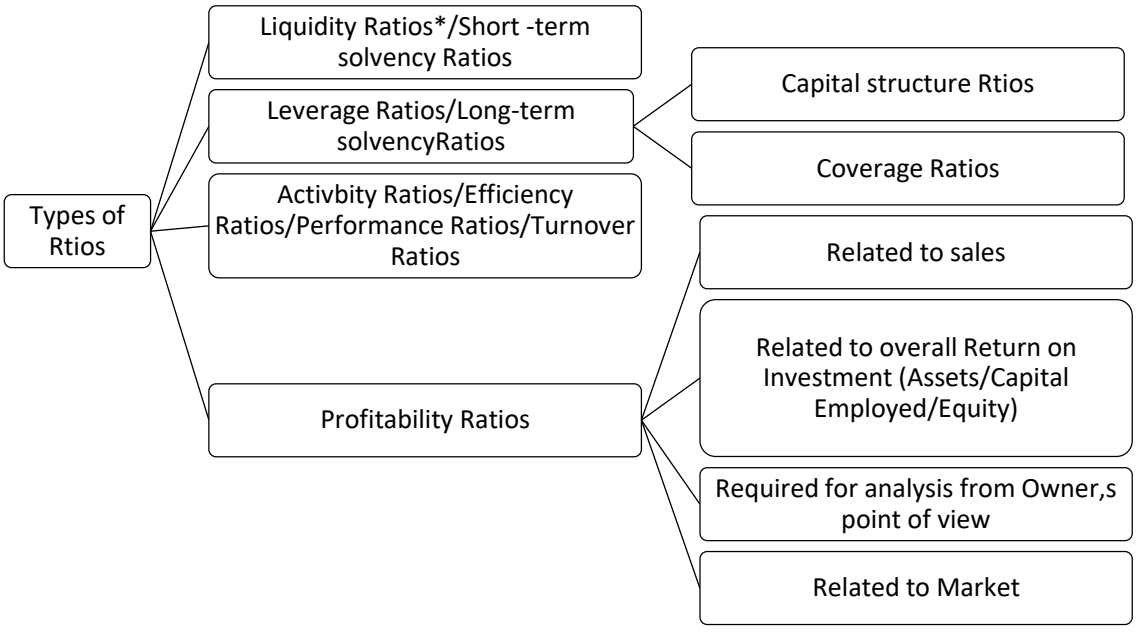
Ratio analysis is not just comparing different numbers from the balance sheet, income statement, and cash flow statement. It is comparing the number against previous years (intra-firm comparison) and, other companies (inter-firm comparison), the industry, or even the economy in general for the purpose of financial analysis.

Sources of Financial Data for Analysis

The sources of information for financial statement analysis are:

i. Annual Reports
ii. Interim financial statements
iii. Notes to Accounts
iv. Statement of cash flows
v. Business periodicals.
vi. Credit and investment advisory services

TYPES OF RATIOS



Liquidity Ratios

The terms **'liquidity' and 'short-term solvency'** are used synonymously.

Liquidity or short-term solvency means ability of the business to pay its short- term liabilities. Inability to pay-off short-term liabilities affects its credibility as well as its credit rating. Continuous default on the part of the business leads to commercial bankruptcy. Eventually such commercial bankruptcy may lead to its sickness and dissolution. Short-term lenders and creditors of a business are very much interested to know its state of liquidity because of their financial stake. Both lack of sufficient liquidity and excess liquidity is bad for the organization.

Various Liquidity Ratio are: -

a. Current Ratio

b. Quick Ratio or Acid test Ratio

c. Cash Ratio or Absolute Liquidity Ratio

d. Basic Defense Interval or Interval Measure Ratio

e. Net Working Capital

a. Current Ratio: The Current Ratio is one of the best-known measures of short-term solvency. It is the most common measure of short-term liquidity.

The main question this ratio addresses is: **"Does your business have enough current assets to meet the payment schedule of its current debts with a margin of safety for possible losses in current assets?"** In other words, current ratio measures whether a firm has enough resources to meet its current obligations.

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

Where,

Current Asset	=	Inventories + Sundry Debtors + Cash and Bank Balances + Receivables/ Accruals + Loans and Advances + Disposable Investments + Any other current assets.
Current Liabilities	=	Creditors for goods and services + Short-term Loans + Bank Overdraft + Cash Credit + Outstanding Expenses + Provision for Taxation + Proposed Dividend + Unclaimed Dividend + Any other current liabilities.

Interpretation

A generally acceptable current ratio is 2:1. But whether or not a specific ratio is satisfactory depends on the nature of the business and the characteristics of its current assets and liabilities.

b. Quick Ratio: The Quick Ratio is sometimes called the **"acid-test"** ratio and is one of the best **measures of liquidity**.

$$\text{Quick Ratio or Acid Test Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Where,

Quick Assets = Current Assets - Inventories - Prepaid expenses

Current Liabilities = As mentioned under Current Ratio.

The Quick Ratio is a much more conservative measure of short-term liquidity than the Current Ratio. It helps answer the question: "If all sales revenues should disappear, could my business meet its current obligations with the readily convertible quick funds on hand?"

Quick Assets consist of only cash and near cash assets. Inventories are deducted from current assets on the belief that these are not 'near cash assets' and also because in times of financial difficulty, inventory may be saleable only at liquidation value. But in a seller's market, inventories are also near cash assets.

Interpretation

An acid-test of 1:1 is considered satisfactory unless the majority of "quick assets" are in accounts receivable, and the pattern of accounts receivable collection lags behind the schedule for paying current liabilities.

c. Cash Ratio/ Absolute Liquidity Ratio: The cash ratio measures the absolute liquidity of the business**.** This ratio considers only the absolute liquidity available with the firm. This ratio is calculated as:

$$\text{Cash Ratio} = \frac{\text{Cash and Bank balances} + \text{Marketable Securities}}{\text{Current Liabilities}}$$

Or

$$= \frac{\text{Cash and Bankbalances} + \text{Current Investments}}{\text{Current Liabilities}}$$

Interpretation

The Absolute Liquidity Ratio only tests short-term liquidity in terms of cash and marketable securities/ current investments.

d. Basic Defense Interval/ Interval Measure:

$$\text{Basic Defense Interval} = \frac{\text{Cash and Bank balances} + \text{Net Receivables} + \text{Marketable Securities}}{\text{Operating Expenses} \div \text{No. of days (say 360)}}$$

Or

$$= \frac{\text{Current Assets} - \text{Prepaid expenses} - \text{Inventories}}{\text{Daily Operating Expenses}}$$

$$\text{Daily Operating Expenses} = \frac{\text{Cost of Goods Sold} + \text{Selling Administartion and other General expenses - Depreciationand other non cash expenditure}}{\text{No. of days in a year}}$$

Interpretation

If for some reason all the company's revenues were to suddenly cease, the Basic Defense Interval would help determine the number of days for which the company can cover its cash expenses without the aid of additional financing.

e. Net Working Capital: Net working capital is more a measure of cash flow than a ratio. The result of this calculation must be a positive number. However, in certain business models it may be negative. It is calculated as shown below:

Net Working Capital = Current Assets - Current Liabilities (Excluding short-term bank borrowing)

Interpretation

Bankers look at Net Working Capital over time to determine a company's ability to weather financial crises. Loans are often tied to minimum working capital requirements.

Long-term Solvency Ratios/ Leverage Ratios

The leverage ratios may be defined as those financial ratios which measure the **long-term stability and capital structure of the firm**. These ratios indicate the mix of funds provided by owners and lenders and assure the lenders of the long- term funds with regard to:

i. Periodic payment of interest during the period of the loan and

ii. Repayment of principal amount on maturity.

Leverage ratios are of two types:

1. **Capital Structure Ratios**
   - **a.** Equity Ratio
   - **b.** Debt Ratio
   - **c.** Debt to Equity Ratio
   - **d.** Debt to Total Assets Ratio
   - **e.** Capital Gearing Ratio
   - **f.** Proprietary Ratio

2. Coverage Ratios

a. Debt-Service Coverage Ratio (DSCR)

b. Interest Coverage Ratio

c. Preference Dividend Coverage Ratio

d. Fixed Charges Coverage Ratio

Capital Structure Ratios

These ratios provide an insight into the financing techniques used by a business and focus, as a consequence, on the **long-term solvency position**.

From the balance sheet, one can get only the absolute fund employed and its sources but only capital structure ratios show the relative weight of different sources.

Various capital structure ratios are:

a. Equity Ratio:

$$\text{Equity Ratio} = \frac{\text{Shareholder's Equity}}{\text{Net Assets}}$$

The **shareholder's equity** is Equity share capital and Reserves & Surplus (excluding fictitious assets etc). **Net Assets or Capital employed** includes Net Fixed Assets and Net Current Assets (Current Assets – Current Liabilities).

This ratio indicates proportion of owner's fund to total fund invested in the business. Traditionally, it is believed that higher the proportion of owner's fund, lower is the degree of risk for potential lenders.

b. Debt Ratio:

$$\text{Debt Ratio} = \frac{\text{Total Debt}}{\text{Net Assets}}$$

Total debt or total outside liabilities includes short- and long-term borrowings from financial institutions, debentures/bonds, deferred payment arrangements for buying capital equipment, bank borrowings, public deposits and any other interest-bearing loan.

Interpretation

This ratio is used to analyse the long-term solvency of a firm. A ratio greater than 1 would mean greater portion of company assets are funded by debt and could be a risky scenario.

c. Debt to Equity Ratio:

$$\text{Debt to Equity Ratio} = \frac{\text{Total Outside Liabilities}}{\text{Shareholders' Equity}} = \frac{\text{Total Debt*}}{\text{Shareholder's Equity}}$$

$$= \frac{\text{Long- term Debt * *}}{\text{Shareholders' equity}}$$

*Not merely long-term debt i.e., both current & non-current liabilities.

** Sometimes only interest-bearing, long-term debt is used instead of total liabilities (exclusive of current liabilities)

Interpretation

A high debt to equity ratio here means less protection for creditors, a low ratio, on the other hand, indicates a wider safety cushion (i.e., creditors feel the owner's funds can help absorb possible losses of income and capital). This ratio indicates the proportion of debt fund in relation to equity. This ratio is very often used for making capital structure decisions such as issue of shares and/ or debentures. Lenders are also very keen to know this ratio since it shows relative weights of debt and equity. Debt equity ratio is the indicator of firm's financial leverage.

a. Debt to Total Assets Ratio: This ratio measures the **proportion of total assets financed with debt** and, therefore, the extent of financial leverage.

Higher the ratio, indicates that assets are less backed up by equity and hence higher financial leverage.

$$\text{Debt to Total Assets Ratio} = \frac{\text{Total Outside Liabilities}}{\text{Total Assets}} \; or = \frac{\text{Total Debt}}{\text{Total Assets}}$$

b. Capital Gearing Ratio: In addition to debt-equity ratio, sometimes capital gearing ratio is also calculated to show the proportion of fixed interest (dividend) bearing capital to funds belonging to equity shareholders i.e. equity funds or net worth. Again, higher ratio may indicate more risk.

$$\text{Capital Gearing Ratio} = \frac{\text{Preference Share Capital} + \text{Debentures} + \text{Other Borrowed funds}}{\text{Equity Share Capital} + \text{Reserves \& Surplus - Losses}}$$

c. Proprietary Ratio:

$$\text{Proprietary Ratio} = \frac{\text{Proprietary Fund}}{\text{Total Assets}}$$

Proprietary fund includes Equity Share Capital, Preference Share Capital and Reserve & Surplus.

Total assets exclude fictitious assets and losses.

Interpretation

It indicates the proportion of total assets financed by shareholders. Higher the ratio, less risky scenario it shall be.

Coverage Ratios

The coverage ratios measure the **firm's ability to service the fixed liabilities**. These ratios establish the relationship between fixed claims and what is normally available out of which these claims are to be paid. The fixed claims consist of:

i. Interest on loans

ii. Preference dividend

iii. Amortisation of principal or repayment of the instalment of loans or redemption of preference capital on maturity.

The following are important coverage ratios:

a. Debt Service Coverage Ratio (DSCR): Lenders are interested in debt service coverage to judge the firm's ability to pay off current interest and instalments.

$$\text{Debt Service Coverage Ratio} = \frac{\text{Earnings available for debt services}}{\text{Interest} + \text{Installments}}$$

Earnings available for debt service*

= Net profit (Earning after taxes) + Non-cash operating expenses like depreciation and other amortizations + Interest + other adjustments like loss on sale of Fixed Asset etc.

***Fund from operations (or cash from operations) before interest and taxes also can be considered as per the requirement.

Interpretation

Normally DSCR of 1.5 to 2 is satisfactory. You may note that sometimes in both numerator and denominator lease rentals may also be added.

b. Interest Coverage Ratio: This ratio also known as **"times interest earned ratio"** indicates the firm's ability to meet interest (and other fixed charges) obligations. This ratio is computed as:

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings before interest and taxes(EBIT)}}{\text{Interest}}$$

Interpretation

Earnings before interest and taxes are used in the numerator of this ratio because the ability to pay interest is not affected by tax burden as interest on debt funds is deductible expense. It measures how many times a company can cover its current interest payment with its available earnings? In other words, it reflects the margin of safety a company has for paying interest on its debt during a given period.

A high interest coverage ratio means that an enterprise can easily meet its interest obligations even if earnings before interest and taxes suffer a considerable decline. A lower ratio indicates excessive use of debt or inefficient operations.

c. **Preference Dividend Coverage Ratio**: This ratio measures the **ability of a firm to pay dividend on preference shares** which carry a stated rate of return. This ratio is computed as:

$$\text{Preference Dividend Coverage Ratio} = \frac{\text{Net Profit/Earning after taxes (EAT)}}{\text{Preference dividend}}$$

This ratio indicates margin of safety available to the preference shareholders. A higher ratio is desirable from preference shareholders point of view.

Similarly, **Equity Dividend coverage ratio** can also be calculated as:

$$\text{Equity Dividend Coverage Ratio} = \frac{\text{Earning after taxes (EAT) - Preference dividend}}{\text{Equity dividend}}$$

d. **Fixed Charges Coverage Ratio:** This ratio shows how many times the cash flow before interest and taxes covers all fixed financing charges. This ratio of more than 1 is considered as safe.

$$\text{Fixed Charges Coverage Ratio} = \frac{\text{"EBIT + Depreciation"}}{\text{"Interest + Repayment of Loan"}}$$

Notes for calculating Ratios:

1. EBIT (Earnings before interest and taxes) = PBIT (Profit before interest and taxes), EAT (Earnings after taxes) = PAT (Profit after taxes) EBT (Earnings before taxes) = PBT (Profit before taxes)
2. Ratios shall be calculated based on requirement and availability of information and may deviate from original formulae. If required, assumptions should be given.
3. Numerator should be taken in correspondence with the denominator and vice-versa.

Activity Ratios/ Efficiency Ratios/ Performance Ratios/ Turnover Ratios

These ratios are employed to **evaluate the efficiency with which the firm manages and utilises its assets.** For this reason, they are often called as 'Asset management ratios'. These ratios usually indicate the frequency of sales with respect to its assets. These assets may be capital assets or working capital or average inventory.

Activity Ratios/ Efficiency Ratios/ Performance Ratios/ Turnover Ratios:

a. Total Assets Turnover Ratio
b. Fixed Assets Turnover Ratio
c. Capital Turnover Ratio/ Net Assets Turnover Ratio
d. Current Assets Turnover Ratio
e. Working Capital Turnover Ratio
   i. Inventory/ Stock Turnover Ratio

ii. Receivables (Debtors) Turnover Ratio

iii. Payables (Creditors) Turnover Ratio

These ratios are usually calculated with reference to **sales/cost of goods sold** and are expressed in terms of rate or times.

a. Total Asset Turnover Ratio: This ratio measures the efficiency with which the firm uses its total assets. Higher the ratio, better it is. This ratio is computed as:

$$\text{Total Asset Turnover Ratio} = \frac{\text{Sales/Cost of Goods Sold}}{\text{Total Assets}}$$

Interpretation

A high total assets turnover ratio indicates the efficient utilization of total assets in generation of sales. Similarly, a low asset turnover ratio indicates total assets are not efficiently used to generate sales.

b. Fixed Assets Turnover Ratio: It measures the efficiency with which the firm uses its fixed assets. A high fixed assets turnover ratio indicates efficient utilisation of fixed assets in generating sales. A firm whose plant and machinery are old may show a higher fixed assets turnover ratio than the firm which has purchased them recently.

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales/Cost of Goods Sold}}{\text{Fixed Assets}}$$

Interpretation

A high fixed assets turnover ratio indicates efficient utilisation of fixed assets in generating sales. A firm whose plant and machinery are old may show a higher fixed assets turnover ratio than the firm which has purchased them recently.

c. Capital Turnover Ratio/ Net Asset Turnover Ratio:

$$\text{Capital Turnover Ratio} = \frac{\text{Sales/Cost of Goods Sold}}{\text{Net Assets}}$$

Interpretation

Since Net Assets equals to capital employed it is also known as Capital Turnover Ratio. This ratio indicates the firm's ability of generating sales/ Cost of Goods Sold per rupee of long-term investment. The higher the ratio, the more efficient is the utilisation of owner's and long-term creditors' funds.

d. Current Assets Turnover Ratio: It measures the efficiency of using the current assets by the firm.

$$\text{Current Assets Turnover Ratio} = \frac{\text{Sales/Cost of Goods Sold}}{\text{Current Assets}}$$

Interpretation

The higher the ratio, the more efficient is the utilization of current assets in generating sales.

e. **Working Capital Turnover Ratio:** It measures how effective a company is at generating sales for every rupee of working capital put to use.

$$\text{Working Capital Turnover Ratio} = \frac{\text{Sales/Cost of Goods Sold}}{\text{Working Capital}}$$

Interpretation

Higher the ratio, the more efficient is the utilisation of working capital in generating sales. However, a very high working capital turnover ratio indicates that the company needs to raise additional working capital for future needs.

Working Capital Turnover is further segregated into Inventory Turnover, Debtors Turnover, and Creditors Turnover.

Note: Average of Total Assets/ Fixed Assets/ Current Assets/ Net Assets/ Working Capital also can be taken in the denominator for the above ratios.

i. **Inventory/ Stock Turnover Ratio**: This ratio also known as **stock turnover ratio establishes the relationship between the cost of goods sold during the year** and average inventory held during the year. It measures the efficiency with which a firm utilizes or manages its inventory**.** It is calculated as follows:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold / Sales}}{\text{Average Inventory}}$$

$$\text{Average Inventory} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

In the case of inventory of raw material, the inventory turnover ratio is calculated using the following formula:

$$\text{Raw Material Inventory Turnover Ratio} = \frac{\text{Raw Material Consumed}}{\text{Average Raw Material Stock}}$$

Interpretation

This ratio indicates that how fast inventory is used or sold. A high ratio is good from the view point of liquidity and vice versa. A low ratio would indicate that inventory is not used/ sold/ lost and stays in a shelf or in the warehouse for a long time.

ii. **Receivables (Debtors) Turnover Ratio:** In case firm sells goods on credit, the realization of sales revenue is delayed and the receivables are created. The cash is realised from these receivables later on.

The **speed with which these receivables are collected affects** the liquidity position of the firm. The debtor's turnover ratio throws light on the collection and credit policies of the firm. **It measures the efficiency with which management is managing its accounts receivables.** It is calculated as follows:

$$\text{Receivables (Debtors) Turnover Ratio} = \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$$

A low debtors' turnover ratio reflects liberal credit terms granted to customers, while a high ratio shows that collections are made rapidly.

Receivables (Debtors) Velocity/Average Collection Period: Debtor's turnover ratio indicates the average collection period. However, the average collection period can be directly calculated as follows:

$$= \frac{\text{Average Accounts Receivables}}{\text{Average Daily Credit Sales}} \; or \; \frac{\text{12 months/52 weeks/360 days}}{\text{Receivable Turnover Ratio}}$$

$$\text{Average Daily Credit Sales} = \frac{\text{Credit Sales}}{\text{No. of days in year (say 360)}}$$

Interpretation

The average collection period measures the average number of days it takes to collect an account receivable. This ratio is also referred to as the number of days of receivable and the number of day's sales in receivables. In determining the credit policy, debtor's turnover and average collection period provide a unique guidance.

iii. **Payables Turnover Ratio:** This ratio is calculated on the same lines as receivable turnover ratio is calculated. It measures how fast a company makes payment to its creditors. It shows the velocity of payables payment by the firm. It is calculated as follows:

$$\text{Payables Turnover Ratio} = \frac{\text{Annual Net Credit Purchases}}{\text{Average Accounts Payables}}$$

A low creditor's turnover ratio reflects liberal credit terms granted by suppliers, while a high ratio shows that accounts are settled rapidly.

Payable Velocity/ Average payment period can be calculated using:

$$= \frac{\text{Average Accounts Payable}}{\text{Average Daily Credit Purchases}} \; or \; \frac{\text{12months/52weeks/360days}}{\text{Payables Turnover Ratio}}$$

Interpretation

The firm can compare what credit period it receives from the suppliers and what it offers to the customers. Also, it can compare the average credit period offered to the customers in the industry to which it belongs.

The above three ratios i.e. Inventory Turnover Ratio/ Receivables Turnover Ratio/Payables Turnover Ratio are also relevant to examine liquidity of an organization.

Notes for calculating Ratios:

1. Only selling & distribution expenses differentiate Cost of Goods Sold (COGS) and Cost of Sales (COS). In its absence, COGS will be equal to Cost of Sales.
2. We can consider Cost of Goods Sold/ Cost of Sales to calculate turnover ratios eliminating profit part.
3. Average of Total Assets/ Fixed Assets/ Current Assets/ Net Assets/ Working Capital also can be taken in denominator while calculating the above ratios. In fact, when average figures of total assets, net assets, capital employed, shareholders' a fund etc. are available it may be preferred to calculate ratios by using this information.
4. Ratios shall be calculated based on requirement and availability of information and may deviate from original formulae. If required, assumptions should be given.

Profitability Ratios

The profitability ratios **measure the profitability or the operational efficiency** of the firm. These ratios reflect the final results of business operations. They are some of the most closely watched and widely quoted ratios. Management attempts to maximize these ratios to maximize the firm's value.

The results of the firm can be evaluated in terms of its earnings with reference to a given level of assets or sales or owner's interest etc. Therefore, the profitability ratios are broadly classified in four categories:

i. Profitability Ratios related to Sales

ii. Profitability Ratios related to overall Return on Investment

iii. Profitability Ratios required for Analysis from Owner's Point of View

iv. Profitability Ratios related to Market/ Valuation/ Investors

Profitability Ratios are as follows:

i. Profitability Ratios based on Sales

- **a.** Gross Profit Ratio
- **b.** Net Profit Ratio
- **c.** Operating Profit Ratio
- **d.** Expenses Ratio

ii. Profitability Ratios related to Overall Return on Assets/ Investments

- **a.** Return on Investments (ROI)

i. Return on Assets (ROA)

ii. Return of Capital Employed (ROCE)

iii. Return on Equity (ROE)

iii. Profitability Ratios required for Analysis from Owner's Point of View

a. Earnings per Share (EPS)

b. Dividend per Share (DPS)

c. Dividend Pay-out Ratio (DP)

iv. Profitability Ratios related to Market/ Valuation/ Investors

a. Price Earnings (P/E) Ratio

b. Dividend and Earning Yield

c. Market Value/ Book Value per Share (MV/BV)

d. Q Ratio

Profitability Ratios based on Sales

a. Gross Profit (G.P) Ratio/ Gross Profit Margin: It measures the percentage of each sale in rupees remaining after payment for the goods sold.

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

Interpretation

Gross profit margin depends on the relationship between sales price, volume and costs. A high Gross Profit Margin is a favorable sign of good management.

b. Net Profit Ratio/ Net Profit Margin: It measures the relationship between net profit and sales of the business. Depending on the concept of net profit, it can be calculated as:

i. $$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Sales}} \times 100\text{Sales}$$

Or

$$\frac{\text{Earnings after taxes (EAT)}}{\text{Sales}} \times 100$$

ii. $$\text{Pre-tax Profit Ratio} = \frac{\text{Earnings before taxes (EBT)}}{\text{Sales}} \times \mathbf{100}$$

Interpretation

Net Profit ratio finds the proportion of revenue that finds its way into profits after meeting all expenses. A high net profit ratio indicates positive returns from the business.

Operating Profit Ratio:

Operating profit ratio is also calculated to evaluate operating performance of business.

$$\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Sales}} \times 100$$

or,

$$\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Sales}} \times 100$$

Where,

Operating Profit = Sales – Cost of Goods Sold (COGS) – Operating Expenses

Interpretation

Operating profit ratio measures **the percentage of each sale in rupees that remains after the payment of all costs and expenses except for interest and taxes**. This ratio is followed closely by analysts because it focuses on operating results. Operating profit is often referred to as earnings before interest and taxes or EBIT.

c. Expenses Ratio: Based on different concepts of expenses it can be expresses in different variants as below:

i.Cost of Goods Sold (COGS) Ratio $= \frac{COGS}{Sales} \times 100$

ii. Operating Expenses Ratio $= \frac{\text{Administrative exp.} + \text{Selling \& Distribution OH}}{\text{Sales}} \times 100$

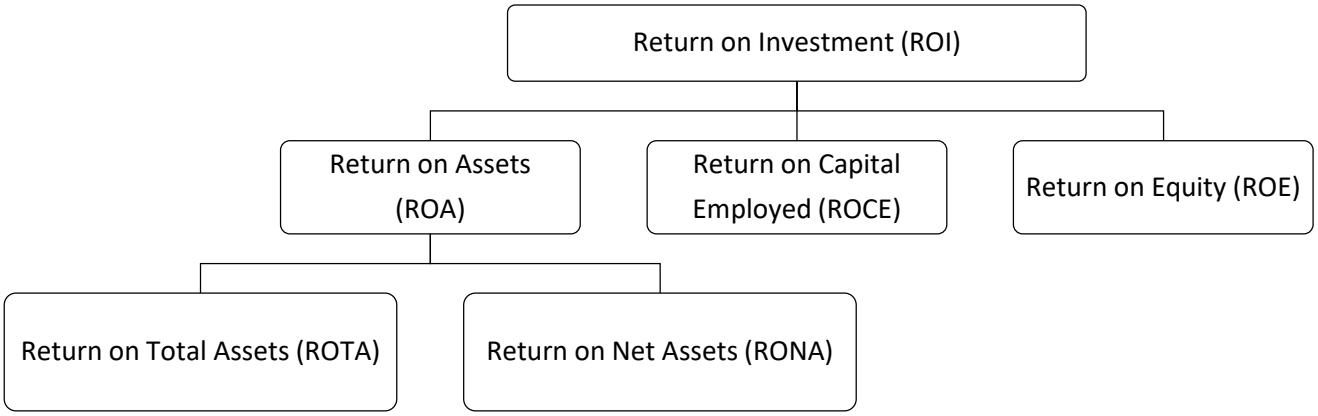
iii. Operating Ratio $= \frac{\text{COGS} + \text{Operating expenses}}{\text{Sales}} \times 100$

iv. Financial Expenses Ratio $= \frac{\text{Financial expenses *}}{\text{Sales}} \times 100$

*It **excludes** taxes, loss due to theft, goods destroyed by fire etc.

Administration Expenses Ratio and Selling & Distribution Expenses Ratio can also be calculated in similar ways.

Profitability Ratios related to Overall Return on Assets/ Investments



a. **Return on Investment (ROI):** ROI is the most important ratio of all. It is the **percentage of return on funds invested in the business by its owners**. In short, this ratio tells the owner whether or not all the effort put into the business has been worthwhile. It compares earnings/ returns/ profit with the investment in the company. The ROI is calculated as follows:

$$\text{Return on Investment} = \frac{\text{Return/Profit/Earnings}}{\text{Investment}} \times 100$$

$$or,$$

$$= \frac{\text{Return/Profit/Earnings}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}}$$

$$or,$$

$$= \text{Profitability Ratio x Investment Turnover Ratio}$$

$$\text{Since, Profitability Ratio} = \frac{\text{Return/Profit/Earnings}}{\text{Sales}}, \text{and}$$

$$\text{Investment Turnover Ratio} = \frac{\text{Sales}}{\text{Investments}}$$

ROI can be improved either by improving Profitability Ratio or Investment Turnover Ratio or by both.

The concept of investment varies and accordingly there are three broad categories of ROI i.e.

i. **Return on Assets (ROA),**
ii. **Return on Capital Employed (ROCE) and**
iii. **Return on Equity (ROE).**

We should keep in mind that investment may be Total Assets or Net Assets. Further, funds employed in net assets are also known as capital employed which is nothing but Net worth plus Debt, where Net worth is equity shareholders' fund. Similarly, the concept of returns/ earnings/ profits may vary as per the requirement and availability of information.

i. **Return on Assets (ROA):** The profitability ratio is measured in terms of relationship between **net profits and assets employed** to earn that profit. This ratio measures the profitability of the firm in terms of assets employed in the firm. Based on various concepts of net profit (return) and assets, the ROA may be measured as follows:

$$\text{ROA} = \frac{\text{Net Profit after taxes}}{*\ \text{AverageTotal Assets}} \text{or} \frac{\text{Net Profit after taxes}}{\text{Average Tangible Assets}}$$

$$or \frac{\text{Net Profit after taxes}}{\text{Average Fixed Assets}}$$

* Note: Sometimes, total assets may also be considered instead of average assets.

Here, net profit is exclusive of interest. As Assets are also financed by lenders, hence ROA can be calculated as:

$$\text{RoA} = \frac{\text{Net Profit after taxes} + \text{Interest}}{\text{Average Total Assets/Average Tangible Assets/Average Fixed Assets}}$$

$$or$$

$$= \frac{\text{EBIT(1- t)}}{\text{Average TotalAssets}} \{\text{also known as Return on Total Assets (ROTA)}\}$$

Or

$$= \frac{\text{EBIT(1-t)}}{\text{Average Net Assets}} \{\text{also known as Return on Net Assets (RONA)}\}$$

ii. **Return on Capital Employed (ROCE):** It is another variation of ROI. The ROCE is calculated as follows:

$$\text{ROCE (Pre-tax)} = \frac{\text{Earnings before interest and taxes(EBIT)}}{\text{Capital Employed}} \times 100$$

$$\text{ROCE (Post-tax)} = \frac{\text{EBIT(1- t)}}{\text{Capital Employed}} \times 100$$

Sometimes, it is also calculated as:

$$= \frac{\text{Net Profit after taxes (PAT/EAT)} + \text{Interest}}{\text{Capital Employed}} \times 100$$

Where,

Capital Employed = Total Assets – Current Liabilities

Or

= Fixed Assets + Working Capital Or

= Equity + Long Term Debt

Interpretation

ROCE should always be higher than the rate at which the company borrows.

Intangible assets (assets which have no physical existence like goodwill, patents and trade-marks) should be included in the capital employed. But no fictitious asset (such as deferred expenses) should be included within capital employed. If information is available, then average capital employed shall be taken.

iii. **Return on Equity (ROE):** Return on Equity measures the **profitability of equity funds invested in the firm**. This ratio reveals how profitably of the owners' funds have been utilised by the firm. It also measures the percentage return generated to equity shareholders. This ratio is computed as:

$$\text{ROE} = \frac{\text{Net Profit after taxes - Preference dividend (if any)}}{\text{Net Worth/ Equity Shareholders'Funds}} \times 100$$

Interpretation

Return on equity is one of the most important indicators of a firm's profitability and potential growth. Companies that boast a high return on equity with little or no debt are able to grow without large capital expenditures, allowing the owners of the business to withdraw cash and reinvest it elsewhere. Many investors fail to realize, however, that two companies can have the same return on equity, yet one can be a much better business. If return on total shareholders (i.e. equity and preference shareholder) is calculated, then Net Profit after taxes (before preference dividend) shall be divided by total shareholders' fund including preference share capital.

Return on Equity using the Du Pont Model:

A finance executive at E.I. Du Pont de Nemours and Co., of Wilmington, Delaware, created the DuPont system of financial analysis in 1919. That system is used around the world today and serves as the basis of components that make up return on equity.

There are various components in the calculation of return on equity using the traditional DuPont model- the net profit margin, asset turnover, and the equity multiplier. By examining each input individually, the sources of a company's return on equity can be discovered and compared to its competitors. The components are as follows:

i. **Profitability/Net Profit Margin**: The **net profit margin is simply the after-tax profit a company generates for each rupee of revenue**. Net profit margin varies across industries, making it important to compare a potential investment against its competitors. Although the general rule-of- thumb is that a higher net profit margin is preferable, it is not uncommon for management to purposely lower the net profit margin in a bid to attract higher sales.

$$\text{Profitability/ Net Profit margin} = \frac{\text{Profit/ Net Income}}{\text{Sales/ Revenue}}$$

Net profit margin is a safety cushion; the lower the margin, the less room for an error. A business with 1% margin has no room for flawed execution. Small miscalculations on management's part could lead to tremendous losses with little or no warning.

ii. **Investment Turnover/ Asset Turnover/ Capital Turnover**: The asset turnover ratio is a measure of **how effectively a company converts its assets into sales.** It is calculated as follows:

$$\text{Investment Turnover/ Asset Turnover/ Capital Turnover} = \frac{\text{Sales/ Revenue}}{\text{Investment/ Assets/ Capital}}$$

The asset turnover ratio tends to be inversely related to the net profit margin i.e. higher the net profit margin, lower the asset turnover and vice versa. The result is that the investor can compare companies using different models (low-profit, high-volume vs. high-profit, low-volume) and determine which one is the more attractive business.

iii. **Equity Multiplier**: It is possible for a company with terrible sales and margins to take on excessive debt and artificially increase its return on equity. The equity multiplier, a measure of financial leverage, allows the investor to see what portion of the return on equity is the result of debt. The equity multiplier is calculated as follows:

$$\text{Equity Multiplier} = \frac{\text{Investment /Assets /Capital}}{\text{Shareholders' Equity}}$$

Calculation of Return on Equity

To calculate the return on equity using the DuPont model, simply multiply the three components (net profit margin, asset turnover, and equity multiplier.)

Return on Equity = (Profitability/ Net profit margin) x (Investment Turnover/ Asset Turnover / Capital Turnover) x Equity Multiplier

Profitability Ratios Required for Analysis from Owner's Point of View

a. **Earnings per Share (EPS):** The profitability of a firm from the point of view of ordinary shareholders can be measured in terms of earnings per share basis. It is calculated as follows:

$$\text{Earnings per Share (EPS)} = \frac{\text{Net profit available to equity shareholders}}{\text{Number of equity shares outstanding}}$$

b. **Dividend per Share (DPS):** Earnings per share as stated above reflects the profitability of a firm per share; it does not reflect how much profit is paid as dividend and how much is retained by the business. Dividend per share ratio indicates the amount of profit distributed to equity shareholders per share. It is calculated as:

$$\text{Dividend per Share (DPS)} = \frac{\text{Total Dividend paid to equity shareholders}}{\text{Number of equity shares outstanding}}$$

c. Dividend Pay-out Ratio (DP): This ratio measures the dividend paid in relation to net earnings. It is determined to see to how much extent earnings per share have been retained by the management for the business. It is computed as:

$$\text{Dividend pay-out Ratio} = \frac{\text{Dividend per equity share (DPS)}}{\text{Earning per Share (EPS)}}$$

Profitability Ratios related to market/valuation/ Investors

These ratios consider the market value of the company's shares in calculation. Frequently, share prices data are punched with the accounting data to generate new set of information. These are (a) Price- Earnings Ratio, (b) Dividend Yield, (c) Market Value/ Book Value per share, (d) Q Ratio.

a. Price- Earnings Ratio (P/E Ratio): The price earnings ratio indicates the **expectation of equity investors about the earnings of the firm** It relates earnings to market price and is generally taken as a summary measure of growth potential of an investment, risk characteristics, shareholders orientation, corporate image and degree of liquidity. It is calculated as

$$\text{Price-Earnings per Share (P/E Ratio)} = \frac{\text{Market Price per Share (MPS)}}{\text{Earning per Share (EPS)}}$$

Interpretation

It indicates the payback period to the investors or prospective investors. A higher P/E ratio could either mean that a company's stock is over-valued or the investors are expecting high growth rates in future.

b. Dividend and Earning Yield:

$$\text{Dividend Yield} = \frac{\text{Dividend} \pm \text{Change in share price}}{\text{Initial share price}} \times 100$$

$$or,$$

$$= \frac{\text{Dividend per Share (DPS)}}{\text{Market Price per Share (MPS)}} \times 100$$

$$\text{Earnings Yield* or EP Ratio} = \frac{\text{Earnings per Share (EPS)}}{\text{Market Price per Share (MPS)}} \times 100$$

*Also known as Earnings Price (EP) Ratio.

Interpretation

This ratio indicates return on investment; this may be on average investment or closing investment. Dividend (%) indicates return on paid up value of shares. But yield (%) is the indicator of true return in which share capital is taken at its market value.

c. **Market Value/ Book Value per Share (MV/BV)**: It provides evaluation of how investors view the company's past and future performance.

$$\text{Market Value/ Book Value per Share (MV/BV)} = \frac{\text{Average share price}}{\text{Net worth} \div \text{No.of equity shares}}$$

Or

$$= \frac{\text{Closing share price}}{\text{Net worth} \div \text{No. of equity shares}}$$

Interpretation

This ratio indicates market response of the shareholders' investment. Undoubtedly, higher the ratio, better is the shareholders' position in terms of return and capital gains.

d. **Q Ratio:** This ratio is proposed by James Tobin, a ratio is defined as

$$\text{Q Ratio} = \frac{\text{Market Value of equity and liabilities}}{\text{Estimated replacement cost of assets}}$$

Or

$$= \frac{\text{Market Value of a Company}}{\text{Assets' Replacement Cost}}$$

Thus, this ratio represents the relationship between market valuation and intrinsic value. Equilibrium is when Q Ratio = 1 because when it is less than 1, it could mean that the stock is undervalued and when it is more than 1, it could mean that stock is overvalued.

Notes for calculating Ratios:

1. EBIT (Earnings before interest and taxes) = PBIT (Profit before interest and taxes),
   EAT (Earnings after taxes) = PAT (Profit after taxes),
   EBT (Earnings before taxes) = PBT (Profit before taxes)
2. In absence of preference dividend PAT can be taken as earnings available to equity shareholders.
3. If information is available then average capital employed shall be taken while calculating ROCE.
4. Ratios shall be calculated based on requirement and availability of information and may deviate from original formulae. If required, assumptions should be given.
5. Numerator should be taken in correspondence with the denominator and vice-versa.

USERS AND OBJECTIVE OF FINANCIAL ANALYSIS - A BIRD'S EYE VIEW

Financial Statement analysis is useful to various shareholders to obtain the derived information about the firm.

S.No.	Users	Objectives	Ratios used in general
1.	Shareholders	Being owners of the organization, they are interested to know about profitability and growth of the organization	Mainly Profitability Ratios [In particular Earning per share (EPS), Dividend per share (DPS), Price Earnings (P/E), Dividend Payout ratio (DP)]
2.	Investors	They are interested to know overall financial health of the organization particularly future perspective of the organizations.	♦ Profitability Ratios ♦ Capital structure Ratios ♦ Solvency Ratios ♦ Turnover Ratios
3.	Lenders	They will keep an eye on the safety perspective of their money lent to the organization	♦ Coverage Ratios ♦ Solvency Ratios ♦ Turnover Ratios ♦ Profitability Ratios
4.	Creditors	They are interested to know liability position of the organisation particularly in short term. Creditors would like to know whether the organisation will be able to pay the amount on due date.	♦ Liquidity Ratios ♦ Short term solvency Ratios/ Liquidity Ratios
5.	Employees	They will be interested to know the overall financial wealth of the organisation and compare it with competitor company.	♦ Liquidity Ratios ♦ Long terms solvency Ratios ♦ Profitability Ratios ♦ Return on investment
6.	Regulator / Government	They will analyse the financial statements to determine taxations and other details payable to the government.	♦ Profitability Ratios

7.	Managers **a.** Production Managers	They are interested to know about data regarding input output, production quantities etc.	♦ Input output Ratio ♦ Raw material consumption ratio.
	b. Sales Managers	Data related to units sold for various years, other associated figures and predicted future sales figure will be an area of interest for them	♦ Turnover ratios (basically receivable turnover ratio) ♦ Expenses Ratios
	c. Financial Manager	They are interested to know various ratios for their future predictions of financial requirement.	♦ Profitability Ratios (particularly related to Return on investment) ♦ Turnover ratios ♦ Capital Structure Ratios
	d. Chief Executive/ General Manager	They will try to assess the complete perspective of the company, starting from Sales, Finance, Inventory, Human resources, Production etc.	♦ All Ratios
8.	Different Industry **a.** Telecom	Finance Manager/ Analyst will calculate ratios of their company and compare it with Industry norms.	♦ Ratio related to 'call' ♦ Revenue and expenses per customer
	b. Bank		♦ Loan to deposit Ratios ♦ Operating expenses and income ratios
	c. Hotel		♦ Room occupancy ratio ♦ Bed occupancy Ratios
	d. Transport		♦ Passenger-kilometre ♦ Operating cost-per passenger kilometre

APPLICATION OF RATIO ANALYSIS IN FINANCIAL DECISION MAKING

A popular technique of analyzing the performance of a business concern is that of financial ratio analysis. As a tool of financial management, they are of crucial significance.

The importance of ratio analysis lies in the fact that it presents facts on a comparative basis and enables drawing of inferences regarding the performance of a firm.

Ratio analysis is relevant in assessing the performance of a firm in respect of following aspects:

Financial Ratios for Evaluating Performance

a. **Liquidity Position:** With the help of ratio analysis one can draw conclusions regarding liquidity position of a firm. The liquidity position of a firm would be satisfactory if it is able to meet its obligations when they become due. This ability is reflected in the liquidity ratios of a firm. The liquidity ratios are particularly useful in credit analysis by banks and other suppliers of short- term loans.

b. **Long-term Solvency:** Ratio analysis is equally useful for assessing the long- term financial viability of a firm. This aspect of the financial position of a borrower is of concern to the long-term creditors, security analysts and the present and potential owners of a business.

   The long-term solvency is measured by the leverage/capital structure and profitability ratios which focus on earning power and operating efficiency.

   The leverage ratios, for instance, will indicate whether a firm has a reasonable proportion of various sources of finance or whether it is heavily loaded with debt in which case its solvency is exposed to serious strain.

   Similarly, the various profitability ratios would reveal whether or not the firm is able to offer adequate return to its owners consistent with the risk involved.

c. **Operating Efficiency:** Ratio analysis throws light on the degree of efficiency in the management and utilisation of its assets.

   The various activity ratios measure this kind of operational efficiency. In fact, the solvency of a firm is, in the ultimate analysis, dependent upon the sales revenues generated by the use of its assets – total as well as its components.

d. **Overall Profitability:** Unlike the outside parties which are interested in one aspect of the financial position of a firm, the management is constantly concerned about the overall profitability of the enterprise. That is, they are concerned about the ability of the firm to meet its short-term as well as long-term obligations to its creditors, to ensure a reasonable return to its owners and secure optimum utilisation of the assets of the firm. This is possible if an integrated view is taken and all the ratios are considered together.

e. **Inter-firm Comparison:** Ratio analysis not only throws light on the financial position of a firm but also serves as a stepping stone to remedial measures. This is made possible due to inter-firm comparison/comparison with industry averages.

A single figure of particular ratio is meaningless unless it is related to some standard or norm. One of the popular techniques is to compare the ratios of a firm with the industry average. It should be reasonably expected that the performance of a firm should be in broad conformity with that of the industry to which it belongs.

An inter-firm comparison would demonstrate the relative position vis-a-vis its competitors. If the results are at variance either with the industry average or with those of the competitors, the firm can seek to identify the probable reasons and, in the light, take remedial measures.

Ratios not only perform post mortem of operations, but also serve as barometer for future. Ratios have predictor value and they are very helpful in forecasting and planning the business activities for a future.

Conclusions are drawn on the basis of the analysis obtained by using ratio analysis. The decisions affected may be whether to supply goods on credit to a concern, whether bank loans will be made available, etc.

f. **Financial Ratios for Budgeting:** In this field ratios are able to provide a great deal of assistance. Budget is only an estimate of future activity based on past experience, in the making of which the relationship between different spheres of activities are invaluable.

It is usually possible to estimate budgeted figures using financial ratios.

