Directorate of Distance Education

UNIVERSITY OF JAMMU
JAMMU

SELF LEARNING MATERIAL

FOR

M.COM . FOURTH SEMESTER

ADVANCED FINANCIAL MANAGEMENT

For the examination to be held in 2021 onwards

Course No. : FE-414	**Unit - I to IV**
M.COM. IV SEMESTER	**Lesson No. 1-20**

Course Co-ordinator :

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ADVANCED FINANCIAL MANAGEMENT

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DIRECTORATE OF DISTANCE EDUCATION

UNIVERSITY OF JAMMU

M.COM. FOURTH SEMESTER (NON CBCS)

ADVANCED FINANCIAL MANAGEMENT

Course : M.COM-FE-414 Max. Marks : 100

Credits : 4 External : 80 Marks

Time : 3.00 Hrs. Internal : 20 Marks

(Syllabus for the examinations to be held in May 2021, 2022 and 2023)

OBJECTIVES : To acquaint students to with the conceptual framework of advanced financial management and its application under various environment constraints.

Page No.

UNIT - I : INVESTMENT DECISIONS (1 - 93)

Inter-relation among investment, financing and dividend decisions; Concept of cash flow; Time value of money - concept, need and techniques of time value of money - discounting and compounding; Risk return trade off; Risk analysis in capital budgeting : Sources of risk, Sensitivity analysis; Measurement of Risk; Application of option pricing theory in investment decisions; Capital budgeting and inflation; Problems in investment decisions; International investment and financing decisions.

UNIT - II : CAPITAL STRUCTURE & DIVIDEND DECISIONS (94-170)

Concept and Definitions of capital structure; Optimum capital structure; Capital structure and market value of a firm; Arbitrage process in capital structure; EBIT - EPS analysis; ROI and ROE analysis; Capital structure policy; Dividend decisions - concept; Theories of dividend policy; relevance and irrelevance of dividend decision; Corporate dividend behaviour.

UNIT - III : WORKING CAPITAL MANAGEMENT (171-280)

Concept and models of deterring optimal cash balances - Baumol model, Miller-Orr model; Credit management through credit policy variables; Marginal analysis; Control of accounts receivables; problems on credit granting decision; Determinations of inventory control levels : Ordering level; Re-ordering level; danger level; Committees on working capital management - Dehejia Committee, Tandon Committee; Chore Committee; Marathe Committee; Kannan Committee; Recent guidelines on working capital finance.

UNIT - IV : CONTEMPORARY AREAS OF FINANCIAL MANAGEMENT (281-384)

Financial strategy formulation; Ethics in finance; Strategic business and financial planning for multinational organisations; Dividend policy in multinational organisations; Concept of acquisitions and mergers; Revival strategies for sick units; Concept and components of EVA; Market value added (MVA); Components and benefits of financial information system; Concept; Features and benefits of corporate value based management system; Impact of demonetisation on various kinds of business concerns.

BOOKS RECOMMENDED :

1. Bhattacharya, Hrishikas, Working Capital Management, Strategies and Techniques, Prentice Hall, New Delhi.
2. Chandra, Prasanna, Financial Decision Making, Prentice Hall, New Delhi.
3. Hampton, John, Financial Decision making, Prentice Hall, New Delhi.
4. Pandey, I.M., Financial Management, Vikas Publishing House, New Delhi.
5. Van Horne, J.C. and J.M. Wachowicz Jr, Fundamentals of Financial Management, Prentice Hall, New Delhi.

6. Van Horne, James C, Financial Management and Policy, Prentice Hall, New Delhi.

NOTE PAPER SETTING :

The paper consists of two sections. Each section will cover the whole of the syllabus without repeating the questions in the entire paper.

Section A : It will consist of eight short answer questions, selecting two from each unit. A candidate has to attempt any six and answer to each question shall be within 200 words. Each question carries four marks and total weightage to this section shall be 24 marks.

Section B : It will consist of six essay type questions with answer to each question within 800 words. One question will be set atleast from each unit and the candidate has to attempt four. Each question will carry 14 marks and total weightage shall be 56 marks.

MODEL QUESTION PAPER

ADVANCED FINANCIAL MANAGEMENT

TIME : 3 Hours **Max. Marks : 80**

SECTION A

Note : Attempt any six questions. Each question carries 4 marks.

1. What is optimum capital structure?
2. Define financial structure.
3. What is scrip dividend?
4. Write a short note on time value of money?
5. What are derivatives?
6. What is meant by market value added?
7. Explain Tandon Committee.
8. Define capital budgeting and state any two objectives of Capital Budgeting.

SECTION B

Note : Attempt any four questions. Each question carries 14 marks.

1. Explain how a firm will go about determining its optimum capital structure.
2. What do you understand by time value of money? What do you understand by future value and present value of money?
3. Explain the significance of working capital in the smooth running of a business enterprise and also discuss the various components of working capital.
4. Discuss the method of working capital assessment as given by chore committee.
5. How international taxation affects the dividend decisions of a multinational firm?
6. What do you understand by risk industrial company? Explain the factors causing industrial sickness.

Semester-IV **Lesson No. 1**

Course No. FE-414 **Unit - I**

FINANCIAL DECISIONS

STRUCTURE

1.1 INTRODUCTION

Finance comprises of blend of knowledge of credit, securities, financial related legislations, financial instruments, financial markets and financial system. As finance is a scarce resource, it must be systematically raised form the cheapest source of funds and must be judiciously utilized for the development and growth of the organization. Charles Gertenberg visualizes the significance of scientific arrangement of records with the help of which the inflow and outflow of funds can be efficiently managed, stocks and bonds can be efficiently marketed and the efficacy of the organization can be greatly improved.

The financial manager in his new role, is concerned with the efficient allocation of funds. The firm's investment and financing decisions are continuous. The financial manager according to Ezra Solomon must find a rationale for answering the following three questions.

(1) How large should an enterprise be and how fast should it grow?

(2) In what form should it hold its assets?

(3) How should the funds required be raised?

It is therefore clear from the above discussion that firms take different financial decisions continuously in the normal course of business. Liquidity, solvency, profitability and flexibility optimization goals and risk, would lead to reaping of wealth maximization goal.

1.2 OBJECTIVES

After reading this lesson, you should be able to:

- understand the various types of financial decisions;
- to describe the relationship of financial decisions; and
- to identify the various factors influencing financial decisions.