Ratios also can be made use of for measuring actual performance with budgeted estimates. They indicate directions in which adjustments should be made either in the budget or in performance to bring them closer to each other.

LIMITATIONS OF FINANCIAL RATIOS

The limitations of financial ratios are listed below:

i. **Diversified product lines:** Many businesses operate a large number of divisions in quite different industries. In such cases ratios calculated on the basis of aggregate data cannot be used for inter-firm comparisons.

ii. **Financial data are badly distorted by inflation**: Historical cost values may be substantially different from true values. Such distortions of financial data are also carried in the financial ratios.

iii. **Seasonal factors**: It may also influence financial data.

Example: A company deals in cotton garments. It keeps a high inventory during October - January every year. For the rest of the year its inventory level becomes just 1/4th of the seasonal inventory level.

So, the liquidity ratios and inventory ratios will produce biased picture. Year end picture may not be the average picture of the business. Sometimes it is suggested to take monthly average inventory data instead of year end data to eliminate seasonal factors. But for external users it is difficult to get monthly inventory figures. (Even in some cases monthly inventory figures may not be available).

iv. **To give a good shape to the popularly used financial ratios (like current ratio, debt-equity ratios etc.)**: The business may make some year-end adjustments. Such window dressing can change the character of financial ratios which would be different had there been no such change.

v. **Differences in accounting policies and accounting period:** It can make the accounting data of two firms non-comparable as also the accounting ratios.

vi. **No standard set of ratios against which a firm's ratios can be compared:** Sometimes a firm's ratios are compared with the industry average. But if a firm desires to be above the average, then **industry** average becomes a low standard. On the other hand, for a below average firm, industry averages become too high a standard to achieve.

vii. **Difficulty to generalise whether a particular ratio is good or bad:** For example, a low current ratio may be said 'bad' from the point of view of low liquidity, but a high current ratio may not be 'good' as this may result from inefficient working capital management.

viii. **Financial ratios are inter-related, not independent:** Viewed in isolation one ratio may **highlight** efficiency. But when considered as a set of ratios they may speak differently. Such interdependence among the ratios can be taken care of through multivariate analysis (analyzing the relationship between several variables simultaneously).

ix. **Financial ratios provide clues but not conclusions.** These are tools only in the hands of experts because there is no standard ready-made interpretation of financial ratios.

FINANCIAL ANALYSIS

It may be of two types: - Horizontal and vertical.

Horizontal Analysis: When financial statement of one year are analysed and interpreted after comparing with another year or years, it is known as horizontal analysis. It can be based on the ratios derived from the financial information over the same time span.

Vertical Analysis: When financial statement of single year is analyzed then it is called vertical analysis. This analysis is useful in inter firm comparison. Every item of Profit and loss account is expressed as a percentage of gross sales, while every item on a balance sheet is expressed as a percentage of total assets held by the firm.

SUMMARY OF RATIOS

Another way of categorizing the ratios is being shown to you in a tabular form. A summary of the ratios has been tabulated as under:

Ratio	Formulae	Interpretation
Liquidity Ratio		
Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	A simple measure that estimates whether the business can pay short term debts. Ideal ratio is 2.
Quick Ratio	$\frac{\text{Quick Assets}}{\text{Current Liabilities}}$	It measures the ability to meet current debt immediately. Ideal ratio is 1.
Cash Ratio	$\left(\frac{\text{Cash and Bank balances} + \text{Marketable Securities}}{\text{Current Liabilities}}\right)$	It measures absolute liquidity of the business.
Basic Defense Interval Ratio	$\left(\frac{\text{Cash and Bank balances} + \text{Net Reveivables} + \text{Marketable Securities}}{\text{Operating Expenses} \div \text{No. of days}}\right)$	It measures the ability of the business to meet regular cash expenditures.
Net Working Capital	Current Assets – Current Liabilities	It is a measure of cash flow to determine the ability of business to survive financial crisis.
Capital Structure Ratio		
Equity Ratio	$\frac{\text{Shareholders' Equity}}{\text{Net Assets}}$	It indicates owner's fund in companies to total fund invested.
Debt Ratio	$\frac{\text{Total Debt}}{\text{Net Assets}}$	It is an indicator of use of outside funds.
Debt to equity Ratio	$\frac{\text{Total Debt}}{\text{Share holders' Equity}}$	It indicates the composition of capital structure in terms of debt and equity.
Debt to Total Assets Ratio	$\frac{\text{Total Debt}}{\text{Total Assets}}$	It measures how much of total assets is financed by the debt.

Capital Gearing Ratio	$\frac{(\text{Preference Share Capital} + \text{Debentures} + \text{Other Borrowed funds})}{(\text{Equity Share Capital} + \text{Reserves \& Surplus} - \text{Losses})}$	It shows the proportion of fixed interest-bearing capital to equity shareholders' fund. It also signifies the advantage of financial leverage to the equity shareholder.
Proprietary Ratio	$\frac{\text{Proprietary Fund}}{\text{Total Assets}}$	It measures the proportion of total assets financed by shareholders.
Coverage Ratios		
Debt Service Coverage Ratio (DSCR)	$\frac{\text{Earnings available for debt services}}{\text{Interest} + \text{Instalments}}$	It measures the ability to meet the commitment of various debt services like interest, instalment etc. Ideal ratio is 2.
Interest Coverage Ratio	$\frac{\text{EBIT}}{\text{Interest}}$	It measures the ability of the business to meet interest obligations. Ideal ratio is > 1.
Preference Dividend Coverage Ratio	$\frac{\text{Net Profit /Earning after taxes (EAT)}}{\text{Preference div idend liability}}$	It measures the ability to pay the preference shareholders' dividend. Ideal ratio is > 1.
Fixed Charges Coverage Ratio	$\frac{\text{EBIT} + \text{Depreciation}}{\text{Interest} + \text{Repayment of loan}}$	This ratio shows how many times the cash flow before interest and taxes covers all fixed financing charges. The ideal ratio is > 1.
Activity Ratio/ Efficiency Ratio/ Performance Ratio/ Turnover Ratio		
Total Asset Turnover Ratio	$\frac{\text{Sales /Cost of Goods Sold}}{\text{Average Total Assets}}$	A measure of total asset utilization. It helps to answer the question - What sales are being generated by each rupee's worth of assets invested in the business?

Fixed Assets Turnover Ratio	$\frac{\text{Sales /Cost of Goods Sold}}{\text{Fixed Assets}}$	This ratio is about fixed asset capacity. A reducing sales or profit being generated from each rupee invested in fixed assets may indicate overcapacity or poorer-performing equipment.
Capital Turnover Ratio	$\frac{\text{Sales /Cost of Goods Sold}}{\text{Net Assets}}$	This indicates the firm's ability to generate sales per rupee of long-term investment.
Working Capital Turnover Ratio	$\frac{\text{Sales /COGS}}{\text{Working Capital}}$	It measures the efficiency of the firm to use working capital.
Inventory Turnover Ratio	$\frac{\text{COGS /Sales}}{\text{Average Inventory}}$	It measures the efficiency of the firm to manage its inventory.
Debtors Turnover Ratio	$\frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$	It measures the efficiency at which firm is managing its receivables.
Receivables (Debtors') Velocity	$\frac{\text{Average Accounts Receivables}}{\text{Average Daily Credit Sales}}$	It measures the velocity of collection of receivables.
Payables Turnover Ratio	$\frac{\text{Annual Net Credit Purchases}}{\text{Average Accounts Payables}}$	It measures how fast a company makes payment to its creditors.
Payables Velocity	$\frac{\text{Average Accounts Payable}}{\text{Average Daily Credit Purchases}}$	It measures the velocity of payment of payables.
Profitability Ratios based on Sales		
Gross Profit Ratio	$\frac{\text{Gross Profit}}{\text{Sales}} \times 100$	This ratio tells us something about the business's ability consistently to control its production costs or to manage the margins it makes on products it buys and sells.

Net Profit Ratio	$\frac{\text{Net Profit}}{\text{Sales}} \times 100$	It measures the relationship between net profit and sales of the business.
Operating Profit Ratio	$\frac{\text{Operating Profit}}{\text{Sales}} \times 100$	It measures operating performance of business.
Expenses Ratio		
Cost of Goods Sold (COGS) Ratio	$\frac{\text{COGS}}{\text{Sales}} \times 100$	It measures portion of a particular expenses in comparison to sales.
Operating Expenses Ratio	$\frac{\left(\text{Administrative exp.} + \text{Selling \& Distribution Overhead}\right)}{\text{Sales}}$	
Operating Ratio	$\frac{\text{COGS} + \text{Operating expenses}}{\text{Sales}} \times 100$	
Financial Expenses Ratio	$\frac{\text{Financial expenses}}{\text{Sales}} \times 100$	
Profitability Ratios related to Overall Return on Assets/ Investments		
Return on Investment (ROI)	$\frac{\text{Return /Profit /Earnings}}{\text{Investments}} \times 100$	It measures overall return of the business on investment / equity funds / capital employed/ assets.
Return on Assets (ROA)	$\frac{\text{Net Profit after taxes}}{\text{Average total assets}}$	It measures net profit per rupee of average total assets / average tangible assets/average fixed assets.
Return on Capital Employed ROCE (Pre-tax)	$\frac{\text{EBIT}}{\text{Capital Employed}} \times 100$	It measures overall earnings (either pre-tax or post tax) on total capital employed.
Return on Capital Employed ROCE (Post-tax)	$\frac{\text{EBIT (1- t)}}{\text{Capital Employed}} \times 100$	It indicates earnings available to equity shareholders in comparison to equity shareholders' net worth.
Return on Equity (ROE)	$\frac{\left(\text{Net Profit after taxes-} \text{Preference dividend (if any)}\right)}{\frac{\text{Net worth}}{\text{Equity shareholders' fund}}} \times 100$	

Profitability Ratios Required for Analysis from Owner's Point of View		
Earnings per Share (EPS)	$\frac{\text{Net profit available to equity shareholders}}{\text{Number of equityshares outstanding}}$	EPS measures the overall profit generated for each share in existence over a particular period.
Dividend per Share (DPS)	$\frac{\text{Dividend paid to equity shareholders}}{\text{Number of equity shares outstanding}}$	Proportion of profit distributed per equity share.
Dividend payout Ratio (DP)	$\frac{\text{Dividend per equity share}}{\text{Earning per Share (EPS)}}$	It shows % of EPS paid as dividend and retained earnings.
Profitability Ratios related to market/ valuation/ Investors		
Price-Earnings per Share (P/E Ratio)	$\frac{\text{Market Price per Share (MPS)}}{\text{Earning per Share (EPS)}}$	At any time, the P/E ratio is an indication of how highly the market "rates" or "values" a business. A P/E ratio is best viewed in the context of a sector or market average to get a feel for relative value and stock market pricing.
Dividend Yield	$\frac{\text{Dividend} \pm \text{Change in share peice}}{\text{Initial share price}} \times 100$ OR $\frac{\text{Dividend per Share (DPS)}}{\text{Market Price per Share (MPS)}} \times 100$	It measures dividend paid based on market price of shares.
Earnings Yield	$\frac{\text{Earnings per Share (EPS)}}{\text{Market Priceper Share (MPS)}} \times 100$	It is the relationship of earning per share and market value of shares.
Market Value /Book Value per Share	$\frac{\text{Market value per share}}{\text{Book value per share}}$	It indicates market response of the shareholders' investment.

Q Ratio	$\frac{\text{Market Value of equity and liabilities}}{\text{Estimated replacement cost of assets}}$	It measures market value of equity as well as debt in comparison to all assets at their replacement cost.

Students may note that now a company is also required to disclose the following ratios in the notes to accounts while preparing Financial Statements:

a. Current Ratio,

b. Debt-Equity Ratio,

c. Debt Service Coverage Ratio,

d. Return on Equity Ratio,

e. Inventory turnover ratio,

f. Trade Receivables turnover ratio,

g. Trade payables turnover ratio,

h. Net capital turnover ratio,

i. Net profit ratio,

j. Return on Capital employed,

k. Return on investment.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

In a meeting held at Solan towards the end of 20x1-20x2, the Directors of HPCL Ltd. have taken a decision to diversify. At present HPCL Ltd. sells all finished goods from its own warehouse. The company issued debentures on 01.04.20x2 and purchased fixed assets on the same day. The purchase prices have remained stable during the concerned period. Following information is provided to you:

INCOME STATEMENT

Particulars	20x1-20x2 (₹)		20x2-20x3 (₹)	
Cash Sales Credit Sales	30,000		32,000	
Less: Cost of goods sold Gross	2,70,000	3,00,000	3,42,000	3,74,000
profit		2,36,000		2,98,000
Less: Operating Expenses:				
Warehousing		64,000		76,000
Transport Administrative Selling	13,000		14,000	
Net Profit	6,000		10,000	
	19,000		19,000	
	11,000	49,000	14,000	57,000
		15,000		19,000

BALANCE SHEET

Assets & Liabilities	20x1-20x2 (₹)		20x2-20x3 (₹)	
Fixed Assets (Net Block) Receivables	-	30,000	-	40,000
Cash at Bank Stock	50,000		82,000	
Total Current Assets (CA) Payables	10,000		7,000	
Total Current Liabilities (CL) Working	60,000		94,000	
Capital (CA - CL)	1,20,000		1,83,000	
Net Assets	50,000		76,000	
	50,000		76,000	
		70,000		1,07,000
		1,00,000		1,47,000

Represented by:				
Share Capital		75,000		75,000

Reserve and Surplus		25,000		42,000
Debentures		-		30,000
		1,00,000		1,47,000

You are required to CALCULATE the following ratios for the years 20x1-20x2 and 20x2-20x3:

i. Gross Profit Ratio

ii. Operating Expenses to Sales Ratio

iii. Operating Profit Ratio

iv. Capital Turnover Ratio

v. Stock Turnover Ratio

vi. Net Profit to Net Worth Ratio

vii. Receivables Collection Period

Ratio relating to capital employed should be based on the capital at the end of the year. Give the reasons for change in the ratios for 2 years. Assume opening stock of ₹40,000 for the year 20x1-20x2. Ignore Taxation.

PROBLEM – 2

Following is the abridged Balance Sheet of Alpha Ltd.:

Liabilities	**₹**	**Assets**	**₹**	**₹**
Share Capital	1,00,000	Land and Buildings		80,000
Profit and Loss Account	17,000	Plant and Machineries	50,000	
Current Liabilities	40,000	Less: Depreciation	15,000	35,000
				1,15,000
		Stock	21,000	
		Receivables	20,000	
		Bank	1,000	42,000
Total	**1,57,000**	**Total**		**1,57,000**

With the help of the additional information furnished below, you are required to PREPARE Trading and Profit & Loss Account and Balance Sheet as at 31 st March, 20x3:

The company went in for re-organisation of capital structure, with share capital remaining the same as follows:

Share capital	50%
Other Shareholders' funds	15%
5% Debentures	10%
Current Liabilities	25%

Debentures were issued on 1st April, interest being paid annually on 31st March.

a. Land and Buildings remained unchanged. Additional plant and machinery has been bought and a further ₹5,000 depreciation was written off.
(The total fixed assets then constituted 60% of total fixed and current assets.)

b. Working capital ratio was 8 : 5.

c. Quick assets ratio was 1 : 1.

d. The receivables (four-fifth of the quick assets) to sales ratio revealed a credit period of 2 months. There were no cash sales.

e. Return on net worth was 10%.

f. Gross profit was at the rate of 15% of selling price.

g. Stock turnover was eight times for the year. Ignore Taxation.

PROBLEM – 3

X Co. has made plans for the next year. It is estimated that the company will employ total assets of ₹8,00,000; 50 per cent of the assets being financed by borrowed capital at an interest cost of 8 per cent per year. The direct costs for the year are estimated at ₹4,80,000 and all other operating expenses are estimated at ₹80,000. The goods will be sold to customers at 150 per cent of the direct costs. Tax rate is assumed to be 50 per cent.

You are required to CALCULATE:

(i) Operating profit margin (before tax) (ii) net profit margin (after tax) (iii) return on assets (on operating profit after tax) (iv) asset turnover and (v) return on owners' equity.

PROBLEM – 4

From the following ratios and information given below, PREPARE Trading Account, Profit and Loss Account and Balance Sheet of Aebece Company:

Fixed Assets	₹40,00,000
Closing Stock	₹4,00,000
Stock turnover ratio	10
Gross profit ratio	25 percent

Net profit ratio	20 percent
Net profit to capital	1/5
Capital to total liabilities	1/2
Fixed assets to capital	5/4
Fixed assets/Total current assets	5/7

PROBLEM – 5

ABC Company sells plumbing fixtures on terms of 2/10, net 30. Its financial statements over the last 3 years are as follows:

Particulars	**20x0-20x1**	**20x1-20x2**	**20x2-20x3**
	₹	**₹**	**₹**
Cash	30,000	20,000	5,000
Accounts receivable	2,00,000	2,60,000	2,90,000
Inventory	4,00,000	4,80,000	6,00,000
	6,30,000	7,60,000	8,95,000
Net fixed assets	8,00,000	8,00,000	8,00,000
	14,30,000	15,60,000	16,95,000

	₹	**₹**	**₹**
Accounts payable	2,30,000	3,00,000	3,80,000
Accruals	2,00,000	2,10,000	2,25,000
Bank loan (short-term)	1,00,000	1,00,000	1,40,000
	5,30,000	6,10,000	7,45,000
Long-term debt	3,00,000	3,00,000	3,00,000
Common stock	1,00,000	1,00,000	1,00,000
Retained earnings	5,00,000	5,50,000	5,50,000
	14,30,000	15,60,000	16,95,000
	₹	**₹**	**₹**
Sales	40,00,000	43,00,000	38,00,000
Cost of goods sold	32,00,000	36,00,000	33,00,000
Net profit	3,00,000	2,00,000	1,00,000

Considering opening balance of Accounts Receivable and Inventory as 2,00,000 and 4,00,000 respectively as on 01.04.20x0, ANALYSE the company's financial condition and performance over the last 3 years. Are there any problems?

PROBLEM – 6

Following information are available for Navya Ltd. along with various ratios relevant to the particular industry it belongs to. APPRAISE your comments on strength and weakness of Navya Ltd. comparing its ratios with the given industry norms.

Navya Ltd.

Balance Sheet as at 31.3.20x3

Liabilities	(₹)	Assets	(₹)
Equity Share Capital	48,00,000	Fixed Assets	24,20,000
10% Debentures	9,20,000	Cash	8,80,000
Sundry Creditors	6,60,000	Sundry debtors	11,00,000
Bills Payable	8,80,000	Stock	33,00,000
Other current Liabilities	4,40,000		-
Total	**77,00,000**	**Total**	**77,00,000**

Statement of Profitability For the year ending 31.3.20x3

Particulars	(₹)	(₹)
Sales		1,10,00,000
Less: Cost of goods sold:		
Material	41,80,000	
Wages	26,40,000	
Factory Overhead	12,98,000	81,18,000
Gross Profit		28,82,000
Less: Selling and Distribution Cost	11,00,000	
Administrative Cost	12,28,000	23,28,000
Earnings before Interest and Taxes		5,54,000
Less: Interest Charges		92,000
Earning before Tax		4,62,000
Less: Taxes @ 50%		2,31,000
Net Profit (PAT)		2,31,000

Industry Norms

Ratios	Norm
Current Ratio	2.5
Receivables Turnover Ratio	8.0
Inventory Turnover Ratio (based on Sales)	9.0
Total Assets Turnover Ratio	2.0
Net Profit Ratio	3.5%
Return on Total Assets (on EBIT)	7.0%
Return on Net worth (Based on Net profit)	10.5%
Total Debt/Total Assets	60.0%

PROBLEM – 7

The total sales (all credit) of a firm are ₹6,40,000. It has a gross profit margin of 15 per cent and a current ratio of 2.5. The firm's current liabilities are ₹96,000; inventories ₹48,000 and cash ₹16,000.

a. DETERMINE the average inventory to be carried by the firm, if an inventory turnover of 5 times is expected? (Assume 360 days a year).

b. DETERMINE the average collection period if the opening balance of debtors is intended to be of ₹80,000? (Assume 360 days a year).

PROBLEM – 8

The capital structure of Beta Limited is as follows:

Equity share capital of ₹10 each	8,00,000
9% preference share capital of ₹10 each	3,00,000
	11,00,000

Additional information: Profit (after tax at 35 per cent) ₹2,70,000; Depreciation ₹60,000; Equity dividend paid 20 per cent; Market price of equity shares ₹40.

You are required to COMPUTE the following, showing the necessary workings:

1. Dividend yield on the equity shares

2. Cover for the preference and equity dividends

3. Earnings per shares

4. Price-earnings ratio

PROBLEM – 9

The following accounting information and financial ratios of PQR Ltd. relates to the year ended 31st March, 20x3:

I	**Accounting Information:**	
	Gross Profit Net profit	15% of Sales
	Raw materials consumed	8% of sales 20% of works
	Direct wages	cost 10% of works cost 3
	Stock of raw materials	months' usage 6% of works
	Stock of finished goods	cost
	Debt collection period	60 days
	(All sales are on credit)	
II	**Financial Ratios:**	
	Fixed assets to sales	1 : 3
	Fixed assets to Current assets	13 : 11
	Current ratio	2 : 1
	Long-term loans to Current liabilities	2 : 1
	Share Capital to Reserves and Surplus	1 : 4

If value of Fixed Assets as on 31st March, 20x2 amounted to ₹26 lakhs, PREPARE a summarised Profit and Loss Account of the company for the year ended 31st March, 20x3 and also the Balance Sheet as on 31st March, 20x3.

PROBLEM – 10

Ganpati Limited has furnished the following ratios and information relating to the year ended 31st March, 20x3:

Sales	₹60,00,000
Return on net worth	25%
Rate of income tax	50%
Share capital to reserves	7:3
Current ratio	2
Net profit to sales	6.25%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	₹18,00,000
Interest on debentures	₹60,000
Receivables	₹2,00,000
Payables	₹2,00,000

You are required to:

1. CALCULATE the operating expenses for the year ended 31st March, 20x3.

2. PREPARE a Balance Sheet as on 31st March, 20x3 in the following format:

Balance Sheet as on 31st March, 2023

Liabilities	₹	Assets	₹
Share Capital Reserve and Surplus 15% Debentures Payables		Fixed Assets Current Assets Stock Receivables Cash	

PROBLEM – 11

Using the following information, PREPARE the balance sheet:

Long-term debt to net worth	0.5
Total asset turnover	2.5
Average collection period*₹	18 days
Inventory turnover	9
Gross profit margin	10%
Acid-test ratio	1

Assume a 360-day year and all sales on credit.

	₹		₹
Cash	?	Notes and payables	1,00,000
Accounts receivable	?	Long-term debt	?
Inventory	?	Common stock	1,00,000
Plant and equipment	?	Retained earnings	1,00,000
Total assets	?	Total liabilities and equity	?

PROBLEM – 12

Following information has been provided from the books of Laxmi Pvt. Ltd. for the year ending on 31st March, 20x3:

Net Working Capital	₹4,80,000

Bank overdraft	₹80,000
Fixed Assets to Proprietary ratio	0.75
Reserves and Surplus	₹3,20,000
Current ratio	2.5
Liquid ratio (Quick Ratio)	1.5

You are required to PREPARE a summarised Balance Sheet as at 31 st March, 20x3 assuming that there is no long term debt.

PROBLEM – 13

Manan Pvt. Ltd. gives you the following information relating to the year ending 31st March20x3:

1. Current Ratio	2.5 : 1
2. Debt-Equity Ratio	1 : 1.5
3. Return on Total Assets (After Tax)	15%
4. Total Assets Turnover Ratio	2
5. Gross Profit Ratio	20%
6. Stock Turnover Ratio	7
7. Net Working Capital	₹13,50,000
8. Fixed Assets	₹30,00,000
9. 1,80,000 Equity Shares of	₹10 each
10. 60,000, 9% Preference Shares of	₹10 each
11. Opening Stock	₹11,40,000

You are required to CALCULATE:

1. Quick Ratio

2. Fixed Assets Turnover Ratio

3. Proprietary Ratio

4. Earnings per Share

PROBLEM – 14

Gig Ltd. has furnished the following information relating to the year ended 31st March, 20x2 and 31st March, 20x3:

	31st March, 20x2 (₹)	**31st March, 20x3 (₹)**
Share Capital	40,00,000	40,00,000

Reserve and Surplus	20,00,000	25,00,000
Long term loan	30,00,000	30,00,000

- Net profit ratio: 8%
- Gross profit ratio: 20%
- Long-term loan has been used to finance 40% of the fixed assets.
- Stock turnover with respect to cost of goods sold is 4.
- Debtors represent 90 days sales.
- The company holds cash equivalent to 1½ months cost of goods sold.
- Ignore taxation and assume 360 days in a year.

You are required to PREPARE Balance Sheet as on 31st March, 20x3 in the following format:

Liabilities	(₹)	Assets	(₹)
Share Capital	-	Fixed Assets	-
Reserve and Surplus	-	Sundry Debtors	-
Long-term loan	-	Closing Stock	-
Sundry Creditors	-	Cash in hand	-

PROBLEM – 15

Following information relates to Temer Ltd.:

Debtors Velocity	3 months
Creditors Velocity	2 months
Stock Turnover Ratio	1.5
Gross Profit Ratio	25%
Bills Receivables	₹25,000
Bills Payables	₹10,000
Gross Profit	₹4,00,000
Fixed Assets turnover Ratio	4

Closing stock of the period is ₹10,000 above the opening stock. DETERMINE:

i. Sales and cost of goods sold

ii. Sundry Debtors

iii. Sundry Creditors

iv. Closing Stock

v. Fixed Assets

PROBLEM – 16

From the following information and ratios, PREPARE the Balance sheet as at 31st March, 20x3 and income statement for the year ended on that date for M/s Ganguly & Co

Average Stock	₹10 lakh
Current Ratio	3:1
Acid Test Ratio	1:1
PBIT to PBT	2.2:1
Average Collection period (Assume 360 days in a year)	30 days
Stock Turnover Ratio (Use sales as turnover)	5 times
Fixed assets turnover ratio	0.8 times
Working Capital	₹10 lakh
Net profit Ratio	10%
Gross profit Ratio	40%
Operating expenses (excluding interest)	₹9 lakh
Long term loan interest	12%
Tax	Nil

PROBLEM – 17

From the following information, you are required to PREPARE a summarised Balance Sheet for Rudra Ltd. for the year ended 31st March, 20x3:

Debt Equity Ratio	1:1
Current Ratio	3:1
Acid Test Ratio	8:3
Fixed Asset Turnover (on the basis of sales)	4
Stock Turnover (on the basis of sales)	6
Cash in hand	₹5,00,000
Stock to Debtor	1:1
Sales to Net Worth	4
Capital to Reserve	1:2

Gross Profit 20% of Cost

COGS to Creditor 10:1

Interest for entire year is yet to be paid on Long Term loan @ 10%.

CHAPTER 08: MANAGEMENT OF WORKING CAPITAL

UNIT – I INTRODUCTION TO WORKING CAPITAL MANAGEMENT

MEANING AND CONCEPT OF WORKING CAPITAL

In accounting terms, working capital is defined as the difference between current assets and current liabilities. If we break down the components of working capital, we will find working capital as follows:

Working Capital = Current Assets – Current Liabilities

Current Assets: An asset is classified as current when:

i. It is expected to be realised or intends to be sold or consumed in normal operating cycle of the entity or within twelve months after the reporting period whichever is longer; and

ii. The asset is held primarily for the purpose of trading in the ordinary course of business.

For the purpose of working capital management, current assets of an entity can be grouped into the following categories:

a. Inventory (raw material, work in process and finished goods)

b. Receivables (trade receivables and bills receivables)

c. Cash or cash equivalents (including short-term marketable securities)

d. Prepaid expenses

Other current assets may also include short term loans or advances, any other accrued revenue etc.

Current Liabilities: A liability is classified as current when:

i. It is expected to be settled in normal operating cycle of the entity or within twelve months after the reporting period whichever is longer; and

ii. It is settled either by the use of current assets or by creation of new current liability.

For the purpose of working capital management, current liabilities of an entity can be grouped into the following categories:

a. Payable (trade payables and bills payables)

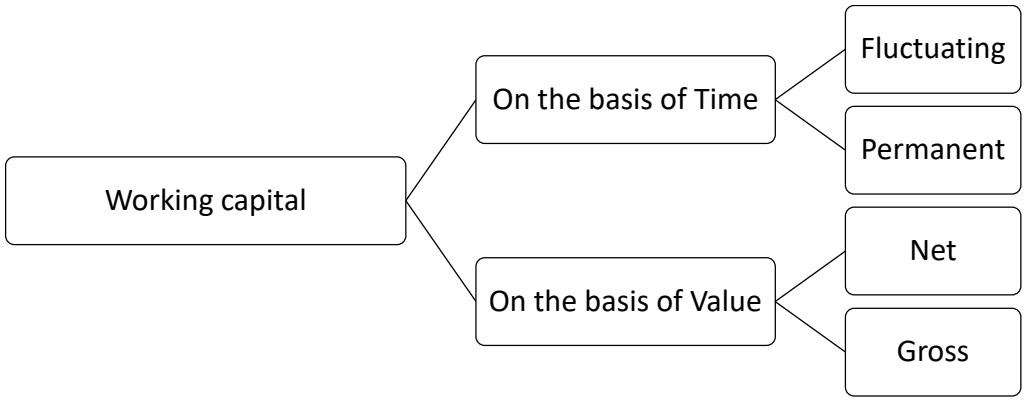
b. Outstanding payments (wages & salary, overheads & other expenses etc.)

Other current liabilities may also include short term borrowings, current portion of long-term debts, short term provisions that are payable within twelve months such as provision for taxes etc.

Working Capital Management is process which is designed to ensure that an organization operates efficiently by monitoring & utilizing its current assets and current liabilities to the best effect. Primary objective is to enable a company maintaining sufficient cash flows in order to meet its day-to-day

operating expenses and its short-term obligations.

The concept of working capital can also be explained through two angles.



which is the minimum level of investment in the current assets that is carried by the entity at all times to carry its day-to-day activities. It generally stays invested in the business, unless the operations are scaled up or down **permanently** which would also result in increase or decrease in permanent working capital. It is generally financed by long term sources of finance.

Temporary working capital refers to that part of total working capital, which is required by an entity in addition to the permanent working capital. It is also called variable or fluctuating working capital which is used to finance the short-term working capital requirements which arises due to fluctuation in sales volume. For instance, an organization would maintain increased levels of inventory to meet increased seasonal demand.

The following diagrams shows Permanent and Temporary or Fluctuating or variable working capital: Both kinds of working capital i.e., permanent and fluctuating (temporary) are necessary to facilitate production and sales through the operating cycle.

SIGNIFICANCE OF WORKING CAPITAL

Importance of Adequate Working Capital

Management of working capital is an essential task of the finance manager. He has to ensure that the amount of working capital available is neither too large nor too small for its requirements.

A large amount of working capital would mean that the company has idle funds. Since funds have a cost, the company has to pay huge amount as interest on such funds that are used to invest in surplus working capital. Another way to look at it is that there is an opportunity cost involved where the company could have invested the surplus funds in long term investments and earned some return on the same.

Various studies conducted by the Bureau of Public Enterprises have shown that one of the reasons for the poor performance of public sector undertakings in our country has been the large amount of

funds locked up in working capital. This results in over capitalization. Over capitalization implies that a company has too large funds for its requirements, resulting in a low rate of return, a situation which implies a less than optimal use of resources.

On the other hand, if the firm has inadequate working capital, such firm runs the risk of insolvency. Paucity of working capital may lead to a situation where the firm may not be able to meet its liabilities. It may also mean that a company may not be holding enough inventory in order to meet the customers' demand and hence would lose sales and eventually some reputation as well.

An organization, therefore, has to be very careful in estimating its working capital requirements.

Maintaining adequate working capital is not just important in the short-term, sufficient liquidity must be maintained in order to ensure the survival of the business in the long-term as well. When businesses make investment decisions, they must not only consider the financial outlay involved with acquiring the new machine or the new building, etc., but must also take account of the additional current assets that are usually required with any expansion of activity. For e.g.:

- Increased production leads to holding of additional stocks of raw materials and work-in-progress.
- An increased sale usually means that the level of debtors and the finished goods inventory requirements will increase.
- A general increase in the firm's scale of operations tends to imply a need for greater levels of working capital.

A question then arises what is an optimum amount of working capital for a firm? An organization should neither have too high an amount of working capital nor should the same be too low. It is the job of the finance manager to estimate the requirements of working capital carefully and determine the optimum level of investment in working capital.

Optimum Working Capital

If a company's current assets do not exceed its current liabilities, then it may run into trouble with creditors that want their money quickly. Not being able to meet its short-term obligations, company shall eventually lose its reputation and not many vendors would like to do business with them.

Current ratio (current assets/current liabilities) (along with acid test ratio to supplement it) has traditionally been considered the best indicator of the working capital situation.

It is understood that a current ratio of 2 (two) for a manufacturing firm implies that the firm has an optimum amount of working capital. A higher ratio may indicate inefficient use of funds and a lower ratio would mean liquidity issues as mentioned above. This is supplemented by Quick Ratio or Acid Test Ratio (Quick assets/Current liabilities) which should be at least 1 (one) which would imply that

there is a comfortable liquidity position if liquid current assets are equal to current liabilities (where quick assets / liquid current assets refer to current assets less inventory & prepaid expenses).

Bankers, financial institutions, financial analysts, investors and other people interested in financial statements have, for years, considered the current ratio at 'two' and the acid test ratio at 'one' as indicators of a good working capital situation. As a thumb rule, this may be quite adequate.

However, it should be remembered that optimum working capital can be determined only with reference to the particular circumstances of a specific situation. Thus, in a company where the inventories are easily saleable and the sundry debtors are as good as liquid cash, the current ratio may be lower than 2 and yet firm may be sound or where the nature of finished goods are perishable in nature like a restaurant, then also the organization cannot afford to hold large amount of working capital. On the other hand, an organization dealing in products which take a longer production time, may need a higher amount of working capital.

In nutshell, a firm should have adequate working capital to run its business operations. Both excessive as well as inadequate working capital positions are dangerous.

DETERMINANTS OF WORKING CAPITAL

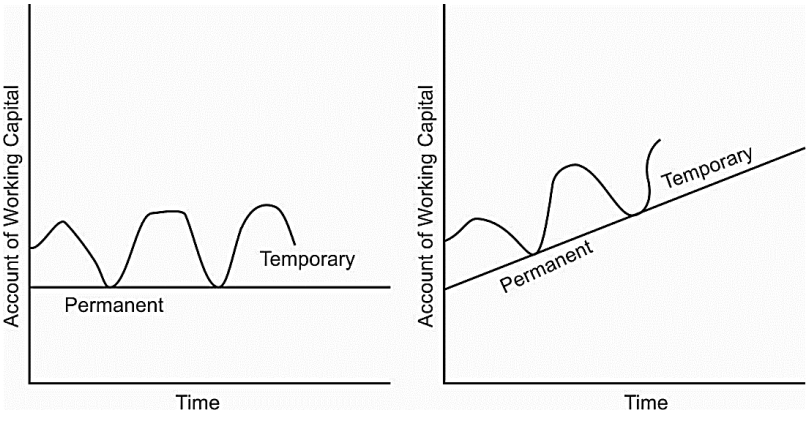
Working capital management is concerned with:

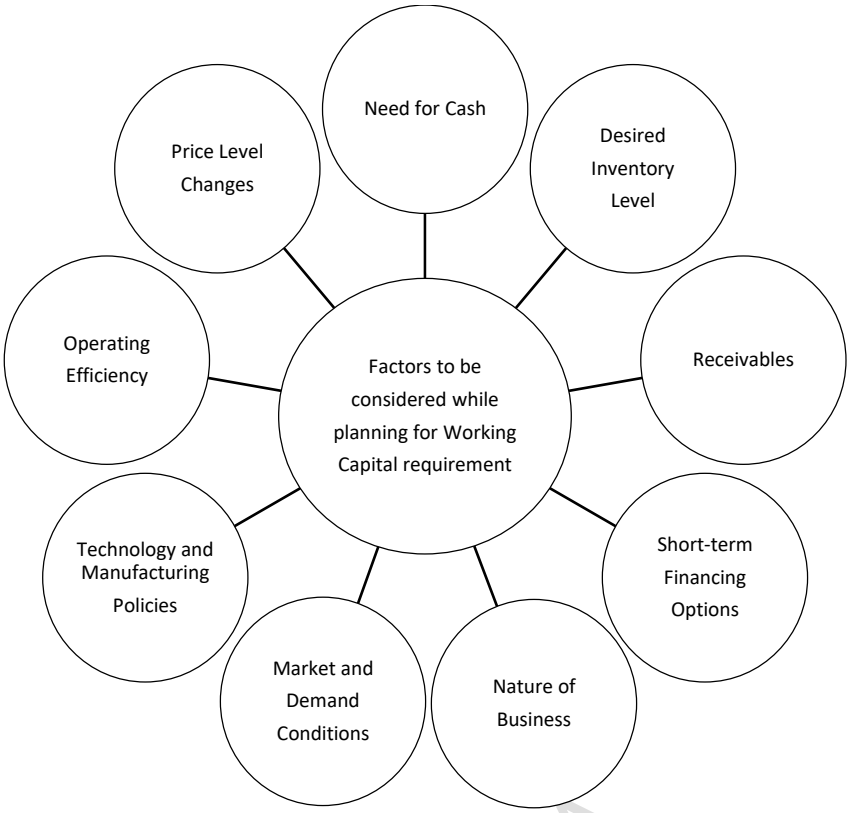
a. **Maintaining adequate working capital** (managing the level of individual current assets and the current liabilities) and
b. **Financing of the working capital.**

For the point a) above, a Finance Manager needs to plan and compute the working capital requirement for its business. And once the requirement has been computed he needs to ensure that it is financed properly. This whole exercise is known as Working Capital Management.

Sound financial and statistical techniques, supported by judgment should be used to predict the quantum of working capital required at different times.

Some of the factors which need to be considered while planning for working capital requirement are:





1. **Need for Cash:** Identify the cash balance which allows for the business to **meet day-to-day expenses** but reduces cash holding costs (example – loss of interest on long term investment had the surplus cash invested therein).
2. **Desired level of Inventory: Identify the level of inventory** which allows for uninterrupted production but reduces the investment in raw materials and hence increases cash flow. The techniques like Just in Time (JIT) and Economic order quantity (EOQ) are used for this.
3. **Receivables:** Identify the **appropriate credit policy**, i.e., credit terms which will attract customers, such that any impact on cash flows and the cash conversion cycle will be offset by increased revenue and hence Return on Capital (or vice versa). The tools like Early Payment Discounts and allowances are used for this.
4. **Short-term Financing Options:** Inventory is ideally financed by credit granted by the supplier. However, depending on the cash conversion cycle, it may be necessary to utilize a bank loan (or overdraft), or to "convert debtors to cash" through "factoring" in order to finance working capital requirements.
5. **Nature of Business:** For e.g., in a business of restaurant, most of the sales are in Cash. Therefore, need for working capital is very less. On the other hand, there would be a higher inventory in case of a pharmacy or a bookstore.
6. **Market and Demand Conditions:** For e.g., if an item's demand far exceeds its production, the working capital requirement would be less as investment in finished goods inventory would be very less with continuous sales.

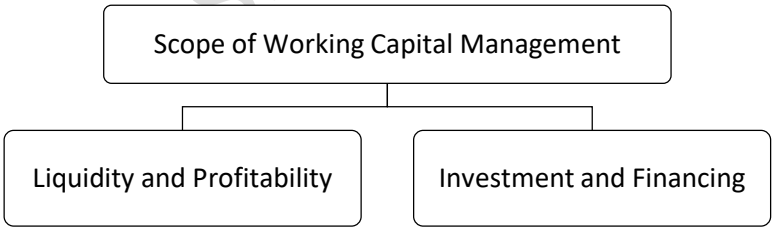
7. **Technology and Manufacturing Policies:** For e.g., in some businesses the **demand for goods is seasonal**, in that case a business may follow a policy for steady production throughout the whole year or rather may choose a policy of production only during the demand season.
8. **Operating Efficiency:** A company can reduce the working capital requirement by **eliminating waste, improving coordination, process improvements** etc.
9. **Price Level Changes & Exchange Rate Fluctuations:** For e.g., **rising prices necessitate the use of more funds** for maintaining an existing level of activity. For the same level of current assets, higher cash outlays are required. Therefore, the effect of rising prices is that a higher amount of working capital is required. Another example would be unfavourable exchange rate movement in case of imported raw materials would warrant additional cost of same.

MANAGEMENT OF WORKING CAPITAL

The importance of working capital for an entity can be compared to importance of life blood for a living body or of a lubricant/ fuel for an engine. Working capital is required for smooth functioning of the business of an entity as lack of this may interrupt the ordinary course of activities. Hence, the working capital needs adequate attention and efficient management. When we talk about the management, it involves **3 Es i.e., Economy, Efficiency and Effectiveness** and all these three are required for the working capital management.

The scope of working capital management can be grouped into two broad areas:

(i) Liquidity and Profitability (ii) Investment and Financing Decision.



Liquidity and Profitability

For uninterrupted and smooth functioning of the day-to-day business of an entity, it is important to maintain liquidity of funds evenly. As we have already learnt in previous chapters that each rupee of capital bears some cost. So, while maintaining liquidity the cost aspect needs to be borne in mind. Also, a higher working capital may be intended to increase the revenue & hence profitability, but at the same time unnecessary tying up of funds in idle assets not only reduces the liquidity but also reduces the opportunity to earn better return from a productive asset. Hence, a trade-off is required between the liquidity and profitability which increases the profitability without disturbing the day-to-day functioning. This requires **3Es** as discussed above i.e., **economy** in **financing**, **efficiency in utilization** and **effectiveness in achieving** the intended objectives.

The trade-off between the components of working capital can be summarized as follows:

Component of Working Capital	Advantages of higher side (Profitability)	Trade-off (between Profitability and Liquidity)	Advantages of lower side (Liquidity)
Inventory	Fewer stock-outs increase the profitability.	Use techniques like EOQ, JIT etc. to carry optimum level of inventory.	Lower inventory requires less capital but endangered stock-out and loss of goodwill.
Receivables	Higher Credit period attract customers and increase revenue (but can result in more bad debts)	Evaluate the credit policy; use the services of debt management (factoring) agencies.	Cash sales provide liquidity but fails to boost sales and revenue (due to lower credit period)
Pre-payment of expenses	Reduces uncertainty and profitable in inflationary environment.	Cost-benefit analysis required	Improves or maintains liquidity.
Cash and Cash equivalents	Payables are honoured in time, improves the goodwill and helpful in getting future discounts.	Cash budgets and other cash management techniques can be used	Cash can be invested in some other investment avenues
Payables and Expenses	Capital can be used in some other investment avenues	Evaluate the credit policy and related cost.	Payables are honoured in time, improves the goodwill and helpful in getting future discounts.

Investment and Financing

Working capital policy is a function of two decisions, first is investment in working capital and the second is financing of the investment. Investment in working capital is concerned with the level of investment in the current assets. It gives the answer of 'How much' fund to be tied in to achieve the organisation objectives (i.e., Effectiveness of fund). Financing decision concerned with the arrangement of funds to finance the working capital. It gives the answer 'Where from' fund to be

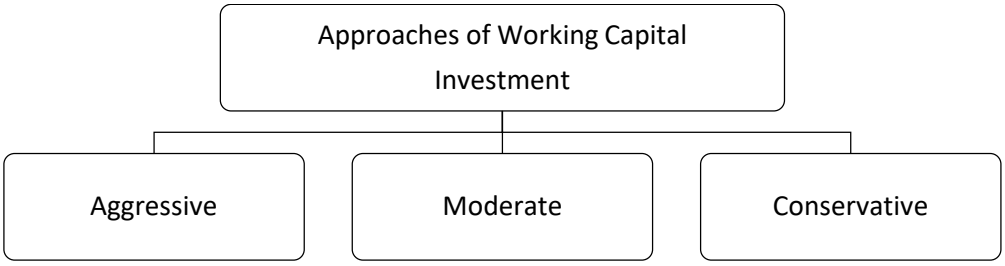
sourced at lowest cost as possible (i.e. Economy). Financing decision, we will discuss this in later unit of this chapter.