1.3 FINANCIAL DECISIONS - TYPES

Financial decisions refer to decisions concerning financial matters of a business firm. There are many kinds of financial management decisions that the

firm makers in pursuit of maximising shareholder's wealth, viz., kind of assets to be acquired, pattern of capitalisation, distribution of firm's income etc. We can classify these decisions into three major groups :

1. Investment decisions
2. Financing decision.
3. Dividend decisions.
4. Liquidity decisions.

1.3.1 Investment Decisions / Capital Budgeting Decisions

Investment Decision relates to the determination of total amount of assets to be held in the firm, the composition of these assets and the business risk complexities of the firm as perceived by the investors. It is the most important financial decision. Since funds involve cost and are available in a limited quantity, its proper utilization is very necessary to achieve the goal of wealth maximasation.

The investment decisions can be classified under two broad groups; (i) long-term investment decision and (ii) Short-term, in vestment decision. The long-term investment decision is referred to as the capital budgeting and the short-term investment decision as working capital management.

Capital budgeting is the process of making investment decisions in capital expenditure. These are expenditures, the benefits of which are expected to be received over a long period of time exceeding one year. The finance manager has to assess the profitability of various projects before committing the funds. The investment proposals should be evaluated in terms of expected profitability, costs involved and the risks associated with the projects. The investment decision is important not only for the setting up of new units but also for the expansion of present units, replacement of permanent assets, research and development project costs, and reallocation of funds, in case, investments made earlier, do not fetch result as anticipated earlier. Generally investment decisions fall under two broad categories:

(i) investment in own business; and

(ii) investment in outside business, i.e., in securities and other companies.

We all know that the primary sources of supplying capital are:

(i) owners and

(ii) lenders / outsiders.

It is also known to us that there is a cost of capital in all types of capital investment in the business therefore, investment in own business is justified only when the return for the same will be at least equal to the estimated return resulting from the investment by way of relevant cost of capital.

In other words, investment in own business is desirable provided the return from such enterprise is higher than the estimated return on the relevant cost of capital.

The primary purpose, of course, of investment funds in business assets is to produce future economic benefits in such a manner which will cover not only the cost of capital and operating expenses but also will leave a sufficient margin in order to cover the risk which is involved in it.

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1.3.2 Financing Decisions / Capital Structure Decisions

Once the firm has taken the investment decision and committed itself to new investment, it must decide the best means of financing these commitments. Since, firms regularly make new investments, the needs for financing and financial decisions are on going, Hence, a firm will be continuously planning for new financial needs. The financing decision is not only concerned with how best to finance new asset, but also concerned with the best overall mix of financing for the firm.

A finance manager has to select such sources of funds which will make optimum capital structure. The important thing to be decided here is the proportion of various sources in the overall capital mix of the firm. The debt- equity ratio should be fixed in such a way that it helps in maximising the profitability of the concern. The

raising of more debts will involve fixed interest liability and dependence upon outsiders. It may help in increasing the return on equity but will also enhance the risk. The raising of funds through equity will bring permanent funds to the business but the shareholders will expect higher rates of earnings. The financial manager has to strike a balance between anxious sources so that the overall profitability of the concern improves. If the capital structure is able to minimise the risk and raise the profitability then the market prices of the shares will go up maximising the wealth of shareholders.

1.3.3 Dividend Decision

The third major financial decision relates to the disbursement of profits back to investors who supplied capital to the firm. The term dividend refers to that part of profits of a company which is distributed by it among its shareholders. It is the reward of shareholders for investments made by them in the share capital of the company. The dividend decision is concerned with the quantum of profits to be distributed among shareholders. A decision has to be taken whether ail the profits are to be distributed, to retain all the profits in business or to keep a part of profits in the business and distribute others among shareholders. The higher rate of dividend may raise the market price of shares and thus, maximise the wealth of shareholders. The firm should also consider the question of dividend stability, stock dividend (bonus shares) and cash dividend.

Moreover, the dividend policies of an organization have a significant bearing on the market value of stocks. Dividends must be distributed in line with the industry standards. The shareholders will otherwise perceive this variability negatively. It casts a suspicion on the financial health and motives of the management (signaling effect). In aggregate, an inefficient dividend decision mechanism would adversely impact the valuation of the company

1.3.4 Liquidity Decisions

Liquidity and profitability are closely related. Obviously, liquidity and profitability goals conflict in most of the decisions. The finance manager always perceives / faces the task of balancing liquidity and profitability. The term liquidity implies the ability of the firm to meet bills and the firm's cash reserves to meet emergencies. Whereas the profitability means the ability of the firm to obtain highest

returns within the funds available. As said earlier, striking a proper balance between liquidity and profitability is an ardous task. If a finance manager wants to meet all the bills, then profitability will decline similarly where he wants to invest funds in short term securities he may not be having adequate funds to pay-off its creditors. Lack of liquidity in extreme situations can lead to the firm's insolvency.

1.4 INTER-RELATION AMONG INVESTMENT, FINANCING AND DIVIDEND DECISIONS

The financial manager is concerned with the optimum utilization of funds and their procurement in a manner that the risk, cost and control considerations are properly balanced in a given situation. Irrespective of nature of decisions, i.e. investment decisions, financing or capital structure decisions / dividend decisions all these decisions are interdependent. All these decisions are inter- related. All are intended to maximize the wealth of the shareholders. An efficient financial manager has to ensure optimal decision by evaluating each of the decision involved in relation to its effect on shareholders wealth.

Although the basic decisions of finance includes three types of decisions i.e. investing, finance and dividend decisions but they are interlinked with each other somehow. It can be evident from the following points:

The main objective of all the above decisions is same which is profit maximization of business and wealth maximization of shareholders.

In order to make investment decisions such as investing in some major projects, the first thing we need to consider is the finance available and required to make investment.

Finance decision is also influenced by dividend decision. If more of the dividend is distributed, there is a need to raise more finance from external sources.

If more of the profits are retained for long term investment, there is less need of outside financing.

Hence, there is a need to take into account the joint impact of all the three decisions and effect of each of the decision on the market value of the company and its shares to achieve the overall objective of the business.

1.5 FACTORS INFLUENCING FINANCIAL DECISIONS

There are innumerable factors that influence the financial decision. They are classified as external factors and internal factors.