Investment of working capital: How much to be invested in current assets as working capital is a matter of policy decision by an entity. It has to be decided in the light of organizational objectives, trade policies and financial (cost-benefit) considerations. There are not set or fixed rules for deciding the level of investment in working capital. Some organizations due to its peculiarity require more investment than others. For example, an infrastructure development company requires more investment in its working capital as there may be huge inventory in the form of work in process on the other hand a company which is engaged in fast food business, comparatively requires less investment as inventory is of perishable nature & most sales are cash sales. Hence, level of investment depends on the various factors listed below:

a. **Nature of Industry:** Construction companies, breweries etc. requires large investment in working capital due long gestation period.
b. **Types of products:** Consumer durable has large inventory as compared to perishable products.
c. **Manufacturing Vs Trading Vs Service:** A manufacturing entity has to maintain three levels of inventory i.e. raw material, work-in-process and finished goods whereas a trading and a service entity has to maintain inventory only in the form of trading stock and consumables respectively.
d. **Volume of sales:** Where the sales are high, there is a possibility of high receivables as well.
e. **Credit policy:** An entity whose credit policy is liberal has not only high level of receivables but may require more capital to fund raw material purchases as that will depend on credit period allowed by suppliers.

Approaches of working capital investment

Based on the organisational policy and risk-return trade off, working capital investment decisions are categorised into three approaches i.e., aggressive, conservative and moderate.

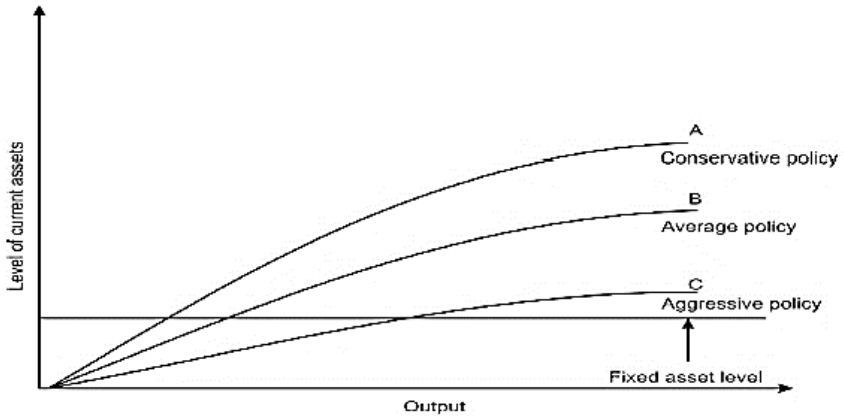


a. **Aggressive:** Here investment in working capital is kept at minimal investment in current assets which means the entity does hold lower level of inventory, follow strict credit policy, keeps less cash balance etc. The advantage of this approach is that lower level of fund is tied in the working capital which results in lower financial costs but the flip side could be risk of stock-outs & that the

organisation could not grow which leads to lower utilisation of fixed assets and long-term debts. In the long run firm may stay behind the competitors. This approach would better suit a highly integrated organisation with efficient processes.

b. Conservative: In this approach, organisation choose to invest high capital in current assets. Organisations use to keep inventory level higher, follows liberal credit policies, and cash balance as high as to meet any current liabilities immediately. The advantages of this approach are higher sales volume, increased demand due to liberal credit policy and increase goodwill among the suppliers due to payment in short time. The disadvantages are increased cost of capital, inventory obsolescence, higher risk of bad debts, shortage of liquidity in long run due to longer operating cycles.

c. Moderate: This approach is in between the above two approaches. Under this approach a balance between the risk and return is maintained to gain more by using the funds in very efficient manner.



A conservative policy implies greater liquidity and lower risk whereas an aggressive policy indicates higher risk and poor liquidity. Moderate current assets policy will fall in the middle of conservative and aggressive policies which most of the firms follow to strike an appropriate balance as per the requirements of their trade or industry. Also, an organization may follow a different policy at different times as may be needed depending on determinants of working capital as discussed earlier.

Current Assets to Fixed Assets Ratio

The finance manager is required to determine the optimum level of current assets so that the shareholders' value is maximized.

A firm needs both fixed and current assets to support a particular level of output.

As the firm's output and sales increases, the need for current assets also increases. Generally, current assets do not increase in direct proportion to output; current assets may increase at a decreasing rate with output. As the output increases, the firm starts using its current asset more efficiently.

The level of the current assets can be measured by creating a relationship between current assets and fixed assets. Dividing current assets by fixed assets gives current assets/fixed assets ratio.

Assuming a constant level of fixed assets, a higher current assets/fixed assets ratio indicates a conservative current assets policy and a lower current assets/fixed assets ratio means an aggressive current assets policy assuming all other factors to be constant.

The following illustration explains the risk-return trade off of various working capital management policies, viz., conservative, aggressive and moderate.

ESTIMATING WORKING CAPITAL NEEDS

Operating cycle is one of the most reliable methods of Computation of Working Capital.

However, other methods like ratio of sales and ratio of fixed investment may also be used to determine the Working Capital requirements. These methods are briefly explained as follows:

i. **Current Assets Holding Period:** To estimate working capital needs based on the average holding period of current assets and relating them to costs based on the company's experience in the previous year. This method is essentially based on the Operating Cycle Concept.
ii. **Ratio of Sales:** To estimate working capital needs as a ratio of sales on the assumption that current assets change with changes in sales.
iii. **Ratio of Fixed Investments:** To estimate Working Capital requirements as a percentage of fixed investments.

A number of factors will, however, be impacting the choice of method of estimating Working Capital. Factors such as seasonal fluctuations, accurate sales forecast, investment cost and variability in sales price would generally be considered. The production cycle and credit and collection policies of the firm will have an impact on Working Capital requirements. Therefore, they should be given due weightage in projecting Working Capital requirements.

OPERATING OR WORKING CAPITAL CYCLE

A useful tool for managing working capital is the operating cycle.

The operating cycle analyses the accounts receivable, inventory and accounts payable cycles in terms of number of days. For example:

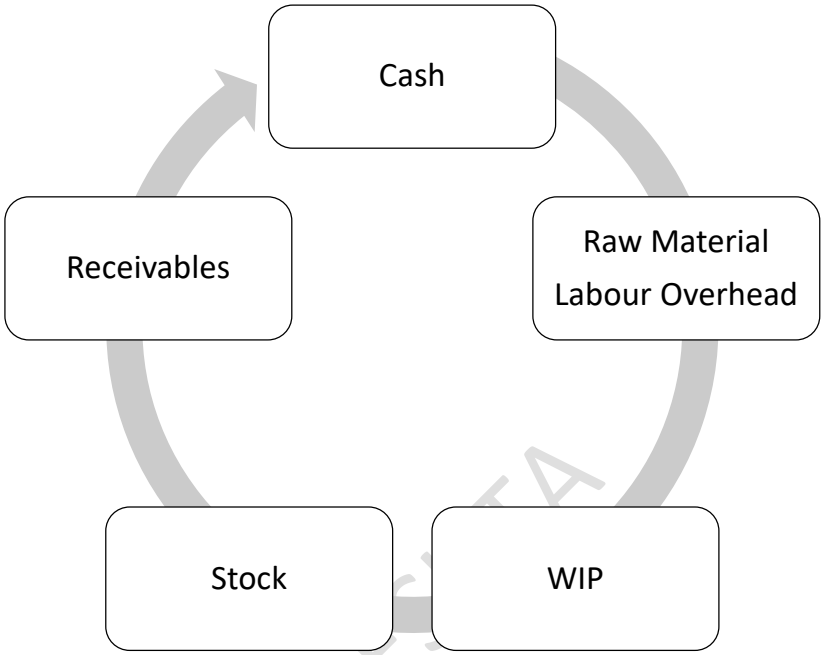
- Accounts receivables are analyzed by the average number of days it takes to collect an account.
- Inventory is analyzed by the average number of days it takes to turn over the sale of a product (from the point it comes in the store to the point it is converted to cash or an account receivable).
- Accounts payables are analyzed by the average number of days it takes to pay a supplier invoice.

Operating/Working Capital Cycle Definition

Working Capital cycle indicates the length of time between a company's paying for materials, entering into stock and receiving the cash from sales of finished goods. It can be determined by adding the

number of days required for each stage in the cycle. For example, a company holds raw materials on an average for 60 days, it gets credit from the supplier for 15 days, production process needs 15 days, finished goods are held for 30 days and 30 days credit is extended to debtors. The total of all these, 120 days, i.e., 60 – 15 + 15 + 30 + 30 days is the total working capital cycle.

Working Capital Cycle



Most businesses cannot finance the operating cycle (accounts receivable days + inventory days) with accounts payable financing alone. Consequently, working capital financing is needed. This shortfall is typically covered by the net profits generated internally or by externally borrowed funds or by a combination of the two.

The faster a business expands the more cash it will need for working capital and investment. The cheapest and best sources of cash exist as working capital right within the business. Good management of working capital will generate cash which will help improve profits and reduce risks. Bear in mind that the cost of providing credit to customers and holding stocks can represent a substantial proportion of a firm's total profits.

Each component of working capital (namely inventory, receivables and payables) has two dimensions Time and Money. When it comes to managing working capital then time is money**.** If you can get money to move faster around the cycle (e.g., collect amount due from debtors more quickly) or reduce the amount of money tied up (e.g., reduce inventory levels relative to sales), the business will generate more cash or it will need to borrow less money to fund working capital. Similarly, if you can negotiate improved terms with suppliers e.g., get longer credit or an increased credit limit; you are effectively creating free finance to help fund future sales.

If you……	Then …….
Collect receivables (debtors) faster	You release cash from the cycle
Collect receivables (debtors) slower	Your receivables soak up cash.
Get better credit (in terms of duration or amount) from suppliers.	You increase your cash resources.
Shift inventory (stocks) faster	You free up cash.
Move inventory (stocks) slower	You consume more cash.

The determination of operating capital cycle helps in the forecasting, controlling and management of working capital. The length of operating cycle is the indicator of performance of management. The net operating cycle represents the time interval for which the firm has to negotiate for Working Capital from its lenders. It enables to determine accurately the amount of working capital needed for the continuous operation of business activities.

The duration of working capital cycle may vary depending on the nature of the business.

In the form of an equation, the operating cycle process can be expressed as follows:

Operating Cycle = R + W + F + D – C

Where,

R = Raw material storage period

W = Work-in-progress inventory* holding period F = Finished goods storage period

D = Receivables (Debtors) collection period

C = Credit period allowed by suppliers (Creditors)

* work in progress inventory may also be termed as works cost.

Also,

Number of Operating Cycles in a Year = 360 or 365 / Operating Cycle

Wherein, more the number of operating cycles better it is for the organization as it indicates shorter operating cycle.

The various components of Operating Cycle may be calculated as shown below:

1.	Raw Material Storage Period	$= \frac{\text{Average stock of raw material}}{\text{Average Cost of Raw Material Consumption per day}}$
2.	Work-in-Progress inventory holding period	$= \frac{\text{Average Work-in-progress inventory}}{\text{Average Cost of Production per day}}$
3.	Finished Goods storage period	$= \frac{\text{Average stock of finished goods}}{\text{Average Cost of Goods Sold per day}}$

4.	Receivables (Debtors) collection period	$= \frac{\text{Average Receivables}}{\text{Average Credit Sales per day}}$
5.	Credit period allowed by suppliers (Creditors)	$= \frac{\text{Average Payables}}{\text{Average Credit Purchases per day}}$

Working Capital Based on Operating Cycle

One of the methods for forecasting working capital requirement is based on the concept of operating cycle.

Estimation of amount of Different Components of Current Assets and Current Liabilities

The various constituents of current assets and current liabilities have a direct bearing on the computation of working capital and the operating cycle. The holding period of various constituents of Current Assets and Current Liabilities cycle may either contract or expand the net operating cycle period.

Shorter the operating cycle period, lower will be the requirement of working capital and vice-versa.

Estimation of Current Assets

The estimates of various components of gross working capital or current assets may be made as follows:

i. **Raw Materials Inventory:** The funds to be invested in raw materials inventory may be estimated on the basis of production budget, the estimated cost per unit and average holding period of raw material inventory by using the following formula:

$$\frac{\text{Estimated Production (units)}}{\text{12months /365days *}} \times \text{Estimated cost per unit x Average raw material storage period}$$

ii. **Work-in-Progress Inventory:** The funds to be invested in work-in-progress can be estimated by the following formula:

$$\frac{\text{Estimated Production (units)}}{\text{12months /365days *}} \times \text{Estimated WIP cost per unit x Average WIP holding period}$$

iii. **Finished Goods:** The funds to be invested in finished goods inventory can be estimated with the help of following formula:

$$\frac{\text{Estimated Production (units)}}{\text{12months /365days *}} \times \text{Estimated cost of production per unit x Average finished goods storage period}$$

iv. **Receivables (Debtors):** Funds to be invested in trade receivables (debtors) may be estimated with the help of following formula:

$$\frac{\text{Estimated Credit sales (units)}}{\text{12months /365days *}} \times \text{Estimated cost of sales (Excl. Dep.) per unit x Average receivable collection period.}$$

Note that only cash cost is considered for debtors and finished goods elements (as the sales to debtors include cost & profit whereas the funds required for working capital purposes doesn't need to include profit). Further, non-cash expense like depreciation is also excluded.

v. **Cash and Cash equivalents:** Minimum desired Cash and Bank balance to be maintained by the firm has to be added in the current assets for the computation of working capital.

Estimation of Current Liabilities

Current liabilities are deducted from the current assets to get working capital. Hence, the amount of working capital is lowered to the extent of current liabilities (other than bank credit) arising in the normal course of business. The important current liabilities like trade payables, wages and overheads can be estimated as follows:

i. **Trade Payables:** Trade payable can be estimated on the basis of material purchase budget and the credit purchase by using following formula:

$$\frac{\text{Estimated credit purchase}}{\text{12months /365days *}} \times \text{Credit period allowed by suppliers}$$

ii. **Direct Wages:** It is estimated with the help of direct wages budget by using following formula:

$$\frac{\text{Estimated labour hours} \times \text{wages rate per hour}}{\text{12months /365days *}} \times \text{Average time lag in payment of wages}$$

iii. **Overheads (other than depreciation and amortization):** It may be estimated with the help of following formula:

$$\frac{\text{Estimated Overheads}}{\text{12months /360days *}} \times \text{Average time lag in payment of overheads}$$

*Number of days in a year may be taken as 365 or 360 days.

Estimation of Working Capital Requirements

		Amount (₹)	Amount (₹)	Amount (₹)
I.	**Current Assets:**			
	Inventories:			
	-Raw Materials	---		
	-Work-in-process	---		

	-Finished goods	---	---	
	Receivables:			
	-Trade debtors	---		
	-Bills	---	---	
	Prepaid Expenses		---	
	Minimum Cash Balance		---	
	Gross Working Capital		**---**	**---**
II.	**Current Liabilities:**			
	Trade Payables		---	
	Bills Payables		---	
	Wages Payables		---	
	Payables for overheads		---	**---**
III.	**Excess of Current Assets over Current Liabilities [I – II]**			**---**
IV.	Safety Margin			---
V.	**Net Working Capital [III + IV]**			**---**

Working Capital Requirement Estimation based on Cash Cost

We have already seen that working capital is the difference between current assets and current liabilities. To estimate requirements of working capital, we have to forecast the amount required for each item of current assets and current liabilities.

In practice another approach may also be useful in estimating working capital requirements. This approach is based on the fact that in **the case of current assets, like sundry debtors and finished goods, etc., the exact amount of funds blocked is less than the amount of such current assets**. For example:

- If we have sundry debtors worth ₹1 lakh and our cost of sales is₹75,000, the actual amount of funds blocked in sundry debtors is ₹75,000 the cost of sundry debtors, the rest (₹25,000) is profit.
- Again, some of the cost items also are non-cash costs; depreciation is a non-cash cost item. Suppose out of ₹75,000, ₹5,000 is depreciation; then it is obvious that the actual funds blocked in terms of sundry debtors totaling ₹1 lakh is only ₹70,000. In other words, ₹70,000 is the amount of funds required to finance sundry debtors worth ₹1 lakh.
- Similarly, in the case of finished goods which are valued at cost, non-cash costs may be excluded to work out the amount of funds blocked.

Many experts, therefore, calculate the working capital requirements by working out the **cash costs of finished goods and sundry debtors**. Under this approach, the debtors are calculated not as a percentage of sales value but as a percentage of cash costs. Similarly, finished goods are valued according to cash costs.

UNIT - II

TREASURY AND CASH MANAGEMENT

TREASURY MANAGEMENT: MEANING

In the wake of the competitive business environment resulting from the liberalization of the economy, there is a pressure to manage cash scientifically. The demand for funds for expansions coupled with high interest rates, foreign exchange volatility and the growing volume of financial transactions have necessitated efficient management of money.

Treasury management encompasses planning, organizing & controlling the funds & working capital of an enterprise in order to ensure best use of funds, maintain liquidity, reduce overall cost of funds and mitigating operational & financial risk. It involves the corporate handling of all financial matters, the generation of external and internal funds for business, the management of currencies and cash flows and the complex, strategies, policies and procedures of corporate finance.

The treasury management mainly deals with: -

- Working capital management; and
- Financial risk management (It includes forex and interest rate management).

The key goals of treasury management are: -

- Maximize the return on the available cash;
- Minimize interest cost on borrowings;
- Mobilise as much cash as possible for corporate ventures for maximum returns; and
- Effective dealing in forex, money and commodity markets to reduce risks arising because of fluctuating exchange rates, interest rates and prices which can in turn affect the profitability of the organization.

FUNCTIONS OF TREASURY DEPARTMENT

The treasury department have evolved in importance over number of years from being responsible for only cash handling issues to technical areas revolving around hedging forex risks, composition of capital structure etc. The fundamental tasks for which treasury department of any enterprise is responsible are: -

1. **Cash Management:** It involves efficient cash collection process and managing payment of cash both inside the organisation and to third parties.

   There may be complete centralization within a group treasury or the treasury may simply advise subsidiaries and divisions on policy matter viz., collection/payment periods, discounts, etc. Treasury will also manage surplus funds in an investment portfolio. Investment policy will consider future needs for liquid funds and acceptable levels of risk as determined by company policy.

2. **Currency Management:** The treasury department manages the foreign currency risk exposure of the company. In a large multinational company (MNC) the first step will usually be to set off intra-group indebtedness. The use of matching receipts and payments in the same currency will save transaction costs and also will save the organization from any unfavorable exchange movements. Accordingly, Treasury might advise on the currency to be used when invoicing overseas sales. The treasury will manage any net exchange exposures in accordance with company policy. If risks are to be minimized then forward contracts can be used either to buy or sell currency forward.

3. **Fund Management:** Treasury department is responsible for planning and sourcing the company's short, medium and long-term cash needs. They also facilitate temporary investment of surplus funds by mapping the time gap between funds inflow and outflow. Treasury department will also participate in the decision on capital structure and forecast future interest and foreign currency rates.

4. **Banking:** It is important that a company maintains a good relationship with its bankers. Treasury department carry out negotiations with bankers with respect to interest rates, foreign exchange rates etc. and act as the initial point of contact with them. Short-term finance can come in the form of bank loans or through the sale of commercial paper in the money market.

5. **Corporate Finance:** Treasury department is involved with both acquisition and divestment activities within the group. In addition, it will often have responsibility for investor relations. The latter activity has assumed increased importance in markets where share-price performance is regarded as crucial and may affect the company's ability to undertake acquisition activity or, if the price falls drastically, render it vulnerable to a hostile bid.

MANAGEMENT OF CASH

Management of cash is an important function of the finance manager. It is concerned with the managing of:

i. Cash flows into and out of the firm;

ii. Cash flows within the firm; and

iii. Cash balances held by the firm at a point of time by financing deficit or investing surplus cash.

The main objectives of cash management for a business are: -

- Provide adequate cash to each of its units as per requirements;
- No funds are blocked in idle cash; and
- The surplus cash (if any) should be invested in order to maximize returns for the business.

A cash management scheme therefore, is a delicate balance between the twin objectives of liquidity and costs.

The Need for Cash

The following are three basic considerations in determining the amount of cash or liquidity as have been outlined by Lord Keynes, a British Economist:

- Transaction need: Cash facilitates the meeting of the day-to-day expenses and other debt payments. Normally, inflows of cash from operations should be sufficient for this purpose. But sometimes this inflow may be temporarily blocked. In such cases, it is only the reserve cash balance that can enable the firm to make its payments in time.
- Speculative needs: Cash may be held in order to take advantage of profitable opportunities that may present themselves and which may be lost for want of ready cash/settlement.
- Precautionary needs: Cash may be held to act as for providing safety against unexpected events. Safety as is explained by the saying that a man has only three friends an old wife, an old dog and money at bank.

Cash Planning

Cash Planning is a technique to plan and control the use of cash. This protects the financial conditions of the firm by developing a projected cash statement from a forecast of expected cash inflows and outflows for a given period. This may be done periodically either on daily, weekly or monthly basis. The period and frequency of cash planning generally depends upon the size of the firm and philosophy of the management. As firms grows and business operations become complex, cash planning becomes inevitable for continuing success.

The very first step in this direction is to estimate the requirement of cash. For this purpose, cash flow statements and cash budget are required to be prepared. The technique of preparing cash flow and funds flow statements have been discussed in accounting paper at Intermediate level of CA course. The preparation of cash budget has however, been demonstrated here.

Cash Budget

Cash Budget is the most significant device to plan for and control cash receipts and payments. This represents cash requirements of business during the budget period.

The various purposes of cash budgets are: -

- Coordinate the timings of cash needs. It identifies the period(s) when there might either be a shortage of cash or an abnormally large cash requirement;
- It also helps to pinpoint period(s) when there is likely to be excess cash;
- It enables firm which has sufficient cash to take advantage like cash discounts on its accounts payable; and
- Lastly it helps to plan/arrange adequately needed funds (avoiding excess/shortage of cash) on favorable terms.

On the basis of cash budget, the firm can decide to invest surplus cash in marketable securities and earn profits. On the contrary, any shortages can also be managed by making overdraft or credit arrangements with banks.

Main Components of Cash Budget

Preparation of cash budget involves the following steps: -

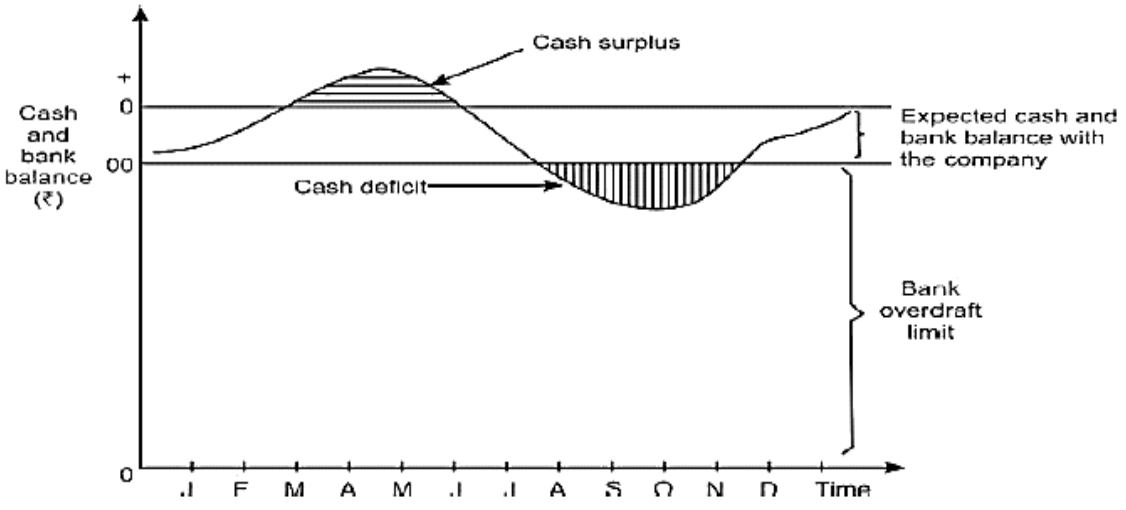
a. Selection of the period of time to be covered by the budget. It also defines the planning horizon.

b. Selection of factors that have a bearing on cash flows. The factors that generate cash flows are generally divided into following two categories: -

i. Operating (cash flows generated by operations of the firm); and

ii. Financial (cash flows generated by financial activities of the firm).

The following figure highlights the cash surplus and cash shortage position over the period of cash budget for preplanning to take corrective and necessary steps.



METHODS OF CASH FLOW BUDGETING

A cash budget can be prepared in the following ways:

1. **Receipts and Payments Method:** In this method all the expected receipts and payments for budget period are considered. All the cash inflow and outflow of all functional budgets including capital expenditure budgets are considered. Accruals and adjustments in accounts will not affect the cash flow budget. Anticipated cash inflow is added to the opening balance of cash and all cash payments are deducted from this to arrive at the closing balance of cash. This method is commonly used in business organizations.
2. **Adjusted Income Method:** In this method the annual cash flows are calculated by adjusting the sales revenue and cost figures for delays in receipts and payments (change in debtors and creditors) and eliminating non-cash items such as depreciation.
3. **Adjusted Balance Sheet Method:** In this method, the budgeted balance sheet is predicted by expressing each type of asset (except cash & bank) and short-term liabilities as percentage of the expected sales. The profit is also calculated as a percentage of sales, so that the increase in owner's equity can be forecasted. Known adjustments, may be made to long-term liabilities and the balance sheet will then show if additional finance is needed (if budgeted assets exceed budgeted liabilities) or if there will be a positive cash balance (if budgeted liabilities exceed budgeted assets).

It is important to note that the capital budget will also be considered in the preparation of cash flow budget because the annual budget may disclose a need for new capital investments and also, the costs and revenues of any new projects coming on stream will need to be incorporated in the short-term budgets.

The Cash Budget can be prepared for short period or for long period.

Cash budget for short period

Preparation of cash budget month by month would require the following estimates:

a. As regards receipts:
   1. Receipts from debtors;
   2. Cash Sales; and
   3. Any other source of receipts of cash (say, dividend from a subsidiary company)

b. As regards payments:
   1. Payments to be made for purchases;
   2. Payments to be made for expenses;
   3. Payments that are made periodically but not every month;

i. Debenture interest;

ii. Income tax paid in advance;

iii. Sales tax or GST etc.

4. Special payments to be made in a particular month, for example, dividends to shareholders, redemption of debentures, repayments of loan, payment of assets acquired, etc.

Format of Cash Budget

_____Co. Ltd.

Cash Budget

Period_____

	Month 1	Month 2	Month 3		Month 12
Receipts:					
1. Opening balance					
2. Collection from debtors					
3. Cash sales					
4. Loans from banks					
5. Share capital					
6. Miscellaneous receipts					
7. Other items					
Total					
Payments:					
1. Payments to creditors					
2. Wages					
3. Overheads					
(a)					
(b)					
(c)					
4. Interest					
5. Dividend					
6. Corporate tax					
7. Capital expenditure					
8. Other items					

Total					
Closing balance					
[Surplus (+)/Shortfall (-)]					

Cash Budget for long period

Long-range cash forecast often resemble the projected sources and application of funds statement. The following procedure may be adopted to prepare long-range cash forecasts:

(i) Take the cash at bank and in the beginning of the year

Add:

- **a.** Trading profit (before tax) expected to be earned;
- **b.** Depreciation and other development expenses incurred to be written off;
- **c.** Sale proceeds of assets;
- **d.** Proceeds of fresh issue of shares or debentures; and
- **e.** Reduction in working capital that is current assets (except cash) less current liabilities.

Deduct:

- **f.** Dividends to be paid.
- **g.** Cost of assets to be purchased.
- **h.** Taxes to be paid.
- **i.** Debentures or preference shares to be redeemed.
- **j.** Increase in working capital that is current assets (except cash) less current liabilities.

Managing Cash Collection and Disbursements

Having prepared the cash budget, the finance manager should ensure that there is not a significant deviation between projected cash flows and actual cash flows.

To achieve this cash management, efficiency will have to be brought in by proper control of cash collection and disbursement.

The twin objectives in managing the cash flows should be: -

- Accelerate cash collections as much as possible; and
- Decelerate or delay cash disbursements within permissible time frame. Let's discuss each of the two objectives individually.

Accelerating Cash Collections

Different Kinds of Float with reference to Management of Cash: First, let's understand the time involved in the cash collection process. The term float is used to refer to the periods that affect

cash as it moves through the different stages of the collection process. Four kinds of float with reference to management of cash are:

- **Billing float:** An invoice is the formal document that a seller prepares and sends to the purchaser as the payment request for goods sold or services provided. The time between the sale and the mailing of the invoice is known as billing float.
- **Mail float:** This is the time when a cheque is being carried by post office, messenger service or other means of delivery.
- **Cheque processing float:** This is the time required for the seller to sort, record and deposit the cheque after it has been received by the company.
- **Banking processing float:** This is the time from the deposit of the cheque to the crediting of funds in the sellers' account.

There are multiple ways in which a firm can attempt to reduce or eliminate any or all types of floats above. For instance:

- A firm can conserve cash and reduce its requirements for cash balances if it can speed up its cash collections by issuing invoices quickly (reducing / eliminating billing float);
- By reducing the time lag between a customer pays bill and the cheque is collected (reducing / eliminating mail float);
- Making funds become available for the firm's use (reducing / eliminating processing floats).

A firm can also use decentralized collection system known as concentration banking and lock box system to speed up cash collection and reduce float time.

i. **Concentration Banking:** In concentration banking, the company establishes a number of strategic collection centers in different regions instead of a single collection center at the head office. This system reduces the period between the time a customer mails in his remittances and the time when they become spendable funds with the company. Payments received by the different collection centers are deposited with their respective local banks which in turn transfer all surplus funds to the concentration bank of head office. The concentration bank with which the company has its major bank account is generally located at the headquarters. Concentration banking is one important and popular way of reducing the size of the float.

ii. **Lock Box System:** Another means to accelerate the flow of funds is a lock box system. While concentration banking, remittances are received by a collection center and deposited in the bank after processing. The purpose of lock box system is to eliminate the time between the receipts of remittances by the company and deposited in the bank. A lock box arrangement usually is on regional basis which a company chooses according to its billing patterns. Under this

arrangement, the company rents the local post-office box and authorizes its bank at each of the locations to pick up remittances in the boxes. Customers are billed with instructions to mail their remittances to the lock boxes. The bank picks up the mail several times a day and deposits the cheques in the company's account. The cheques may be micro-filmed for record purposes and cleared for collection. The company receives a deposit slip and lists all payments together with any other material in the envelope. This procedure frees the company from handling and depositing the cheques. The main advantage of lock box system is that cheques are deposited with the banks sooner and become collected funds sooner than if they were processed by the company prior to deposit. In other words, lag between the time cheques are received by the company and the time they are actually deposited in the bank (i.e. cheque processing float) is eliminated.The main drawback of lock box system is the cost of its operation. The bank provides a number of services in addition to usual clearing of cheques and requires compensation for them. Since the cost is almost directly proportional to the number of cheques deposited. Lock box arrangements are usually not profitable if the average remittance is small. The appropriate rule for deciding whether or not to use a lock box system or for that matter, concentration banking, is simply to compare the added cost of the most efficient system with the marginal income that can be generated from the released funds. If costs are less than income, the system is profitable and if the system is not profitable, it is not worth undertaking.

Controlling Payments

An effective control over payments can also cause faster turnover of cash. This is possible only by making payments on the due date, making excessive use of draft (bill of exchange) instead of cheques. Availability of cash can be maximized by playing the float. In this, a firm estimates accurately the time when the cheques issued will be presented for encashment and thus utilizes the float period to its advantage by issuing more cheques but having in the bank account only so much cash balance as will be sufficient to honour those cheques which are actually expected to be presented on a particular date.

Also, the company may make payment to its outstation suppliers by a cheque and send it through mail. The delay in transit and collection of the cheque, will be used to increase the float.

Determining the Optimum Cash Balance

A firm should maintain optimum cash balance to cater to the day-to-day operations. It may also carry additional cash as a buffer or safety stock. The amount of cash balance will depend on the

risk-return trade off. The firm should maintain an optimum level i.e. just enough, i.e. neither too much (to avoid any opportunity cost) nor too little cash balance (to settle day to day payments). This, however, poses a question. How to determine the optimum cash balance if cash flows are predictable and if they are not predictable?

CASH MANAGEMENT MODELS

In recent years several types of mathematical models have been developed which helps to determine the optimum cash balance to be carried by a business organization.

The purpose of all these models is to ensure that cash does not remain idle unnecessarily and at the same time the firm is not confronted with a situation of cash shortage.

All these models can be put in two categories:

1. Inventory type models

2. Stochastic models.

Inventory type models have been constructed to aid the finance manager to determine optimum cash balance of his firm. William J. Baumol's economic order quantity model applies equally to cash management problems under conditions of certainty or where the cash flows are predictable.

However, in a situation where the EOQ Model is not applicable, stochastic model of cash management helps in determining the optimum level of cash balance. It happens when the demand for cash is stochastic and not known in advance.

William J. Baumol's Economic Order Quantity Model, (1952)

According to this model, **optimum cash level is that level of cash where the carrying costs and transactions costs are the minimum**.

The carrying costs refer to the cost of holding cash, namely, the opportunity cost or interest foregone on marketable securities. The transaction costs refer to the cost involved in getting the marketable securities converted into cash. This happens when the firm falls short of cash and has to sell the securities resulting in clerical, brokerage, registration and other costs.

The optimum cash balance according to this model will be that point where these two costs are minimum. The formula for determining optimum cash balance is:

$$C = \sqrt{\frac{2U \times P}{S}}$$

Where,

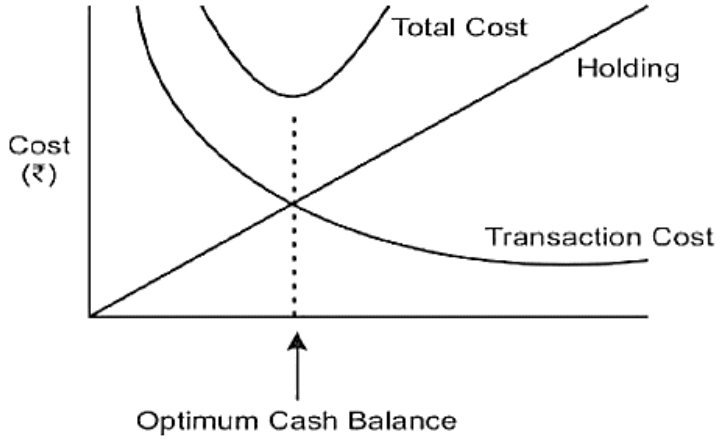
C = Optimum cash balance

U = Annual (or monthly) cash disbursement

P = Fixed cost per transaction.

S = Opportunity cost of one rupee p.a. (or p.m.)

This can be explained with the following diagram:



The model is based on the following assumptions:

i. Cash needs of the firm are known with certainty.

ii. The cash is used uniformly over a period of time and it is also known with certainty.

iii. The holding cost is known and it is constant.

iv. The transaction cost also remains constant.

Miller-Orr Cash Management Model (1966)

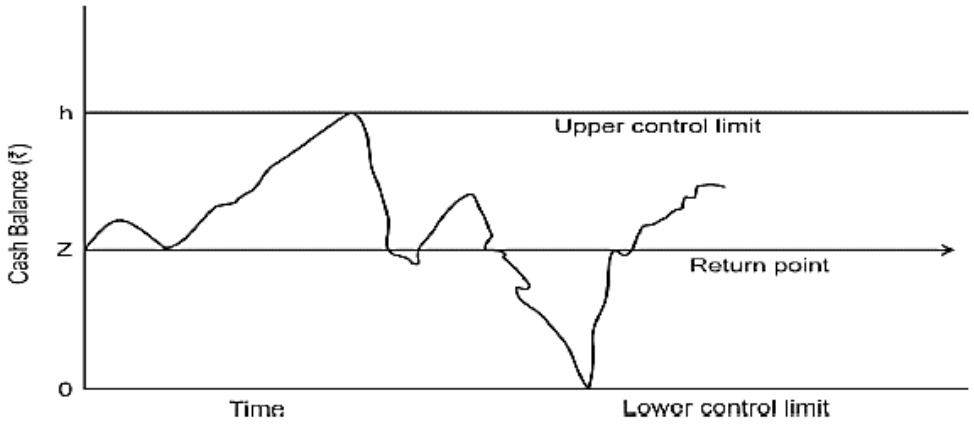
According to this model the net **cash flow is completely stochastic**.

When changes in cash balance occur randomly the application of control theory serves a useful purpose. The Miller-Orr model is one of such control limit models.

This model is designed to determine the time and size of transfers between an investment account and cash account. In this model control limits are set for cash balances. These limits may consist of h as upper limit, z as the return point; and zero as the lower limit.

- When the cash balance reaches the upper limit, the transfer of cash equal to h – z is invested in marketable securities account.
- When it touches the lower limit, a transfer from marketable securities account to cash account is made.
- During the period when cash balance stays between (h, z) and (z, 0) i.e. high and low limits no transactions between cash and marketable securities account is made.

The high and low limits of cash balance are set up on the basis of fixed cost associated with the securities transactions, the opportunity cost of holding cash and the degree of likely fluctuations in cash balances. These limits satisfy the demands for cash at the lowest possible total costs. The following diagram illustrates the Miller-Orr model.



The MO Model is more realistic since it allows variations in cash balance within lower and upper limits. The finance manager can set the limits according to the firm's liquidity requirements i.e., maintaining minimum and maximum cash balance.

RECENT DEVELOPMENTS IN CASH MANAGEMENT

It is important to understand the latest developments in the field of cash management, since it has a great impact on how we manage our cash. Both technological advancement and desire to reduce cost of operations has led to some innovative techniques in managing cash. Some of them are:-

Electronic Fund Transfer	Zero Balance Account	Money Market Operations
Petty Cash Imprest System	Management of Temporary Cash Surplus	Electronic Cash Management System
	Virtual Banking	

Electronic Fund Transfer

With the developments which took place in the Information technology, the present banking system is switching over to the computerization of banks branches to offer efficient banking services and cash management services to their customers. The network will be linked to the different branches, banks. This will help the customers in the following ways:

- Instant updating of accounts.
- Quick transfer of funds.
- Instant information about foreign exchange rates.

Zero Balance Account

For efficient cash management some firms employ an extensive policy of substituting marketable securities for cash by the use of zero balance accounts. Every day the firm totals the cheques presented for payment against the account. The firm transfers the balance amount of cash (in excess of payments) in the account if any, for buying marketable securities. In case of shortage of cash, the firm sells the marketable securities.

Money Market Operations

One of the tasks of 'treasury function' of larger companies is the investment of surplus funds in the money market. The chief characteristic of money market banking is one of size. Banks obtain funds by competing in the money market for the deposits by the companies, public authorities, High Net worth Investors (HNI), and other banks. Deposits are made for specific periods ranging from overnight to one year; highly competitive rates which reflect supply and demand on a daily, even hourly basis are quoted. Consequently, the rates can fluctuate quite dramatically, especially for the shorter-term deposits. Surplus funds can thus be invested in money market easily.

Petty Cash Imprest System

For better control on cash, generally the companies use petty cash imprest system wherein the day-to-day petty expenses are estimated taking into account past experience and future needs and generally a week's requirement of cash will be kept separate for making petty expenses. Again, the next week will commence with the pre-determined balance. This will reduce the strain of the management in managing petty cash expenses and help in the managing cash efficiently.

Management of Temporary Cash Surplus

Temporary cash surpluses can be profitably invested in the following:

- Short-term deposits in Banks and financial institutions.
- Short-term debt market instruments.
- Or Long Term Debt Instruments with flexible maturity dates Shares of Blue chip listed companies.

Choice of investment can be based on economic situation, volatility of returns and also the risk appetite of the organization.

Electronic Cash Management System

Most of the cash management systems now-a-days are electronically based, since 'speed' is the essence of any cash management system. Electronically, transfer of data as well as funds play a key role in any cash management system. Various elements in the process of cash management are linked through a satellite. Various places that are interlinked may be the place where the instrument is collected, the place where cash is to be transferred in company's account, the place where the payment is to be transferred etc.

Certain networked cash management system may also provide a very limited access to third parties like parties having very regular dealings of receipts and payments with the company etc. A finance company accepting deposits from public through sub-brokers may give a limited access to sub-brokers to verify the collections made through him for determination of his commission among other things.

Electronic-scientific cash management results in:

- Significant saving in time.
- Increase in interest earned & decrease in interest expense.
- Reduces paper-work & hence manpower.
- Greater accounting accuracy as it allows easy detection of book-keeping errors.
- More control over time and funds.
- Supports electronic payments.
- Faster transfer of funds from one location to another, where required.
- Speedy conversion of various instruments into cash.
- Making available funds wherever required, whenever required.
- Reduction in the amount of 'idle float' to the maximum possible extent.
- Ensures no idle funds are placed at any place in the organization.
- It makes inter-bank balancing of funds much easier.
- It is a true form of centralized 'Cash Management'.
- Produces faster electronic reconciliation.
- Reduces the number of cheques issued.

Virtual Banking

The practice of banking has undergone a significant change in the nineties. While banks are striving to strengthen customer base and relationship and move towards relationship banking, customers are increasingly moving away from the confines of traditional branch banking and are seeking the

convenience of remote electronic banking services including net banking & mobile banking. And even within the broad spectrum of electronic banking the virtual banking has gained prominence

Broadly virtual banking denotes the provision of banking and related services through extensive use of information technology without direct recourse to the bank by the customer. The origin of virtual banking in the developed countries can be traced back to the seventies with the installation of Automated Teller Machines

(ATMs). Subsequently, driven by the competitive market environment as well as various technological and customer pressures, other types of virtual banking services have grown in prominence throughout the world.

The Reserve Bank of India has been taking a number of initiatives, which will facilitate the active involvement of commercial banks in the sophisticated cash management system. One of the pre-requisites to ensure faster and reliable mobility of funds in a country is to have an efficient payment system. Considering the importance of speed in payment system to the economy, the RBI has taken numerous measures since mid- Eighties to strengthen the payments mechanism in the country.

Introduction of computerized settlement of clearing transactions, use of Magnetic Ink Character Recognition (MICR) technology, provision of inter-city clearing facilities and high value clearing facilities, Electronic Clearing Service Scheme (ECSS), Electronic Funds Transfer (EFT) scheme, UPI payment platforms, Real Time Gross Settlement System (RTGS), Delivery vs. Payment (DVP) for Government securities transactions, setting up of Indian Financial Network (INFINET) are some of the significant developments.

Other than above, Introduction of Centralised Funds Management System (CFMS), Securities Services System (SSS) and Structured Financial Messaging System (SFMS) have been the other top priority items on the agenda to transform the existing system into a state-of-the art payment infrastructure in India.

The current vision envisaged for the payment systems reforms is one, which contemplates linking up of all the remaining bank branches with the domestic payment systems network thereby facilitating cross border connectivity. With the help of the systems already put in place in India and which are coming into being, both banks and corporates can exercise effective control over the cash management.

Advantages of Virtual Banking

The advantages of virtual banking services are as follows:

- Lower cost of handling a transaction.

- The increased speed of response to customer requirements.
- The lower cost of operating branch network along with reduced staff costs leads to cost efficiency.
- Virtual banking allows the possibility of improved and a range of services being made available to the customer rapidly, accurately and at his convenience.

The popularity which virtual banking services have won among customers is due to the speed, convenience and round the clock access they offer.

MANAGEMENT OF MARKETABLE SECURITIES

Management of marketable securities is an integral part of investment of cash as this may serve both the purposes of liquidity and cash, provided choice of investment is made correctly. As the working capital needs are fluctuating, it is possible to park excess funds in some short-term securities, which can be liquidated when need for cash is felt. The selection of securities should be guided by three principles.

- **Safety:** Return and risks go hand in hand. As the objective in this investment is ensuring liquidity, minimum risk is the criterion of selection.
- **Maturity:** Matching of maturity and forecasted cash needs is essential. Prices of long term securities fluctuate more with changes in interest rates and are therefore, riskier. Since this is for temporary excess funds, short term securities are preferred.
- **Marketability:** It refers to the convenience, speed and cost at which a security can be converted into cash. If the security can be sold quickly without loss of time and price it is highly liquid or marketable.

The choice of marketable securities is mainly limited to Government treasury bills, Deposits with banks and Inter-corporate deposits. Units of Unit Trust of India and commercial papers of corporates are other attractive means of parking surplus funds for companies along with deposits with sister concerns or associate companies.

Besides this Money Market Mutual Funds (MMMFs) have also emerged as one of the avenues of short-term investment.

UNIT - III

MANAGEMENT OF INVENTORY

INVENTORY MANAGEMENT

Inventories constitute a major element of working capital. It is, therefore, important that investment in inventory is properly controlled. The objectives of inventory management are, to a great extent, similar to the objectives of cash management. Inventory management covers a large number of problems including fixation of minimum and maximum levels, determining the size of inventory to be carried, deciding about the issues, receipts and inspection procedures, determining the economic order quantity, proper storage facilities, keeping check over obsolescence and ensuring control over movement of inventories.

Inventory Management has been discussed in detail in Chapter 2 (Material Cost) Paper 4: Cost and Management Accounting. Students are advised to refer the same.

UNIT – IV MANAGEMENT OF RECEIVABLES

MEANING AND OBJECTIVE

Management of receivables refers to planning and controlling of 'debt' owed to the firm from customer on account of credit sales. It is also known as trade credit management.

The basic objective of management of receivables (debtors) is to optimise the return on investment on these assets.

When large amounts are tied up in receivables, there are chances of bad debts and there will be cost of collection of debts. On the contrary, if the investment in receivables is low, the sales may be restricted, since the competitors may offer more liberal terms. Therefore, management of receivables is an important issue and requires proper policies and their implementation.

ASPECTS OF MANAGEMENT OF DEBTORS

There are basically three aspects of management of receivables:

1. **Credit Policy:** A balanced credit policy should be determined for effective management of receivables. Decision of Credit standards, Credit terms and collection efforts is included in Credit policy. It involves a trade-off between the profits on additional sales that arise due to credit being extended on the one hand and the cost of carrying those debtors and bad debt losses on the other. This seeks to decide credit period, cash discount and other relevant matters. The credit period is generally stated in terms of net days. For example, if the firm's credit terms are "net 50". It is expected that customers will repay credit obligations not later than 50 days.

Further, the cash discount policy of the firm specifies:

a. The rate of cash discount.

b. The cash discount period; and

c. The net credit periods.

For example, the credit terms may be expressed as "3/15 net 60". This means that a 3% discount will be granted if the customer pays within 15 days; if he does not avail the offer he must make payment within 60 days.

2. **Credit Analysis:** This requires the finance manager to determine as to how risky it is to advance credit to a particular party. This involves due diligence or reputation check of the customers with respect to their credit worthiness.
3. **Control of Receivable:** This requires finance manager to follow up debtors and decide about a suitable credit collection policy. It involves both laying down of credit policies and execution of such policies.

   There is always cost of maintaining receivables which comprises of following costs:

   i. The company requires additional funds as resources are blocked in receivables which involves a cost in the form of interest (loan funds) or opportunity cost (own funds)

   ii. Administrative costs which include record keeping, investigation of credit worthiness

   iii. Collection costs.

   iv. Defaulting costs.

FACTORS DETERMINING CREDIT POLICY

The credit policy is an important factor determining both the quantity and the quality of accounts receivables. Various factors determine the size of the investment a company makes in accounts receivables. They are, for instance:

i. The effect of credit on the volume of sales;

ii. Credit terms;

iii. Cash discount;

iv. Policies and practices of the firm for selecting credit customers;

v. Paying practices and habits of the customers;

vi. The firm's policy and practice of collection; and

vii. The degree of operating efficiency in the billing, record keeping and adjustment function, other costs such as interest, collection costs and bad debts etc., would also have an impact on the size of the investment in receivables. The rising trend in these costs would depress the size of investment in receivables. The firm may follow a lenient or a stringent credit policy. The firm which

follows a lenient credit policy sells on credit to customers on very liberal terms and standards. On the contrary a firm following a stringent credit policy sells on credit on a highly selective basis only to those customers who have proper credit worthiness and who are financially sound. Any increase in accounts receivables that is, additional extension of trade credit not only results in higher sales but also requires additional financing to support the increased investment in accounts receivables. The costs of credit investigations and collection efforts and the chances of bad debts are also increased. On the contrary, a decrease in accounts receivable due to a stringent credit policy may be as a result of reduced sales with competitors offering better credit terms.

FACTORS UNDER THE CONTROL OF THE FINANCE MANAGER

The finance manager has operating responsibility for the management of the investment in receivables. His involvement includes: -

a. Supervising the administration of credit;

b. Contribute to top management decisions relating to the best credit policies of the firm;

c. Deciding the criteria for selection of credit applications; and

d. Speed up the conversion of receivables into cash by aggressive collection policy.

In summary the finance manager has to strike a balance between the cost of increased investment in receivables and profits from the higher levels of sales.

APPROACHES TO EVALUATION OF CREDIT POLICIES

There are basically two methods of evaluating the credit policies to be adopted by a Company – Total Approach and Incremental Approach. The formats for the two approaches are given as under:

Statement showing the Evaluation of Credit Policies (based on Total Approach)

Particulars	Present Policy	Proposed Policy I	Proposed Policy II	Proposed Policy III
	₹	₹	₹	₹
A. Expected Profit:				
a. Credit Sales	…….	…….	…….	…….
b. Total Cost other than Bad Debts				
i. Variable Costs	……	…….	…….	…….
ii. Fixed Costs	……	…….	…….	…….
	……	…….	…….	…….

c. Bad Debts **d.** Cash discount	……	……	……	……
e. Expected Net Profit before Tax (a-b-c-d)	……	……	……	……
f. Less: Tax	……	……	……	……
g. Expected Profit after Tax	……	……	……	……
B. Opportunity Cost of Investments in Receivables locked up in Collection Period	……	……	……	……
Net Benefits (A – B)	……	……	……	……

Advise: The Policy……. should be adopted since the net benefits under this policy are higher as compared to other policies.

Here

i. Total Fixed Cost = [Average Cost per unit – Variable Cost per unit] × No. of units sold on credit under Present Policy

ii. Opportunity Cost = Total Cost of Credit Sales × $\frac{\text{Collection period (Days)}}{365 \text{ (or } 360)} \times \frac{\text{Required Rate of Return}}{100}$

Statement showing the Evaluation of Credit Policies (based on Incremental Approach)

Particulars	Present Policy days	Proposed Policy I days	Proposed Policy II days	Proposed Policy III days
	₹	₹	₹	₹
A. Incremental Expected Profit:				
Credit Sales	…….	……	…….	…….
a. Incremental Credit Sales	…….	……	…….	…….
b. Less: Incremental Costs of Credit Sales				
i. Variable Costs	…….	……	…….	…….
ii. Fixed Costs	…….	……	…….	…….
c. Incremental Bad Debt Losses	…….	……	…….	…….
d. Incremental Cash Discount	…….	……	…….	…….
e. Incremental Expected Profit (a-b-c-d)	…….	……	…….	…….
f. Less: Tax	…….	……	…….	…….

g. Incremental Expected Profit after Tax	…….	……	…….	…….
	…….	……	…….	…….
B. Required Return on Incremental Investments:				
a. Cost of Credit Sales	…….	……	…….	…….
b. Collection Period (in days)	…….	……	…….	…….
c. Investment in Receivable (a × b/365 or 360)	…….	……	…….	…….
d. Incremental Investment in Receivables	…….	……	…….	…….
e. Required Rate of Return (in %)	…….	……	…….	…….
f. Required Return on Incremental Investments (d × e)	…….	……	…….	…….
Incremental Net Benefits (A – B)	…….	……	…….	…….

Advise: The Policy ……should be adopted since net benefits under this policy are higher as compared to other policies.

Here:

i. Total Fixed Cost = [Average Cost per unit – Variable Cost per unit] × No. of units sold on credit under Present Policy

ii. Opportunity Cost = Total Cost of Credit Sales × $\frac{\text{Collection period (Days)}}{365 \text{ (or } 360)} \times \frac{\text{Required Rate of Return}}{100}$

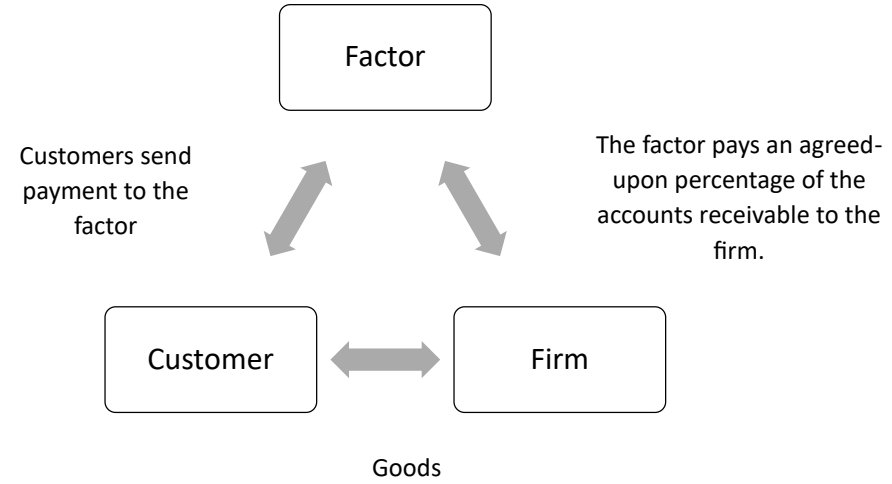
FINANCING RECEIVABLES

Pledging and Factoring

Pledging of accounts receivables and Factoring have emerged as the important sources of financing of accounts receivables now-a-days.

i. Pledging: This refers to the use of a firm's receivable to secure a short term loan. After cash, a firm's receivables can be termed as its most liquid assets and this serve as prime collateral for a secured loan. The lender scrutinizes the quality of the account receivables, selects acceptable accounts, creates a lien on the collateral and fixes the percentage of financing receivables which ranges around 50 to 90%. The major advantage of pledging accounts receivables is the ease and flexibility it provides to the borrower. Moreover, financing is done regularly. This, however, suffers on account of high cost of financing. Also being a loan, it leaves an impact on the debt equity ratio as well by increasing the amount of debt.

ii. **Factoring:** Factoring is a relatively new concept in financing of accounts receivables. This refers to outright sale of accounts receivables to a factor or a financial agency. A factor is a firm that acquires the receivables of other firms. The factoring lays down the conditions of the sale in a factoring agreement. The factoring agency bears the risk of collection and services the accounts for a fee.



Factoring arrangement can be either on a recourse basis or on a non-recourse basis:

- **Recourse**: In case factor is unable to collect the amount from receivables then, factor can turn back the same to the organization for resolution (which generally is by replacing those receivables with new receivables)
- **Non-Recourse**: The factor bears the ultimate risk of loss in case of default and hence in such cases they charge higher commission.

There are a number of financial institutions providing factoring services in India. Some commercial banks and other financial agencies provide this service. The biggest advantages of factoring are the immediate conversion of receivables into cash and predicted pattern of cash flows. Financing receivables with the help of factoring can help a company having liquidity **without creating a net liability on its financial condition** and hence no impact on debt equity ratio. Besides, factoring is a flexible financial tool providing timely funds, efficient record keepings and effective management of the collection process. This is not considered as a loan. There is no debt repayment and hence no compromise to balance sheet, no long-term agreements or delays associated with other methods of raising capital. Factoring allows the firm to use cash for the growth needs of business.

The basic format of evaluating factoring proposal is given as under:

Statement showing the Evaluation of Factoring Proposal

	Particulars	₹
A.	**Annual Savings (Benefit) on taking Factoring Service**	
	Cost of credit administration saved	.....
	Bad debts avoided	.....
	Interest saved due to reduction in average collection period (Wherever applicable) [Cost of Annual Credit Sales × Rate of Interest × (Present Collection Period – New Collection Period)/360* days]	.....
	Total	.....
B.	**Annual Cost of Factoring to the Firm:**	
	Factoring Commission [Annual credit Sales × % of Commission (or calculated annually)]	.....
	Interest Charged by Factor on advance (or calculated annually) [Amount available for advance or (Annual Credit Sales – Factoring Commission – Factoring Reserve)] × $\left[\frac{\text{Collection Period (days)}}{360^*} \times \text{Rate of Interest}\right]$	.....
	Total	.....
C.	**Net Annual Benefits/Cost of Factoring to the Firm:**	**A-B**
	Rate of Effective Cost of Factoring to the Firm $= \frac{\text{Net Annual cost of Factoring}}{\text{Amount available for advance}} \times 100$ or $= \frac{\text{Net Annual cost of Factoring}}{\text{Advances to be paid}} \times 100$ Advances to be paid = (Amount available for advance – Interest deducted by factor)	

*1 Year is taken as 360 days

Advise:

1. The company should avail Factoring services if rate of effective Cost of Factoring to the firm is less than the existing cost of borrowing or if availing services of factoring results in to positive Net Annual Benefits.

2. The company should not avail Factoring services if the Rate of Effective Cost of Factoring to the Firm is more than the existing cost of borrowing.

Forfaiting

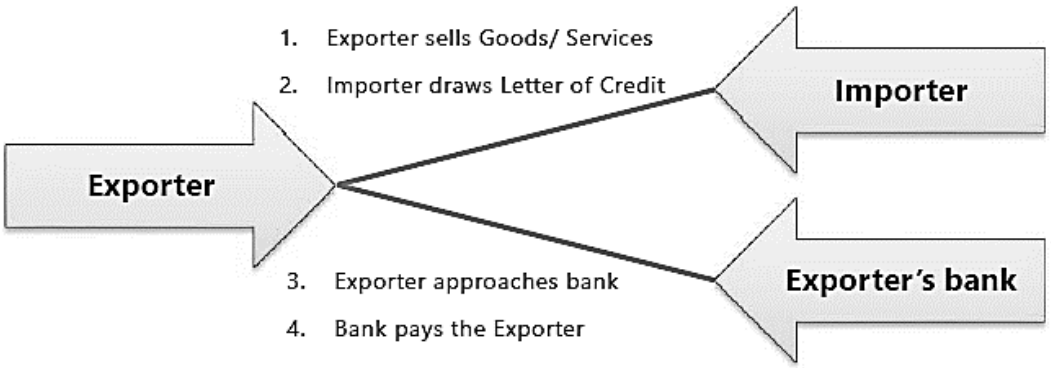
Meaning of Forfaiting

'Forfait' is a French term which means "relinquish a right". Forfaiting is an arrangement of bill discounting in which a financial institution or bank buys the trade bills (invoices) or trade receivables from exporters of goods or services, where the exporter relinquish his right to receive payment from importer. Financial Institutions or banks provides immediate finance to exporter 'without recourse' basis in which risk and rewards related with the bills/ receivables transferred to the financial institutions/ banks. It is a unique credit facility arrangement where an overseas buyer (importer) can open a "letter of credit" (or other negotiable instruments) in favour of the exporter and can import goods and services on deferred payment terms.

Functions of Forfaiting

The functionality can be understood in the following manner:

i. Exporter sells goods or services to an overseas buyer.
ii. The overseas buyers i.e. the importer on the basis trade bills and import documents draws a letter of credit (or other negotiable instruments) through its bank (known as importer's bank).
iii. The exporter on receiving the letter of credit (or other negotiable instruments) approaches to its bank (known as exporter's bank).
iv. The exporter's bank buys the letter of credit (or other negotiable instruments) 'without recourse basis' and provides the exporter the payment for the bill.



Features of Forfaiting

The Salient features of forfaiting are:

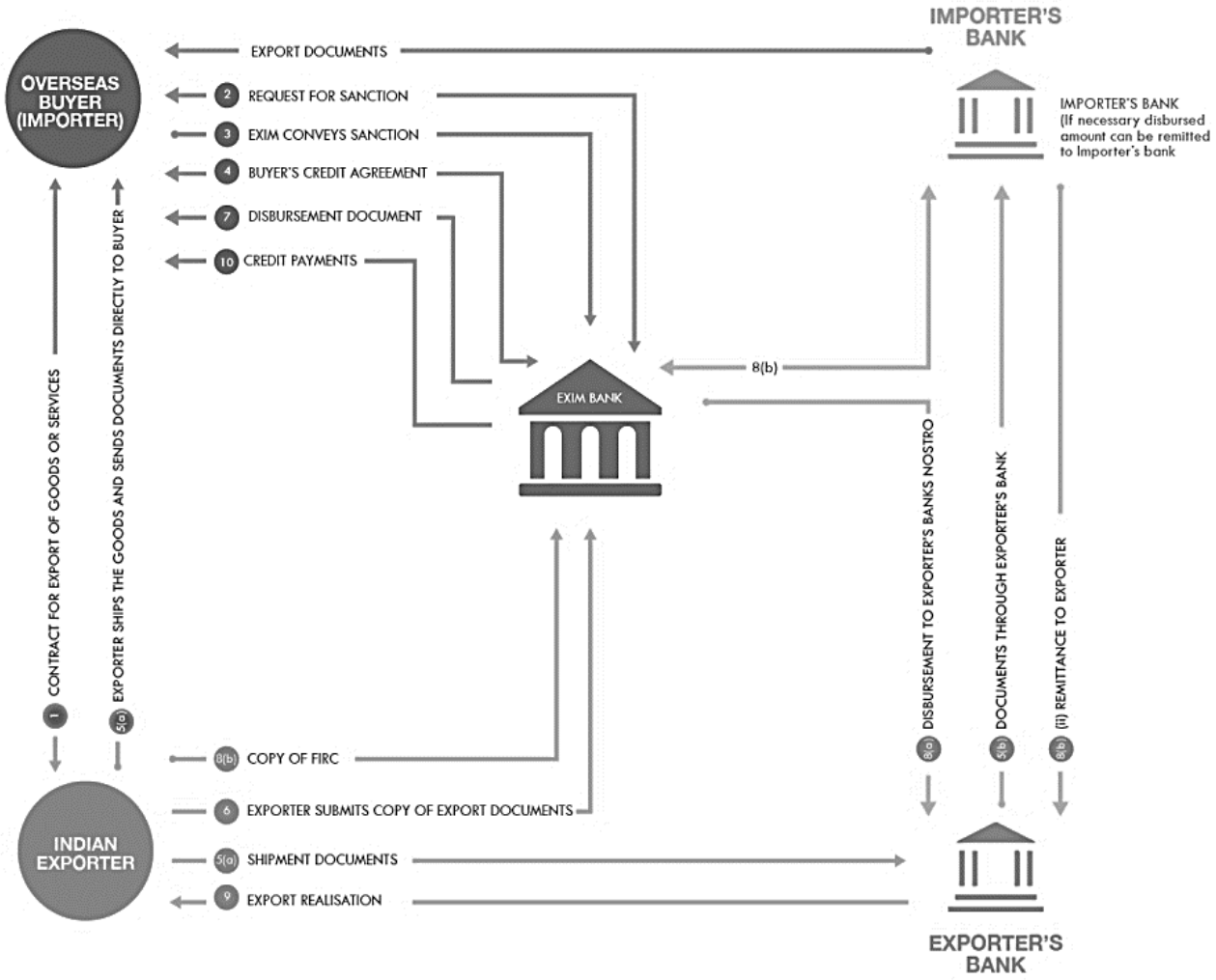
- It motivates exporters to **explore new geographies** as payment is assured.
- An overseas buyer (importer) can import goods and services on **deferred payment terms**.

- The exporter enjoys **reduced transaction costs and complexities** of international trade transactions.
- The exporter gets to **compete in the international market** and can continue to put his working capital to good use to scale up operations.
- While importers avail of forfaiting facility from international financial institutions in order to **finance their imports at competitive rates**.

Example of Forfaiting:

Exim Bank of India's 'Buyer's Credit' is an example of forfaiting arrangement. Buyer's Credit programme facilitates exports for SMEs by providing credit to overseas buyer to import goods from India. It is offering financing of capital goods or services on deferred payment terms and provides non-recourse finance to Indian exporters by converting deferred credit contract into cash contract. It extends advance payments to Indian exporters on behalf of the overseas buyer.

The following is a diagrammatic illustration of Exim's Buyer's Credit:



INNOVATIONS IN RECEIVABLE MANAGEMENT

During the recent years, a number of tools, techniques, practices and measures have been invented to increase effectiveness in accounts receivable management.

Following are the major determinants for significant innovations in accounts receivable management and process efficiency.

1. **Re-engineering Receivable Process:** In some of the organizations real cost reductions and performance improvements have been achieved by re- engineering in accounts receivable process. Re-engineering is a fundamental re-think and re-design of business processes by incorporating modern business approaches. The nature of accounts receivables is such that decisions made elsewhere in the organization are likely to affect the level of resources that are expended on the management of accounts receivables.

   The following aspects provide an opportunity to improve the management of accounts receivables:

   a. **Centralisation:** Centralisation of high nature transactions of accounts receivables and payable is one of the practices for better efficiency. This focuses attention on specialized groups for speedy recovery.

   b. **Alternative Payment Strategies:** Alternative payment strategies in addition to traditional practices result into efficiencies in the management of accounts receivables. It is observed that payment of accounts outstanding is likely to be quicker where a number of payment alternatives are made available to customers. Besides, this convenient payment method is a marketing tool that is of benefit in attracting and retaining customers. The following alternative modes of payment may also be used along with traditional methods like Cheque Book etc., for making timely payment, added customer service, reducing remittance processing costs and improved cash flows and better debtor turnover.

      i. **Direct debit:** I.e., authorization for the transfer of funds from the purchaser's bank account.

      ii. **Integrated Voice Response (IVR):** This system uses human operators and a computer-based system to allow customers to make payment over phone. This system has proved to be beneficial in the organisations processing a large number of payments regularly.

      iii. **Collection by a third party:** The payment can be collected by an authorized external firm. The payments can be made by cash, cheque, credit card or Electronic fund transfer. Banks may also be acting as collecting agents of their customers and directly depositing the collections in customers' bank accounts.

      iv. **Lock Box Processing:** Under this system an outsourced partner captures cheques and invoice data and transmits the file to the client firm for processing in that firm's systems.

v. **Payments via Internet using fund transfer methods** like RTGS, NEFT, IPMS UPIs, App based payment like Paytm, Phone Pe, etc.

c. **Customer Orientation:** Where individual customers or a group of customers have some strategic importance to the firm a case study approach may be followed to develop good customer relations. A critical study of this group may lead to formation of a strategy for prompt settlement of debt.

2. **Evaluation of Risk:** Risk evaluation is a major component in the establishment of an effective control mechanism. Once risks have been properly assessed controls can be introduced to either contain the risk to an acceptable level or to eliminate them entirely. This also provides an opportunity for removing inefficient practices. This involves a re-think of processes and questioning the way that tasks are performed. This also opens the way for efficiency and effectiveness benefits in the management of accounts receivables.

3. **Use of Latest Technology:** Technological developments now-a-days provides an opportunity for improvement in accounts receivables process. The major innovations available are the integration of systems used in the management of accounts receivables, the automation and the use of e-commerce.

   a. **E-commerce** refers to the use of computer and electronic telecommunication technologies, particularly on an inter- organisational level, to support trading in goods and services. It uses technologies such as Electronic Data Inter-change (EDI), Electronic Mail, Electronic Funds Transfer (EFT) and Electronic Catalogue Systems to allow the buyer and seller to transact business by exchange of information between computer application systems such as Amazon, Flipkart etc.

   b. **Automated Accounts Receivable Management Systems**: Now-a- days all the big companies develop and maintain automated receivable management systems. Manual systems of recording the transactions and managing receivables are not only cumbersome but ultimately costly also. These integrated systems automatically update all the accounting records affected by a transaction. For example, if a transaction of credit sale is to be recorded, the system increases the amount the customer owes to the firm, reduces the inventory for the item purchased, and records the sale. This system of a company allows the application and tracking of receivables and collections, using the automated receivables system allows the company to store important information for an unlimited number of customers and transactions, and accommodate efficient processing of customer payments and adjustments.

4. **Receivable Collection Practices:** The aim of debtors' collection should be to reduce, monitor and control the accounts receivable at the same time maintain customer goodwill. The fundamental rule of sound receivable management should be to reduce the time lag between the sale and collection. Any delays that lengthen this span causes receivables to unnecessary build up and increase the risk of bad debts. This is equally true for the delays caused by billing and collection procedures as it is for delays caused by the customer.

   The following are major receivable collection procedures and practices:

   i. Issue of Invoice.

   ii. Open account or open-end credit.

   iii. Credit terms or time limits.

   iv. Periodic statements and follow ups.

   v. Use of payment incentives and penalties.

   vi. Record keeping and Continuous Audit.

   vii. Export Factoring: Factors provide comprehensive credit management, loss protection collection services and provision of working capital to the firms exporting internationally.

   viii. Business Process Outsourcing: This refers to a strategic business tool whereby an outside agency takes over the entire responsibility for managing a business process like collections in this case.

5. **Use of Financial tools/techniques:** The finance manager while managing accounts receivables uses a number of financial tools and techniques. Some of them have been described hereby as follows:

   i. Credit analysis: While determining the credit terms, the firm has to evaluate individual customers in respect of their credit worthiness and the possibility of bad debts. For this purpose, the firm has to ascertain credit rating of prospective customers.

   Credit rating: An important task for the finance manager is to rate the various debtors who seek credit facility. This involves decisions regarding individual parties so as to ascertain how much credit can be extended and for how long. In foreign countries specialized agencies are engaged in the task of providing rating information regarding individual parties. Dun and Broad Street is one such source.

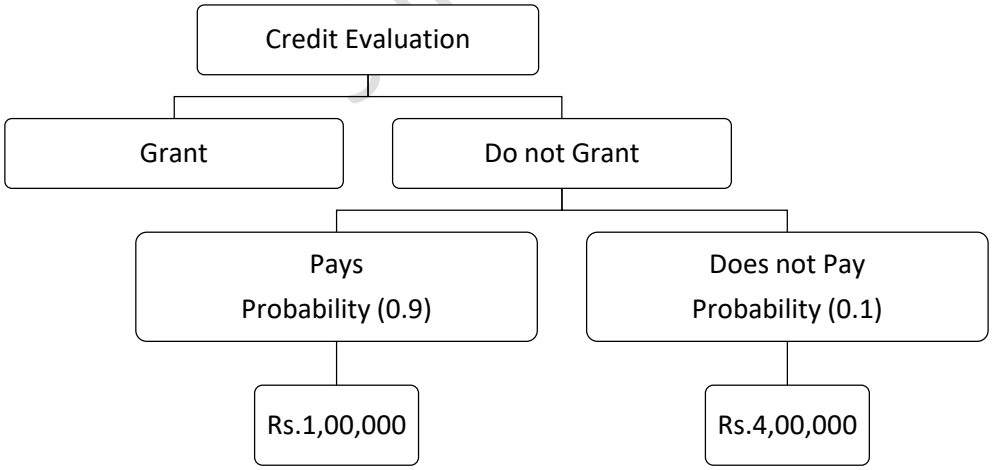
   The finance manager has to look into the credit-worthiness of a party and sanction credit limit only after he is convinced that the party is sound. This would involve an analysis of the financial status of the party, its reputation and previous record of meeting commitments. The credit manager here has to employ a number of sources to obtain credit information. The following

are the important sources: Trade references; Bank references; Credit bureau reports; Past experience; Published financial statements; and Salesman's interview and reports. Once the credit-worthiness of a client is ascertained, the next question is to set a limit of the credit. This credit limit once set can be further enhanced as the favorable experience is gained while dealing with that client. In all such enquiries, the credit manager must be discreet and should always have the interest of high sales in view at the same time balancing any risk of non-collection.

ii. **Credit Granting - Decision tree analysis:** The decision whether to grant credit or not is a decision involving costs and benefits. When a customer pays, the seller makes profit but when he fails to pay the amount of cost going into the product is also gone. If the relative chances of recovering the dues can be decided, it can form a probability distribution of payment or non-payment. If the chances of recovery are 9 out of 10 then probability of recovery is 0.9 and that of default is 0.1.

Credit evaluation of a customer shows that the probability of recovery is 0.9 and that of default is 0.1, the revenue from the order is ₹5 lakhs and cost is ₹ 4 lakhs. The decision is whether credit should be granted or not.

The analysis is presented in the following diagram.



The weighted net benefit is ₹ [1,00,000 × 0.9 i.e., 90,000 – 0.1 × 4,00,000 i.e., 40,000] = 50,000. So, credit should be granted.

iii. **Control of receivables:** Another aspect of management of debtors is the control of receivables. Merely setting of standards and framing a credit policy is not sufficient; it is, equally important to control receivables by constant monitoring and follow ups.

iv. **Collection policy:** Efficient and timely collection of debtors ensures that the bad debt losses are reduced to the minimum and the average collection period is shorter. If a firm spends more

resources on collection of debts, it is likely to have smaller bad debts. Thus, a firm must work out the optimum amount that it should spend on collection of debtors. This involves a trade- off between the level of expenditure on the one hand and decrease in bad debt losses and investment in debtors on the other.

The collection cell of a firm has to work in a manner that it does not create too much resentment amongst the customers. On the other hand, it has to keep the amount of the outstanding in check. Hence, it has to work in a very smoothen manner and diplomatically.

It is important that clear-cut procedures regarding credit collection are set up. Such procedures must answer questions like the following:

a. How long should a debtor balance be allowed to exist before collection process is started?

b. What should be the procedure of follow up with defaulting customer? How reminders are to be sent and how should and at what frequency, each successive reminder be drafted?

c. Should there be collection machinery whereby personal calls by company's representatives are made?

d. What should be the procedure for dealing with doubtful accounts? Is legal action to be instituted or some escalation matrix to be followed? How should account be handled?

MONITORING OF RECEIVABLES

Constant monitoring of the current status of receivables is very essential for any organization to make sure that its receivables management is as effective as it should be. Various steps that constitute constant monitoring are:

i. Computation of average age of receivables: It involves computation of average collection period.

ii. **Ageing Schedule:** When receivables **are analysed according to their age**, the process is known as preparing the ageing schedules of receivables. The computation of average age of receivables is a quick and effective method of comparing the liquidity of receivables with the liquidity of receivables in the past and also comparing liquidity of one firm with the liquidity of the other competitive firm. It also helps the firm to predict collection pattern of receivables in future. This comparison can be made periodically. The purpose of classifying receivables by age groups is to have a closer control over the quality of individual accounts. It requires going back to the receivables' ledger where the dates of each customer's purchases and payments are available. The ageing schedule, by indicating a tendency for old accounts to accumulate, provides a useful supplement to average collection period of receivables/sales analysis. Because an analysis of receivables in terms of associated dates of sales enables the firm to recognise the recent increases,

and slumps in sales. To ascertain the condition of receivables for control purposes, it may be considered desirable to compare the current ageing schedule with an earlier ageing schedule in the same firm and also to compare this information with the experience of other firms.

iii. Debt Collection Programme:

a. **Monitoring** the state of receivables.

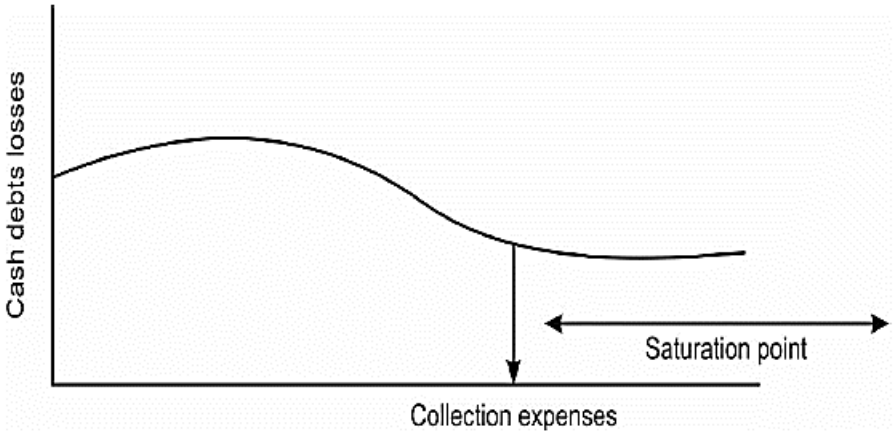
b. **Intimation** to customers when due date approaches.

c. **E-mail and telephonic** advice to customers on the due date.

d. **Reminding** the legal recourse on overdue A/cs and follow escalation matrix if available.

e. **Legal action** on overdue A/cs.

The following diagram shows the relationship between collection expenses and bad debt losses which have to be established as initial increase in collection expenses may have only a small impact on bad debt losses.



UNIT - V

MANAGEMENT OF PAYABLES (CREDITORS)

INTRODUCTION

There is an old age saying in business that if you can buy well then you can sellwell. Management of your creditors and suppliers is just as important as the management of your debtors.

Trade creditor is a spontaneous / short term source of finance in the sense that it arises from ordinary business transaction. But it is also important to look after your creditors - slow payment by you may create ill-feeling and your supplies could be disrupted and also create a bad image for your company. Creditors are a vital part of effective cash management and should be managed carefully to enhance the cash position.

COST AND BENEFITS OF TRADE CREDIT

a. Cost of Availing Trade Credit

Normally it is considered that the trade credit does not carry any cost. However, it carries the following costs:

i. **Price:** There is often a discount on the price that the firm undergoes when it uses trade credit, since it can take advantage of the discountonly if it pays immediately. This discount can translate into a high implicit cost.

ii. **Loss of goodwill:** If the credit is overstepped, suppliers may discriminate against delinquent customers if supplies become short. As with the effect of any loss of goodwill, it depends very much on the relative market strengths of the parties involved.

iii. **Cost of managing:** Management of creditors involves administrativeand accounting costs that would otherwise be incurred.

iv. **Conditions:** Sometimes most of the suppliers insist that for availing the credit facility the order should be of some minimum size or even on regularbasis.

b. Cost of Not Taking Trade Credit

On the other hand, the costs of not availing credit facilities are as under:

i. **Impact of Inflation:** If inflation persists then the borrowers are favored over the lenders as they were better off to pay the fixed outstanding amount later than sooner. Also, the subsequent transactions shall be at higher prices.

ii. **Interest:** Trade credit is a type of interest free loan, therefore failure to avail this facility has an interest cost. This cost is further increased if interest rates are higher.

iii. **Inconvenience:** Sometimes it may also cause inconvenience to the supplier if the supplier is geared to the deferred payment.

COMPUTATION OF COST OF PAYABLES

By using the trade credit judiciously, a firm can reduce the effect of growth orburden on investments in Working Capital.

Now question arises how to calculate the cost of not taking the discount.

The following equation can be used to calculate nominal cost, on an annual basisof not taking the discount:

$$\frac{d}{100-d}\times\frac{365\ days}{t}$$

However, the above formula does not take into account the compounding effectand therefore, the cost of credit shall be even higher. The cost of lost cash discount can be estimated by the formula:

$$\left(\frac{100}{100-d}\right)^{\frac{365}{t}}-1$$

Where,

d = Size of discount i.e. for 6% discount, d = 6

t = The reduction in the payment period in days, necessary to obtain theearly discount or Days Credit Outstanding – Discount Period.

UNIT – VI

FINANCING OF WORKING CAPITAL

INTRODUCTION

After determining the amount of working capital required, the next step to be taken by the finance manager is to arrange the funds.

As discussed earlier, it is advisable that the finance manager bifurcate the working capital requirements between the permanent working capital and temporary working capital.

The permanent working capital is always needed irrespective of sales fluctuation; hence it should be financed by the long-term sources such as debt and equity. On the contrary the temporary working capital may be financed by the short-term sources of finance.

Broadly speaking, the working capital finance may be classified between the two categories:

i. Spontaneous sources; and

ii. Negotiable sources.

Spontaneous Sources: Spontaneous sources of finance are those which naturally arise in the course of business operations. Trade credit, credit from employees, credit from suppliers of services, etc. are some of the examples which may bequoted in this respect.

Negotiated Sources: On the other hand, the negotiated sources, as the nameimplies, are those which have to be specifically negotiated with lenders say, commercial banks, financial institutions, general public etc.

The finance manager has to be very careful while selecting a particular source, or a combination thereof for financing of working capital. Generally, the following parameters will guide his decisions in this respect:

i. Cost factor

ii. Impact on credit rating

iii. Feasibility

iv. Reliability

v. Restrictions

vi. Hedging approach or matching approach i.e., Financing of assets with thesame maturity as of assets.

SOURCES OF FINANCE

Spontaneous Sources of Finance

a. **Trade Credit:** As outlined above trade credit is a spontaneous source of finance which is normally extended to the purchaser organization by the sellers or services providers. This source of financing working capital is more important sinceit contributes to about one-third of the total short-term requirements. The dependence on this source is higher due to lesser cost of finance as compared with other sources. Trade credit is guaranteed when a company acquires supplies, merchandise or materials and does not pay immediately. If a buyer is able to getthe credit without completing much formality, it is termed as 'open account trade credit.'

b. **Bills Payable:** On the other hand, in the case of "Bills Payable" the purchaser will have to give a written promise to pay the amount of the bill/invoice either on demand or at a fixed future date to the seller or the bearer of the note.

   Due to its simplicity, easy availability and lesser explicit cost, the dependence onthis source is much more in all small or big organizations. Especially, for small enterprises this form of credit is more helpful to small and medium enterprises. The amount of such financing depends on the volume of purchases and the payment timing.

c. **Accrued Expenses:** Another spontaneous source of short-term financing is the accrued expenses or the outstanding expenses liabilities. The accrued expenses refer to the services availed by the firm, but the payment for which has yet to be made. It is a built in and an automatic source of finance as most of the serviceslike wages, salaries, taxes, duties etc., are paid at the end of the period. The accrued expenses represent an interest free source of finance. There is no explicit or implicit cost associated with the accrued expenses and the firm can ensure liquidity by accruing these expenses.

Inter-corporate Loans and Deposits

Sometimes, organizations having surplus funds invest for short-term period with other organizations. The rate of interest will be higher than the bank rate of interest and depends on the financial soundness of the borrower company. This source of finance reduces dependence on bank financing.

Commercial Papers

Commercial Paper (CP) is an unsecured promissory note issued by a firm to raise funds for a short period. This is an instrument that enables highly rated corporate borrowers for short-term borrowings and provides an additional financial instrument to investors with a freely negotiable interest rate.

The maturity period ranges from minimum 7 days to less than 1 year from the date of issue. CP can be issued in denomination of Rs.5 lakhs or multiples thereof.

Advantages of CP: From the point of the issuing company, CP provides the following benefits:

i. CP is sold on an unsecured basis and does not contain any restrictiveconditions.

ii. Maturing CP can be repaid by selling new CP and thus can provide acontinuous source of funds.

iii. Maturity of CP can be tailored to suit the requirement of the issuing firm.

iv. CP can be issued as a source of fund even when money market is tight.

v. Generally, the cost of CP to the issuing firm is lower than the cost ofcommercial bank loans.

However, CP as a source of financing has its own limitations:

a. Only highly credit rating firms can use it. New and moderately rated firmgenerally are not in a position to issue CP.

b. CP can neither be redeemed before maturity nor can be extended beyondmaturity.

Funds Generated from Operations

Funds generated from operations, during an accounting period, increase working capital by an equivalent amount. The two main components of funds generated from operations are profit and depreciation. Working capital will increase by the extent of funds generated from operations. Students may refer to funds flow statement given earlier in this chapter.

Public Deposits

Deposits from the public are one of the important sources of finance particularlyfor well-established big companies with huge capital base for short and medium- term.

Bills Discounting

Bill discounting is recognized as an important short-term Financial Instrument andit is widely used method of short-term financing. In a process of bill discounting, the supplier of goods draws a bill of exchange with direction to the buyer to pay a certain amount of money after a certain period, and gets its acceptance from the buyer or drawee of the bill.

Bill Rediscounting Scheme

The Bill rediscounting Scheme was introduced by Reserve Bank of India with effect from 1st November, 1970 in order to extend the use of the bill of exchange as an instrument for providing credit and the creation of a bill market in India with a facility for the rediscounting of eligible bills by banks. Under the bills rediscounting scheme, all licensed scheduled banks are eligible to offer bills of exchange to the Reserve Bank for rediscount.

Factoring

Students may refer to the unit on Receivable Management wherein the concept of factoring has been discussed. Factoring is a method of financing whereby a firm sells its trade debts at a discount to a financial institution. In other words, factoringis a continuous arrangement between a financial institution, (namely the factor) anda firm (namely the client) which sells goods and services to trade customers on credit. As per this arrangement, the factor purchases the client's trade debts including accounts receivables either with or without recourse to the client, andthus, exercises control over the credit extended to the customers and administers the sales ledger of his client. To put it in a layman's language, a factor is an agent who collects the dues of his client for a certain fee.

The differences between Factoring and Bills discounting are as follows:

i. Factoring is called as 'Invoice factoring' whereas bills discounting is known as "Invoice discounting".

ii. In factoring the parties are known as client, factor and debtor whereas in billsdiscounting they are known as Drawer, Drawee and Payee.

iii. Factoring is a sort of management of book debts whereas bills discounting isa sort of borrowing from commercial banks.

iv. For factoring there is no specific Act; whereas in the case of bills discounting,the Negotiable Instrument Act is applicable.

WORKING CAPITAL FINANCE FROM BANKS

Banks in India today constitute the major suppliers of working capital credit to any business activity. Recently, some term lending financial institutions have also announced schemes for working capital financing. The two committees viz., Tandon Committee and Chore Committee have evolved definite guidelines and parameters in working capital financing, which have laid the foundations for development and innovation in the area.

Instructions on Working Capital Finance by Banks

Assessment of Working Capital

- Reserve Bank of India has withdrawn the prescription, in regard to assessment of working capital needs, based on the concept of Maximum Permissible Bank Finance (MPBF), in April 1997. Banks are now free to evolve, with the approval of their Boards, methods for assessing the working capital requirements of borrowers, within the prudential guidelines and exposure norms prescribed. Banks, however, have to take into account Reserve Bank's instructions relating to directed credit (such as priority sector, export, etc.), and prohibition ofcredit (such as bridge finance, rediscounting of bills earlier discounted byNBFCs) while formulating their lending policies.

- With the above liberalizations, all the instructions relating to MPBF issued by RBI from time to time stand withdrawn. Further, various instructions/guidelines issued to banks with objective of ensuring lending discipline in appraisal, sanction, monitoring and utilization of bank finance cease to be mandatory. However, banks have the option of incorporatingsuch of the instructions / guidelines as are considered necessary in their lending policies / procedures.

FORMS OF BANK CREDIT

The bank credit will generally be in the following forms:

- **Cash Credit:** This facility will be given by the banker to the customers by giving certain amount of credit facility on continuous basis. The borrower will not be allowed to exceed the limits sanctioned by the bank.
- **Bank Overdraft:** It is a short-term borrowing facility made available to the companies in case of urgent need of funds. The banks will impose limits on the amount they can lend. When the borrowed funds are no longer required they can quickly and easily be repaid. The banks issue overdrafts with a right to call them in at short notice.
- **Bills Discounting:** The Company which sells goods on credit will normally draw a bill on the buyer who will accept it and sends it to the seller of goods. The seller, in turn discounts the bill with his banker. The banker will generally earmark the discounting bill limit.
- **Bills Acceptance:** To obtain finance under this type of arrangement a company draws a bill of exchange on bank. The bank accepts the bill thereby promising to pay out the amount of the bill at some specified future date.
- **Line of Credit:** Line of Credit is a commitment by a bank to lend a certain amount of funds on demand specifying the maximum amount.
- **Letter of Credit:** It is an arrangement by which the issuing bank on the instructions of a customer or on its own behalf undertakes to pay or accept or negotiate or authorizes another bank to do so against stipulated documents subject to compliance with specified terms and conditions.
- **Bank Guarantees:** Bank guarantee is one of the facilities that the commercial banks extend on behalf of their clients in favour of third parties who will be the beneficiaries of the guarantees.

QUESTIONS FOR CLASSROOM DISCUSSION

PROBLEM – 1

A firm has the following data for the year ending 31st March, 20x2:

	(₹)
Sales (1,00,000 @ ₹20)	20,00,000
Earnings before Interest and Taxes	2,00,000
Fixed Assets	5,00,000

The three possible current assets holdings of the firm are ₹5,00,000, ₹4,00,000 and ₹3,00,000. It is assumed that fixed assets level is constant, and profits do not vary with current assets levels. ANALYSE the effect of the three alternative current assets policies.

PROBLEM – 2

From the following information of XYZ Ltd., you are required to CALCULATE:

a. Net operating cycle period.

b. Number of operating cycles in a year.