(A) External factors

- Capital structure
- Capital market and money market State of economy
- Requirements of investors Government policy
- Taxation policy
- Financial institutions / banks lending policy

(B) Internal factors

- Nature of business
- Age of the firm
- Size of the business
- Extent and trend of earnings
- Liquidity position
- Working capital requirements
- Composition of assets
- Nature of risk and expected return.

1.6 SUMMARY

Finance comprises of blend of knowledge of credit, securities, financial related legislations, financial instruments, financial markets and financial system. As finance is a scarce resource, it must be systematically raised form the cheapest source of funds and must be judiciously utilized for the development and growth of the organization. Financial decisions refer to decisions concerning financial matters of a business firm. There are many kinds of financial management decisions that the firm makers in pursuit of maximising shareholder's wealth, viz., kind of assets to be acquired, pattern of capitalisation, distribution of firm's income etc. We can classify

these decisions into three major groups : (1) Investment decisions, (2) Financing decision, (3) Dividend decisions, and (4) Liquidity decisions.

Investment Decision relates to the determination of total amount of assets to be held in the firm, the composition of these assets and the business risk complexities of the firm as perceived by the investors. The financing decision is not only concerned with how best to finance new asset, but also concerned with the best overall mix of financing for the firm. A finance manager has to select such sources of funds which will make optimum capital structure. The dividend decision is concerned with the quantum of profits to be distributed among shareholders. A decision has to be taken whether ail the profits are to be distributed, to retain all the profits in business or to keep a part of profits in the business and distribute others among shareholders. The higher rate of dividend may raise the market price of shares and thus, maximise the wealth of shareholders. The term liquidity implies the ability of the firm to meet bills and the firm's cash reserves to meet emergencies. Whereas the profitability means the ability of the firm to obtain highest returns within the funds available. As said earlier, striking a proper balance between liquidity and profitability is an ardous task. The finance manager tries to achieve the proper balance between, the basic considerations of 'risk and return' associated with various financial management decisions to maximise the market, value, of the firm. The financial manager is concerned with the optimum utilization of funds and their procurement in a manner that the risk, cost and control considerations are properly balanced in a given situation.

1.7 GLOSSARY

- **Financial decisions:** It refer to decisions concerning financial matters of a business firm.
- **Risk Free Rate:** It is a compensation for time and risk premium for risk.
- **Risk – Return Trade Off:** Levelling of risk and return is known as risk – return trade off.

1.8 SELF ASSESSMENT QUESTIONS

(1) What is meant by financial decision?

(2) Explain investment decision.

(3) Discuss the significance of various financial decisions.

(4) What is meant by liquidity decision?

1.9 LESSON END EXERCISE

(1) Explain in detail the factors that affect the dividend decisions in the companies?

(2) What are the types of Investment Secisions

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1.10 SUGGESTED READINGS

- Bhattacharya, Hrishikas, Working Capital Management, Strategies and Techniques, Prentice Hall, New Delhi.
- Chandra, Prasanna, Financial Decision Making, Prentice Hall, New Delhi.
- Hampton, John, Financial Decision Making, Prentice Hall, New Delhi.
- Pandey, I.M., Financial management, Vikas Publishing House, New Delhi.
- Van Horne, J.C and J.M Wachowicz Jr, Fundamentals of Financial Management, Prentice Hall, New Delhi.

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Semester-IV **Lesson No. 2**

Course No. FE-414 **Unit - I**

CASH FLOW AND TIME VALUE OF MONEY

STRUCTURE

2.1 INTRODUCTION

The amount of cash or cash-equivalent which the company receives or gives out by the way of payment(s) to creditors is known as cash flow. Cash flow analysis is often used to analyse the liquidity position of the company. It gives a snapshot of the amount of cash coming into the business, from where, and amount flowing out.Cash flows can either be positive or negative. It is calculated by subtracting the cash balance at the beginning of a period which is also known as opening balance, form the cash balance at the end of the period (could be a month, quarter or a year) or the closing balance. If the difference is positive, it means you have more cash at the end of a given period. If the difference is negative it means that you have less amount of cash at the end of a given period when compared with the opening balance at the starting of a period. To analyse where the cash is coming from and going out, cash flow statements are prepared. It has three main categories – operating cash flow which includes day-to-day transactions, investing cash flow which includes transactions which are done for expansion purpose, and financing cash flow which include transactions relating to the amount of dividend paid out to stockholders. However, the level of cash flow is not an ideal metric to analyse a company when making an investment decision. A Company's balance sheet as well as income statements should be studied carefully to come to a conclusion. Cash level might be increasing for a company because it might have sold some of its assets, but that doesn't mean the liquidity is improving. If the company has sold off some of its assets to pay off debt then this is a negative sign and should be investigated further for more clarification. If the company is not reinvesting cash then this is also a negative sign because in that case it is not using the opportunity to diversify or build business for expansion.

2.2 OBJECTIVES

After studying the unit the students will be able to:

- Discuss the concept of cash flow;
- Discuss the concept Time value of money.;
- Understand the methods of Time value of money;
- Calculate the future value of single flow;

- Discuss the merits and demerits of various Investment Appraisal Techniques; and
- Solve the problems on Investment Appraisal Techniques.

2.3 CONCEPT OF CAH FLOW

Cash Flow: A cash flow is the inflow (receipt) and the outflow (payment) of Cash and Cash equivalents, where cash and cash equivalents include Cash, Bank Balance, Marketable Securities, etc.(unless specified otherwise, Current Investments are considered as Marketable Securities). o Cash Flow Statement: It is a statement that shows the inflows and the outflows of Cash and Cash Equivalents during the period. Inflows are those transactions that increase the Cash and Cash Equivalents and outflows are those transactions that decrease the Cash and Cash Equivalents. Such statement is prepared in accordance with the Accounting Standard-3 (Revised) on Cash Flow Statement. As per this accounting standard, cash flows are showed under the following 3 heads: Cash Flow from Operating Activities; Cash Flow from Investing Activities; and Cash Flow from Financing Activities.

(A) Cash Flow from Operating Activities: Activities related to core or principal revenue generating activities of an enterprise.

- **Cash Inflows:**
  - i. from Cash Sales
  - ii. from Debtors
  - iii. as Commission and Royalty
- **Cash Outflows:**
  - i. Cash Purchases
  - ii. Payment to creditors
  - iii. Payment of wages

(B) Cash Flow from Investing Activities: Activities related to sale and purchase of long-term fixed assets and investments.

- **Cash Inflows:**
  i. Proceeds from sale of Fixed Assets and Investments
  ii. Interest and dividend received
- **Cash Outflows:**
  i. Purchase of long term fixed assets such as Land & Building, Plant & Machinery, Investments, etc.

(C) Cash Flow from Financing Activities: Activities related to capital or long term funds of an enterprise.

- **Cash Inflows:**
  i. Proceeds from Issue of Shares and Debentures for Cash
  ii. Proceeds from Long-term Borrowings such as Bonds, Loans, etc.
- **Cash Outflows:**
  i. Repayment of Loans
  ii. Redemption of Preference Shares and Debentures
  iii. Buy-back of Equity Shares
  iv. Payment of Dividend and Interest, etc

2.4 OBJECTIVES OF CASH FLOW STATEMENT

i. to determine the sources of Cash and Cash Equivalents under operating, investing and financing activities of the enterprise.

ii. to determine the applications of Cash and Cash Equivalents for operating, investing and financing activities of the enterprise.

iii. to determine the net change in Cash and Cash Equivalents due to cash inflows and outflows for operating, investing and financing activities of the enterprise that take place between the 2 balance sheet dates.

2.5 IMPORTANCE OR USES OF CASH FLOW STATEMENT

i. To facilitate Short-term Planning: It helps in planning investments and assessing the financial requirements of the enterprise based on information provided in the statement about the sources and applications of Cash and Cash Equivalents.

ii. To assess Liquidity and Solvency: It helps in identifying the ability of the enterprise to meet its liabilities on time.

iii. To manage Cash Efficiently: It provides information about the cash position by reflecting either a surplus of cash or a deficit of cash in the statement. This helps the enterprise to take decisions about the investment of surplus cash and the arrangement of deficit funds.

iv. To facilitate Comparative Study: It facilitates the comparison of actual cash flows with the budgeted cash flows to identify whether the inflows and outflows of cash are moving as per the plan. Such comparison will also reflect deviations of the actual cash flows from the budgeted cash flows for which necessary actions are then taken by the enterprise.

v. To justify Cash Position: Cash flow statement is prepared to record all the cash inflows and outflows which result in the surplus or deficit of cash for an enterprise. Since, all the cash transactions are presented in the statement, it becomes easy to identify the items which increase or decrease the cash balances.

vi. To evaluate Management Decisions: This statement classifies the cash transactions under 3 separate heads namely, operating, investing and financing. Such classification helps the users of the statement to evaluate whether the decisions taken by the management are appropriate from investing and financing point of view.

vii. To take dividend decisions: In order to declare or approve the dividends, every enterprise should comply with the prescribed provisions e.g. depositing the amount of dividend in a separate bank, etc. Accordingly, to identify whether the enterprise has sufficient funds for such compliance cash flow statement is referred by the management. Also, it helps in deciding how much dividend the enterprise should pay during a particular year.

2.6 LIMITATIONS OF CASH FLOW STATEMENT

i. Non-cash transactions are not shown: It takes into consideration only cash inflows and cash outflows. Non-cash transactions are not considered for preparation of cash flow statement.

ii. Not a substitute for an Income Statement: Cash flow statement cannot be used as a

substitute for an Income Statement because Income Statement is prepared on accrual basis of accounting whereas cash flow statement is prepared on cash basis. Also, it is not possible to compute net profit or loss from the cash flow statement.

iii. Not a substitute for Balance Sheet: Cash flow statement do not show the financial position of the enterprise and therefore, cannot be used as a substitute for Balance Sheet.

iv. Historical in Nature: Cash flow statement is prepared based on the cash inflows and outflows that have already taken place during the year and hence, it is historical in nature.

v. Assessment of Liquidity: Cash flow statement takes into consideration all the transactions of cash and cash equivalents. This cash and cash equivalents is just one of the components in the current assets which determine the liquidity position of the enterprise. Therefore, cash flow statement alone cannot help in determining the liquidity position of the enterprise. vi. Accuracy of Cash Flow Statement: Since, the cash flow statement is prepared from the financial statements of an enterprise, accuracy of the same shall depend upon how accurately the financial statements of the enterprise are prepared.

2.7 CONCEPT OF TIME VALUE OF MONEY

Time value of money is defined as "the value derived from the use of money over time as a result of investment and reinvestment". Time value of money means that "worth of a rupee received today is different from the worth of rupee to be received in future". The preference for money now, as compared to future money is known as time preference of money.

The whole set of financial decisions (whether financing decision or investment decision) hinges on the fact that the value of one rupee today is not equal to the value of one rupee at the end of one year or at the end of second year. In other words, we cannot assume that the value of rupee remains the same. This is known as 'Time Value of Money'.

'Time Value of Money' signifies that the value of a sum of money received today is more than its value receivable after some time.

Time value of money principle also applies when comparing the worth of money to be received in future and the worth of money to be received in further future. In simple words, TVM principles says that the value of a given sum of money to be received on a particular date is more than the same sum of money to be received on a later date.

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

2.8 TECHNIQUES OF TIME VALUE OF MONEY

Money should have time value for the following reasons:

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

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

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

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

Nominal or market interest rate

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

2.9 TECHNIQUES OF TIME VALUE OF MONEY

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

Future Value of a sum of money is the expected value of that sum of money invested after a number of years at a specific compound rate of interest.

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

(2) **Discounting :** The current value of an expected amount of money to be received at a future date is known as Present Value. If we expect a certain sum of money after some years at a specific interest rate, then by discounting the Future Value we can calculate the amount to be invested today, i.e. the Current or Present Value.

Hence, Discounting Technique is the method that converts Future Value into Present Value. The amont calculated by Discounting Technique is the Present Value and the rate of interest is the discount rate.

We determine the Time Value of Money at Time "O" by comparing the initial outflow with the sum of the Present Values (PV) of the future inflows at the given rate of interest.

Time Value of Money

Compounding Discounting

(Future Value)	(Present Value)
(a) Single Flow	(a) Single Flow
(b) Multiple Flows	(b) Uneven Multiple Flows
(c) Annuity	(c) Annuity
(d) Perpetuity	

FUTURE VALUE OF A SINGLE FLOW

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

$FVn \quad PV (1+i)^n$

Where,

FVn = Future value of initial cash outflow after n years PV = Initial cash outflow.

i = Rate of Interest p.a.

n = Life of the Investment

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

Illustration 1:

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

Period of Deposit	Rate Per Annum
46 days to 179 days	5.0
180 days < 1 year	5.5
1 year and above	6.0

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

FVn PV $(1+i)^n$

PV υ FVIF (6,3)

PV υ $(1.06)^3$

15000 (1.191)

Rs. 17,865

Doubling Period: "How long will it take for the amount invested to be doubled for a given rate of interest"?