Raw material inventory consumed during the year	600000
Average stock of raw material	50000
Cost of Production for the year	500000
Average work-in-progress inventory	30000
Cost of goods sold during the year	800000
Average finished goods stock held	40000
Average collection period from debtors	45 days
Average credit period availed	30 days
No. of days in a year	360 days

PROBLEM – 3

PREPARE a working capital estimate to finance an activity level of 52,000 unitsa year (52 weeks) based on the following data:

Raw Materials	₹400 per unit
Direct Wages	₹150 per unit
Overheads (Manufacturing)	₹200 per unit
Overheads (Selling & Distribution)	₹100 per unit

Selling Price - ₹1,000 per unit, Raw materials & Finished Goods remain in stock for 4 weeks, Work in process takes 4 weeks. Debtors are allowed 8 weeks for payment whereas creditors allow us 4 weeks. Minimum cash balance expected is ₹50,000. Receivables are valued at Selling Price.

PROBLEM – 4

On 1st January, the Managing Director of Naureen Ltd. wishes to know the amount of working capital that will be required during the year. From the following information, PREPARE the working capital requirements forecast.

Production during the previous year was 60,000 units. It is planned that this level of activity would be maintained during the present year.

The expected ratios of the cost to selling prices are Raw materials 60%, Direct wages 10% and Overheads 20%.

Raw materials are expected to remain in store for an average of 2 months before issue to production. Each unit is expected to be in process for one month, the raw materials being fed into the pipeline immediately and the labour and overhead costs accruing evenly during the month.

Finished goods will stay in the warehouse awaiting dispatch to customers for approximately 3 months. Credit allowed by creditors is 2 months from the date of delivery of raw material. Credit allowed to debtors is 3 months from the date of dispatch.

Selling price is ₹5 per unit.

There is a regular production and sales cycle.

Wages and overheads are paid on the 1st of each month for the previous month. The company normally keeps cash in hand to the extent of ₹20,000.

PROBLEM – 5

The following annual figures relate to XYZ Co.:

	(₹)
Sales (at two months' credit)	36,00,000
Materials consumed (suppliers extend two months' credit)	9,00,000
Wages paid (1 month lag in payment)	7,20,000
Cash manufacturing expenses (expenses are paid one month in arrear)	9,60,000
Administrative expenses (1 month lag in payment)	2,40,000
Sales promotion expenses (paid quarterly in advance)	1,20,000

The company sells its products on gross profit of 25%. Depreciation is considered as a part of the cost of production. It keeps one month's stock each of raw materials and finished goods, and a cash balance of ₹1,00,000.

Assuming a 20% safety margin, COMPUTE the working capital requirements of the company on cash cost basis. Ignore work-in-process.

PROBLEM – 6

Samreen Enterprises has been operating its manufacturing facilities till 31.3.20x2 on a single shift working with the following cost structure:

	Per unit (₹)
Cost of Materials	6.00
Wages (out of which 40% fixed)	5.00
Overheads (out of which 80% fixed)	5.00
Profit	2.00
Selling Price	18.00
Sales during 2020-21 – ₹4,32,000	

As at 31.3.2022 the company held:

	(₹)
Stock of raw materials (at cost)	36,000
Work-in-progress (valued at prime cost)	22,000
Finished goods (valued at total cost)	72,000
Sundry debtors	1,08,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed of from suppliers will continue to remain at the present level i.e., 2 months. Lag in payment of wages and expenses will continue to remain half a month.

You are required to PREPARE the additional working capital requirements, if the policy to increase output is implemented.

PROBLEM – 7

M.A. Limited is commencing a new project for manufacture of a plastic component. The following cost information has been ascertained for annual production of 12,000 units which is the full capacity:

	Costs per unit (₹)
Materials	40.00
Direct labour and variable expenses	20.00
Fixed manufacturing expenses	6.00
Depreciation	10.00
Fixed administration expenses	4.00
	80.00

The selling price per unit is expected to be ₹96 and the selling expenses ₹5 per unit, 80% of which is variable.

In the first two years of operations, production and sales are expected to be asfollows:

Year	**Production (No. of units)**	**Sales (No. of units)**
1	6,000	5,000
2	9,000	8,500

To assess the working capital requirements, the following additional informationis available:

a. Stock of materials 2.25 months' average consumption

b. Work-in-process Nil

c. Debtors 1 month's average sales.

d. Cash balance ₹10,000

e. Creditors for supply of materials 1 month's average purchase during the year.

f. Creditors for expenses 1 month's average of all expenses during the year.

PREPARE, for the two years:

i. A projected statement of Profit/Loss (Ignoring taxation); and

ii. A projected statement of working capital requirements.

PROBLEM – 8

Aneja Limited, a newly formed company, has applied to a commercial bank for the first time for financing its working capital requirements. The following information is available about the projections for the current year:

Estimated level of activity: 1,04,000 completed units of production plus 4,000 units of work-in-progress.

Based on the above activity, estimated cost per unitis:

Raw material	₹ 80 per unit
Direct wages	₹ 30 per unit
Overheads (exclusive of depreciation)	₹ 60 per unit
Total cost	₹170 per unit
Selling price	₹200 per unit

Raw materials in stock: Average 4 weeks consumption, work-in-progress (assume 50% completion stage in respect of conversion cost) (materials issuedat the start of the processing).

Finished goods in stock	8,000 units
Credit allowed by suppliers	Average 4 weeks
Credit allowed to debtors/receivables	Average 8 weeks

Lag in payment of wages Average 1.5 weeksCash at banks (for smooth operation) is expected to be ₹25,000.

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only.

You are required to CALCULATE the net working capital required.

PROBLEM – 9

The management of Trux Company Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveal the following annual information:

	(₹)
Sales – Domestic at one month's credit	18,00,000
Export at three month's credit (sales price 10% below domesticprice)	8,10,000
Materials used (suppliers extend two months credit)	6,75,000
Lag in payment of wages – ½ month	5,40,000
Lag in payment of manufacturing expenses (cash) – 1 month	7,65,000
Lag in payment of Administration Expenses – 1 month	1,80,000
Selling expenses payable quarterly in advance	1,12,500
Income tax payable in four installments, of which one falls in thenext financial year	1,68,000

Rate of gross profit is 20%. Ignore work-in-progress and depreciation.

The company keeps one month's stock of raw materials and finished goods (each)and believes in keeping ₹ 2,50,000 available to it including the overdraft limit of ₹75,000 not yet utilized by the company.

The management is also of the opinion to make 10% margin for contingencies oncomputed figure.

You are required to PREPARE the estimated working capital statement for the nextyear.

PROBLEM – 10

The following data relating to an auto component manufacturing company isavailable for the year 20x1-20x2:

Raw material held in storage	20 days
Receivables' collection period	30 days
Conversion process period	10 days
(raw material – 100%, other costs – 50% complete)	
Finished goods storage period	45 days
Credit period from suppliers	60 days
Advance payment to suppliers	5 days
Total cash operating expenses per annum	₹ 800 lakhs

75% of the total cash operating expenses are for raw material. 360 days areassumed in a year.

You are required to CALCULATE:

i. Each item of current assets and current liabilities,

ii. The working capital requirement, if the company wants to maintain a cash balance of ₹ 10 lakhs at all times.

PROBLEM – 11

The following figures and ratios are related to a company:

i. Sales for the year (all credit)	₹90,00,000
ii. Gross Profit ratio	35 percent
iii. Fixed assets turnover (based on cost of goods sold)	1.5
iv. Stock turnover (based on cost of goods sold)	6
v. Liquid ratio	1.5:1
vi. Current ratio	2.5:1
vii. Receivables (Debtors) collection period	1 month
viii. Reserves and surplus to Share capital	1:1.5

ix. Capital gearing ratio	0.7875
x. Fixed assets to net worth	1.3: 1

You are required to PREPARE:

a. Balance Sheet of the company on the basis of above details.

b. The statement showing working capital requirement, if the company wants to make a provision for contingencies @15 percent of net working capital.

PROBLEM – 12

PQ Ltd., a company newly commencing business in 2021-22 has the following projected Profit and Loss Account:

	(₹)	(₹)
Sales		2,10,000
Cost of goods sold		1,53,000
Gross Profit		57,000
Administrative Expenses	14,000	
Selling Expenses	13,000	27,000
Profit before tax		30,000
Provision for taxation		10,000
Profit after tax		20,000
The cost of goods sold has been arrived at as under:		
Materials used	84,000	
Wages and manufacturing Expenses	62,500	
Depreciation	23,500	
	1,70,000	
Less: Stock of Finished goods		
(10% of goods produced not yet sold)	17,000	
	1,53,000	

The figure given above relate only to finished goods and not to work-in- progress. Goods equal to 15% of the year's production (in terms of physical units) will be in process on the average requiring full materials but only 40% of the other expenses. The company believes in keeping materials equal to two months' consumption in stock.

All expenses will be paid one month in advance. Suppliers of materials will extend 1-1/2 months credit. Sales will be 20% for cash and the rest at two months' credit. 70% of the Income tax will be paid in advance in quarterly instalments. The company wishes to keep ₹8,000 in cash. 10% has to be added to the estimated figure for unforeseen contingencies.

PREPARE an estimate of working capital.

Note: All workings should form part of the answer.

PROBLEM – 13

PREPARE monthly cash budget for six months beginning from April 2022 on the basis of the following information:

i. Estimated monthly sales are as follows:

	₹		₹
January	1,00,000	June	80,000
February	1,20,000	July	1,00,000
March	1,40,000	August	80,000
April	80,000	September	60,000
May	60,000	October	1,00,000

ii. Wages and salaries are estimated to be payable as follows: -

	₹		₹
April	9,000	July	10,000
May	8,000	August	9,000
June	10,000	September	9,000

iii. Of the sales, 80% is on credit and 20% for cash. 75% of the credit sales are collected within one month after sale and the balance in two months after sale. There are no bad debt losses.

iv. Purchases amount to 80% of sales and are made on credit and paid for in the month preceding the sales.

v. The firm has 10% debentures of ₹ 1,20,000. Interest on these has to be paid quarterly in January, April and so on.

vi. The firm is to make an advance payment of tax of ₹ 5,000 in July, 2022.

vii. The firm had a cash balance of ₹ 20,000 on April 1, 2022, which is the minimum desired level of cash balance. Any cash surplus/deficit above/below this level is made up by temporary investments/liquidation of temporary investments or temporary borrowings at the end of each month (interest on these to be ignored).

PROBLEM – 14

From the following information relating to a departmental store, you are required to PREPARE for the three months ending 31st March, 20x2:

a. Month-wise cash budget on receipts and payments basis; and

b. Statement of Sources and uses of funds for the three months period.

It is anticipated that the working capital & other account balances at 1st January, 20x2 will be as follows:

	₹ in '000
Cash in hand and at bank	545
Short term investments	300
Debtors	2,570
Stock	1,300
Trade creditors	2,110
Other creditors	200
Dividends payable	485
Tax due	320
Plant	800

Budgeted Profit Statement:	**₹ in '000**		
	January	**February**	**March**
Sales	2,100	1,800	1,700
Cost of goods sold	1,635	1,405	1,330
Gross Profit	465	395	370
Administrative, Selling and Distribution Expenses	315	270	255
Net Profit before tax	**150**	**125**	**115**

Budgeted balances at the end of each month	**₹ in '000**		
	31st Jan.	**28th Feb.**	**31st March**
Short term investments	700	---	200
Debtors	2,600	2,500	2,350
Stock	1,200	1,100	1,000
Trade creditors	2,000	1,950	1,900

Other creditors	200	200	200
Dividends payable	485	--	--
Tax due	320	320	320
Plant (depreciation ignored)	800	1,600	1,550

Depreciation amount to ₹ 60,000 is included in the budgeted expenditure for each month.

PROBLEM – 15

You are given below the Profit & Loss Accounts for two years for a company:

Profit and Loss Account

	Year 1	**Year 2**		**Year 1**	**Year 2**
	₹	**₹**		**₹**	**₹**
To Opening stock	80,00,000	1,00,00,000	By Sales	8,00,00,000	10,00,00,000
To Raw materials	3,00,00,000	4,00,00,000	By Closing stock	1,00,00,000	1,50,00,000
To Stores	1,00,00,000	1,20,00,000	By Misc. Income	10,00,000	10,00,000
To Manufacturing Expenses	1,00,00,000	1,60,00,000			
To Other Expenses	1,00,00,000	1,00,00,000			
To Depreciation	1,00,00,000	1,00,00,000			
To Net Profit	1,30,00,000	1,80,00,000		-	-
	9,10,00,000	**11,60,00,000**		**9,10,00,000**	**11,60,00,000**

Sales are expected to be ₹ 12,00,00,000 in year 3.

As a result, other expenses will increase by ₹ 50,00,000 besides other charges. Only raw materials are in stock. Assume sales and purchases are in cash terms and the closing stock is expected to go up by the same amount as between year 1 and 2. You may assume that no dividend is being paid. The Company can use 75% of the cash generated to service a loan. COMPUTE how much cash from operations will be available in year 3 for the purpose? Ignore income tax.

PROBLEM – 16

Prachi Ltd is a manufacturing company producing and selling a range of cleaning products to wholesale customers. It has three suppliers and two customers. Prachi Ltd relies on its cleared funds forecast to manage its cash.

You are an accounting technician for the company and have been asked to prepare a cleared funds forecast for the period Saturday 9 August to Wednesday 13 August 20X2 inclusive. You have been provided with the following information:

1. Receipts from customers

	Credit terms	Payment method	9 Aug 20X2 sales	9 Jul 20X2 sales
W Ltd	1 calendar month	BACS	₹ 150,000	₹ 130,000
X Ltd	None	Cheque	₹ 180,000	₹ 160,000

a. Receipt of money by BACS (Bankers' Automated Clearing Services) is instantaneous.

b. X Ltd's cheque will be paid into Prachi Ltd's bank account on the same day as the sale is made and will clear on the third day following this (excluding day of payment).

2. Payments to suppliers

Supplier name	Credit terms	Payment method	9 Aug 20X2 purchases	9 Jul 20X2 purchases	9 Jun 20X2 purchases
A Ltd	1 calendar month	Standing order	₹ 65,000	₹ 55,000	₹ 45,000
B Ltd	2 calendar months	Cheque	₹ 85,000	₹ 80,000	₹ 75,000
C Ltd	None	Cheque	₹ 95,000	₹ 90,000	₹ 85,000

a. Prachi Ltd has set up a standing order for ₹ 45,000 a month to pay for supplies from A Ltd. This will leave Prachi's bank account on 9 August.

Every few months, an adjustment is made to reflect the actual cost of supplies purchased (you do NOT need to make this adjustment).

b. Prachi Ltd will send out, by post, cheques to B Ltd and C Ltd on 9 August. The amounts will leave its bank account on the second day following this (excluding the day of posting).

3. Wages and salaries

	July 20X2	August 20X2
Weekly wages	₹ 12,000	₹ 13,000
Monthly salaries	₹ 56,000	₹ 59,000

a. Factory workers are paid cash wages (weekly). They will be paid one week's wages, on 13 August, for the last week's work done in July (i.e. they work a week in hand).

b. All the office workers are paid salaries (monthly) by BACS. Salaries for July will be paid on 9 August.

4. Other miscellaneous payments

a. Every Saturday morning, the petty cashier withdraws ₹ 200 from the company bank account for the petty cash. The money leaves Prachi's bank account straight away.

b. The room cleaner is paid ₹ 30 from petty cash every Monday morning.

c. Office stationery will be ordered by telephone on Sunday 10 August to the value of ₹ 300. This is paid for by company debit card. Such payments are generally seen to leave the company account on the next working day.

d. Five new softwares will be ordered over the Internet on 12 August at a total cost of ₹ 6,500. A cheque will be sent out on the same day. The amount will leave Prachi Ltd's bank account on the second day following this (excluding the day of posting).

5. Other information

The balance on Prachi's bank account will be ₹ 200,000 on 9 August 20X2. This represents both the book balance and the cleared funds.

PREPARE a cleared funds forecast for the period Saturday 7th August to Wednesday 13th August 20X2 inclusive using the information provided. Show clearly the uncleared funds float each day.

PROBLEM – 17

A firm maintains a separate account for cash disbursement. Total disbursement are ₹ 1,05,000 per month or ₹ 12,60,000 per year. Administrative and transaction cost of transferring cash to disbursement account is ₹ 20 per transfer. Marketable securities yield is 8% per annum.

DETERMINE the optimum cash balance according to William J. Baumol model.

PROBLEM – 18

The following information is available in respect of Sai trading company:

i. On an average, debtors are collected after 45 days; inventories have an average holding period of 75 days and creditor's payment period on an average is 30 days.

ii. The firm spends a total of ₹ 120 lakhs annually at a constant rate.

iii. It can earn 10 per cent on investments.

From the above information, you are required to CALCULATE:

a. The cash cycle and cash turnover,

b. Minimum amounts of cash to be maintained to meet payments as they become due,

c. Savings by reducing the average inventory holding period by 30 days.

PROBLEM – 19

A trader whose current sales are in the region of ₹ 6 lakhs per annum and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information: -

Credit Policy	Increase in collection period	Increase in sales	Present default anticipated
A	10 days	₹ 30,000	1.5%
B	20 days	₹ 48,000	2%
C	30 days	₹ 75,000	3%
D	45 days	₹ 90,000	4%

The selling price per unit is ₹ 3. Average cost per unit is ₹ 2.25 and variable costs per unit are ₹ 2. The current bad debt loss is 1%. Required return on additional investment is 20%. Assume a 360 days year. ANALYSE which of the above policies would you recommend for adoption?

PROBLEM – 20

XYZ Corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently, the firm has annual credit sales of ₹ 50 lakhs and accounts receivable turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹ 1,50,000. The firm is required to give a return of 25% on the investment in new accounts receivables. The company's variable costs are 70% of the selling price. Given the following information, IDENTIFY which is the better option?

(Amount in ₹)

	Present Policy	Policy Option I	Policy Option II
Annual credit sales	50,00,000	60,00,000	67,50,000
Accounts receivable turnover ratio	4 times	3 times	2.4 times
Bad debt losses	1,50,000	3,00,000	4,50,000

PROBLEM – 21

A company is presently having credit sales of ₹ 12 lakh. The existing credit terms are 1/10, net 45 days and average collection period is 30 days. The current bad debts loss is 1.5%. In order to accelerate the collection process further as also to increase sales, the company is contemplating liberalization of its existing credit terms to 2/10, net 45 days. It is expected that sales are likely to increase by 1/3 of existing sales, bad debts increase to 2% of sales and average collection period to decline to 20 days. The contribution to sales ratio of the company is 22% and opportunity cost of investment in receivables is 15 percent (pre-tax). 50 per cent and 80 percent of customers in terms of sales revenue are expected to avail cash discount under existing and liberalization scheme respectively. The tax rate is 30%.

ADVISE, should the company change its credit terms? (Assume 360 days in a year).

PROBLEM – 22

A Factoring firm has credit sales of ₹ 360 lakhs and its average collection period is 30 days. The financial controller estimates, bad debt losses are around 2% of credit sales. The firm spends ₹ 1,40,000 annually on debtor's administration. This cost comprises of telephonic and fax bills along with salaries of staff members. These are the avoidable costs. A Factoring firm has offered to buy the firm's receivables. The factor will charge 1% commission and will pay an advance against receivables on an interest @15% p.a. after withholding 10% as reserve. ANALYSE what should the firm do?

Assume 360 days in a year.

PROBLEM – 23

Mosaic Limited has current sales of ₹ 15 lakhs per year. Cost of sales is 75 per cent of sales and bad debts are one per cent of sales. Cost of sales comprises 80 per cent variable costs and 20 per cent fixed costs, while the company's required rate of return is 12 per cent. Mosaic Limited currently allows customers 30 days' credit, but is considering increasing this to 60 days' credit in order to increase sales.

It has been estimated that this change in policy will increase sales by 15 per cent, while bad debts will increase from one per cent to four per cent. It is not expected that the policy change will result in an increase in fixed costs and creditors and stock will be unchanged.

Should Mosaic Limited introduce the proposed policy? ANALYSE (Assume a 360 days year)

PROBLEM – 24

As a part of the strategy to increase sales and profits, the sales manager of a company proposes to sell goods to a group of new customers with 10% risk of non-payment. This group would require one and a half months credit and is likely to increase sales by ₹1,00,000 p.a. Production and Selling expenses amount to 80% of sales and the income-tax rate is 50%. The company's minimum required rate of return (after tax) is 25%.

Should the sales manager's proposal be accepted? ANALYSE

Also COMPUTE the degree of risk of non-payment that the company should be willing to assume if the required rate of return (after tax) were (i) 30%, (ii) 40% and (iii) 60%.

PROBLEM – 25

Slow Payers are regular customers of Goods Dealers Ltd. and have approached the sellers for extension of credit facility for enabling them to purchase goods.On an analysis of past performance and on the basis of information supplied, the following pattern of payment schedule emerges in regard to Slow Payers:

Pattern of Payment Schedule	
At the end of 30 days	15% of the bill
At the end of 60 days	34% of the bill
At the end of 90 days	30% of the bill
At the end of 100 days	20% of the bill
Non-recovery	1% of the bill

Slow Payers want to enter into a firm commitment for purchase of goods of ₹15 lakhs in 20x1-20x2, deliveries to be made in equal quantities on the first dayof each quarter in the calendar year. The price per unit of commodity is ₹150 on which a profit of ₹5 per unit is expected to be made. It is anticipated by Goods Dealers Ltd., that taking up of this contract would mean an extra recurring expenditure of ₹5,000 per annum. If the opportunity cost of funds in the hands of Goods Dealers is 24% per annum, would you as the finance manager of the seller recommend the grant of credit to Slow Payers? ANALYSE. Workings should form part of your answer. Assume year of 365 days.

PROBLEM – 26

Suppose ABC Ltd. has been offered credit terms from its major supplier of 2/10, net 45. Hence the company has the choice of paying ₹ 10 per ₹ 100 or to invest ₹ 98 foran additional 35 days and eventually pay the supplier ₹ 100 per ₹ 100. The decision as to whether the discount should be accepted depends on the opportunity cost of investing ₹ 98 for 35 days. ANALYSE what should the company do?

PROBLEM – 27

The Dolce Company purchases raw materials on terms of 2/10, net 30. A review of the company's records by the owner, Mr. Gautam, revealed that payments are usually made 15 days after purchases are made. When asked why the firm did not take advantage of its discounts, the accountant, Mr. Rohit, replied that it cost only 2 percent for these funds, whereas a bank loan would cost the company 12 per cent.

a. ANALYSE what mistake is Rohit making?

b. If the firm could not borrow from the bank and was forced to resort to the useof trade credit funds, what suggestion might be made to Rohit that would reduce the annual interest cost? IDENTIFY.

ADDITIONAL QUESTIONS FOR PRATICE

QFP 1 (Concept Similar to Problem – 4)

Following information is forecasted by R Limited for the year ending 31st March,20x2:

	Balance as at 31st March, 20x2	Balance as at31st March, 20x1
	(₹in lakh)	(₹in lakh)
Raw Material	65	45
Work-in-progress	51	35
Finished goods	70	60
Receivables	135	112
Payables	71	68
Annual purchases of raw material (allcredit)	400	
Annual cost of production	450	
Annual cost of goods sold	525	
Annual operating cost	325	
Annual sales (all credit)	585	

You may take one year as equal to 365 days.

You are required to CALCULATE:

1. Net operating cycle period.
2. Number of operating cycles in the year.
3. Amount of working capital requirement.

QFP 2 (Concept Similar to Problem – 8)

The following information relates to Zeta Limited, a publishing company:

The selling price of a book is ₹15, and sales are made on credit through a book club and invoiced on the last day of the month.

Variable costs of production per book are materials (₹5), labour (₹4), and overhead (₹2)

The sales manager has forecasted the following volumes:

Month	No. of Books
November	1,000
December	1,000
January	1,000

February	1,250
March	1,500
April	2,000
May	1,900
June	2,200
July	2,200
August	2,300

Customers are expected to pay as follows:

One month after the sale	40%
Two months after the sale	60%

The company produces the books two months before they are sold and the creditors for materials are paid two months after production.

Variable overheads are paid in the month following production and are expected to increase by 25% in April; 75% of wages are paid in the month of production and 25% in the following month. A wage increase of 12.5% will take place on 1st March.

The company is going through a restructuring and will sell one of its freehold properties in May for ₹25,000, but it is also planning to buy a new printing press in May for ₹10,000. Depreciation is currently ₹1,000 per month, and will riseto ₹1,500 after the purchase of the new machine.

The company's corporation tax (of ₹10,000) is due for payment in March.

The company presently has a cash balance at bank on 31 December 20x1, of ₹1,500.

You are required to PREPARE a cash budget for the six months from January to June, 20x2.

QFP 3 (Concept Similar to Problem – 8)

From the information and the assumption that the cash balance in hand on 1st January 20x2 is ₹72,500, PREPARE a cash budget.

Assume that 50 per cent of total sales are cash sales. Assets are to be acquiredin the months of February and April. Therefore, provisions should be made for the payment of ₹8,000 and ₹25,000 for the same. An application has been made to the bank for the grant of a loan of ₹30,000 and it is hoped that the loan amount will be received in the month of May.

It is anticipated that a dividend of ₹35,000 will be paid in June. Debtors are allowed one month's credit. Creditors for materials purchased and overheads grant one month's credit. Sales commission at 3 per cent on sales is paid to the salesman each month.

Month	Sales (₹)	Materials Purchases(₹)	Salaries & Wages(₹)	Production Overheads (₹)	Office and Selling Overheads (₹)
January	72,000	25,000	10,000	6,000	5,500
February	97,000	31,000	12,100	6,300	6,700
March	86,000	25,500	10,600	6,000	7,500
April	88,600	30,600	25,000	6,500	8,900
May	1,02,500	37,000	22,000	8,000	11,000
June	1,08,700	38,800	23,000	8,200	11,500

QFP 4 (Concept Similar to Problem – 8)

Consider the balance sheet of Maya Limited as on 31 December, 20x2. The company has received a large order and anticipates the need to go to its bank to increase its borrowings. As a result, it has to forecast its cash requirements for January, February and March, 20x3. Typically, the company collects 20 per cent of its sales in the month of sale, 70 per cent in the subsequent month, and 10 per cent in the second month after the sale. All sales are credit sales.

Equity & liabilities	Amount (₹in '000)	Assets	Amount (₹in '000)
Equity shares capital	100	Net fixed assets	1,836
Retained earnings	1,439	Inventories	545
Long-term borrowings	450	Accounts receivables	530
Accounts payables	360	Cash and bank	50
Loan from banks	400		
Other liabilities	212		
	2,961		**2,961**

Purchases of raw materials are made in the month prior to the sale and amountsto 60 per cent of sales. Payments for these purchases occur in the month afterthe purchase. Labour costs, including overtime, are expected to be ₹1,50,000in January, ₹2,00,000 in February, and ₹1,60,000 in March. Selling, administrative, taxes, and other cash expenses are expected to be ₹1,00,000 per month for January through March. Actual sales in November and December and projected sales for January through April are as follows (in thousands):

Month	₹	Month	₹	Month	₹
November	500	January	600	March	650
December	600	February	1,000	April	750

On the basis of this information:

a. PREPARE a cash budget and DETERMINE the amount of additional bank borrowings necessary to maintain a cash balance of ₹50,000 at all times for the months of January, February, and March.

b. PREPARE a pro forma balance sheet for March 31.

QFP 5 (Concept Similar to Problem – 23)

PQR Ltd. having an annual sales of ₹30 lakhs, is re-considering its present collection policy. At present, the average collection period is 50 days and thebad debt losses are 5% of sales. The company is incurring an expenditure of ₹30,000 on account of collection of receivables. Cost of funds is 10 percent.

The alternative policies are as under:

	Alternative I	Alternative II
Average Collection Period	40 days	30 days
Bad Debt Losses	4% of sales	3% of sales
Collection Expenses	₹60,000	₹95,000

DETERMINE the alternatives on the basis of incremental approach and state which alternative is more beneficial.

CHAPTER 09: SCOPE AND OBJECTIVES OF FINANCIAL MANAGEMENT

INTRODUCTION

We will like to explain Financial Management by giving a very simple scenario. For the purpose of starting any new business/venture, an entrepreneur goes through the following stages of decision making: -

Stage 1 →	Stage 2 →	Stage 3 →	Stage 4
Decide which assets (premises, machinery, Equipment etc.) to buy.	Determining what is total investment (since assets cost money) required for buying assets.	Apart from buying assets the entrepreneur would also need to determine how much cash he would need to run the daily operations (payment for raw material, salaries, wages etc.). In other words this is also defined as Working Capital requirement.	The next stage is to decide what all sources, does the entrepreneur need to tap to finance the total investment (assets and working capital). The sources could be Share Capital (Including Entrepreneur's own funds) or Borrowing from Banks or Investment from Financial Institutions etc.

While deciding how much to take from each source, the entrepreneur would keep in mind the cost of capital for each source (Interest/Dividend etc.). As an entrepreneur he would like to keep the cost of capital low.

Thus, financial management is concerned with **efficient acquisition (financing) and allocation** (investment in assets, working capital etc.) of funds with an objective to make profit (dividend) for owners. In other words, focus of financial management is to address three major financial decision areas namely, **investment, financing and dividend decisions.**

Any business enterprise requiring money and the 3 key questions being enquired into

1. Where to get the money from? **(Financing Decision)**
2. Where to invest the money? **(Investment Decision)**
3. How much to distribute amongst shareholders to keep them satisfied? **(Dividend Decision)**

MEANING OF FINANCIAL MANAGEMENT

Financial management is that **managerial activity which is concerned with planning and controlling of the firm's financial resources**. In other words it is concerned with acquiring, financing and managing assets to accomplish the overall goal of a business enterprise (mainly to maximise the shareholder's wealth).

In today's world where positive cash flow is more important than book profit, Financial Management can also be defined as planning for the future of a business enterprise to ensure a positive cash flow. Some experts also refer to financial management as the science of money management. It can be defined as:

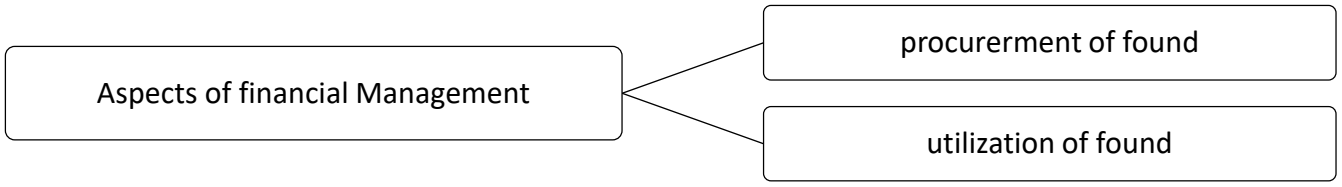
"Financial Management comprises of forecasting, planning, organizing, directing, co-ordinating and controlling of all activities relating to acquisition and application of the financial resources of an undertaking in keeping with its financial objective.

Another very elaborate definition given by Phillippatus is:

"Financial Management is concerned with the managerial decisions that result in the acquisition and financing of short term and long term credits for the firm."

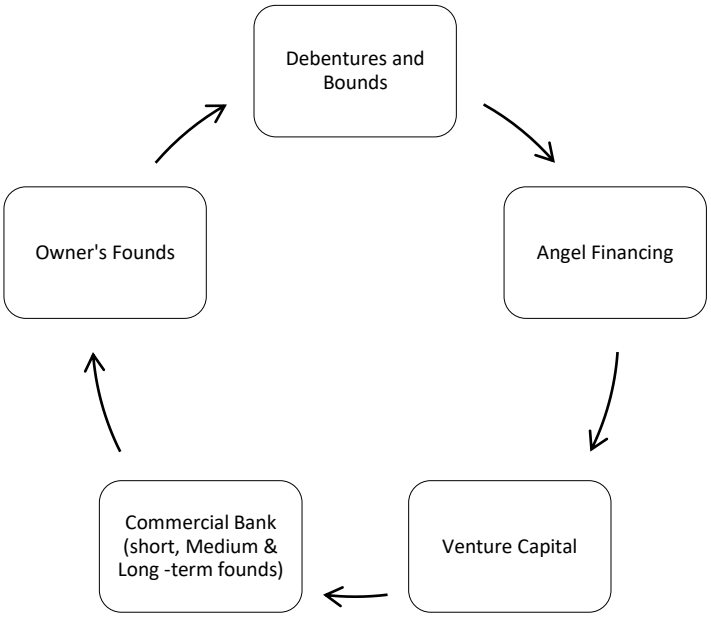
As such it deals with the situations that require selection of specific assets (orcombination of assets), the selection of specific problem of size and growth of an enterprise. The analysis of these decisions is based on the expected inflows and outflows of funds and their effect on managerial objectives.

There are two basic aspects of financial management viz., procurement of funds and an effective use of these funds to achieve business objectives



Procurement of Funds

Since funds can be obtained from different sources therefore their procurement is always considered as a complex problem business concerns. Some of the Sources for funds for a business enterprise are **sources for funds** for a business enterprise are:



In a global competitive scenario, it is not enough to depend on the available waysof raising finance but resource mobilization has to be undertaken through innovative ways on financial products which may meet the needs of investors. We are constantly seeing new and creative sources of funds which are helping the modern businesses to grow faster. For example: trading in Carbon Credits is turning out to be another source of funding.

Funds procured from different sources have different characteristics in terms of risk, cost and control. The cost of funds should be at the minimum level for that a proper balancing of risk and control factors must be carried out.

Another key consideration in choosing the source of new business finance is to strike a balance between equity and debt to ensure the funding structure suits the business.

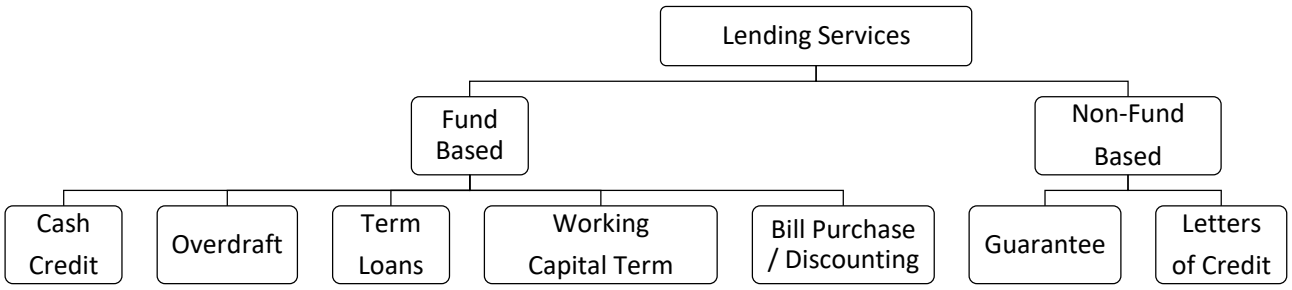
Let us discuss some of the sources of funds (discussed in detail in later chapters):

a. **Equity:** The funds raised by the issue of equity shares are the best from therisk point of view for the firm, since there is no question of repayment ofequity capital except when the firm is under liquidation. From the cost pointof view, however, equity capital is usually the most expensive source of funds. This is because the dividend expectations of shareholders are normally higher than prevalent interest rate and also because dividends arean appropriation of profit, not allowed as an expense under the Income TaxAct. Also, the issue of new shares to public may dilute the control of the existing shareholders.

b. **Debentures:** Debentures as a source of funds are comparatively cheaper than the shares because of their tax advantage. The interest the companypays on a debenture is free of tax, unlike a dividend payment which is made from the taxed profits. However, even when times are hard, interest on debenture loans must be paid whereas dividends need not be. However, debentures entail a high degree of risk since they have to be repaid as perthe terms of

agreement. Also, the interest payment has to be made whetheror not the company makes profits.

c. **Funding from Banks:** Commercial Banks play an important role in fundingof the business enterprises. Apart from supporting businesses in their routine activities (deposits, payments etc.) they play an important role in meeting the long term and short term needs of a business enterprise. Different lending services provided by Commercial Banks are depicted as follows: -



d. **International Funding:** Funding today is not limited to domestic market. With liberalization and globalization, a business enterprise has options to raise capital from International markets also. Foreign Direct Investment (FDI) and Foreign Institutional Investors (FII) are two major routes for raising funds from foreign sources besides ADR's (American depository receipts) and GDR's (Global depository receipts). Obviously, the mechanism of procurement of funds has to be modified in the light of the requirements of foreign investors.

e. **Angel Financing:** Angel Financing is a form of an equity-financing where an angel investor is a wealthy individual who provides capital for start-up or expansion, in exchange for an ownership/equity in the company. Angel investors have idle cash available and are looking for a higher rate of return than what is given by traditional investments. Typically, angels, as they are known as, will invest around 25 to 60 per cent to help a company get started. This source of finance sometimes is the last option for startups which doesn't qualify for bank funding and are too small for venture capital financing.

Effective Utilisation of Funds

The finance manager is also responsible for effective utilisation of funds. He hasto point out situations where the funds are being kept idle or where proper use of funds is not being made. All the funds are procured at a certain cost and after entailing a certain amount of risk. If these funds are not utilised in the manner sothat they generate an income higher than the cost of procuring them, there is no point in running the business. Hence, it is crucial to employ the funds properlyand profitably. Some of the aspects of funds utilization are:

a. **Utilization for Fixed Assets:** The funds are to be invested in the manner so that the company can produce at its optimum level without endangering its financial solvency. For this, the finance manager would be required to possess sound knowledge of techniques of capital budgeting. Capital budgeting (or investment appraisal) is the planning process used to determine whether a firm's long-term investments such as new machinery,replacement machinery, new plants, new products, and research development projects would provide the desired return (profit).

b. **Utilization for Working Capital:** The finance manager must also keep in view the need for adequate working capital and ensure that while the firms enjoy an optimum level of working capital, they do not keep too much funds blocked in inventories, book debts, cash etc.

EVOLUTION OF FINANCIAL MANAGEMENT

Financial management evolved gradually over the past 50 years. The evolution of Financial Management is divided into three phases. Financial Management evolved as a separate field of study at the beginning of the century. The three stages of its evolution are:

The Traditional Phase: During this phase, Financial Management was considered necessary only during occasional events such as takeovers, mergers, expansion, liquidation, etc. Also, when taking financial decisions in the organisation, the needs of outsiders (investment bankers, people who lend money to the businessand other such people) to the business was kept in mind.

The Transitional Phase: During this phase, the day-to-day problems that financial managers faced were given importance. The general problems related to funds analysis, planning and control were given more attention in this phase.

The Modern Phase: Modern phase is still going on. The scope of Financial Management has greatly increased now. It is important to carry out financial analysis for a company. This analysis helps in decision making. During this phase, many theories have been developed regarding efficient markets, capital budgeting, option pricing, valuation models and also in several other important fields in financial management.

FINANCE FUNCTIONS/ FINANCE DECISION

Value of a firm will depend on various finance functions/decisions. It can be expressed as :

$$V = f(I,F,D).$$

The finance functions are divided into long term and short term functions / decisions

Long term Finance Function Decisions

a. **Investment decisions (I)**: These decisions relate to the **selection of assets in which funds will be invested by a firm.** Funds procured from different sources have to be invested in various kinds of assets. Long term funds are used in a project for various fixed assets and also for current assets. The investment of funds in a project has to be made after careful assessment of the various projects through capital budgeting. A part of long term funds is also to be kept for financing the working capital requirements. Asset management policies are to be laid down regarding various items of current assets. The inventory policy would be determined by the productionmanager and the finance manager keeping in view the requirement of production and the future price estimates of raw materials and theavailability of funds.

b. **Financing decisions (F):** These decisions relate to **acquiring the optimum finance** to meet financial objectives and seeing that fixed and working capital are effectively managed. The financial manager needs to possess a good knowledge of the sources of available funds and their respective costs and needs to ensure that the company has a sound capital structure, i.e. a proper balance between equity capital and debt. Such managers also needto have a very clear understanding as to the difference between profit andcash flow, bearing in mind that profit is of little avail unless the organisation is adequately supported by cash to pay for assets and sustain the working capital cycle. Financing decisions also call for a good knowledge ofevaluation of risk, e.g. excessive debt carried high risk for an organization's equity because of the priority rights of the lenders. A major area for risk- related decisions is in overseas trading, where an organisation is vulnerableto currency fluctuations, and the manager must be well aware of the various protective procedures such as hedging (it is a strategy designed tominimize, reduce or cancel out the risk in another investment) available to him. For example, someone who has a shop, takes care of the risk of the goods being destroyed by fire by hedging it via a fire insurance contract.

c. **Dividend decisions (D):** These decisions relate to the **determination as to how much and how frequently cash can be paid out of the profits** of an organisation as income for its owners/shareholders. The owner of any profit-making organization looks for reward for his investment in two ways,the growth of the capital invested and the cash paid out as income; for asole trader this income would be termed as drawings and for a limited liability company the term is dividends.

   The dividend decision thus has two elements – the amount to be paid out and the amount to be retained to support the growth of the organisation, the latter being also a financing decision;

the level and regular growth of dividends represent a significant factor in determining a profit-making company's market value, i.e. the value placed on its shares by the stock market. All three types of decisions are interrelated, the first two pertaining to any kind of organisation while the third relates only to profit-making organisations, thus it can be seen that financial management is of vital importance at every level of business activity, from a sole trader to the largest multinational corporation.

Short-term Finance Decisions/ Function

Working Capital Management (WCM): Generally short term decision are reduced to management of current asset and current liability (i.e., working capital Management)

IMPORTANCE OF FINANCIAL MANAGE MENT

Importance of Financial Management cannot be over-emphasized. It is, indeed, the key to successful business operations. Without proper administration of finance, no business enterprise can reach at its full potentials for growth and success. Money is to an enterprise, what oil is to an engine.

Financial Management is all about planning investment, funding the investment, monitoring expenses against budget and managing gains from the investments. Financial management means management of all matters related to an organization's finances.

The best way to demonstrate the importance of good financial management is to describe some of the tasks that it involves: -

- **Taking care** not to over-invest in fixed assets
- **Balancing** cash-outflow with cash-inflows
- **Ensuring** that there is a sufficient level of short-term working capital
- **Setting** sales revenue targets that will deliver growth
- **Increasing** gross profit by setting the correct pricing for products or services
- **Controlling** the level of general and administrative expenses by finding more cost-efficient ways of running the day-to-day business operations, and
- **Tax planning** that will minimize the taxes a business has to pay.

SCOPE OF FINANCIAL MANAGEMENT

As an integral part of the overall management, financial management is mainly concerned with acquisition and use of funds by an organization. Based on financial management guru Ezra Solomon's concept of financial management, following aspects are taken up in detail under the study of financial management:

a. **Determination** of size of the enterprise and determination of rate ofgrowth.

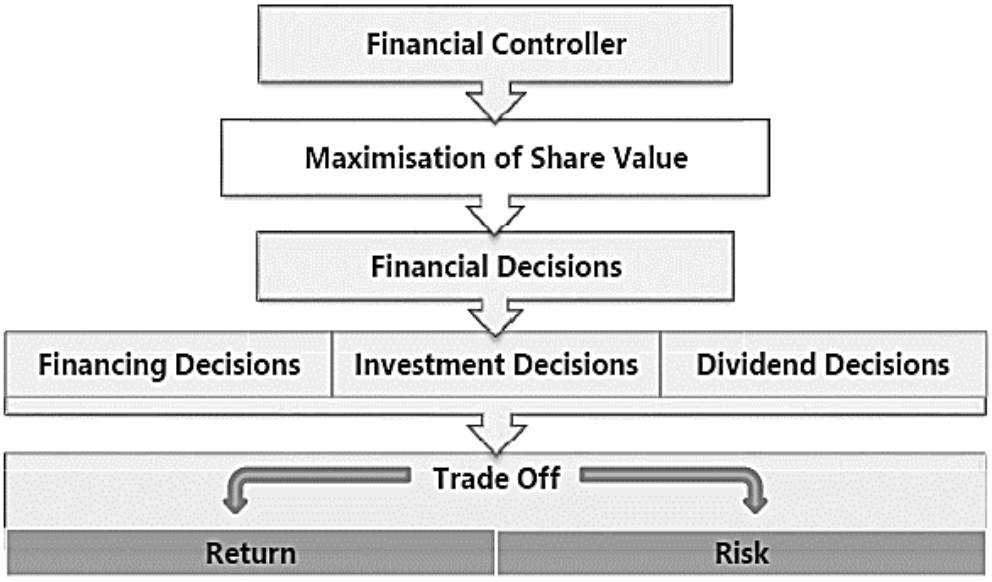
b. **Determining** the composition of assets of the enterprise.

c. **Determining** the mix of enterprise's financing i.e. consideration of level of debt to equity, etc.

d. **Analysis, planning and control** of financial affairs of the enterprise.

Role of Financial Controller: The role of financial controller has undergone changes over the years. Until the middle of this century, its scope was limited to procurement of funds under major events in the life of the enterprise such aspromotion, expansion, merger, etc. In the modern times, the role of financial controller includes besides procurement of funds, the three different kinds of decisions as well namely investment, financing and dividend. All the three typesof decisions would be dealt in detail during the course of this chapter.

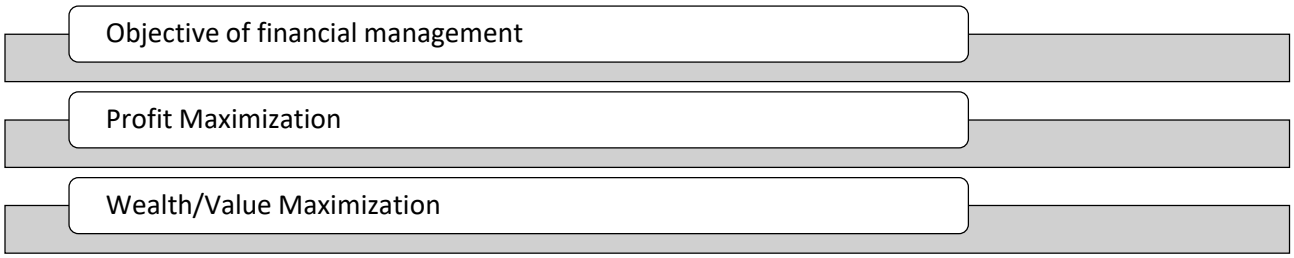
The given figure depicts the overview of the role and functions of financial controller. It also gives the interrelation between the market value, financial decisions and risk return trade off. The financial controller, in a bid to maximize shareholders' wealth, should strive to maximize returns in relation to the givenrisk; he should seek courses of actions that avoid unnecessary risks. To ensuremaximum return, funds flowing in and out of the firm should be constantly monitored to assure that they are safeguarded and properly utilized.



An Overview of Financial Controller

OBJECTIVES OF FINANCIAL MANAGEMENT

Efficient financial management requires the existence of some objectives or goals because judgment as to whether or not a financial decision is efficient must be made in the light of some objective. Although various objectives are possible butwe assume two objectives of financial management for elaborate discussion. These are:



Profit Maximization

It has traditionally been argued that the primary objective of a company is to earn profit; hence the objective of financial management is also profit maximization.This implies that the finance manager has to make his decisions in a manner sothat the profits of the concern are maximised. Each alternative, therefore, is to beseen as to whether or not it gives maximum profit. However, profit maximization cannot be the sole objective of a company. It is at best a limited objective. If profit is given undue importance, a number of problems can arise. Some of these have been discussed below:

i. **The term profit is vague. It does not clarify what exactly it means.** It conveys a different meaning to different people. For example, profit may be in short term or long term period; it may be total profit or rate of profit etc.

ii. **Profit maximization has to be attempted with a realization of risks involved.** There is a direct relationship between risk and profit. Many risky propositions yield high profit. Higher the risk, higher is the possibility of profits. If profit maximization is the only goal, then risk factor is altogether ignored. This implies that finance manager will accept highly risky proposals also, if they give high profits. In practice, however, risk is very important consideration and has to be balanced with the profit objective.

iii. **Profit maximization as an objective does not take into account the time pattern of returns.** Proposal A may give a higher amount of profits as compared to proposal B, yet if the returns of proposal A begin to flow say10 years later, proposal B may be preferred which may have lower overall profit but the returns flow is more early and quick.

iv. **Profit maximization as an objective is too narrow.** It fails to take into account the social considerations as also the obligations to various interests of workers, consumers, society, as well as ethical trade practices. If these factors are ignored, a company cannot survive for long. Profit maximizationat the cost of social and moral obligations is a short sighted policy.

Wealth Maximization/ Value Creation

We will first like to define what is Wealth Maximization Model. Shareholderswealth are the result of cost benefit analysis adjusted with their timing and risk i.e. time value of money.So,

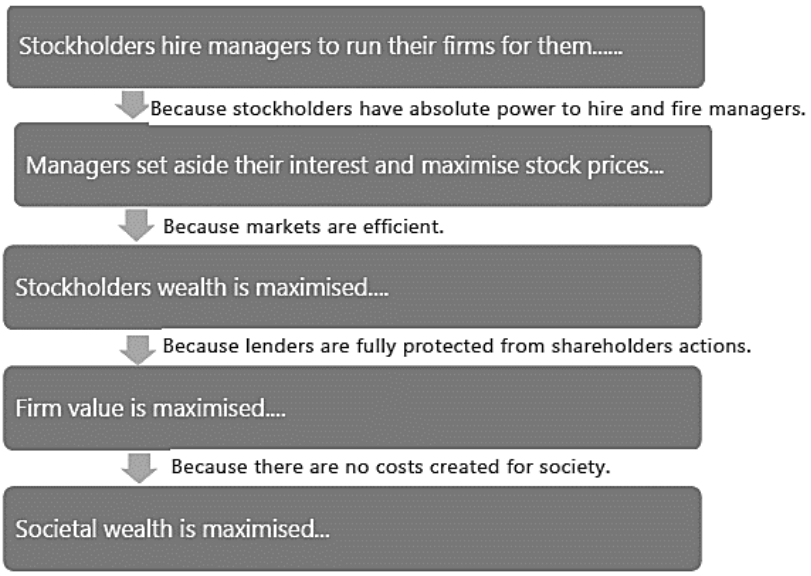
Wealth = Present value of benefits – Present Value of Costs

It is important that benefits measured by the finance manager are in terms ofcash flow. Finance manager should emphasis on Cash flow for investment or financing decisions not on accounting profit. The shareholder value maximization model holds that the primary goal of the firm is to maximize its market value and implies that business decisions should seek to increase the net present value ofthe economic profits of the firm. So, for measuring and maximising shareholders wealth finance manager should follow:

- Cash Flow approach not Accounting Profit
- Cost benefit analysis
- Application of time value of money.

How do we measure the value/wealth of a firm?

According to Van Horne, "Value of a firm is represented by the market price of the company's common stock. The market price of a firm's stock represents the focal judgment of all market participants as to what the value of the particular firm is. It takes into account present and prospective future earnings per share, the timingand risk of these earnings, the dividend policy of the firm and many other factors that bear upon the market price of the stock. The market price serves as a performance index or report card of the firm's progress. It indicates how well management is doing on behalf of stockholders."



Value of a firm (V) = Number of Shares (N) × Market price of shares (MP)Or

V = Value of equity (V_e) + Value of debt (V_d)

Why Wealth Maximization Works? Before we answer this question it is importantto first understand and know what other goals a business enterprise may have. Some of the other goals a business enterprise may follow are:-

- Achieving a higher growth rate
- Attaining a larger market share
- Gaining leadership in the market in terms of products and technology
- Promoting employee welfare
- Increasing customer satisfaction
- Improving community life, supporting education and research, solvingsocietal problems, etc.

Though, the above goals are important but the primary goal remains to be wealth maximization, as it is critical for the very existence of the business enterprise. If this goal is not met, public/institutions would lose confidence in the enterprise and will not invest further in the growth of the organization. If the growth of the organization is restricted than the other goals like community welfare will not get fulfilled.

CONFLICTS IN PROFIT VERSUS VALUE MAXIMIZATION PRINCIPLE

In any company, the management is the decision taking authority. As a normal tendency the management may pursue its own personal goals (profit maximization). But in an organization where there is a significant outside participation (shareholding, lenders etc.), the management may not be able to exclusively pursue its personal goals due to the constant supervision of the various stakeholders of the company-employees, creditors, customers, government, etc.

Every entity associated with the company will evaluate the performance of themanagement from the fulfilment of its own objective. The survival of the management will be threatened if the objective of any of the entities remains unfulfilled.

The wealth maximization objective is generally in accord with the interests of the various groups such as owners, employees, creditors and society, and thus, it maybe consistent with the management objective of survival.

Owing to limitation (timing, social consideration etc.) in profit maximization, in today's real world situations which is uncertain and multi-period in nature, wealth maximization is a better objective. Where the time period is short and degree of uncertainty is not great, wealth maximization and profit maximization amount to essentially the same.

The table below highlights some of the advantages and disadvantages of both profit maximization and wealth maximization goals: -

Goal	Objective	Advantages	Disadvantages
Profit Maximization	Large amount ofprofits	**i.** Easy to calculate profits **ii.** Easy to determine the link between financial decisions andprofits.	**i.** Emphasizes theshort-term gains **ii.** Ignores risk oruncertainty **iii.** Ignores the timing of returns **iv.** Requires immediate resources.
Shareholders Wealth Maximization	Highest market value ofshares.	**i.** Emphasizes thelong term gains **ii.** Recognises risk or uncertainty **iii.** Recognises thetiming of returns **iv.** Considers shareholders' return.	**i.** Offers no clear relationship betweenfinancial decisionsand share price. **ii.** Can lead to management anxietyand frustration.

ROLE OF FINANCE EXECUTIVE

Modern financial management has come a long way from the traditionalcorporate finance. As the economy is opening up and global resources are being tapped, the opportunities available to finance managers virtually have no limits.

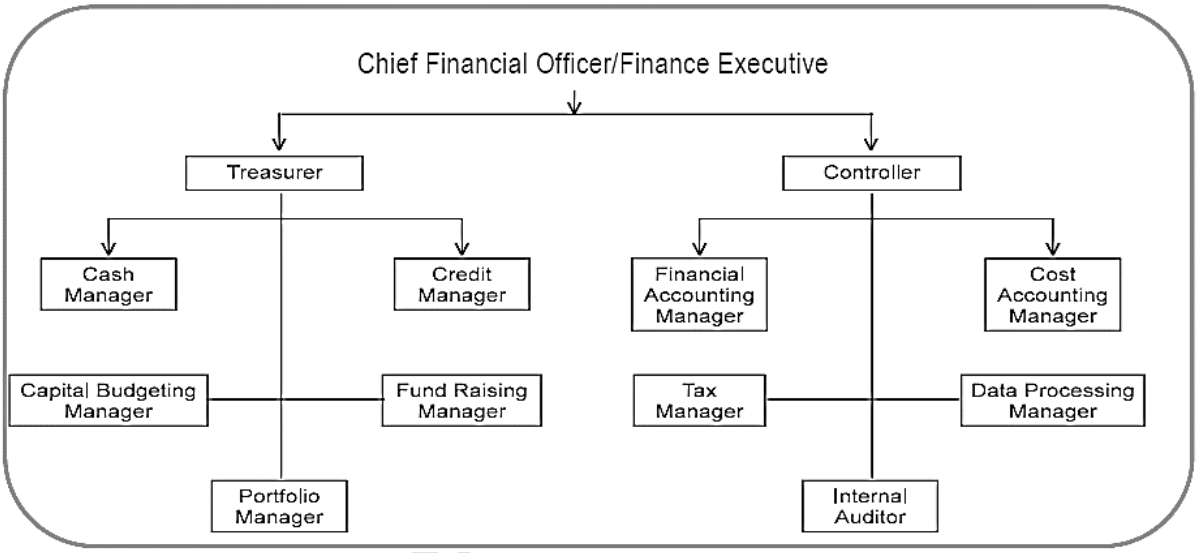
A new era has ushered during the recent years for chief financial officers in different organisation to finance executive is known in different name, howevertheir role and functions are similar. His role assumes significance in the present day context of liberalization, deregulation and globalization.

Changing Role of the Finance Executive
"Today's CFO team is expected to add value well beyond the traditional roles of cost management, controls and acting as the conscience of the organisation. These roles are challenging enough, but today's CFO is expected to work in collaboration, by serving as the integration hub for key business processes, as a catalyst for change including business transformation, and as a consultant or trusted business advisor in helping to create sustainable growth." Jeff Thomson, IMA President and CEO

To sum it up, the finance executive of an organisation plays an important role in the company's goals, policies, and financial success. His responsibilities include:

a. **Financial analysis and planning:** Determining the proper amount of fundsto employ in the firm, i.e., designating the size of the firm and its rate ofgrowth.
b. **Investment decisions:** The efficient allocation of funds to specific assets.
c. **Financing and capital structure decisions:** Raising funds on favourableterms as possible i.e., determining the composition of liabilities.
d. **Management of financial resources** (such as working capital).
e. **Risk management:** Protecting assets.

The figure below shows how the finance function in a large organization may beorganized.



Organisation of Finance Function

Role of Finance Executive in today's World vis-a-vis in thepast

Today, the role of chief financial officer, or CFO, is no longer confined to accounting, financial reporting and risk management. It's about being a strategic business partner of the chief executive officer, or CEO. Some of the key differences that highlight the changing role of a CFO are as follows:-

What a CFO used to do?	What a CFO now does?
Budgeting	Budgeting
Forecasting	Forecasting
Accounting	Managing M&As
Treasury (cash management)	Profitability analysis (for example, bycustomer or product)

Preparing internal financial reportsfor management	Pricing analysis
Preparing quarterly, annual filingsfor investors	Decisions about outsourcing
Tax filing	Overseeing the IT function
Tracking accounts payable andaccounts receivable	Overseeing the HR function
Travel and entertainment expense management	Strategic planning (sometimes overseeingthis function)
	Regulatory compliance
	Risk management

FINANCIAL DISTRESS AND INSOLVENCY

There are various factors like price of the product/ service, demand, price of inputs e.g. raw material, labour etc., which is to be managed by an organisationon a continuous basis. Proportion of debt also need to be managed by an organisation very delicately. Higher debt requires higher interest and if the cash inflow is not sufficient then it will put lot of pressure to the organisation. Both short term and long-term creditors will put stress to the firm. If all the above factors are not well managed by the firm, it can create situation known as distress,so financial distress is a position where Cash inflows of a firm are inadequate to meet all its current obligations.

Now if distress continues for a long period of time, firm may have to sell its asset, even many times at a lower price. Further when revenue is inadequate to revivethe situation, firm will not be able to meet its obligations and become insolvent.So, **insolvency basically means inability of a firm to repay various debts andis a result of continuous financial distress.**

RELATIONSHIP OF FINANCIAL MANAGE- MENT WITH RELATED DISCIPLINES

As an integral part of the overall management, financial management is not a totally independent area. It draws heavily on related disciplines and areas of study namely economics, accounting, production, marketing and quantitative methods. Even though these disciplines are inter-related, there are key differences among them. Some of the relationships are being discussed below:

Financial Management and Accounting

The relationship between financial management and accounting are closely related to the extent that accounting is an important input in financial decision making. In other words, accounting is a necessary input into the financial management function.

Financial accounting generates information relating to operations of the organisation. The outcome of accounting is the financial statements such as balance sheet, income statement, and the statement of changes in financial position. The information contained in these statements and reports helps the financial managers in gauging the past performance and future directions of the organisation. Though financial management and accounting are closely related, still they differin the treatment of funds and also with regards to decision making. Some of the differences are:-

Treatment of Funds

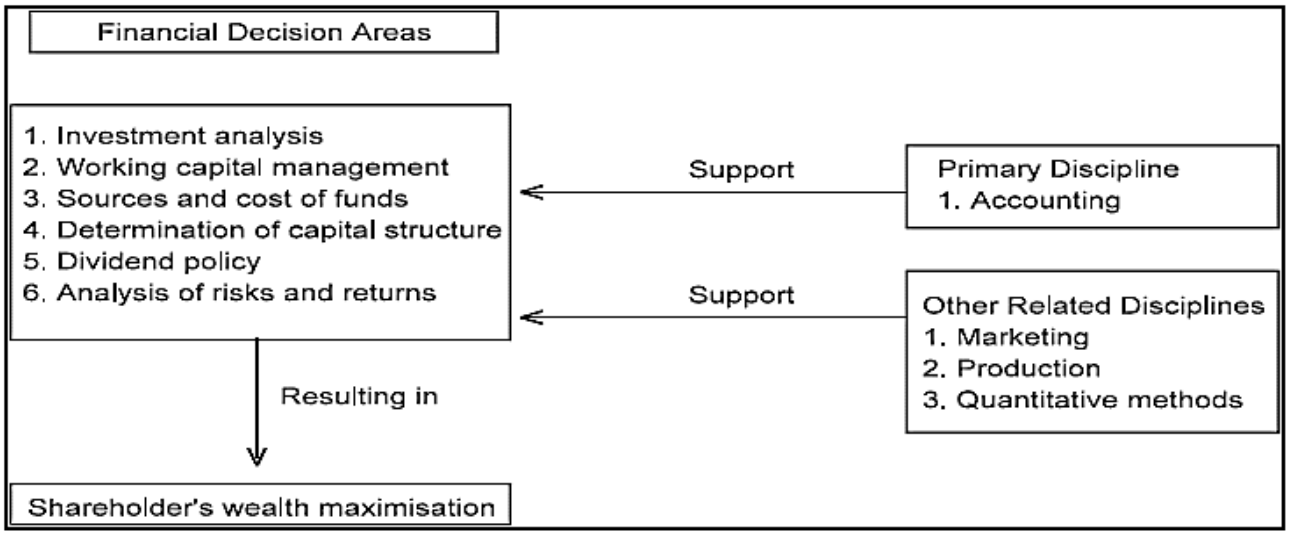
In accounting, the measurement of funds is based on the accrual principle i.e. revenue is recognised at the point of sale and not when collected and expensesare recognised when they are incurred rather than when actually paid. The accrual based accounting data do not reflect fully the financial conditions of the organisation. An organisation which has earned profit (sales less expenses) may said to be profitable in the accounting sense but it may not be able to meet its current obligations due to shortage of liquidity as a result of say, uncollectible receivables. Such an organisation will not survive regardless of its levels of profits. Whereas, the treatment of funds in financial management is based on cash flows.The revenues are recognised only when cash is actually received (i.e. cash inflow) and expenses are recognised on actual payment (i.e. cash outflow). This is so because the finance manager is concerned with maintaining solvency of the organisation by providing the cash flows necessary to satisfy its obligations and acquiring and financing the assets needed to achieve the goals of the organisation. Thus, cash flow based returns help financial managers to avoid insolvency and achieve desired financial goals.

Decision–making

The purpose of accounting is to collect and present financial data of the past, present and future operations of the organization. The financial manager uses these data for financial decision making. It is not that the financial managers cannot collect data or accountants cannot make decisions, but the chief focus ofan accountant is to collect data and present the data while the financial manager's primary responsibility relates to financial planning, controlling and decision making. Thus, in a way it can be stated that financial management begins where accounting ends.

Financial Management and Other Related Disciplines

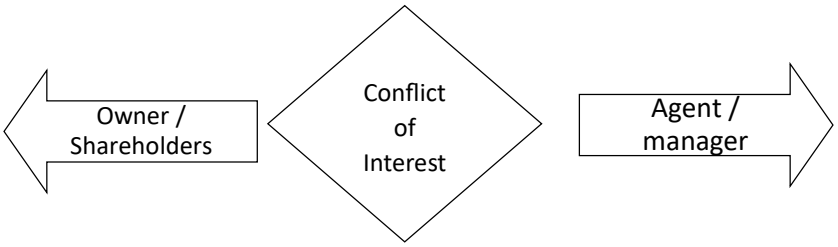
For its day-to-day decision making process, financial management also draws on other related disciplines such as marketing, production and quantitative methods apart from accounting. For instance, financial managers should consider the impact of new product development and promotion plans made in marketing area since their plans will require capital outlays and have an impact on the projected cash flows. Likewise, changes in the production process may require capital expenditures which the financial managers must evaluate and finance. Finally, the tools and techniques of analysis developed in the quantitative methods discipline are helpful in analyzing complex financial management problems



Impact of Other Disciplines on Financial Management

The above figure depicts the relationship between financial management and supportive disciplines. The marketing, production and quantitative methods are,thus, only indirectly related to day to day decision making by financial managersand are supportive in nature while accounting is the primary discipline on whichthe financial manager draws considerably. Even economics can also be consideredas one of the major disciplines which help the financial manager to gain knowledge of what goes on in the world outside the business.

AGENCY PROBLEM AND AGENCY COST



Agency Problem

Though in a sole proprietorship firm, partnership etc., owners participate in management but in corporates, owners are not active in management so, there isa separation between owner/ shareholders and managers. In theory managers should act in the best interest of shareholders however in reality, managers maytry to maximise their individual goal like salary, perks etc., so there is a **principal agent relationship between managers and owners, which is known as Agency Problem**. In a nutshell, Agency Problem is the chances that managers may place personal goals ahead of the goal of owners. Agency Problem leads to AgencyCost. Agency cost is the additional cost borne by the shareholders to monitor the manager and control their behaviour so as to maximise shareholders wealth.

Generally, Agency Costs are of four types (i) monitoring (ii) bonding (iii)opportunity (iv) structuring.

Addressing the agency problem

The agency problem arises if manager's interests are not aligned to the interestsof the debt lender and equity investors. The agency problem of debt lender would be addressed by imposing negative covenants i.e., the managers cannot borrow beyond a point. This is one of the most important concepts of modernday finance and the application of this would be applied in the Credit Risk Management of Bank, Fund Raising, Valuing distressed companies.

Agency problem between the managers and shareholders can be addressed if the interests of the managers are aligned to the interests of the share- holders. It is easier said than done.

However, following efforts have been made to address these issues:

- Managerial compensation is linked to profit of the company to some extent and also with the long term objectives of the company.
- Employee is also designed to address the issue with the underlying assumption that maximization of the stock price is the objective of the investors.
- Effecting monitoring can be done.

CHAPTER 10. TYPES OF FINANCING

FINANCIAL NEEDS AND SOURCES OF FINANCE OF A BUSINESS

Financial Needs of a Business

Business enterprises need funds to meet their different types of requirements. All the financial needs of a business may be grouped into the following three categories:

i. **Long-term financial needs:** Such needs generally refer to those requirements of funds which are for a period exceeding 5-10 years. All investments in plant, machinery, land, buildings, etc., are considered as long-term financial needs. Funds required to finance permanent or hard- core working capital should also be procured from long term sources.

ii. **Medium-term financial needs:** Such requirements refer to those funds which are required for a period exceeding one year but not exceeding 5years. This might be needed for stores and spares, critical spares, tools, dies, moulds.

iii. **Short-term financial needs:** Such type of financial needs arise to finance current assets such as stock, debtors, cash etc. Investment in these assets are known as meeting of working capital requirements of the concern. Themain characteristic of short-term financial needs is that they arise for a short period of time not exceeding the accounting period. i.e., one year.

Basic Principle for Funding Various Needs

The basic principle for meeting the short-term financial needs of a concern is that such needs should be met from short term sources, and medium-term financial needs from medium term sources and long term financial needs from long term sources. Accordingly, the method of raising funds is to be decided with referenceto the period for which funds are required.

General rule for financing of different assets would take place. These rules can be changed depending on the nature of borrower i.e. depending on the borrower'slevel of operation Besides, the stage of development of the business and natureof business would also decide the type of borrowing. Generally, it can be as follows:

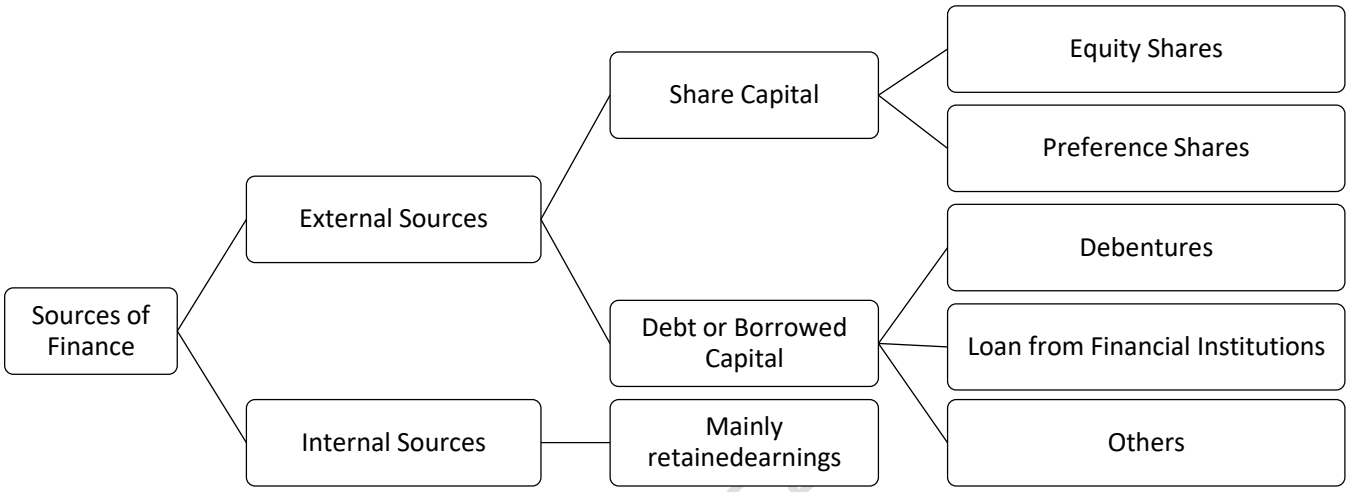
stage	Nature of Business	Sources of Found
Early stage	High uncertainty	Equity ; mainly Angel found
	High to moderate uncertainty	Equity; Venture capital ; Debt
Growth Stage	Moderate to Low Uncertainty	Debt; Venture Capital; Private Equity
Stable stage	Low Uncertainty	Debt

CLASSIFICATION OF FINANCIAL SOURCES

There are mainly two ways of classifying various financial sources (i) Based on basic Sources (ii) Based on Maturity of repayment period.

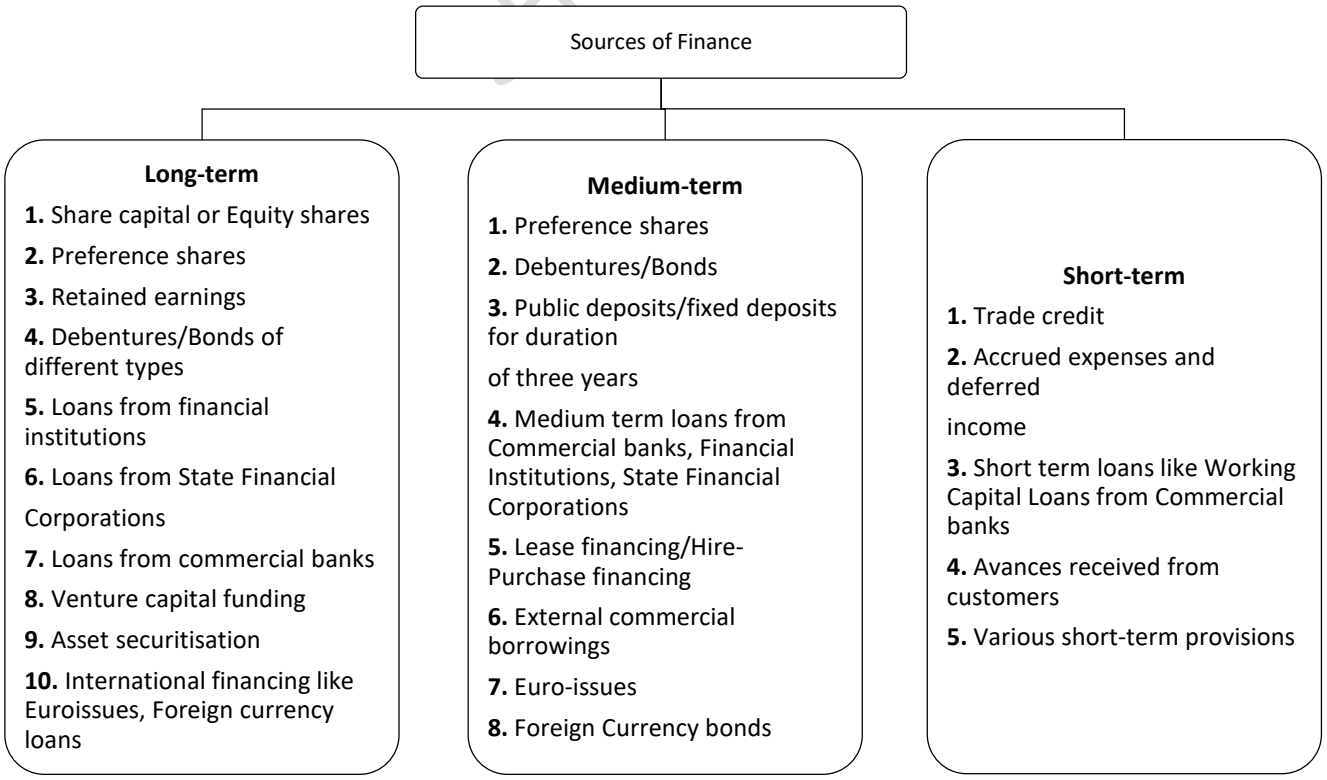
Sources of Finance based on Basic Sources

Based on basic sources of finance, types of financing can be classified as below**:**



Sources of Finance based on Maturity of Payment

Sources of finance based on maturity of payment can be classified as below:



LONG-TERM SOURCES OF FINANCE

There are different sources of funds available to meet long term financial needs ofthe business.

These sources may be broadly classified into:

- **Share capital** (both equity and preference) &
- **Debt** (including debentures, long term borrowings or other debtinstruments).

The different sources of long-term finance have been discussed as follows:

Owners Capital or Equity Capital

A public limited company may raise funds from promoters or from the investing public by way of owner's capital or equity capital by issuing ordinary equity shares. Some of the characteristics of Owners/Equity Share Capital are:

- It is a source of permanent capital. The holders of such share capital in the company are called equity shareholders or ordinary shareholders.
- Equity shareholders are practically owners of the company as they undertake the highest risk.
- Equity shareholders are entitled to dividends after the income claims of other stakeholders are satisfied. The dividend payable to them is an appropriation of profits and not a charge against profits.
- In the event of winding up, ordinary shareholders can exercise their claim on assets after the claims of the other suppliers of capital have been met.
- The cost of ordinary shares is usually the highest. This is due to the fact that such shareholders expect a higher rate of return (as their risk is the highest)on their investment as compared to other suppliers of long-term funds.
- Ordinary share capital also provides a security to other suppliers of funds.Any institution giving loan to a company would make sure the debt-equityratio is comfortable to cover the debt. There can be various types of equity shares like New issue, Rights issue, Bonus Shares, Sweat Equity.

Advantages of raising funds by issue of equity shares are:

i. It is a permanent source of finance. Since such shares are not redeemable,the company has no liability for cash outflows associated with its redemption. In other words, once the company has issued equity shares, they are tradable i.e. they can be purchased and sold. So, a company is inno way responsible for any cash outflows of investors by which they become the shareholders of the company by purchasing the shares of existing shareholders.

ii. Equity capital increases the company's financial base and thus helps to further the borrowing powers of the company. In other words, by issuing equity shares, a company manage to raise

some money for its capital expenditures and this helps it to raise more funds with the help of debt. Thisis because; debt will enable the company to increase its earnings per shareand consequently, its share prices.

iii. A company is not obliged legally to pay dividends. Hence in times of uncertainties or when the company is not performing well, dividendpayments can be reduced or even suspended.

iv. A company can make further increase its share capital by initiating a right issue.

Disadvantages of raising funds by issue of equity shares are:

Apart from the above mentioned advantages, raising of funds through equity share capital has some disadvantages in comparison to other sources of finance. These are as follows:

i. Investors find ordinary shares riskier because of uncertain dividendpayments and capital gains.

ii. The issue of new equity shares reduces the earning per share of the existingshareholders until and unless the profits are proportionately increased.

iii. The issue of new equity shares can also reduce the ownership and control ofthe existing shareholders.

Preference Share Capital

These are special kind of shares; the holders of such shares enjoy priority, both as regard to the payment of a fixed amount of dividend and also towards repaymentof capital on winding up of the company. Some of the characteristics of Preference Share Capital are as follows:

- Long-term funds from preference shares can be raised through a public issue of shares.
- Such shares are normally cumulative, i.e., the dividend payable in a year of loss gets carried over to the next year till there are adequate profits to pay the cumulative dividends.
- The rate of dividend on preference shares is normally higher than the rateof interest on debentures, loans etc.
- Most of preference shares these days carry a stipulation of period and the funds have to be repaid at the end of a stipulated period.
- Preference share capital is a hybrid form of financing which imbibes within itself some characteristics of equity capital and some attributes of debt capital. It is similar to equity because preference dividend, like equity dividend is not a tax-deductible payment. It resembles debt capital becausethe rate of preference dividend is fixed.
- Cumulative Convertible Preference Shares (CCPs) may also be offered, under which the shares would carry a cumulative dividend of specified limit for a period of say three years after which the shares are converted into equity shares. These shares are attractive for projects with a long gestation period.

- Preference share capital may be redeemed at a pre decided future date orat an earlier stage inter alia out of the profits of the company. This enablesthe promoters to withdraw their capital from the company which is now self-sufficient, and the withdrawn capital may be reinvested in otherprofitable ventures.

Various types of Preference shares can be as below:

S. No.	Type of Preference Shares	Salient Features
1	Cumulative	Arrear Dividend will accumulate.
2	Non-cumulative	No right to arrear dividend.
3	Redeemable	Redemption should be done.
4	Participating	Can participate in the surplus whichremains after payment to equity shareholders.
5	Non-Participating	Cannot participate in the surplus after payment of fixed rate ofDividend.
6	Convertible	Option of converting into equityShares.

Advantages of raising funds by issue of preference shares are:

i. No dilution in EPS on enlarged capital base – On the other hand if equity shares are issued it reduces EPS, thus affecting the market perception about the company.

ii. There is also the advantage of leverage as it bears a fixed charge (because companies are required to pay a fixed rate of dividend in case of a issue of preference shares). Non-payment of preference dividends does not force a company into liquidity.

iii. There is no risk of takeover as the preference shareholders do not have voting rights except where dividend payment are in arrears.

iv. The preference dividends are fixed and pre-decided. Hence preference shareholders cannot participate in surplus profits as the ordinary shareholders can except in case of participating preference shareholders.

v. Preference capital can be redeemed after a specified period.

Disadvantages of raising funds by issue of preference shares are:

i. One of the major disadvantages of preference shares is that preference dividend is not tax deductible and so does not provide a tax shield to the company. Hence preference shares are costlier to the company than debt e.g. debenture.

ii. Preference dividends are cumulative in nature. This means that if in a particular year preference dividends are not paid they shall be accumulated and paid later. Also, if these dividends are not paid, no dividend can be paid to ordinary shareholders. The non-payment of dividend to ordinary shareholders could seriously impair the reputation of the concerned company.

Difference between Equity Shares and Preference Shares are as follows:

S. No.	Basis of Distinction	Equity Share	Preference Share
1	Dividend payment	Equity Dividend is paid after preference dividend.	Payment of preference dividend is preferred over equity dividend.
2	Rate of dividend	Fluctuating	Fixed
3	Convertibility	Not convertible	Convertible
4	Voting rights	Equity shareholdersenjoy full voting rights.	They have very limited voting rights.

Retained Earnings

Long-term funds may also be provided by **accumulating the profits of the company and by ploughing them back into business**. Such funds belong to the ordinary shareholders and increase the net worth of the company. A public limited company must plough back a reasonable amount of profit every year keeping in view the legal requirements in this regard and also for its own expansion plans. Such funds also entail almost no risk. Further, control of present owners is also not diluted by retaining profits. The decision to plough back depends on the rate of return generated by company vs expected cost of equity. This is further discussed in dividend decision chapter.

Debentures

Loans can be raised from public by issuing debentures or bonds by public limitedcompanies. Some of the characteristics of debentures are:

- Debentures are normally issued in different denominations ranging from Rs.100 to Rs.1,000 and carry different rates of interest.
- Normally, debentures are issued on the basis of a debenture trust deedwhich lists the terms and conditions on which the debentures are floated.

- Debentures are basically instruments for raising long-term debt capital.
- The period of maturity normally varies from 3 to 10 years and may alsoincrease for projects having high gestation period.
- Debentures are either secured or unsecured.
- They may or may not be listed on the stock exchange.
- The cost of capital raised through debentures is quite low since the interest payable on debentures can be charged as an expense before tax.
- From the investors' point of view, debentures offer a more attractive prospect than the preference shares since interest on debentures is payable whether or not the company makes profits.

Debentures can be divided into the following three categories based on their convertibility:

i. **Non-convertible debentures –** These types of debentures do not have any feature of conversion and are repayable on maturity.

ii. **Fully convertible debentures –** Such debentures are converted into equity shares as per the terms of issue in relation to price and the time of conversion. Interest rates on such debentures are generally less than the non-convertible debentures because they carry an attractive feature of getting themselves converted into shares at a later time.

iii. **Partly convertible debentures –** These debentures carry features of both convertible and non-convertible debentures. The investor has the advantageof having both the features in one debenture.

Other types of Debentures with their features are as follows:

Sl. No.	Type of Debenture	Salient Feature
1	Bearer	Transferable like negotiable instruments
2	Registered	Interest payable to registered person
3	Mortgage	Secured by a charge on Asset(s)
4	Naked or simple	Unsecured
5	Redeemable	Repaid after a certain period
6	Non-Redeemable	Not repayable

Advantages of raising finance by issue of debentures are:

i. The cost of debentures is much lower than the cost of preference or equity capital as the interest is tax-deductible. Also, investors consider debenture investment safer than equity or preferred investment and, hence, may require a lower return on debenture investment.

ii. Debenture financing does not result in dilution of control.

iii. In a period of rising prices, debenture issue is advantageous. The fixed monetary outgo decreases in real terms as the price level increases. In other words, the company has to pay a fixed rate of interest.

Disadvantages of debenture financing are:

i. Debenture interest and the repayment of its principal amount is anobligatory payment.

ii. The protective covenants associated with a debenture issue may berestrictive.

iii. Debenture financing enhances the financial risk associated with the firmbecause of the reasons given in point (i).

iv. Since debentures need to be paid at the time of maturity, a large amount ofcash outflow is needed at that time.

Public issue of debentures and private placement to mutual funds now require that a debenture issue must be rated by a credit rating agency like CRISIL (Credit Rating and Information Services of India Ltd.). The credit rating is given after evaluating factors like track record of the company, profitability, debt servicing capacity, credit worthiness and the perceived risk of lending.

Difference between Preference Shares and Debentures

Basis of difference	Preference shares	Debentures
Ownership	Preference Share Capital is aspecial kind of share	Debenture is a type of loan which can be raised from the public
Payment of Dividend/ Interest	The preference shareholders enjoy priority both as regard to the payment of a fixed amountof dividend and also towards repayment of capital in case of winding up of a company	It carries fixed percentage of interest.
Nature	Preference shares are a hybrid form of financing with some characteristic of equity shares and some attributes of DebtCapital.	Debentures are instrument for raising long term capital with a fixed period of maturity.

Bond

Bond is fixed income security created to raise fund. Bonds can be raised through Public Issue and through Private Placement.

Types of Bonds

Based on call, Bonds can be categorized as:

i . Callable bonds,

ii. Puttable bonds

i. Callable bonds: A callable bond has a call option which gives the issuer the right to redeem the bond before maturity at a predetermined price knownas the call price (Generally at a premium).

ii. Puttable bonds: Puttable bonds give the investor a put option (i.e. the rightto sell the bond) back to the company before maturity.

Various Bonds with their salient features are as follows:

Foreign Bonds

Sl. No.	Name of Bond	Salient Features
1.	Foreign Currency Convertible Bond (FCCB)	• This bond comes at a very low rate of interest. • The advantage to the issuer is that the issuer can get foreign currency at a very low cost. • The risk is that in case the bond has to be redeemed on the date of maturity, the issuer has to make the payment and at that time the issuer may not have the money.
2.	Plain VanillaBond	• The issuer would pay the principal amount along with the interest rate. • This type of bond would not have anyoptions. • This bond can be issued in the form of discounted bond or can be issued in the form of coupon bearing bond.
3.	Convertible Floating RateNotes (FRN)	• A convertible FRN is issued by giving its holder an option to convert it into a longer term debt security with a specified coupon • It protects an investor against falling interest rate • The long- term debt security can be sold inthe market and the investor can earn profit • Capital gain is not applicable to FRN
4.	Drop LockBond	• It is a Floating Rate Note with a normal floating rate • The floating rate bond would be automatically converted into fixed rate bondif interest rate falls below a predetermined level

		• The new fixed rate stays till the drop lock bond reaches its maturity • The difference between the convertiblefloating rate note and drop lock bond is that the former is a long option structure and the later one is a short option structure
5.	Variable Rate Demand Obligations	• A normal floating rate note with a nominal maturity • The holder of the floating rate note can sellthe obligation back to the trustee at par plus accrued interest • It gives the investor an option to exit, so it is more liquid than the normal FRN
6.	Yield Curve Note (YCN)	• It is a structured debt security • Yield increases when prevailing interest ratedeclines • Yield decreases when prevailing interest rateincreases • This is used to hedge the interest rate • This works like inverse floater
7.	Euro Bond	• Euro bonds are issued or traded in a country using a currency other than the one in which the bond is denominated. This means that the bond uses a certain currency, but operates outside the jurisdiction of the Central Bank that issues that currency.
		• Eurobonds are issued by multinational corporations, for example, a British company may issue a Eurobond in Germany, denominating it in U.S. dollars • It is important to note that the term has nothing to do with the euro, and the prefix "euro-" is used more generally to refer to deposit outside the jurisdiction of the domestic central bank

Indian Bonds

Sl. No.	Name of Bond	Salient Feature
1.	Masala Bond	Masala (means spice) bond is an Indian name used for Rupee denominated bond that Indian corporate borrowers can sell to investors in overseas markets. • These bonds are issued outside India but denominated in Indian Rupees.

		• NTPC raised Rs.2,000 crore via masala bondsfor its capital expenditure in the year 2016.
2.	MunicipalBonds	Municipal bonds are used to finance urban infrastructure are increasingly evident in India. • Ahmedabad Municipal Corporation issued afirst historical Municipal Bond in Asia to raise Rs.100 crore from the capital market for partfinancing a water supply project.
3.	Government or Treasury Bonds	Government or Treasury bonds are bonds issuedby Government of India, Reserve Bank of India,any state Government or any other Government department.

Some other bonds are included in other source of Financing (para 8)

Loans from Financial Institutions

Financial Institution: National

S. No.	Name of the FinancialInstitution	Year of Establishment	Remarks
1.	Industrial Finance Corporation of India (IFCI)	1918	Converted into apublic company
2.	State FinancialCorporations (SFCs)	1951	-
3.	Industrial Development Bank of India (IDBI)	1954	Converted into Bank
4.	National Industrial Development Corporation (NIDC)	1954	-
5.	Industrial Credit and Investment Corporationof India (ICICI)	1955	Converted into Bank and Privatised
6.	Life InsuranceCorporation of India (LIC)	1956	-
7.	Unit Trust of India (UTI)	1964	-
8.	Industrial Reconstruction Bank of India (IRBI)	1971	-

Financial Institution: International Institutions

Sl. No.	Name of the Financial Institution	Year of Establishment
1.	The World Bank/ International Bank for Reconstruction and Development (IBRD)	1944
2.	The International Finance Corporation (IFC)	1956
3.	Asian Development Bank (ADB)	1966

Loans from Commercial Banks

The primary role of the commercial banks is to cater to the short-termrequirements of industry. Of late, however, banks have started taking an interest in long term financing of industries in several ways.

a. The banks provide long term loans for the purpose of expansion or settingup of new units. Their repayment is usually scheduled over a long period of time. The liquidity of such loans is said to depend on the anticipated incomeof the borrowers.

b. As part of the long-term funding for a company, the banks also fund thelong term working capital requirement (it is also called WCTL i.e. working capital term loan). It is funding of that portion of working capital which is always required (the minimum level) and is not impacted by seasonal requirement of the company.

Bridge Finance: Bridge finance refers to loans taken by a company normally from commercial banks for a **short period because of pending disbursement of loans sanctioned by financial institutions**. Though it is of short-term nature but since it is an important step in the facilitation of long-term loan, therefore it isbeing discussed along with the long term sources of funds. Normally, it takes timefor financial institutions to disburse loans to companies. However, once the loans are approved by the term lending institutions, companies, in order not to losefurther time in starting their projects, arrange short term loans from commercial banks. The bridge loans are repaid/ adjusted out of the term loans as and when disbursed by the concerned institutions. Bridge loans are normally secured by hypothecating movable assets, personal guarantees and demand promissory notes. Generally, the rate of interest on bridge finance is higher as compared with that on term loans.