(i) By Applying "Rule of 72"

Doubling Period 72/rate of interest

For instance, if the rate is 5%, then the doubling period is 72/5 14.4 years.

(ii) Rule of 69: For a better and accurate way of calculating the doubling period :

0.35+ 69 / Interest Rate

0.35+ 69/5 0.35+13.8 14.15 years

Future Value of Multiple Flows

Rate of Interest = 6% p.a. Total Accumulation after 3 years

Being of Year	Investment (Rs.)	EVIF	Compounded Value (Rs.)
0	4,000	1.2625	5,050
1	6,000	1.191	7,146
2	5,000	1,1236	5,618
3	5,000	1.06	5,300
Total	20,000		23,114

The total compounded value is Rs. 23,114

Future Value of Annuity

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

The future value of annuity is expressed as :

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

Where, A = Amount of Annuity

i = rate of interest

n = time period

FVA_n = compounded at the end of n years.

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

Present Value of a Single Flow:

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

Where, PV = Present Value

FV_n = Future Value receivable after n years

i = rate of interest

n = time period

And $\frac{1}{FVIF\ (i,n)}$ PVIF (i,n) {Present value of interest factor}

Present Value of Even Cash Inflows

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

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

= 50,000 × 2.4868 = Rs. 1, 24,340/-

Present Value of an Annuity

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

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

PVIF (i,n) [Present Value of Interest Factor]

2.10 SUMMARY

In our economics life, money is not free. Money has time value. Interest rates give money its time value. If the investor has some spare cash or funds, he can invest it in savings deposit in a bank and receive more money later. If the investor wants to borrow money, he must repay a larger amount in the future due to interest. The result is that Rs. 100 in hand today, is worth more than Rs. 100 to be received a year from now. This is because Rs. 100 today can be invested to provide Rs. 100 plus interest after a year. The interest rates in the economy provide money with its time value. There are two types of decisions which requires some consideration of time value. The first decision involves investingmoney now in order to receive future cash benefits. The other decision involves borrowing now to take current expenditure at a cost of having less money in the future. The intelligent investor requires familiarity with the concepts of compound interest.

2.11 GLOSARRY

- **Present Value :** A present value is the discounted value of one or more future cash flows.
- **Future Value :** A future value is the compounded value of a present value.
- **Discount Factor :** The discount factor is the present value of a rupee received in the future.
- **Compound Factor :** The compounding factor is the future value of a rupee.

2.12 SELF ASSESSMENT QUESTIONS

Q.1 What do you understand by time value of money?

Q.2 What are the possible reasons that must have time value despite not being put to use?

Q.3 What do you understand by future value and present value of money?

Q.4 What are annuities? And why such values are calculated?

Q.5 How do you determine the equated monthly installments?

2.13 LESSON END EXERCISE

Q.1 Why do business consider time value of money before making an investment decision?

Q.2 You are explaining time value of money factors to your friend. Which factor would you explain as being larger?

(a) The future value of $1 for 12 periods at 6% is larger.

(b) The present value of $1 of 12 periods at 6% is larger.

(c) Neither one is larger because they are equal.

(d) There is not enough information given to answer this question.

2.14 SUGGESTED READINGS

- Bhattacharya, Hrishikas, Working Capital Management, Strategies and Techniques, Prentice Hall, New Delhi.
- Chandra, Prasanna, Financial Decision Making, Prentice Hall, New Delhi.
- Hampton, John, Financial Decision Making, Prentice Hall, New Delhi.
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- Van Horne, J.C and J.M Wachowicz Jr, Fundamentals of Financial Management, Prentice Hall, New Delhi.

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Semester-IV **Lesson No. 3**
Course No. FE-414 **Unit - I**

RISK RETURN TRADE OFF

STRUCTURE

3.1 INTRODUCTION

Any rational investor, before investing his or her investable wealth in the stock, analysis the risk associated with the particular stock. The actual return he receives from a stock may vary from his expected return and is expressed in the variability of return. Risk The dictionary meaning of risk is the possibility of loss or injury; risk the possibility of not getting the expected return. The difference between expected return and actual return is called the risk in investment. Investment situation may be high risk, medium and low risk investment

3.2 OBJECTIVES

After reading this lesson, you should be able to:

- To understand the meaning of risk;
- Sources of risk; and
- Measurement of risk.

3.3 MEANING OF RISK

By the term risk we mean a situation in which the possible future outcome of a present decision is plural and in which the probabilities and dimensions of their outcomes are known in the form of a frequency distribution. Risk refers to variability. It is measured in financial analysis generally by standard deviation or by beta coefficient. Technically risk can be defined as a situation where the possible consequences of the decision that is to be taken are known.

Risk is composed of the demands that bring in variations in return of income. The main forces contributing to risk are price and interest. Risk is also influenced by external and internal considerations. External risks are uncontrollable and broadly affect the investments.

These external risks are called systematic risk. Risk due to internal environment of a firm or those affecting a particular industry are referred to as unsystematic risk. Unsystematic risk is unique to a firm or industry. It does not affect the investor. Unsystematic risk is caused by factors like labour strike, irregular disorganised management policies and consumer preferences.

3.4 SOURCE OF RISK

1. Systematic Risk:

Market risk, interest rate risk and purchasing power risk are grouped under systematic risk.

They are explained as under:

(i) Market Risk

It is referred to as stock variability due to changes in investor's attitudes and expectations. The investor's reaction towards tangible and intangible events is the chief cause affecting market risk. Market risk cannot be eliminated but it can be reduced. Market risk includes such factors as business recessions, depressions and long term changes in consumption in the economy.

(ii) Interest Rate Risk

There are four types of movements in prices of stocks in the market. These may be termed as long term, cyclical, intermediate and short term. Traditionally, investors could attempt to forecast cyclical savings in interest rates and prices merely by forecasting ups and downs in general business activity.

The effect of interest rate can be different for lending institution and borrow-ing institution. In India, a combination of factors have produced a situation where it is difficult to accurately find out the changes in interest rates.

(iii) Purchasing Power Risk

It is also known as inflation risk. It arises out of changes in the prices of goods and services and technically it covers both inflation and deflation periods. In India, purchasing power risk is associated with inflation and rising prices. All investors should have an approximate estimate in their minds before investing their funds of the expected return after making an allowance for purchasing power risk.