Having discussed funding from share capital (equity/preference), raising of debt from financial institutions and banks, we will now discuss some other important sources of long-term finance.

VENTURE CAPITAL FINANCING

Meaning of Venture Capital Financing

The venture capital financing refers to **financing of new high risky venture promoted by qualified entrepreneurs** who lack experience and funds to give shape to their ideas. In broad sense, under venture capital financing, venture capitalist make investment to purchase equity or debt securities from inexperienced entrepreneurs who undertake highly risky ventures with potential to succeed in future.

Characteristics of Venture Capital Financing

Some of the characteristics of Venture Capital financing are:

- It is basically an equity finance in new companies.
- It can be viewed as a long-term investment in growth-oriented small/medium firms.
- Apart from providing funds, the investor also provides support in form of sales strategy, business networking and management expertise, enabling the growth of the entrepreneur.

Methods of Venture Capital Financing

Some common methods of venture capital financing are as follows:

i. **Equity financing:** The venture capital undertakings generally require fundsfor a longer period but may not be able to provide returns to the investors during the initial stages. Therefore, the venture capital finance is generally provided by way of equity share capital. The equity contribution of venture capital firm does not exceed 49% of the total equity capital of venture capital undertakings so that the effective control and ownership remains with the entrepreneur.

ii. **Conditional loan:** A conditional loan is repayable in the form of a royalty after the venture is able to generate sales. No interest is paid on such loans. In India venture capital financiers charge royalty ranging between 2 and 15 per cent; actual rate depends on other factors of the venture such as gestation period, cash flow patterns, risk and other factors of the enterprise. Some Venture capital financiers give a choice to the enterprise of paying a high rate of interest (which could be well above 20 per cent) instead of royalty on sales once it becomes commercially sound.

iii. **Income note:** It is a hybrid security which combines the features of both conventional loan and conditional loan. The entrepreneur has to pay both interest and royalty on sales but at substantially low rates. IDBI's VCF provides funding equal to 80 – 87.50% of the projects cost for commercial application of indigenous technology.

iv. **Participating debenture:** Such security carries charges in three phases — in the start-up phase no interest is charged, next stage a low rate of interest is charged up to a particular level of operation, after that, a high rate of interest is required to be paid.

DEBT SECURITISATION

Meaning of Debt Securitisation

Securitisation is a process in which illiquid assets are pooled into marketable securities that can be sold to investors. The process leads to the creation of financial instruments that represent ownership interest in, or are secured by a segregated income producing asset or pool of assets. These assets are generally secured by personal or real property such as automobiles, real estate, or equipment loans but in some cases are unsecured.

Example of Debt Securitisation

A finance company has given a large number of car loans. It needs more moneyso that it is in a position to give more loans. One way to achieve this is to sell all the existing loans. But, in the absence of a liquid secondary market for individualcar loans, this is not feasible.

However, a practical option is debt securitisation, in which the finance companysells its existing car loans already given to borrowers to the Special Purpose Vehicle (SPV). The SPV, in return pays to the company, which in turn continue tolend with this money. On the other hand, the SPV pools these loans and convertthese into marketable securities. It means that now these converted securities can be issued to investors.

So, this process of debt securitization helps the finance company to raise fundsand get the loans off its Balance Sheet. These funds also help the company disburse further loans. Similarly, the process is beneficial to the investors also as it creates a liquid investment in a diversified pool of car loans, which may be an attractive option to other fixed income instruments. The whole process is carried out in such a way that the original debtors i.e. the car loan borrowers may not be aware of the transaction. They might have continued making payments the waythey are already doing. However, these payments shall now be made to the new investors who have emerged out of this securitization process.

LEASE FINANCING

Leasing is a general contract between the owner and user of the asset over a specified period of time. The asset is purchased initially by the lessor (leasing company) and thereafter leased to the user (lessee company) which pays a specified rent at periodical intervals. Thus, leasing is an alternative to the purchase of an asset out of own or borrowed funds. Moreover, lease finance can be arranged much faster as compared to term loans from financial institutions.

Types of Lease Contracts

Broadly lease contracts can be divided into following two categories:

a. Operating Lease

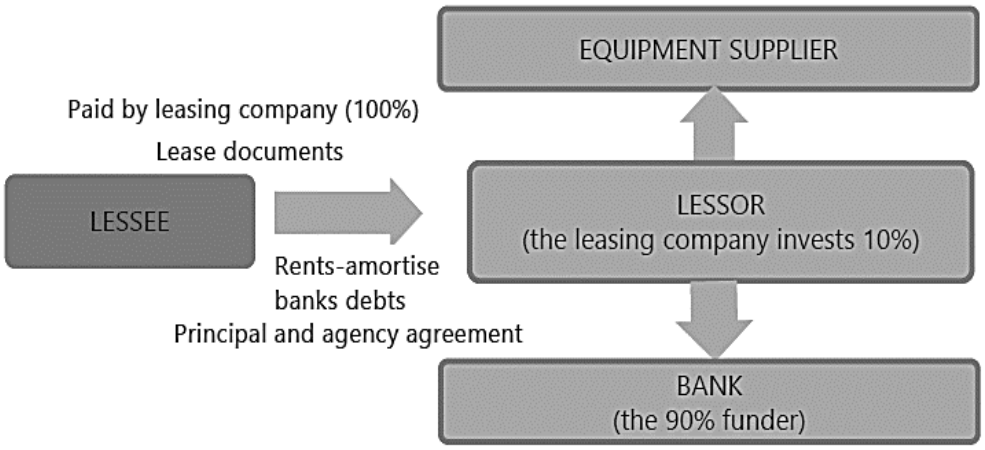
b. Financial Lease

a. Operating Lease: An operating lease is a form of lease in which the right to use the asset is given by the lessor to the lessee. However, the ownershipright of the asset remains with the lessor. The lessee gives a fixed amount of periodic lease rentals to the lessor for using the asset. Further, the lessoralso bears the insurance, maintenance and repair costs etc. of the asset.

In operating lease, the lease period is short. So, the lessor may not be ableto recover the cost of the asset during the initial lease period and tend tolease the asset to more than one lessee. Normally, these are callable leaseand are cancelable with proper notice.

The term of this type of lease is shorter than the asset's economic life. The lessee is obliged to make payment until the lease expiration, whichapproaches useful life of the asset.

An operating lease is particularly attractive to companies that continually update or replace equipment and want to use equipment without ownership, but also want to return equipment at lease end and avoid technological obsolescence.



Note: The above diagram may be summarized in a short paragraph.

b. Financial Lease: In contrast to an operating lease, a financial lease is long term in nature and non-cancelable i.e. the lessee cannot terminate the lease agreement subsequently So, the period of lease is generally the full economic life of the leased asset. In other words, a financial lease can be regarded as any leasing arrangement that is to finance the use of equipment for the major parts of its useful life. The lessee has the right touse the equipment while the lessor retains legal title. Further, in such lease,the lessee has to bear the insurance, maintenance and other related costs. Itis also called capital lease, which is nothing but a loan in disguise.

Thus, it can be said that a financial lease is a contract involving paymentsover an obligatory period of specified sums sufficient in total to amortise the capital outlay of the lessor and give some profit.

Comparison between Financial Lease and Operating Lease

	Financial Lease	Operating Lease
1.	The risk and reward incident to ownership are passed on to the lessee. The lessor only remains the legal owner of the asset.	The lessee is only provided the use of the asset for a certain time. Risk incident to ownership belong wholly to the lessor.
2.	The lessee bears the risk of obsolescence.	The lessor bears the risk of obsolescence.
3.	The lessor is interested in his rentals and not in the asset. Hemust get his principal back alongwith interest. Therefore, the lease is non-cancellable by either party.	As the lessor does not have difficulty in leasing the same asset to other willing lessee, thelease is kept cancelable by the lessor.
4.	The lessor enters into the transaction only as financier. He does not bear the cost of repairs, maintenance or operations.	Usually, the lessor bears cost of repairs, maintenance oroperations.
5.	The lease is usually full payout, that is, the single lease repays the cost of the asset together with the interest.	The lease is usually non-payout, since the lessor expects to leasethe same asset over and over again to several users.

Other Types of Leases

a. **Sales and Lease Back:** Under this type of lease, the owner of an asset sellsthe asset to a party (the buyer), who in turn leases back the same asset tothe owner in consideration of a lease rentals. Under this arrangement, the asset is not physically exchanged but it all happen in records only. The main advantage of this method is that the lessee can satisfy himself completely regarding the quality of an asset and after possession of the asset convert the sale into a lease agreement.

   Under this transaction, the seller assumes the role of lessee (as the same asset which he has sold came back to him in the form of lease) and thebuyer assumes the role of a lessor (as asset purchased by him was leased back to the seller). So, the seller gets the agreed selling price and the buyergets the lease rentals.

b. **Leveraged Lease:** Under this lease, a third party is involved besides lessorand the lessee. The lessor borrows a part of the purchase cost (say 80%) ofthe asset from the third party i.e.,

lender and asset so purchased is held as security against the loan. The lender is paid off from the lease rentals directly by the lessee and the surplus after meeting the claims of the lender goes to the lessor. The lessor is entitled to claim depreciation allowance.

c. **Sales-aid Lease:** Under this lease contract, the lessor enters into a tie upwith a manufacturer for marketing the latter's product through his own leasing operations, it is called a sales-aid lease. In consideration of the aid in sales, the manufacturer may grant either credit or a commission to the lessor. Thus, the lessor earns from both sources i.e. from lessee as well asthe manufacturer.

d. **Close-ended and Open-ended Leases:** In the close-ended lease, the assets get transferred to the lessor at the end of lease, the risk of obsolescence, residual value etc., remain with the lessor being the legal owner of the asset.In the open-ended lease, the lessee has the option of purchasing the assetat the end of the lease period.

In recent years, leasing has become a popular source of financing in India. Fromthe lessee's point of view, leasing has the attraction of eliminating immediate cash outflow, and the lease rentals can be deducted for computing the total income under the Income tax Act. As against this, buying has the advantages of depreciation allowance (including additional depreciation) and interest on borrowed capital being tax-deductible. Thus, an evaluation of the two alternativesis to be made in order to take a decision. Practical problems for lease financing are covered at Final level in paper - Financial Services and Capital Markets.

SHORT-TERM SOURCES OF FINANCE

There are various sources available to meet short-term needs of finance. The different sources are discussed below:

i. **Trade Credit:** It represents credit granted by suppliers of goods, etc., as an incident of sale. The usual duration of such credit is 15 to 90 days. It generates automatically in the course of business and is common to almostall business operations. It can be in the form of an 'open account' or 'bills payable'.

Trade credit is preferred as a source of finance because it is without any explicit cost and till a business is a going concern it keeps on rotating. Another very important characteristic of trade credit is that it enhances automatically with the increase in the volume of business.

ii. **Accrued Expenses and Deferred (Unearned) Income:** Accrued expenses represent liabilities which a company has to pay for the services which it has already received like wages, taxes, interest and dividends. Such expenses arise out of the day-to-day activities of the company and hence represent a spontaneous source of finance.

Deferred income, on the other hand, reflects the amount of funds receivedby a company in lieu of goods and services to be provided in the future.Since these receipts increase a company's liquidity, they are also consideredto be an important source of spontaneous finance.

iii. **Advances from Customers:** Manufacturers and contractors engaged in producing or constructing costly goods involving considerable length of manufacturing or construction time usually demand advance money from their customers at the time of accepting their orders for executing their contracts or supplying the goods. This is a cost free source of finance and really useful.

iv. **Commercial Paper:** A Commercial Paper is an unsecured money market instrument issued in the form of a promissory note. The Reserve Bank ofIndia introduced the commercial paper scheme in the year 1989 with a viewto enabling highly rated corporate borrowers to diversify their sources ofshort-term borrowings and to provide an additional instrument to investors. Subsequently, in addition to the Corporate, Primary Dealers and All India Financial Institutions have also been allowed to issue Commercial Papers. Commercial papers are issued in denominations of Rs.5 lakhs or multiplesthereof and the interest rate is generally linked to the yield on the one-year government bond.

All eligible issuers are required to get the credit rating from Credit Rating Information Services of India Ltd, (CRISIL), or the Investment Information and Credit Rating Agency of India Ltd (ICRA) or the Credit Analysis and Research Ltd (CARE) or the FITCH Ratings India Pvt. Ltd or any such other credit rating agency as is specified by the Reserve Bank of India.

v. **Treasury Bills:** Treasury bills are a class of Central Government Securities. Treasury bills, commonly referred to as T-Bills are issued by Government of India to meet short term borrowing requirements with maturities ranging between 14 to 364 days.

vi. **Certificates of Deposit (CD):** A certificate of deposit (CD) is basically a savings certificate with a fixed maturity date of not less than 15 days up to a maximum of one year.

vii. **Bank Advances:** Banks receive deposits from public for different periods at varying rates of interest. These funds are invested and lent in such a manner that when required, they may be called back. Lending results in gross revenues out of which costs, such as interest on deposits, administrative costs, etc., are met and a reasonable profit is made. A bank's lending policy is not merely profit motivated but has to also keep in mind the socio- economic development of the country.

Some of the facilities provided by banks are:

a. **Short Term Loans:** In a loan account, the entire advance is disbursedat one time either in cash or by transfer to the current account of the borrower. It is a single advance and given against securities like shares, government securities, life insurance policies and fixed deposit receipts, etc. Except by way of interest and other charges, no further adjustments are made in this account. Repayment under the loan account is made either by way of repaying the full amount or by wayof schedule of repayments agreed upon as in case of term loans.

b. **Overdraft:** Under this facility, customers are allowed to withdraw inexcess of credit balance standing in their Current Account. A fixed limit is, therefore, granted to the borrower within which the borroweris allowed to overdraw his account. Though overdrafts are repayableon demand, they generally continue for long periods by annual renewals of the limits. This is a convenient arrangement for the borrower as he is in a position to avail the limit sanctioned, accordingto his requirements. Interest is charged on daily balances.

   Since these accounts are operated in the same way as cash credit and current accounts, cheque books are provided.

c. **Clean Overdrafts:** Request for clean advances are entertained only from parties which are financially sound and having reputation for their integrity. The bank has to rely upon the personal security of the borrowers. Therefore, while entertaining proposals for clean advances; banks exercise a good deal of restraint since they have no backing of any tangible security. If the parties are already enjoying secured advance facilities, this may be a point in favor and may be taken into account while screening such proposals. The amount of turnover in the account, satisfactory dealings for considerable period and reputation in the market are some of the factors which the bank normally see. As a safeguard, banks take guarantees from other persons who are credit worthy before granting this facility. A clean advance is generally granted for a short period and must not be continued for long.

d. **Cash Credits:** Cash Credit is an arrangement under which a customeris allowed an advance up to certain limit against credit granted by bank. Under this arrangement, a customer need not borrow the entire amount of advance at one time; he can only draw to the extent of his requirements and deposit his surplus funds in his account. Interest isnot charged on the full amount of the advance but on the amount actually availed by him.

   Generally, cash credit limits are sanctioned against the security of tradable goods by way of pledge or hypothecation. Though these accounts are repayable on demand, banks usually do not recall such advances, unless they are compelled to do so by adverse factors.

e. **Advances against goods:** Advances against goods occupy an important place in total bank credit. They provide a reliable source of repayment. Advances against them are safe and liquid. Also, there is a quick turnover in goods, as they are in constant demand. So a banker generally accepts them as security. Furthermore, goods are charged to the bank either by way of pledge or by way of hypothecation. Theterm 'goods' includes all forms of movables which are offered to the bank as security. They may be agricultural commodities or industrialraw materials or partly finished goods.

f. **Bills Purchased/ Discounted:** Under this head, banks give advances against the security of bills which may be clean or documentary. Bills are sometimes purchased from approved customers in whose favour limits are sanctioned. Before granting a limit, the banker satisfies himself as to the credit worthiness of the drawer (the one who prepared the bill of exchange, i.e. the creditor or the beneficiary or the payee). Although the term 'bills purchased' gives the impression that the bank becomes the owner or purchaser of such bills, in actual practice the bank holds the bills only as security for the advance. The bank, in addition to the rights against the parties liable on the bills,can also exercise a pledge's rights over the goods covered by the documents.

viii. **Financing of Export Trade by Banks:** Exports play an important role in accelerating the economic growth of developing countries like India. Out of the several factors influencing export growth, credit is a very important factor which enables exporters in efficiently executing their export orders.The commercial banks provide short-term export finance mainly by way ofpre and post-shipment credit. Export finance is granted in Rupees as well asin foreign currency.

In view of the importance of export credit in maintaining the pace of export growth, RBI has initiated several measures in the recent years to ensure timely and hassle-free flow of credit to the export sector. These measures, inter alia, include rationalization and liberalization of export credit interest rates, flexibility in repayment/prepayment of pre-shipment credit, special financial package for large value exporters, export finance for agricultural exports, Gold Card Scheme for exporters etc. Further, banks have been granted freedom by RBI to source funds from abroad without any limit, exclusively for the purpose of granting export credit in foreign currency, which has enabled banks to increase their lending's under export credit in foreign currency substantially during the last few years.

The advances by commercial banks for export financing are in the form of:

i. Pre-shipment finance i.e., before shipment of goods.

ii. Post-shipment finance i.e., after shipment of goods.

i. **Pre-Shipment Finance:** This generally takes the form of packing credit facility; packing credit is an advance extended by banks to an exporter for the purpose of buying, manufacturing, processing, packing, shipping goods to overseas buyers. Any exporter, having athand a firm export order placed with him by his foreign buyer or an irrevocable letter of credit opened in his favour, can approach a bankfor availing of packing credit. An advance so taken by an exporter is required to be liquidated within 180 days from the date of its commencement by negotiation of export bills or receipt of export proceeds in an approved manner. Thus, packing credit is essentially a short-term advance.

Normally, banks insist upon their customers to lodge with them irrevocable letters of credit opened in favour of the customers by the overseas buyers. The letter of credit and firm sale contracts not only serve as evidence of a definite arrangement for realisation of the export proceeds but also indicate the amount of finance required bythe exporter.

Packing credit, in the case of customers of long standing, may also be granted against firm contracts entered into by them with overseas buyers.

Types of Packing Credit

a. **Clean packing credit:** This is an advance made available to an exporter only on production of a firm export order or a letter of credit without exercising any charge or control over raw materialor finished goods. It is a clean type of export advance. Each proposal is weighed according to particular requirements of the trade and credit worthiness of the exporter. A suitable margin has to be maintained. Also, Export Credit Guarantee Corporation (ECGC) cover should be obtained by the bank.

b. **Packing credit against hypothecation of goods:** Export finance is made available on certain terms and conditions wherethe exporter has pledge able interest and the goods are hypothecated to the bank as security with stipulated margin. Atthe time of utilising the advance, the exporter is required to submit, along with the firm export order or letter of credit relative stock statements and thereafter continue submitting them every fortnight and/or whenever there is any movement in stocks.

c. **Packing credit against pledge of goods:** Export finance is made available on certain terms and conditions where the exportable finished goods are pledged to the banks with approved clearing agents who will ship the same from time to time as required by the exporter. The possession of the goods so pledged lies with the bank and is kept under its lock and key.

d. **E.C.G.C. guarantee:** Any loan given to an exporter for the manufacture, processing, purchasing, or packing of goods meant for export against a firm order qualifies for the packing credit guarantee issued by Export Credit Guarantee Corporation.

e. **Forward exchange contract:** Another requirement of packing credit facility is that if the export bill is to be drawn in a foreign currency, the exporter should enter into a forward exchange contact with the bank, thereby avoiding risk involved in a possible change in the rate of exchange.

ii. **Post-shipment Finance:** It takes the following forms:

a. **Purchase/discounting of documentary export bills**: Finance is provided to exporters by purchasing export bills drawn payable at sight or by discounting usance export bills covering confirmed sales and backed by documents including documents of the title of goods such as bill of lading, post parcel receipts, or air consignment notes.

b. **E.C.G.C. Guarantee:** Post-shipment finance, given to an exporter by a bank through purchase, negotiation or discount of an export bill against an order, qualifies for post-shipment exportcredit guarantee. It is necessary, however, that exporters should obtain a shipment or contracts risk policy of E.C.G.C. Banks insiston the exporters to take a contracts shipments (comprehensive risks) policy covering both political and commercial risks. The Corporation, on acceptance of the policy, will fix credit limits for individual exporters and the Corporation's liability will be limited to the extent of the limit so fixed for the exporter concernedirrespective of the amount of the policy.

c. **Advance against export bills sent for collection:** Finance is provided by banks to exporters by way of advance against export bills forwarded through them for collection, taking into account the creditworthiness of the party, nature of goods exported, usance, standing of drawee etc.

d. **Advance against duty draw backs, cash subsidy, etc.:** To finance export losses sustained by exporters, bank advance against duty draw-back, cash subsidy etc., receivable by them 7against export performance. Such advances are of clean nature; hence necessary precaution should be exercised.

Bank providing finance in this manner see that the relative export billsare either negotiated or forwarded for collection through it so that itis in a position to verify the exporter's claims for duty draw-backs, cash subsidy, etc. 'An advance so availed of by an exporter is requiredto be liquidated within 180 days from the date of shipment of relative goods.

Other facilities extended to the exporters are as follows:

i. On behalf of approved exporters, banks establish letters of credit on their overseas or up country suppliers.

ii. Guarantees for waiver of excise duty, etc. due performance ofcontracts, bond in lieu of cash security deposit, guarantees for advance payments etc., are also issued by banks to approved clients.

iii. To approved clients undertaking exports on deferred payment terms, banks also provide finance.

iv. Banks also endeavour to secure for their exporter-customers status reports of their buyers and trade information on various commodities through their correspondents.

v. Economic intelligence on various countries is also provided bybanks to their exporter clients.

ix. **Inter Corporate Deposits:** The companies can borrow funds for a short period, say 6 months, from other companies which have surplus liquidity.The rate of interest on inter corporate deposits varies depending upon the amount involved and the time period.

x. **Certificate of Deposit (CD):** The certificate of deposit is a document of title similar to a time deposit receipt issued by a bank except that there is no prescribed interest rate on such funds. The main advantage of CD is that banker is not required to encash the deposit before maturity period and the investor is assured of liquidity because he can sell the CD in secondary market.

xi. **Public Deposits:** Public deposits are very important source of short-term and medium term finances particularly due to credit squeeze by the Reserve Bank of India. A company can accept public deposits subject to the stipulations of Reserve Bank of India from time to time upto a maximum amount of 35 per cent of its paid up capital and reserves. These depositsmay be accepted for a period of six months to three years. Public depositsare unsecured loans; they should not be used for acquiring fixed assets since they are to be repaid within a period of 3 years. These are mainly usedto finance working capital requirements.

OTHER SOURCES OF FINANCING

i. **Seed Capital Assistance:** The Seed Capital Assistance scheme is designed by IDBI for professionally or technically qualified entrepreneurs and/or persons possessing relevant experience, skills and entrepreneurial traits but lack adequate financial resources. All the projects eligible for financial assistance from IDBI, directly or indirectly through refinance are eligible under the scheme.

The Seed Capital Assistance is interest free but carries a service charge ofone per cent per annum for the first five years and at increasing rate thereafter. However, IDBI will have the option to charge interest at such rate as may be determined by IDBI on the loan if the financial position and profitability of the company so permits during the currency of the loan. The repayment schedule is fixed depending upon the repaying capacity of theunit with an initial moratorium up-to five years.

ii. **Internal Cash Accruals:** Existing profit-making companies which undertake an expansion/ diversification programme may be permitted to invest a partof their accumulated reserves or cash profits for creation of capital assets. In such cases, past performance of the company permits the capital expenditure from within the company by way of disinvestment of working/invested funds. In other words, the surplus generated from operations, after meeting all the contractual, statutory and working requirement of funds, is available for further capital expenditure.

iii. **Unsecured Loans:** Unsecured loans are typically provided by promoters to meet the promoters' contribution norm. These loans are subordinate to institutional loans. The rate of interest chargeable on these loans should beless than or equal to the rate of interest on institutional loans and interest can be paid only after payment of institutional dues. These loans cannot be repaid without the prior approval of financial institutions. Unsecured loansare considered as part of the equity for the purpose of calculating debt equity ratio.

iv. **Deferred Payment Guarantee:** Many a time suppliers of machinery provide deferred credit facility under which payment for the purchase of machinerycan be made over a period of time. The entire cost of the machinery is financed and the company is not required to contribute any amount initially towards acquisition of the machinery. Normally, the supplier of machinery insists that bank guarantee should be furnished by the buyer. Such a facility does not have a moratorium period for repayment. Hence, itis advisable only for an existing profit-making company.

v. **Capital Incentives:** The backward area development incentives available often determine the location of a new industrial unit. These incentives usually consist of a lump sum subsidy and exemption from or deferment of sales tax and octroi duty. The quantum of incentives is determined by the degree of backwardness of the location.

The special capital incentive in the form of a lump sum subsidy is a quantum sanctioned by the implementing agency as a percentage of the fixed capital investment subject to an overall ceiling. This amount forms a part of thelong-term means of finance for the project. However, it

may be mentioned that the viability of the project must not be dependent on the quantum and availability of incentives. Institutions, while appraising the project, assess the viability of the project per se, without considering the impact of incentives on the cash flows and profitability of the project.Special capital incentives are sanctioned and released to the units only after they have complied with the requirements of the relevant scheme. The requirements may be classified into initial effective steps and final effective steps.

vi. **Deep Discount Bonds:** Deep Discount Bonds is a form of zero-interest bonds. These bonds are sold at a discounted value and on maturity, face value is paid to the investors. In such bonds, there is no interest payoutduring lock in period.

vii. **Secured Premium Notes:** Secured Premium Notes is issued along with a detachable warrant and is redeemable after a notified period of say 4 to 7years. The conversion of detachable warrant into equity shares will have tobe done within time period notified by the company.

viii. **Zero Interest Fully Convertible Debentures:** These are fully convertible debentures which do not carry any interest. The debentures are compulsorily and automatically converted after a specified period of time and holders thereof are entitled to new equity shares of the company at predetermined price. From the point of view of company, this kind of instrument is beneficial in the sense that no interest is to be paid on it. If the share price of the company in the market is very high then the investors tends to get equity shares of the company at the lower rate.

ix. **Zero Coupon Bonds:** A Zero Coupon Bond does not carry any interest butit is sold by the issuing company at a discount. The difference between the discounted value and maturing or face value represents the interest to be earned by the investor on such bonds.

x. **Option Bonds:** These are cumulative and non-cumulative bonds where interest is payable on maturity or periodically. Redemption premium is also offered to attract investors.

xi. **Inflation Bonds:** Inflation Bonds are the bonds in which interest rate is adjusted for inflation. Thus, the investor gets interest which is free from the effects of inflation. For example, if the interest rate is 11 per cent and the inflation is 5 per cent, the investor will earn 16 per cent meaning therebythat the investor is protected against inflation.

xii. **Floating Rate Bonds:** This as the name suggests is bond where the interest rate is not fixed and is allowed to float depending upon the market conditions. This is an ideal instrument which can be resorted to by the issuerto hedge themselves against the volatility in the interest rates. This has become more popular as a money market instrument and has been successfully issued by financial institutions like IDBI, ICICI etc.

INTERNATIONAL FINANCING

The essence of financial management is to raise and utilise the funds raised effectively. There are various avenues for organisations to raise funds either through internal or external sources. The sources of external financing include:

i. **Commercial Banks:** Like domestic loans, commercial banks all over the world extend Foreign Currency (FC) loans also for international operations. These banks also provide to overdraw over and above the loan amount.

ii. **Development Banks:** Development banks offer long & medium term loans including FC loans. Many agencies at the national level offer a number of concessions to foreign companies to invest within their country and to finance exports from their countries e.g. EXIM Bank of USA.

iii. **Discounting of Trade Bills:** This is used as a short-term financing method.It is used widely in Europe and Asian countries to finance both domestic and international business.

iv. **International Agencies:** A number of international agencies have emerged over the years to finance international trade & business. The more notable among them include The International Finance Corporation (IFC), TheInternational Bank for Reconstruction and Development (IBRD), The Asian Development Bank (ADB), The International Monetary Fund (IMF), etc.

v. **International Capital Markets:** Today, modern organisations includingMNC's depend upon sizeable borrowings in Rupees as well as Foreign Currency (FC). In order to cater to the needs of such organisations, international capital markets have sprung all over the globe such as in London.

In international capital market, the availability of FC is available under the four main systems viz:

- Euro-currency market
- Export credit facilities
- Bonds issues
- Financial Institutions

The origin of the Euro-currency market was with the dollar denominated bank deposits and loans in Europe particularly in London. Euro-dollar deposits are dollar denominated time deposits available at foreign branches of US banks and at some foreign banks. Banks based in Europe accept dollar denominated deposits and make dollar denominated deposits to the clients. This forms the backbone of the Euro-currency market all over the globe. Inthis market, funds are made available as loans through syndicated Euro- credit of instruments such as FRN's, FR certificates of deposits.

vi. **Financial Instruments:** Some of the various financial instruments dealt within the international market are briefly described below:

a. **External Commercial Borrowings (ECB):** ECBs refer to commercial loans (in the form of bank loans, buyers credit, suppliers credit, securitised instruments (e.g. floating rate notes and fixed rate bonds) availed from non-resident lenders with minimum average maturity of3 years. Borrowers can raise ECBs through internationally recognised sources like (i) international banks, (ii) international capital markets, (iii) multilateral financial institutions such as the IFC, ADB etc, (iv) export credit agencies, (v) suppliers of equipment, (vi) foreign collaborators and (vii) foreign equity holders.

External Commercial Borrowings can be accessed under two routes viz (i) Automatic route and (ii) Approval route. Under the Automatic route, there is no need to take the RBI/Government approval whereas such approval is necessary under the Approval route. Company's registered under the Companies Act and NGOs engaged in micro finance activities are eligible for the Automatic Route whereas FinancialInstitutions and Banks dealing exclusively in infrastructure or export finance and the ones which had participated in the textile and steel sector restructuring packages as approved by the government are required to take the Approval Route.

b. **Euro Bonds:** Euro bonds are debt instruments which are not denominated in the currency of the country in which they are issued e.g. a Yen note floated in Germany. Such bonds are generally issued ina bearer form rather than as registered bonds and in such cases they do not contain the investor's names or the country of their origin. These bonds are an attractive proposition to investors seeking privacy.

c. **Foreign Bonds:** These are debt instruments issued by foreign corporations or foreign governments. Such bonds are exposed to default risk, especially the corporate bonds. These bonds are denominated in the currency of the country where they are issued, however, in case these bonds are issued in a currency other than the investors home currency, they are exposed to exchange rate risks. An example of a foreign bond 'A British firm placing Dollar denominated bonds in USA'.

d. **Fully Hedged Bonds:** As mentioned above, in foreign bonds, the risk of currency fluctuations exists. Fully hedged bonds eliminate the riskby selling in forward markets the entire stream of principal and interest payments.

e. **Medium Term Notes (MTN):** Certain issuers need frequent financing through the Bond route including that of the Euro bond. However, it may be costly and ineffective to go in for frequent

issues. Instead, investors can follow the MTN programme. Under this programme, several lots of bonds can be issued, all having different features e.g. different coupon rates, different currencies etc. The timing of each lotcan be decided keeping in mind the future market opportunities. The entire documentation and various regulatory approvals can be takenat one point of time.

f. **Floating Rate Notes (FRN):** These are issued up to seven years maturity. Interest rates are adjusted to reflect the prevailing exchange rates. They provide cheaper money than foreign loans.

g. **Euro Commercial Papers (ECP):** ECPs are short term money market instruments. They have maturity period of less than one year. They are usually designated in US Dollars.

h. **Foreign Currency Option (FC):** A FC Option is the right (and not the obligation) to buy or sell, foreign currency at a certain specified priceon or before a specified date. It provides a hedge against financial and economic risks.

i. **Foreign Currency Futures:** FC Futures are obligations (and not the right) to buy or sell a specified foreign currency in the present for settlement at a future date.

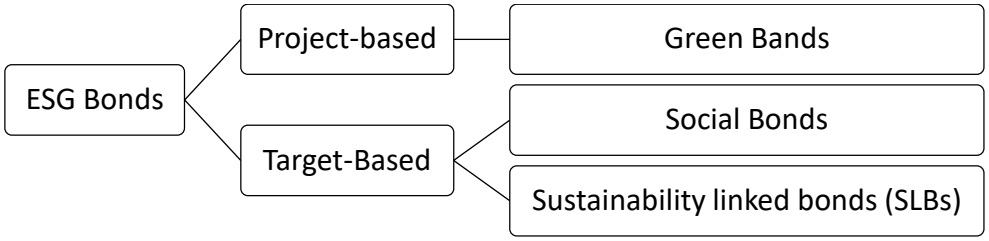
j. **Foreign Euro Bonds:** In domestic capital markets of various countries the Bonds issues referred to above are known by different names such as Yankee Bonds in the US, Swiss Frances in Switzerland, Samurai Bonds in Tokyo and Bulldogs in UK.

k. **Euro Convertible Bonds:** A convertible bond is a debt instrument which gives the holders of the bond an option to convert the bonds into a pre-determined number of equity shares of the company. Usually the price of the equity shares at the time of conversion will have a premium element. These bonds carry a fixed rate of interestand if the issuer company so desires may also include a Call Option (where the issuer company has the option of calling/ buying the bonds for redemption prior to the maturity date) or a Put Option (which gives the holder the option to put/sell his bonds to the issuer company at a pre-determined date and price).

l. **Euro Convertible Zero Bonds:** These bonds are structured as a convertible bond. No interest is payable on the bonds. But conversionof bonds takes place on maturity at a pre-determined price. Usuallythere is a five years maturity period and they are treated as a deferred equity issue.

m. **Euro Bonds with Equity Warrants:** These bonds carry a coupon rate determined by market rates. The warrants are detachable. Pure bonds are traded at a discount. Fixed Income Funds Management may like to invest for the purposes of regular income in this case.

n. **Environmental, Social and Governance-linked bonds (ESG):** These bonds carry a responsibility of the issuer company to prioritize optimal environmental, social and governance (ESG) factors. Investing in ESG bonds is considered as **socially responsible investing**. ESG bonds can be project-based - green bonds and social bonds; and target-based - sustainability-linked bonds (SLBs).



- **Green bonds:** These are the most popular ESG bonds that are issued by a financial, non-financial or public institution, where the bond proceeds are used to finance "green projects". Green projectsare aimed at positive environmental and/or climate impact including the cultivation of eco-friendly technology. India is the second-largest green bond market. For example: Ghaziabad Municipal Corporation (GMC) becomes the first Municipal Corporation to raise Rs.150 crore from Green Bond in the Year 2021.
- **Social bonds:** These bonds finance the socially impactful projects. The projects here are related to the social concerns such as Human rights, Equality, animal welfare etc. For example, "Vaccine bonds" are social bonds, issued to fund the vaccination of vulnerable childrens and protection of people in lower income countries.
- **Sustainability-linked bonds (SLBs):** These bonds are combinationof green bonds and social bonds. Proceeds of SLBs are not meantfor a specific project but for general corporate purpose to achieve Key Performance Indicator (KPIs). For example: UltraTech Cement raises US$ 400 million through India's first sustainability-linked bonds in year 2021. The company aims to reduce carbon emissions through the life of bond of 10 years.

vii. **Euro Issues by Indian Companies:** Indian companies are permitted to raise foreign currency resources through issue of ordinary equity shares through Global Depository Receipts (GDRs)/ American Depository Receipts (ADRs) and / or issue of Foreign Currency Convertible Bonds (FCCB) to foreign investors i.e. institutional investors or individuals (including NRIs) residing abroad. Such investment is treated as Foreign Direct Investment (FDI). The government guidelines on these issues are covered under the Foreign Currency Convertible Bonds and Ordinary Shares (through depositary receipt mechanism) Scheme, 1993 and notifications issued after the implementation of the said scheme.

a. **American Depository Receipts (ADRs):** These are securities offeredby **non-US companies who want to list on any of the US exchange.** Each ADR represents a certain number of a company's regular shares. ADRs allow US investors to buy shares of these companies without the costs of investing directly in a foreign stock exchange.

   The Indian companies have preferred the GDRs to ADRs because theUS market exposes them to a higher level of responsibility than a European listing in the areas of disclosure, costs, liabilities and timing.The regulations are somewhat more stringent and onerous, even for companies already listed and held by retail investors in their home country. The most onerous aspect of a US listing for the companies isto provide full, half yearly and quarterly accounts in accordance with,or at least reconciled with US GAAPs.

b. **Global Depository Receipts (GDRs):** These are negotiable certificates held in the bank of one country representing a **specific number of shares of a stock traded on the exchange of another country.** These financial instruments are used by companies to raise capital in either dollars or Euros. These are mainly traded in European countriesand particularly in London.

   ADRs/GDRs and the Indian Scenario: Indian companies are shedding their reluctance to tap the US markets. Infosys Technologies was the first Indian company to be listed on Nasdaq in 1999. However, the first Indian firm to issue sponsored GDR or ADR was Reliance industries Limited. Beside these two companies there are several other Indian firms which are also listed in the overseas bourses. These are Wipro, MTNL, State Bank of India, Tata Motors, Dr. Reddy's Lab, etc.

c. **Indian Depository Receipts (IDRs):** The concept of **the depository receipt mechanism which is used to raise funds in foreign currency** has been applied in the Indian Capital Market through the issue of Indian Depository Receipts (IDRs). IDRs are similar to ADRs/GDRs in the sense that foreign companies can issue IDRs to raise funds from the Indian Capital Market in the same lines as an Indian company uses ADRs/GDRs to raise foreign capital. The IDRs are listed and traded in India in the same way as other Indian securitiesare traded.

CONTEMPORARY SOURCES OF FUNDING

i. **Crowd funding:** In simple terms, crowdfunding means raising money for an individual or organisation from a group of people to fund a project, typically via internet (social media and crowdfunding websites). It generally involves collecting funds from family, friends, strangers, corporates and many morein exchange of equity (known as Equity funding), loans (known as P2P lending) or nothing at all (i.e. donation). This source of funding also helps start-up to substantiate demand for their product before entering into production.

In the crowdfunding process, three parties are involved i.e. fund raiser, mediator and fund investor. The platforms (mediator) may also charge certain fees in the form of processing fee, transaction fee, etc. either as a fixed amount or a percentage or in combination of both.

ii. **Equity funding:** Equity crowdfunding is a mechanism where investor invests money in an organisation and receive securities of that organisation in return. Every investor would be entitled to a stake in the organisation depending on their investment. The digital nature of crowdfunding targets large number of investors with small contributions. This type of funding is mostly adopted by startups. Some of the platforms offering equity crowdfunding are StartEngine, EquityNet, SeedInvest, etc.

iii. **Peer-to-Peer (P2P) lending:** It is that category of crowdfunding where lenders match with the borrowers in order to provide unsecured loans through online platform. The fund raised are paid back by the borrowerswith interest, though this kind of lending involves certain risk of defaults (just as the banks bear in the case of conventional method of lending). Anyone interested in investing money under P2P lending can visit the P2P lending platforms and choose amongst borrowers considering risk & returns. Some of the platforms offering P2P lending are i2iFunding, Lend box, Fair cent, Rupee Circle, etc.

iv. **Start-up funding:** A start-up company being newly formed needs fund before starting any project. However, as a start-up, it is difficult to manage loans from bank, leaving crowdfunding as one of the sources of finance. Through crowdfunding, a start-up company can raise money from large group of people. The crowdfunding may be in the form of equity funding,P2P lending or both.

v. **Donation-based Crowdfunding:** It is a source of finance where large groupof people donate money as a charity for some cause with no expectation of any ownership or debt. Some of the platforms that are used for donation- based crowdfunding are GoFundMe (used for donations against medical needs, education, etc.), Ketto (used for donation against medical needs), Fuel A Dream (used for donation against charity projects, new ideas), etc.

MULTIPLE CHOICE QUESTIONS (MCQs)

CHAPTER 00: SCOPE AND OBJECTIVES OF FINANCIAL MANAGEMENT

1. **Focus of financial management is mainly concerned with the decision relatedto:**
   - **a.** Financing
   - **b.** Investing
   - **c.** Dividend
   - **d.** All of above.

2. **The main objective of financial management is to:**
   - **a.** Secure profitability
   - **b.** Maximise shareholder wealth
   - **c.** Enhancing the cost of debt
   - **d.** None of above.

3. **The shareholder value maximisation model holds that the primary goal of thefirm is to maximise its:**
   - **a.** Accounting profit
   - **b.** Liquidity
   - **c.** Market value
   - **d.** Working capital.

4. **Wealth maximisation approach is based on the concept of:**
   - **a.** Cost benefit analysis
   - **b.** Cash flow approach
   - **c.** Time value of money
   - **d.** All of the above.

5. **Management of all matters related to an organisation's finances is called:**
   - **a.** Cash inflows and outflows

b. Allocation of resources

c. Financial management

d. Finance.

6. Which of the following is the disadvantage of having shareholders wealthmaximisation goals?

a. Emphasizes the short-term gains.

b. Ignores the timing of returns.

c. Requires immediate resources.

d. Offers no clear relationship between financial decisions and share price.

7. The most important goal of financial management is:

a. Profit maximisation

b. Matching income and expenditure

c. Using business assets effectively

d. Wealth maximisation.

8. To achieve wealth maximization, the finance manager has to take carefuldecision in respect of:

a. Investment

b. Financing

c. Dividend

d. All the above.

9. Early in the history of finance, an important issue was:

a. Liquidity

b. Technology

c. Capital structure

d. Financing options.

10. Which of the following are microeconomic variables that help define andexplain the discipline of finance?

a. Risk and return

b. Capital structure

c. Inflation

d. All of the above.

11. Financial Management is mainly concerned with the-

a. Acquiring and developing assets to forfeit its overall benefit.

b. Acquiring, financing and managing assets to accomplish the overallgoal of a business enterprise.

c. Efficient management of the business.

d. Sole objective of profit maximisation.

12. Which of the following need not be followed by the finance manager formeasuring and maximising shareholders' wealth?

a. Accounting profit analysis.

b. Cash Flow approach.

c. Cost benefit analysis.

d. Application of time value of money.

Answers to the MCQs

1.	**(d)**	**2.**	**(b)**	**3.**	**(c)**	**4.**	**(d)**	**5.**	**(c)**	**6.**	**(d)**
7.	**(d)**	**8.**	**(d)**	**9.**	**(a)**	**10.**	**(d)**	**11.**	**(b)**	**12.**	**(a)**

2. TYPES OF FINANCING

1. **Equity shares:**
   - **a.** Have an unlimited life, and voting rights and receive dividends
   - **b.** Have a limited life, with no voting rights but receive dividends
   - **c.** Have a limited life, and voting rights and receive dividends
   - **d.** Have an unlimited life, and voting rights but receive no dividends

2. **External sources of finance do not include:**
   - **a.** Debentures
   - **b.** Retained earnings
   - **c.** Overdrafts
   - **d.** Leasing

3. **Internal sources of finance do not include:**
   - **a.** Better management of working capital
   - **b.** Ordinary shares
   - **c.** Retained earnings
   - **d.** Reserve and Surplus

4. **In preference shares:**
   - **a.** Dividends are not available
   - **b.** Limited voting rights are available
   - **c.** Are not part of a company's share capital
   - **d.** Interest can be received

5. **A debenture:**
   - **a.** Is a long-term loan
   - **b.** Does not require security
   - **c.** Is a short-term loan
   - **d.** Receives dividend payments

6. **Debt capital refers to:**
   - **a.** Money raised through the sale of shares.
   - **b.** Funds raised by borrowing that must be repaid.
   - **c.** Factoring accounts receivable.
   - **d.** Inventory loans.

7. **The most popular source of short-term funding is:**
   - **a.** Factoring.
   - **b.** Trade credit.
   - **c.** Family and friends.
   - **d.** Commercial banks.

8. **Marketable securities are primarily:**
   - **a.** short-term debt instruments.
   - **b.** short-term equity securities.
   - **c.** long-term debt instruments.
   - **d.** long-term equity securities.