2. Unsystematic Risk

It arises out of the uncertainty surrounding a particular firm or industry due to factors like labour strike, consumer preferences and management policies.

The two kinds of unsystematic risks in a business organisation are business risk and financial risk which are explained below:

(i) Business Risk

Every firm has its own objectives and aims at a particular gross profit and operating income. It also hopes to plough back some profits. Business risk is also classified into internal business risk and external business risk. Internal business risk may be represented by a firm's limiting environment within which it conducts its business. External risks are due to many factors and some of the important factors are business cycle, demographic factors, political policies, monetary policy and the economic environment of the economy.

(ii) Financial Risk

It is associated with the method through which it plans its financial structure. If the capital structure of a company tends to make earnings unstable, the company may fail financially. Large amounts of debt financing also increase the risk. Financial risk can be stated as being between Earnings before Interest and Taxes, and Earnings Before Taxes.

3.5 MEASUREMENT OF RISK

A number of techniques have been suggested by economists to deal with risk in investment appraisal.

Some of the popular techniques used for this purpose are as follows.

1. Risk Adjusted Discount Rate Method

This method calls for adjusting the discount rate to reflect the degree of the risk of the project. The risk adjusted discount rate is based on the presumption that investors expect a higher rate of return on risky projects as compared to less risky projects.

The rate requires determination of (i) risk free rates and (ii) risk premium rate. Risk free rate is the rate at which the future cash inflows should be discounted. Risk premium rate is the extra return expected by the investor over the normal rate.

The adjusted discount rate is a composite discount rate. It takes into account both time and risk factors.

Illustration:

A project with an outlay of Rs. 4,00,000, its risk adjusted discount rate is estimated at 18 per cent. The data on cash flow is as follows:

Year	Expected Cash Flow (Rs.)
1	80,000
2	1,20,000
3	1,60,000
4	1,20,000
5	80,000

Should the project be accepted or rejected?

Accept the project: if NPV > 1

Reject the project: if NPV < 1

Using the risk adjusted discount rate we find that

2. The Certainty Equivalent Approach:

According to this method, the estimated cash flows are reduced to a conservative level by apply-ing a correction factor termed as certainty equivalent coefficient. The correction factor is the ratio of riskless cash flow to risky cash flow.

The certainty equivalent coefficient which reflects the management's attitude towards risk is

Certainty Equivalent Coefficient = Riskless Cash Flow/Risky Cash Flow.

Example:

A project is expected to generate a cash of Rs. 40,000. The project is risky but management feels that it will get at least a cash flow of Rs. 24,000. It means that certainty equivalent coefficient is 0.6.

Under the certainty equivalent method the net present value is calculated as:

$$NPV = \sum_{t=1}^{n} \frac{\alpha t A_t}{(1+i)^t} - I$$

Where

α_t = Certainty Equivalent Coefficient

A_t = Expected Cash Flow for year t

I = Initial outlay on the project

i = Discount rate

Illustration:

Pioneer Concern is considering a project with initial outlay of Rs. 18,00,000 with a risk free discount rate of 1.05 per cent. The expected cash flow and certainty equivalent coefficient are given below. What is NPV of the project?

Year	*Expected Cash flow (Rs)*	*Certainty Equivalent Coefficient*
1	4,00,000	0.90
2	6,00,000	0.85
3	8,00,000	0.82
4	10,00,000	0.78

$$NPV = \frac{(4,00,000)(0.90)}{1.05} + \frac{(6,00,000)(0.85)}{(1.05)^2} + \frac{(8,00,000)(0.82)}{(1.05)^3}$$

$$+ \frac{(10,00,000)(0.78)}{(1.05)^4} - 18,00,000$$

3. Sensitivity Analysis

The future is not certain and involves uncertainties and risk, the cost and benefits projected over the lifetime of the project may turn out to be different. This deviation has an important bearing on the selection of a project.

If the project can stand the test of changes in the future, affecting costs and benefits, the project would qualify for selection. The technique to find out this strength of the project is covered under the sensitivity analysis of the project. This analysis tries to avoid over estimation or underestimation of the cost and benefits of the project.

In sensitivity analysis, we try to find out the critical elements which have a vital bearing on the costs or benefits of the project. In investment decision, one has to consider as many elements of uncertainty as possible on costs or benefits side and then arrive at critical elements which effect the expected costs or benefits of the project.

How many variables should be tested to carry out the sensitivity analysis in order to find out its impact on costs or benefits of the projects is a matter of judgement. In sensitivity analysis, one has to consider the changes in the various factors correlated with changes in the other. In order to arrive at the degree of uncertainty, the decision maker has to make alternative calculation of costs or benefits of the project.

Sensitivity analysis is a simulation technique in which key variables are changes and the resulting change in the rate of return is observed. Some of the key variables are cost, prices, project life, market share, etc.

Usually this analysis provides information about cash flows under the assumptions:

(i) Pessimistic,

(ii) Most likely, and

(iii) Optimistic.

It explains how sensitive the cash flows are under these three different situations. If the differ-ence is larger between the optimistic and pessimistic cash flows, the more risky is the project.

Illustration:

Pioneer Company Ltd. is attempting to evaluate two projects A and B. Each project requires a net investment of Rs. 10,000 and the annual cash flows from each of the project is estimated at Rs. 2,000 p.a. in the next 15 years. The company's cost of capital may be taken at 10%. In order to arrive at a decision about the selection of the project, the following data have been ascertained regarding the NPV of cash flows of each project.

	Project A	*Project B*	*Discount factor at 10%*	
Initial Investment	Rs. 10,000	Rs. 10,000	*Project A*	*Project B*
Estimated cash flows for each of 15 years.				
Pessimistic	Rs. 1,500	Rs.—	7.606	7.606
Most likely	Rs. 2,000	Rs. 2,000	7.606	7.606
Optimistic	Rs. 2,500	Rs. 4,000	7.606	7.606

	PRESENT VALUE		*NPV*	
	Project A	*Project B*	*Project A*	*Project B*
Pessimistic	Rs. 11,409	Rs.—	Rs. 1,409	Rs. 10,000
Most likely	Rs. 15,212	Rs. 15,212	Rs. 5,212	Rs. 5,212
Optimistic	Rs. 19,015	Rs. 30,424	Rs. 9,015	Rs. 20,424

The above analysis shows that project B is more risky.

4. Probability Theory Approach

Yet another method for dealing with risks is to estimate the value for a result. Each value of prospective result is assigned a probability. Here one has to see a range of possible cash flows from the most optimistic to the most pessimistic for each pertinent year. Probability means the likelihood of happening an event.

It may be objective or subjective. An objective probability is based on a large number of observations under independent and identical conditions repeated over a period of time. A subjective probability is based on personal judgement. In capital budgeting decisions the probabilities are of a subjective type since they are based on a single event.

Process of Assigning Probabilities:

Here let us see the process of assigning probabilities.

It is subject to certain rules and they are:

(i) List of events collectively expansive

(ii) Events must be mutually exclusive

(iii) The numerical probabilities must add up to 1.

Basic Probability Theorem

We must see certain basic theorems relating to a probability theory.

These are as follows:

(i) The probability of an event is always a number between 0 and 1 inclusive. If an event is sure to occur, its probability is by definition equal to 1. If it is certain that it will not occur its probability is 0.

(ii) If 'n' events are equally likely and only one of them may happen, then the probability of that event is 1/n.

(iii) If two events are mutually independent and the probabilities of one is PI while that of other P2, the probability of the events occurring together is the product of P1, P2.

(iv) If the events are mutually exclusive and the probability of the one is PI while that of the other is P2, the probability of either one or the other occurring is the sum P1+P2.

Possible	*Project A*			*Project B*		
event	*Cash in flow*	*Probability*	*Expected value*	*Cash in flow*	*Probability*	*Expected value*
A	Rs. 4,000	.10	Rs. 400	Rs. 12,000	.10	Rs. 1,200
B	Rs. 5,000	.20	Rs. 1000	Rs. 10,000	.15	Rs. 1,500
C	Rs. 6,000	.40	Rs. 2400	Rs. 8,000	.50	Rs. 4,000
D	Rs. 7,000	.20	Rs. 1400	Rs. 6,000	.15	Rs. 900
E	Rs. 8,000	.10	Rs. 800	Rs. 4,000	.10	Rs. 400
Total			Rs. 6,000			Rs. 8,000

The above table shows that Project B has higher monetary value as compared to Project A. Therefore, Project B is preferable.

5. Standard Deviation

Subjective judgment of the decision makers plays a crucial role in practice to resolve the prob-lem which may turn out to be imprecise or biased. There is no precise way to find the probabilities of different outcomes. This limitation is overcome by adoption of standard deviation approach.

The standard deviation is defined as the square root of the mean of the squared deviations of all the items from the mean and it is usual to denote it by the small Greek "Sigma", ó. In the case of capital budgeting, this measure is used to compare the variability of possible cash flows of different projects from their respective mean or expected values.

Steps to be followed for calculating the S.D. of the possible cash flows.

(i) Compute the mean value of the possible cash flows.

(ii) Find out the deviation between the mean value and the possible cash flows.

(iii) Square the deviations.

(iv) Multiply the squared deviations by the assigned probabilities to get the weighted squared deviations.

(v) The sum of the weighted squared deviations and their square root are calculated. The result gives the S.D.

Illustration:

On the basis of the data given in probability theory approach find out which project is more risky by adopting S.D. approach.

Project A

Possible events	*Cash inflows*	*Deviation from Mean(Rs. 6000)*	*Deviations squared*	*Probability*	*Probability Deviation squared*
A	4,000	-2,000	40,00,000	.10	4,00,000
B	5,000	-1,000	10,00,000	.20	2,00,000
C	6,000	0	0	.40	0
D	7,000	1,000	10,00,000	.20	2,00,000
E	8,000	2,000	40,00,000	.10	4,00,000
				Σ Pdef²	= 12,00,000

$\sigma = \sqrt{Pdef^2} = \sqrt{12,00,000} = 1,095$

Project B

Possible events	*Cash inflows*	*Deviation from Mean (Rs. 8,000)*	*Deviations squared*	*Probability*	*Probability Deviation squared*
A	12,000	4,000	1,60,00,000	.10	16,00,000
B	10,000	2,000	40,00,000	.15	6,00,000
C	8,000	0	0	.50	0
D	6,000	-2,000	40,00,000	.15	6,00,000
E	4,000	-4,000	1,60,00,000	.10	16,00,000

$\sigma = \sqrt{EPdef^2} = \sqrt{44,00,000} = 2,098$

A project having a larger standard deviation will be more risky as compared to a project having smaller standard deviation. In the above illustration, the standard deviation for project A is 1,095 while that of project B is 2,098. Hence project B is more risky.

6. Coefficient of Variation

Standard deviation is expressed in the units of the original distribution and is called absolute measure of dispersion. Therefore, absolute measure must be reduced to a form which is free from the original unit of measurement. This can be done by expressing it in relation to the average from which variation is measured. This measure of relative variation is obtained by dividing the absolute measure by that average and is called a coefficient of variation.

The co-efficient of variation can be calculated as follows:

Coefficient of Variation = Standard Deviation/Expected (or Mean) Cash Flow = ó/Erf.

On the basis of the data given in the standard deviation approach, the standard deviation for project A is 1095, while that for project B is 2098. The coefficient of variation of project B is more as compared to project A. Hence project B is more risky.

7. Decision Tree Analysis:

The decision tree analysis is another technique which is helpful in tackling risky capital invest-ment proposals. A decision tree is a graphic display of various decision alternatives and the sequence of events as if they were branches of a tree.

In constructing a tree diagram, it is a convention to use the symbol ¡% to indicate the decision point and O denotes the situation of uncertainty or event. Branches coming out of a decision point are nothing but representation of immediate mutually exclusive alternative options open to the decision maker.

Branches emanating from the event point 'O' represent all possible situations. These events are not fully under the control of the decision maker and may represent some other factors. The basic advantage of a tree diagram is that another act subsequent to the happening of each event may also be represented. The resulting pay-off for

each act-event combination may be indicated in the tree diagram at the outer end of each branch.

Construction of Decision Tree

The construction of a decision tree requires definition of proposal, identification of alternatives, graphing the decision tree, forecasting cash flows, and evaluating results.