9. **Which of the following marketable securities is the obligation of a commercialbank?**
   - **a.** Commercial paper
   - **b.** Negotiable certificate of deposit
   - **c.** Repurchase agreement
   - **d.** T-bills

10. **Reserves & Surplus are which form of financing?**
   - **a.** Security Financing
   - **b.** Internal Financing
   - **c.** Loans Financing
   - **d.** International Financing

11. **With reference to Rs.IFC Masala Bonds', which of the statements given below is/are correct?**
   1. **The International Finance Corporation, which offered these bonds, is anarm of the World Bank.**

2. **They are rupee-denominated bonds and are a source of debt financingfor the public and private sector.**

a. 1 only

b. 2 only

c. Both 1 and 2

d. Neither 1 nor 2

12. External Commercial Borrowings can be accessed through .....

a. only automatic route

b. only approval route

c. both automatic and approval route

d. neither automatic nor approval route

Answers to the MCQs

1.	**(a)**	**2.**	**(b)**	**3.**	**(b)**	**4.**	**(b)**	**5.**	**(a)**	**6.**	**(b)**
7.	**(b)**	**8.**	**(a)**	**9.**	**(b)**	**10.**	**(b)**	**11.**	**(c)**	**12.**	**(c)**

3. FINANCIAL ANALYSIS AND PLANNING –RATIO ANALYSIS

1. **Ratio of Net sales to Net working capital is a:**
   - **a.** Profitability ratio
   - **b.** Liquidity ratio
   - **c.** Current ratio
   - **d.** Working capital turnover ratio

2. **Long-term solvency is indicated by:**
   - **a.** Debt/equity ratio
   - **b.** Current Ratio
   - **c.** Operating ratio
   - **d.** Net profit ratio

3. **Ratio of net profit before interest and tax to sales is:**
   - **a.** Gross profit ratio
   - **b.** Net profit ratio
   - **c.** Operating profit ratio
   - **d.** Interest coverage ratio.

4. **Observing changes in the financial variables across the years is:**
   - **a.** Vertical analysis
   - **b.** Horizontal Analysis
   - **c.** Peer-firm Analysis
   - **d.** Industry Analysis.

5. **The Receivable-Turnover ratio helps management to:**
   - **a.** Managing resources
   - **b.** Managing inventory
   - **c.** Managing customer relationship
   - **d.** Managing working capital

6. **Which of the following is a liquidity ratio?**
   - **a.** Equity ratio
   - **b.** Proprietary ratio
   - **c.** Net Working Capital
   - **d.** Capital Gearing ratio

7. **Which of the following is not a part of Quick Assets?**
   - **a.** Disposable investments
   - **b.** Receivables
   - **c.** Cash and Cash equivalents
   - **d.** Prepaid expenses

8. **Capital Gearing ratio is the fraction of:**
   - **a.** Preference Share Capital and Debentures to Equity Share Capital and Reserve & Surplus.
   - **b.** Equity Share Capital and Reserve & Surplus to Preference Share Capital and Debentures.
   - **c.** Equity Share Capital to Total Assets.
   - **d.** Total Assets to Equity Share Capital.

9. **From the following information, calculate P/E ratio: Equity share capital of Rs.10 each Rs.8,00,000 9% Preference share capital of Rs.10 each Rs.3,00,000 Profit (after 35% tax) Rs.2,67,000, Depreciation Rs.67,000**

   Market price of equity share Rs.48
   - **a.** 15 times
   - **b.** 16 times
   - **c.** 17 times
   - **d.** 18 times

10. **Equity multiplier allows the investor to see:**
    - **a.** What portion of interest on debt can be covered from earnings available to equity shareholders?
    - **b.** How many times preference share interest be paid from earnings available to equity shareholders?
    - **c.** What portion of return on equity is the result of debt?
    - **d.** How many times equity is multiplied to get the value of debt?

11. A company has average accounts receivable of Rs.10,00,000 and annual credit sales of Rs.60,00,000. Its average collection period would be:

a. 60.83 days

b. 6.00 days

c. 1.67 days

d. 0.67 days

12. A company has net profit margin of 5%, total assets of Rs.90,00,000 and return on assets of 9%. Its total asset turnover ratio would be:

a. 1.6

b. 1.7

c. 1.8

d. 1.9

13. What does Q ratio measures?

a. Relationship between market value and book value per equity share.

b. Proportion of profit available per equity share.

c. Overall earnings on average total assets.

d. Market value of equity as well as debt in comparison to all assets at their replacement cost.

14. Calculate operating expenses from the information given below:

Sales	**Rs.75,00,000**
Rate of income tax	**50%**
Net profit to sales	**5%**
Cost of goods sold	**Rs.32,90,000**
Interest on debentures	**Rs.60,000**

a. Rs.41,00,000

b. Rs.8,10,000

c. Rs.34,00,000

d. Rs.33,90,000

15. Which of the following is not a profitability ratio?

a. P/E ratio

b. Return on capital employed (ROCE)

c. Q Ratio

d. Preference Dividend Coverage Ratio

Answers to the MCQs

1.	**(d)**	**2.**	**(a)**	**3.**	**(c)**	**4.**	**(b)**	**5.**	**(d)**	**6.**	**(c)**
7.	**(d)**	**8.**	**(a)**	**9.**	**(b)**	**10.**	**(c)**	**11.**	**(a)**	**12.**	**(c)**
13.	**(d)**	**14.**	**(c)**	**15.**	**(d)**						

4. COST OF CAPITAL

1. **Which of the following is not an assumption of the capital asset pricing model (CAPM)?**
   - **a.** The capital market is efficient.
   - **b.** Investors lend or borrow at a risk-free rate of return.
   - **c.** Investors do not have the same expectations about the risk and return.
   - **d.** Investor's decisions are based on a single-time period.

2. **Given: risk-free rate of return = 5%; market return 10%; cost of equity =15%; value of beta (β) is:**
   - **a.** 1.9
   - **b.** 1.8
   - **c.** 2.0
   - **d.** 2.2

3. **May be defined as the cost of raising an additional rupee of capital:**
   - **a.** Marginal cost of capital
   - **b.** Weighted Average cost of capital
   - **c.** Simple Average cost of capital
   - **d.** Liquid cost of capital

4. **Which of the following cost of capital requires to adjust taxes***?*
   - **a.** Cost of Equity Share
   - **b.** Cost of Preference Shares,
   - **c.** Cost of Debentures
   - **d.** Cost of Retained Earnings

5. **Marginal Cost of capital is the cost of:**
   - **a.** Additional Revenue
   - **b.** Additional Funds
   - **c.** Additional Interests
   - **d.** None of the above

6. **In order to calculate Weighted Average Cost of Capital, weights may be basedon:**
   - **a.** Market Values
   - **b.** Target Values
   - **c.** Book Values
   - **d.** Anyone of the above

7. **Firm's Cost of Capital is the average cost of:**
   - **a.** All sources of finance
   - **b.** All Borrowings
   - **c.** All share capital
   - **d.** All Bonds & Debentures

8. **A company has a financial structure where equity is 70% of its total debt plus equity. Its cost of equity is 10% and gross loan interest is 5%. Corporation tax is paid at 30%. What is the company's weighted average cost of capital (WACC)?**
   - **a.** 7.55%
   - **b.** 7.80%
   - **c.** 8.70%
   - **d.** 8.05%

9. **The cost of equity capital is all of the following except:**
   - **a.** The minimum rate that a firm should earn on the equity-financed part ofan investment.
   - **b.** A return on the equity-financed portion of an investment that, at worst,leaves the market price of the stock unchanged.
   - **c.** By far, the most difficult component cost to estimate.
   - **d.** Generally, lower than the before-tax cost of debt.

10. **What is the overall (weighted average) cost of capital when the firm has Rs.20 crores in long-term debt, Rs.4 crores in preferred stock, and Rs.16 crores inequity shares? The before-tax cost for debt, preferred stock, and equity capital are 8%, 9%, and 15%, respectively. Assume a 50% tax rate.**
    - **a.** 7.60%
    - **b.** 6.90%
    - **c.** 7.30%
    - **d.** 8.90%

Answers to the MCQs

1.	**(c)**	**2.**	**(c)**	**3.**	**(a)**	**4.**	**(c)**	**5.**	**(b)**	**6.**	**(d)**
7.	**(a)**	**8.**	**(d)**	**9.**	**(d)**	**10.**	**(d)**				

5. FINANCING DECISIONS-CAPITAL STRUCTURE

1. **The assumptions of MM hypothesis of capital structure do not include the following:**
   - **a.** Capital markets are imperfect
   - **b.** Investors have homogeneous expectations
   - **c.** All firms can be classified into homogeneous risk classes
   - **d.** The dividend-payout ratio is cent percent, and there is no corporate tax

2. **Which of the following is irrelevant for optimal capital structure?**
   - **a.** Flexibility
   - **b.** Solvency
   - **c.** Liquidity
   - **d.** Control

3. **Financial Structure refers to:**
   - **a.** All financial resources
   - **b.** Short-term funds
   - **c.** Long-term funds
   - **d.** None of these

4. **An EBIT-EPS indifference analysis chart is used for:**
   - **a.** Evaluating the effects of business risk on EPS
   - **b.** Examining EPS results for alternative financial plans at varying EBIT levels
   - **c.** Determining the impact of a change in sales on EBIT
   - **d.** Showing the changes in EPS quality over time

5. **The term "capital structure" means:**
   - **a.** Long-term debt, preferred stock, and equity shares
   - **b.** Current assets and current liabilities
   - **c.** Net working capital
   - **d.** Shareholder's equity

6. **The cost of monitoring management is considered to be a (an):**

   a. Bankruptcy cost

   b. Transaction cost

   c. Agency cost

   d. Institutional cost

7. **The traditional approach towards the valuation of a firm assumes:**

   a. That the overall capitalization rate changes in financial leverage.

   b. That there is an optimum capital structure.

   c. That the total risk is not changed with the changes in the capital structure.

   d. That the markets are perfect.

8. **Market values are often used in computing the weighted average cost of capital because:**

   a. This is the simplest way to do the calculation.

   b. This is consistent with the goal of maximizing shareholder value.

   c. This is required by SEBI.

   d. This is a very common mistake.

9. **A firm's optimal capital structure:**

   a. Is the debt-equity ratio that results in the minimum possible weighted average cost of capital

   b. 40 percent debt and 60 percent equity

   c. When the debt-equity ratio is 0.50

   d. When Cost of equity is minimum

10. **Capital structure of a firm influences the:**

    a. Risk

    b. Return

    c. Both Risk and Return

    d. Return but not Risk

11. **Consider the below mentioned statements:**

    1. **A company is considered to be over-capitalised when its actual capitalisation is lower than the proper capitalisation as warranted by the earning capacity.**

2. **Both over-capitalisation and under-capitalisation are detrimental to the interests of the society.**

   State True or False:

   a. 1-True, 2-True

   b. 1-False, 2-True

   c. 1-False, 2-False

   d. 1-True, 2-False

12. A critical assumption of the Net Operating Income (NOI) approach to valuation is:

a. That debt and equity levels remain unchanged.

b. That dividends increase at a constant rate.

c. That ko remains constant regardless of changes in leverage.

d. That interest expense and taxes are included in the calculation.

13. Which of the following steps may be adopted to avoid the negative consequences of over-capitalisation?

a. The shares of the company should be split up. This will reduce dividend per share, though EPS shall remain unchanged.

b. Issue of Bonus Shares.

c. Revising upward the par value of shares in exchange of the existing shares held by them.

d. Reduction in claims of debenture-holders and creditors.

Answers to the MCQs

1.	**(a)**	**2.**	**(b)**	**3.**	**(a)**	**4.**	**(b)**	**5.**	**(a)**	**6.**	**(c)**
7.	**(b)**	**8.**	**(b)**	**9.**	**(a)**	**10.**	**(c)**	**11.**	**(b)**	**12.**	**(c)**
13.	**(d)**										

6. FINANCING DECISIONS – LEVERAGES

1. **Given**

   Operating fixed costs Rs. 20,000

   Sales Rs. 1,00,000

   P/ V ratio 40%

   The operating leverage is:

   a. 2.00

   b. 2.50

   c. 2.67

   d. 2.47

2. **If EBIT is Rs. 15,00,000, interest is Rs. 2,50,000, corporate tax is 40%, degree of financial leverage is;**

   a. 1.11

   b. 1.20

   c. 1.31

   d. 1.41

3. **If DOL is 1.24 and DFL is 1.99, DCL would be:**

   a. 2.14

   b. 2.18

   c. 2.31

   d. 2.47

4. **Operating Leverage is calculated as:**

   a. Contribution ÷ EBIT

   b. EBIT ÷ PBT

   c. EBIT ÷ Interest

   d. EBIT ÷ Tax

5. **Financial Leverage is calculated as:**

   a. EBIT ÷ Contribution

   b. EBIT ÷ PBT

   c. EBIT ÷ Sales

   d. EBIT ÷ Variables Cost

6. **Which of the following is correct?**

   a. CL = OL + FL

   b. CL = OL – FL

   c. CL = OL × FL

   d. OL = OL ÷ FL

7. **Which of the following indicates business risk?**

   a. Operating leverage

   b. Financial leverage

   c. Combined leverage

   d. Total leverage

8. **Degree of combined leverage is the fraction of:**

   a. Percentage change in EBIT on Percentage change in Sales.

   b. Percentage change in EPS on Percentage change in Sales.

   c. Percentage change in Sales on Percentage change in EPS.

   d. Percentage change in EPS on Percentage change in EBIT.

9. **From the following information, calculate combined leverage: Sales Rs. 20,00,000**

   Variable Cost **40%**

   Fixed Cost **Rs. 10,00,000**

   Borrowings **Rs. 10,00,000 @ 8% p.a.**

   a. 10 times

   b. 6 times

   c. 1.667 times

   d. 0.10 times

10. Operating leverage is a function of which of the following factors?

a. Amount of variable cost.

b. Variable contribution margin.

c. Volume of purchases.

d. Amount of semi-variable cost.

11. Financial leverage may be defined as:

a. Use of funds with a product cost in order to increase earnings per share.

b. Use of funds with a contribution cost in order to increase earnings before interest and taxes.

c. Use of funds with a fixed cost in order to increase earnings per share.

d. Use of funds with a fixed cost in order to increase earnings before interest and taxes.

12. If Margin of Safety is 0.25 and there is 8% increase in output, then EBIT will be:

a. Decrease by 2%

b. Increase by 32%

c. Increase by 2%

d. Decrease by 32%

13. If degree of financial leverage is 3 and there is 15% increase in Earning per share (EPS), then EBIT will be:

a. Decrease by 15%

b. Increase by 45%

c. Decrease by 45%

d. Increase by 5%

14. When EBIT is much higher than Financial break-even point, then degree of financial leverage will be slightly:

a. Less than 1

b. Equals to 1

c. More than 1

d. Equals to 0

15. Firm with high operating leverage will have:

a. Higher breakeven point

b. Lower business risk

c. Higher margin of safety

d. All of above

16. When sales are at breakeven point, the degree of operating leverage will be:

a. Zero

b. Infinite

c. One

d. None of above

17. If degree of combined leverage is 3 and margin of safety is 0.50, then degree of financial leverage is:

a. 6.00

b. 3.00

c. 0.50

d. 1.50

Answers to the MCQs

1.	**(a)**	**2.**	**(b)**	**3.**	**(d)**	**4.**	**(a)**	**5.**	**(b)**	**6.**	**(c)**
7.	**(a)**	**8.**	**(b)**	**9.**	**(a)**	**10.**	**(b)**	**11.**	**(c)**	**12.**	**(b)**
13.	**(d)**	**14.**	**(c)**	**15.**	**(a)**	**16.**	**(b)**	**17.**	**(d)**		

7. INVESTMENT DECISIONS

1. **A capital budgeting technique which does not require the computation of costof capital for decision making purposes is:**
   - **a.** Net Present Value method
   - **b.** Internal Rate of Return method
   - **c.** Modified Internal Rate of Return method
   - **d.** Payback Period method

2. **If two alternative proposals are such that the acceptance of one shall exclude the possibility of the acceptance of another then such decision making will lead to:**
   - **a.** Mutually exclusive decisions
   - **b.** Accept reject decisions
   - **c.** Contingent decisions
   - **d.** None of the above

3. **In case a company considers a discounting factor higher than the cost of capitalfor arriving at present values, the present values of cash inflows will be:**
   - **a.** Less than those computed on the basis of cost of capital
   - **b.** More than those computed on the basis of cost of capital
   - **c.** Equal to those computed on the basis of the cost of capital
   - **d.** None of the above

4. **If the cut off rate of a project is greater than IRR, we may:**
   - **a.** Accept the proposal
   - **b.** Reject the proposal
   - **c.** Be neutral about it
   - **d.** Wait for the IRR to increase and match the cut off rate

5. **While evaluating capital investment proposals, time value of money is used inwhich of the following techniques:**
   - **a.** Payback Period method
   - **b.** Accounting rate of return
   - **c.** Net present value
   - **d.** None of the above

6. **IRR would favour project proposals which have:**
   - **a.** Heavy cash inflows in the early stages of the project.
   - **b.** Evenly distributed cash inflows throughout the project.
   - **c.** Heavy cash inflows at the later stages of the project.
   - **d.** None of the above.

7. **The re-investment assumption in the case of the IRR technique assumes that:**
   - **a.** Cash flows can be re-invested at the projects IRR.
   - **b.** Cash flows can be re-invested at the weighted cost of capital.
   - **c.** Cash flows can be re-invested at the marginal cost of capital.
   - **d.** None of the above

8. **Multiple IRRs are obtained when:**
   - **a.** Cash flows in the early stages of the project exceed cash flows during thelater stages.
   - **b.** Cash flows reverse their signs during the project.
   - **c.** Cash flows are uneven.
   - **d.** None of the above.

9. **Depreciation is included as a cost in which of the following techniques:**
   - **a.** Accounting rate of return
   - **b.** Net present value
   - **c.** Internal rate of return
   - **d.** None of the above

10. **Management is considering a Rs.1,00,000 investment in a project with a 5 yearlife and no residual value. If the total income from the project is expected to be Rs.60,000 and recognition is given to the effect of straight line depreciation onthe investment, the average rate of return is:**

    a. 12% **b.** 24% **c.** 60% **d.** 75%

11. **Assume cash outflow equals Rs.1,20,000 followed by cash inflows of Rs.25,000 peryear for 8 years and a cost of capital of 11%. What is the Net present value?**

    a. (Rs.38,214) **b.** Rs.9,653 **c.** Rs.8,653 **d.** Rs.38,214

12. **What is the Internal rate of return for a project having cash flows of Rs.40,000per year for 10 years and a cost of Rs.2,26,009?**

a. 8%

b. 9%

c. 10%

d. 12%

13. **While evaluating investments, the release of working capital at the end of theproject's life should be considered as:**

a. Cash inflow

b. Cash outflow

c. Having no effect upon the capital budgeting decision

d. None of the above

14. **Capital rationing refers to a situation where:**

a. Funds are restricted and the management has to choose from amongstavailable alternative investments.

b. Funds are unlimited and the management has to decide how to allocatethem to suitable projects.

c. Very few feasible investment proposals are available with themanagement.

d. None of the above.

15. **Capital budgeting is done for:**

a. Evaluating short term investment decisions.

b. Evaluating medium term investment decisions.

c. Evaluating long term investment decisions.

d. None of the above.

Answers to the MCQs based Questions

1.	**(d)**	**2.**	**(a)**	**3.**	**(a)**	**4.**	**(b)**	**5.**	**(c)**	**6.**	**(a)**
7.	**(a)**	**8.**	**(b)**	**9.**	**(a)**	**10.**	**(b)**	**11.**	**(c)**	**12.**	**(d)**
13.	**(a)**	**14.**	**(a)**	**15.**	**(c)**						

8. DIVIDEND DECISIONS

1. **Which one of the following is the assumption of Gordon's Model:**
   - **a.** $K_e > g$
   - **b.** Retention ratio, (b), once decide upon, is constant
   - **c.** Firm is an all equity firm
   - **d.** All of the above

2. **What should be the optimum Dividend pay-out ratio, when r = 15% & K_e = 12%:**
   - **a.** 100%
   - **b.** 50%
   - **c.** Zero
   - **d.** None of the above

3. **Which of the following is the irrelevance theory?**
   - **a.** Walter model
   - **b.** Gordon model
   - **c.** M.M. hypothesis
   - **d.** Linter's model

4. **If the company's D/P ratio is 60% & ROI is 16%, what should be the growthrate?**
   - **a.** 5%
   - **b.** 7%
   - **c.** 6.4%
   - **d.** 9.6%

5. **If the shareholders prefer regular income, how does this affect the dividenddecision:**
   - **a.** It will lead to payment of dividend
   - **b.** It is the indicator to retain more earnings
   - **c.** It has no impact on dividend decision
   - **d.** Can't say

6. **Mature companies having few investment opportunities will show high payoutratios, this statement is:**
   - **a.** False
   - **b.** True
   - **c.** Partial true
   - **d.** None of these

7. **Which of the following is the limitation of Linter's model?**
   - **a.** This model does not offer a market price for the shares.
   - **b.** The adjustment factor is an arbitrary number and not based on anyscientific criterion or methods.
   - **c.** Both (a) & (b)
   - **d.** None of the above.

8. **What are the different options other than cash used for distributing profits toshareholders?**
   - **a.** Bonus shares
   - **b.** Stock split
   - **c.** Both (a) and (b)
   - **d.** None of the above

9. **Which of the following statement is correct with respect to Gordon's model?**
   - **a.** When IRR is greater than cost of capital, the price per share increases anddividend pay-out decreases.
   - **b.** When IRR is greater than cost of capital, the price per share decreases anddividend pay-out increases.
   - **c.** When IRR is equal to cost of capital, the price per share increases anddividend pay-out decreases.
   - **d.** When IRR is lower than cost of capital, the price per share increases anddividend pay-out decreases.

10. Compute EPS according to Graham & Dodd approach from the giveninformation:

Market price	**Rs. 56**
Dividend pay-out ratio	**60%**
Multiplier	**2**

a. Rs. 30

b. Rs. 56

c. Rs. 28

d. Rs. 84

11. Which among the following is not an assumption of Walter's Model?

a. Rate of return and cost of capital are constant

b. Information is freely available to all

c. There is discrimination in taxes

d. The firm has perpetual life

Answers to the MCQs

1.	**(d)**	**2.**	**(c)**	**3.**	**(c)**	**4.**	**(c)**	**5. (a)**	**6.**	**(b)**
7.	**(c)**	**8.**	**(a)**	**9.**	**(a)**	**10.**	**(a)**	**11. (c)**		

9. MANAGEMENT OF WORKING CAPITAL

1. **The credit terms may be expressed as "3/15 net 60". This means that a 3% discount will be granted if the customer pays within 15 days, if he does not avail the offer, he must make payment within 60 days.**
   - **a.** I agree with the statement
   - **b.** I do not agree with the statement
   - **c.** I cannot say.

2. **The term 'net 50' implies that the customer will make payment:**
   - **a.** Exactly on 50^{th} day
   - **b.** Before 50^{th} day
   - **c.** Not later than 50^{th} day
   - **d.** None of the above.

3. **Trade credit is a source of :**
   - **a.** Long-term finance
   - **b.** Medium term finance
   - **c.** Spontaneous source of finance
   - **d.** None of the above.

4. **The term float is used in:**
   - **a.** Inventory Management
   - **b.** Receivable Management
   - **c.** Cash Management
   - **d.** Marketable securities.

5. **William J Baumol's model of Cash Management determines optimum cash levelwhere the carrying cost and transaction cost are:**
   - **a.** Maximum
   - **b.** Minimum
   - **c.** Medium
   - **d.** None of the above.

6. **In Miller – ORR Model of Cash Management:**
   - **a.** The lower, upper limit, and return point of Cash Balances are set out
   - **b.** Only upper limit and return point are decided
   - **c.** Only lower limit and return point are decided
   - **d.** None of the above are decided.

7. **Working Capital is defined as:**
   - **a.** Excess of current assets over current liabilities
   - **b.** Excess of current liabilities over current assets
   - **c.** Excess of Fixed Assets over long-term liabilities
   - **d.** None of the above.

8. **Working Capital is also known as "Circulating Capital, fluctuating Capital andrevolving capital". The aforesaid statement is;**
   - **a.** Correct
   - **b.** Incorrect
   - **c.** Cannot say.

9. **The basic objectives of Working Capital Management are:**
   - **a.** Optimum utilization of resources for profitability
   - **b.** To meet day-to-day current obligations
   - **c.** Ensuring marginal return on current assets is always more than cost ofcapital
   - **d.** Select any one of the above statements.

10. **The term Gross Working Capital is known as:**
    - **a.** The investment in current liabilities
    - **b.** The investment in long-term liability
    - **c.** The investment in current assets
    - **d.** None of the above.

11. **The term net working capital refers to the difference between the current assetsminus current liabilities.**
    - **a.** The statement is correct
    - **b.** The statement is incorrect
    - **c.** I cannot say.

12. **The term "Core current assets' was coined by:**
    - **a.** Chore Committee
    - **b.** Tandon Committee
    - **c.** Jilani Committee
    - **d.** None of the above.

13. **The concept operating cycle refers to the average time which elapses betweenthe acquisition of raw materials and the final cash realization. This statement is:**
    - **a.** Correct
    - **b.** Incorrect
    - **c.** Partially True
    - **d.** I cannot say.

14. **As a matter of self-imposed financial discipline can there be a situation of zero working capital now-a-days in some of the professionally managed organizations.**
    - **a.** Yes
    - **b.** No
    - **c.** Impossible
    - **d.** Cannot say.

15. **Over trading arises when a business expands beyond the level of funds available.The statement is:**
    - **a.** Incorrect
    - **b.** Correct
    - **c.** Partially correct
    - **d.** I cannot say.

16. **A Conservative Working Capital strategy calls for high levels of current assetsin relation to sales.**
    - **a.** I agree
    - **b.** Do not agree
    - **c.** I cannot say.

17. **The term Working Capital leverage refer to the impact of level of working capital on company's profitability. This measures the responsiveness of ROCE for changes in current assets.**
    - **a.** I agree
    - **b.** Do not agree
    - **c.** The statement is partially true.

18. **The term spontaneous source of finance refers to the finance which naturallyarise in the course of business operations. The statement is:**
    - **a.** Correct
    - **b.** Incorrect
    - **c.** Partially Correct
    - **d.** I cannot say.

19. **Under hedging approach to financing of working capital requirements of a firm, each asset in the balance sheet assets side would be offset with a financing instrument of the same approximate maturity. This statement is:**
    - **a.** Incorrect
    - **b.** Correct
    - **c.** Partially correct
    - **d.** I cannot say.

20. **Trade credit is a:**
    - **a.** Negotiated source of finance
    - **b.** Hybrid source of finance
    - **c.** Spontaneous source of finance
    - **d.** None of the above.

21. **Factoring is a method of financing whereby a firm sells its trade debts at adiscount to a financial institution. The statement is:**
    - **a.** Correct
    - **b.** Incorrect
    - **c.** Partially correct
    - **d.** I cannot say.

22. A factoring arrangement can be both with recourse as well as without recourse:

a. True

b. False

c. Partially correct

d. Cannot say.

23. The Bank financing of working capital will generally be in the following form. Cash Credit, Overdraft, bills discounting, bills acceptance, line of credit; Letter of credit and bank guarantee.

a. I agree

b. I do not agree

c. I cannot say.

24. When the items of inventory are classified according to value of usage, thetechnique is known as:

a. XYZ Analysis

b. ABC Analysis

c. DEF Analysis

d. None of the above.

25. When a firm advises its customers to mail their payments to special Post Officecollection centers, the system is known as.

a. Concentration banking

b. Lock Box system

c. Playing the float

d. None of the above.

Answers to the MCQs

1.	**(a)**	**2.**	**(c)**	**3.**	**(c)**	**4.**	**(c)**	**5.**	**(b)**	**6.**	**(a)**
7.	**(a)**	**8.**	**(a)**	**9.**	**(b)**	**10.**	**(c)**	**11.**	**(a)**	**12.**	**(b)**
13.	**(a)**	**14.**	**(a)**	**15.**	**(b)**	**16.**	**(a)**	**17.**	**(a)**	**18.**	**(a)**
19.	**(b)**	**20.**	**(c)**	**21.**	**(a)**	**22.**	**(a)**	**23.**	**(a)**	**24.**	**(b)**
25.	**(b)**										

APPENDIX

Future value interest factor of ₹1 per period at i% for n periods, FVIF(i,n).

(The Compound Sum of One Rupee)

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.010	1.020	1.030	1.040	1.050	1.060	1.070	1.080	1.090	1.100
2	1.020	1.040	1.061	1.082	1.103	1.124	1.145	1.166	1.188	1.210
3	1.030	1.061	1.093	1.125	1.158	1.191	1.225	1.260	1.295	1.331
4	1.041	1.082	1.126	1.170	1.216	1.262	1.311	1.360	1.412	1.464
5	1.051	1.104	1.159	1.217	1.276	1.338	1.403	1.469	1.539	1.611
6	1.062	1.126	1.194	1.265	1.340	1.419	1.501	1.587	1.677	1.772
7	1.072	1.149	1.230	1.316	1.407	1.504	1.606	1.714	1.828	1.949
8	1.083	1.172	1.267	1.369	1.477	1.594	1.718	1.851	1.993	2.144
9	1.094	1.195	1.305	1.423	1.551	1.689	1.838	1.999	2.172	2.358
10	1.105	1.219	1.344	1.480	1.629	1.791	1.967	2.159	2.367	2.594
11	1.116	1.243	1.384	1.539	1.710	1.898	2.105	2.332	2.580	2.853
12	1.127	1.268	1.426	1.601	1.796	2.012	2.252	2.518	2.813	3.138
13	1.138	1.294	1.469	1.665	1.886	2.133	2.410	2.720	3.066	3.452
14	1.149	1.319	1.513	1.732	1.980	2.261	2.579	2.937	3.342	3.797
15	1.161	1.346	1.558	1.801	2.079	2.397	2.759	3.172	3.642	4.177
16	1.173	1.373	1.605	1.873	2.183	2.540	2.952	3.426	3.970	4.595
17	1.184	1.400	1.653	1.948	2.292	2.693	3.159	3.700	4.328	5.054
18	1.196	1.428	1.702	2.026	2.407	2.854	3.380	3.996	4.717	5.560
19	1.208	1.457	1.754	2.107	2.527	3.026	3.617	4.316	5.142	6.116
20	1.220	1.486	1.806	2.191	2.653	3.207	3.870	4.661	5.604	6.727
25	1.282	1.641	2.094	2.666	3.386	4.292	5.427	6.848	8.623	10.835
30	1.348	1.811	2.427	3.243	4.322	5.743	7.612	10.063	13.268	17.449
35	1.417	2.000	2.814	3.946	5.516	7.686	10.677	14.785	20.414	28.102
40	1.489	2.208	3.262	4.801	7.040	10.286	14.974	21.725	31.409	45.259
50	1.645	2.692	4.384	7.107	11.467	18.420	29.457	46.902	74.358	117.391

Contd.....

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.110	1.120	1.130	1.140	1.150	1.160	1.170	1.180	1.190	1.200
2	1.232	1.254	1.277	1.300	1.323	1.346	1.369	1.392	1.416	1.440
3	1.368	1.405	1.443	1.482	1.521	1.561	1.602	1.643	1.685	1.728
4	1.518	1.574	1.630	1.689	1.749	1.811	1.874	1.939	2.005	2.074
5	1.685	1.762	1.842	1.925	2.011	2.100	2.192	2.288	2.386	2.488
6	1.870	1.974	2.082	2.195	2.313	2.436	2.565	2.700	2.840	2.986
7	2.076	2.211	2.353	2.502	2.660	2.826	3.001	3.185	3.379	3.583
8	2.305	2.476	2.658	2.853	3.059	3.278	3.511	3.759	4.021	4.300
9	2.558	2.773	3.004	3.252	3.518	3.803	4.108	4.435	4.785	5.160
10	2.839	3.106	3.395	3.707	4.046	4.411	4.807	5.234	5.695	6.192
11	3.152	3.479	3.836	4.226	4.652	5.117	5.624	6.176	6.777	7.430
12	3.498	3.896	4.335	4.818	5.350	5.936	6.580	7.288	8.064	8.916
13	3.883	4.363	4.898	5.492	6.153	6.886	7.699	8.599	9.596	10.699
14	4.310	4.887	5.535	6.261	7.076	7.988	9.007	10.147	11.420	12.839
15	4.785	5.474	6.254	7.138	8.137	9.266	10.539	11.974	13.590	15.407
16	5.311	6.130	7.067	8.137	9.358	10.748	12.330	14.129	16.172	18.488
17	5.895	6.866	7.986	9.276	10.761	12.468	14.426	16.672	19.244	22.186
18	6.544	7.690	9.024	10.575	12.375	14.463	16.879	19.673	22.901	26.623
19	7.263	8.613	10.197	12.056	14.232	16.777	19.748	23.214	27.252	31.948
20	8.062	9.646	11.523	13.743	16.367	19.461	23.106	27.393	32.429	38.338
25	13.585	17.000	21.231	26.462	32.919	40.874	50.658	62.669	77.388	95.396
30	22.892	29.960	39.116	50.950	66.212	85.850	111.065	143.371	184.675	237.376
35	38.575	52.800	72.069	98.100	133.176	180.314	243.503	327.997	440.701	590.668
40	65.001	93.051	132.782	188.884	267.864	378.721	533.869	750.378	1,051.668	1,469.772
50	184.565	289.002	450.736	700.233	1,083.657	1,670.704	2,566.215	3,927.357	5,988.914	9,100.438

Present value interest factor of Re 1 per period at i% for n periods, PVIF(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009

Contd....

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	0.812	0.797	0.783	0.769	0.756	0.743	0.731	0.718	0.706	0.694
3	0.731	0.712	0.693	0.675	0.658	0.641	0.624	0.609	0.593	0.579
4	0.659	0.636	0.613	0.592	0.572	0.552	0.534	0.516	0.499	0.482
5	0.593	0.567	0.543	0.519	0.497	0.476	0.456	0.437	0.419	0.402
6	0.535	0.507	0.480	0.456	0.432	0.410	0.390	0.370	0.352	0.335
7	0.482	0.452	0.425	0.400	0.376	0.354	0.333	0.314	0.296	0.279
8	0.434	0.404	0.376	0.351	0.327	0.305	0.285	0.266	0.249	0.233
9	0.391	0.361	0.333	0.308	0.284	0.263	0.243	0.225	0.209	0.194
10	0.352	0.322	0.295	0.270	0.247	0.227	0.208	0.191	0.176	0.162
11	0.317	0.287	0.261	0.237	0.215	0.195	0.178	0.162	0.148	0.135
12	0.286	0.257	0.231	0.208	0.187	0.168	0.152	0.137	0.124	0.112
13	0.258	0.229	0.204	0.182	0.163	0.145	0.130	0.116	0.104	0.093
14	0.232	0.205	0.181	0.160	0.141	0.125	0.111	0.099	0.088	0.078
15	0.209	0.183	0.160	0.140	0.123	0.108	0.095	0.084	0.074	0.065
16	0.188	0.163	0.141	0.123	0.107	0.093	0.081	0.071	0.062	0.054
17	0.170	0.146	0.125	0.108	0.093	0.080	0.069	0.060	0.052	0.045
18	0.153	0.130	0.111	0.095	0.081	0.069	0.059	0.051	0.044	0.038
19	0.138	0.116	0.098	0.083	0.070	0.060	0.051	0.043	0.037	0.031
20	0.124	0.104	0.087	0.073	0.061	0.051	0.043	0.037	0.031	0.026
25	0.074	0.059	0.047	0.038	0.030	0.024	0.020	0.016	0.013	0.010
30	0.044	0.033	0.026	0.020	0.015	0.012	0.009	0.007	0.005	0.004
35	0.026	0.019	0.014	0.010	0.008	0.006	0.004	0.003	0.002	0.002
40	0.015	0.011	0.008	0.005	0.004	0.003	0.002	0.001	0.001	0.001
50	0.005	0.003	0.002	0.001	0.001	0.001	0.000	0.000	0.000	0.000

Future value interest factor of an ordinary annuity of Re 1 per period at i% for n periods, FVIFA(i,n). (The Compound Value of an Annuity of One Rupee)

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.010	2.020	2.030	2.040	2.050	2.060	2.070	2.080	2.090	2.100
3	3.030	3.060	3.091	3.122	3.153	3.184	3.215	3.246	3.278	3.310
4	4.060	4.122	4.184	4.246	4.310	4.375	4.440	4.506	4.573	4.641
5	5.101	5.204	5.309	5.416	5.526	5.637	5.751	5.867	5.985	6.105
6	6.152	6.308	6.468	6.633	6.802	6.975	7.153	7.336	7.523	7.716
7	7.214	7.434	7.662	7.898	8.142	8.394	8.654	8.923	9.200	9.487
8	8.286	8.583	8.892	9.214	9.549	9.897	10.260	10.637	11.028	11.436
9	9.369	9.755	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347
30	34.785	40.568	47.575	56.085	66.439	79.058	94.461	113.28	136.31	164.49
35	41.660	49.994	60.462	73.652	90.320	111.43	138.24	172.32	215.71	271.02
40	48.886	60.402	75.401	95.026	120.80	154.76	199.64	259.06	337.88	442.59
50	64.463	84.579	112.80	152.67	209.35	290.34	406.53	573.77	815.08	1,163.9

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.110	2.120	2.130	2.140	2.150	2.160	2.170	2.180	2.190	2.200
3	3.342	3.374	3.407	3.440	3.473	3.506	3.539	3.572	3.606	3.640
4	4.710	4.779	4.850	4.921	4.993	5.066	5.141	5.215	5.291	5.368
5	6.228	6.353	6.480	6.610	6.742	6.877	7.014	7.154	7.297	7.442
6	7.913	8.115	8.323	8.536	8.754	8.977	9.207	9.442	9.683	9.930
7	9.783	10.089	10.405	10.730	11.067	11.414	11.772	12.142	12.523	12.916
8	11.859	12.300	12.757	13.233	13.727	14.240	14.773	15.327	15.902	16.499
9	14.164	14.776	15.416	16.085	16.786	17.519	18.285	19.086	19.923	20.799
10	16.722	17.549	18.420	19.337	20.304	21.321	22.393	23.521	24.709	25.959
11	19.561	20.655	21.814	23.045	24.349	25.733	27.200	28.755	30.404	32.150
12	22.713	24.133	25.650	27.271	29.002	30.850	32.824	34.931	37.180	39.581
13	26.212	28.029	29.985	32.089	34.352	36.786	39.404	42.219	45.244	48.497
14	30.095	32.393	34.883	37.581	40.505	43.672	47.103	50.818	54.841	59.196
15	34.405	37.280	40.417	43.842	47.580	51.660	56.110	60.965	66.261	72.035
16	39.190	42.753	46.672	50.980	55.717	60.925	66.649	72.939	79.850	87.442
17	44.501	48.884	53.739	59.118	65.075	71.673	78.979	87.068	96.022	105.93
18	50.396	55.750	61.725	68.394	75.836	84.141	93.406	103.74	115.27	128.12
19	56.939	63.440	70.749	78.969	88.212	98.603	110.28	123.41	138.17	154.74
20	64.203	72.052	80.947	91.025	102.44	115.38	130.03	146.63	165.42	186.69
25	114.41	133.33	155.62	181.87	212.79	249.21	292.10	342.60	402.04	471.98
30	199.02	241.33	293.20	356.79	434.75	530.31	647.44	790.95	966.71	1,181.9
35	341.59	431.66	546.68	693.57	881.17	1,120.7	1,426.5	1,816.7	2,314.2	2,948.3
40	581.83	767.09	1,013.7	1,342.0	1,779.1	2,360.8	3,134.5	4,163.2	5,529.8	7,343.9
50	1,668.8	2,400.0	3,459.5	4,994.5	7,217.7	10,436	15,090	21,813	31,515	45,497

Present value interest factor of an (ordinary) annuity of Re 1 per period at i% for n periods, PVIFA(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909
2	1.970	1.942	1.913	1.886	1.859	1.833	1.808	1.783	1.759	1.736
3	2.941	2.884	2.829	2.775	2.723	2.673	2.624	2.577	2.531	2.487
4	3.902	3.808	3.717	3.630	3.546	3.465	3.387	3.312	3.240	3.170
5	4.853	4.713	4.580	4.452	4.329	4.212	4.100	3.993	3.890	3.791
6	5.795	5.601	5.417	5.242	5.076	4.917	4.767	4.623	4.486	4.355
7	6.728	6.472	6.230	6.002	5.786	5.582	5.389	5.206	5.033	4.868
8	7.652	7.325	7.020	6.733	6.463	6.210	5.971	5.747	5.535	5.335
9	8.566	8.162	7.786	7.435	7.108	6.802	6.515	6.247	5.995	5.759
10	9.471	8.983	8.530	8.111	7.722	7.360	7.024	6.710	6.418	6.145
11	10.368	9.787	9.253	8.760	8.306	7.887	7.499	7.139	6.805	6.495
12	11.255	10.575	9.954	9.385	8.863	8.384	7.943	7.536	7.161	6.814
13	12.134	11.348	10.635	9.986	9.394	8.853	8.358	7.904	7.487	7.103
14	13.004	12.106	11.296	10.563	9.899	9.295	8.745	8.244	7.786	7.367
15	13.865	12.849	11.938	11.118	10.380	9.712	9.108	8.559	8.061	7.606
16	14.718	13.578	12.561	11.652	10.838	10.106	9.447	8.851	8.313	7.824
17	15.562	14.292	13.166	12.166	11.274	10.477	9.763	9.122	8.544	8.022
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.372	8.756	8.201
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.604	8.950	8.365
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.818	9.129	8.514
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.823	9.077
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.427
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.644
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.779
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.915

Contd….

Period	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.901	0.893	0.885	0.877	0.870	0.862	0.855	0.847	0.840	0.833
2	1.713	1.690	1.668	1.647	1.626	1.605	1.585	1.566	1.547	1.528
3	2.444	2.402	2.361	2.322	2.283	2.246	2.210	2.174	2.140	2.106
4	3.102	3.037	2.974	2.914	2.855	2.798	2.743	2.690	2.639	2.589
5	3.696	3.605	3.517	3.433	3.352	3.274	3.199	3.127	3.058	2.991
6	4.231	4.111	3.998	3.889	3.784	3.685	3.589	3.498	3.410	3.326
7	4.712	4.564	4.423	4.288	4.160	4.039	3.922	3.812	3.706	3.605
8	5.146	4.968	4.799	4.639	4.487	4.344	4.207	4.078	3.954	3.837
9	5.537	5.328	5.132	4.946	4.772	4.607	4.451	4.303	4.163	4.031
10	5.889	5.650	5.426	5.216	5.019	4.833	4.659	4.494	4.339	4.192
11	6.207	5.938	5.687	5.453	5.234	5.029	4.836	4.656	4.486	4.327
12	6.492	6.194	5.918	5.660	5.421	5.197	4.988	4.793	4.611	4.439
13	6.750	6.424	6.122	5.842	5.583	5.342	5.118	4.910	4.715	4.533
14	6.982	6.628	6.302	6.002	5.724	5.468	5.229	5.008	4.802	4.611
15	7.191	6.811	6.462	6.142	5.847	5.575	5.324	5.092	4.876	4.675
16	7.379	6.974	6.604	6.265	5.954	5.668	5.405	5.162	4.938	4.730
17	7.549	7.120	6.729	6.373	6.047	5.749	5.475	5.222	4.990	4.775
18	7.702	7.250	6.840	6.467	6.128	5.818	5.534	5.273	5.033	4.812
19	7.839	7.366	6.938	6.550	6.198	5.877	5.584	5.316	5.070	4.843
20	7.963	7.469	7.025	6.623	6.259	5.929	5.628	5.353	5.101	4.870
25	8.422	7.843	7.330	6.873	6.464	6.097	5.766	5.467	5.195	4.948
30	8.694	8.055	7.496	7.003	6.566	6.177	5.829	5.517	5.235	4.979
35	8.855	8.176	7.586	7.070	6.617	6.215	5.858	5.539	5.251	4.992
40	8.951	8.244	7.634	7.105	6.642	6.233	5.871	5.548	5.258	4.997
50	9.042	8.304	7.675	7.133	6.661	6.246	5.880	5.554	5.262	4.999