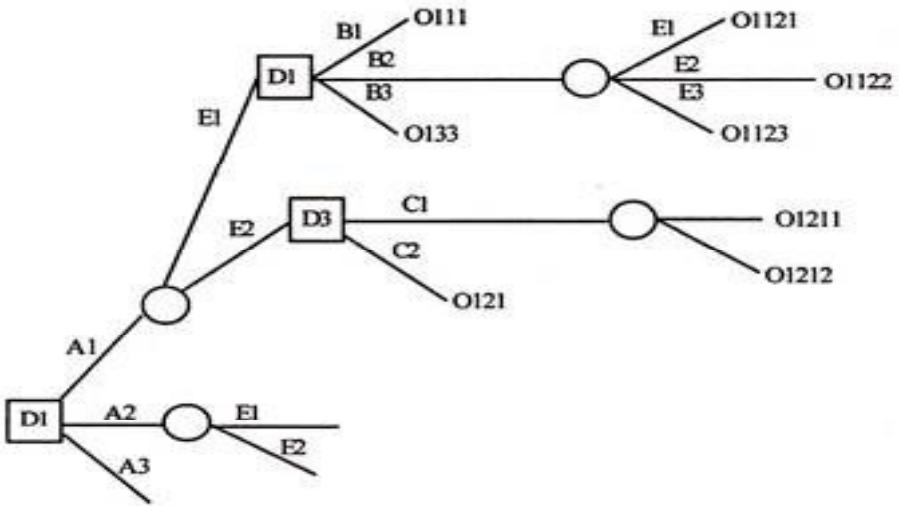
This process can be under-taken in the following way:

(i) The first step in the construction of the decision tree is the definition of proposal. It means what is exactly required under the proposal.

(ii) The second step in the decision tree is the identification of alternatives. Each proposal will have at least two alternatives—accept or reject. In some cases, there may be more than two alternatives too.

(iii) The third step is graphing the decision tree. Decision tree is a graphical method. It visually helps the decision maker view his alternatives and outcomes.

Illustration of a Decision Tree Diagram:



(iv) The fourth step is forecasting cash flows. The forecasted cash flows regarding each decision branch are also shown along with the branch. Probabilities are also assigned to each cash flow. The probabilities of each event will be different.

(v) The fifth step in construction of a decision tree is evaluating results. The evaluation will be based on manager's own experience, consultation with others and information available in this respect. On the basis of the expected value for each decision, the results are analysed. The firm may proceed with profitable alternative.

The pay-off for ultimate alternatives has been calculated by taking into account the probabilities of the ultimate alternative as well as for the previous alternative and multiplied by the expected pay-off of the first alternative without its probability. By incorporating probabilities of various events in the decision tree, it is possible to comprehend and trace probability of a decision leading to results desired.

What is significant about the decision tree approach is that it does several things for decision makers. It is highly useful to a decision maker in multi-stage situations which involve a series of decisions each dependent on the preceding one. It makes possible for them to see at least the major alternatives open to them and that the subsequent decisions may depend on events of the future.

3.6 RISK AND RETURN TRADE OFF

Financial decisions incur different degree of risk. Your decision to invest your money in government bonds has less risk as interest rate is known and the risk of default is very less. On the other hand, you would incur more risk if you decide to invest your money in shares, as return is not certain. However, you can expect a lower return from government bond and higher from shares. Risk and expected return move in tandem; the greater the risk, the greater the expected return.

Financial decisions of the firm are guided by the risk-return trade-off. These decisions are interrelated and jointly affect the market value of its shares by influencing return and risk of the firm. Every type of investment comes with a certain level of risk, which can significantly vary between two options. For instance, equity stocks are known to have one of the highest levels of risks in the financial markets. But there is no denying that they also have the highest returns potential. If you have selected quality stocks, they can generate more than 10%-12% returns annually.

On the other hand, investment options such as bank FDs come with minimum risk. But, the annual returns are generally in the range of 6%-7%. And this concept not just applies to the financial markets. Every type of investment, be it equity, mutual funds, bullion market, or even real estate, this relationship between risk and returns is prevalent everywhere.

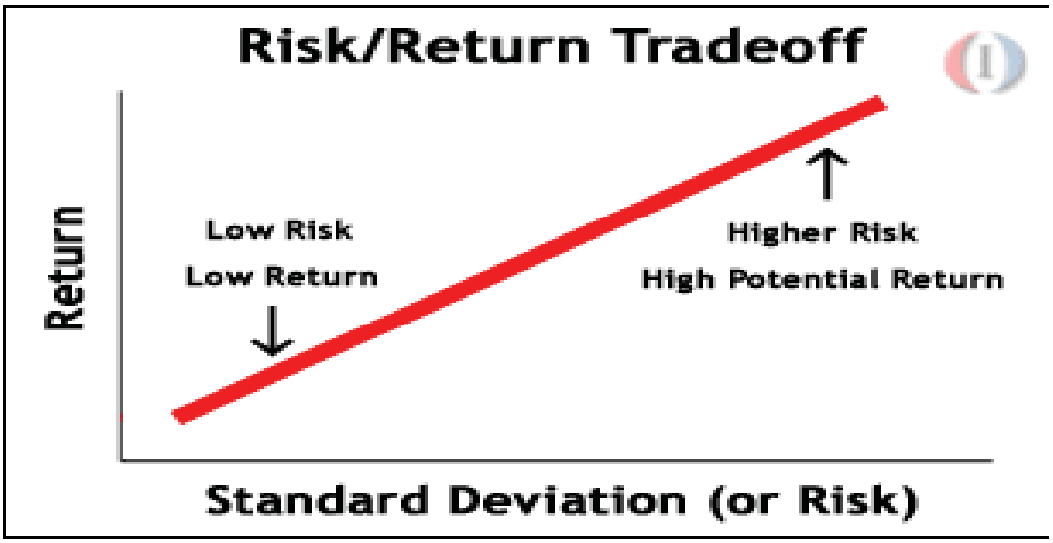
So, every investor must consider the risk-return trade-off at the time of selecting an investment so that the risk level is in line with the risk appetite.

The relationship between return and risk can be simply expressed as follows:

Return = Risk-free rate + Risk premium

The Figure 1.2 explains the relation between the risk and return.

Figure 1.2: Risk and Return Trade Off



Risk-free rate is a rate obtainable from a default-risk free government security. An investor assuming risk from her investment requires a risk premium above the risk-free rate. Risk-free rate is a compensation for time and risk premium for risk. Higher the risk of an action, higher will be the risk premium leading to higher required return on that action. A proper balance between return and risk should be maintained to maximise the market value of a firm's shares. Such balance is called risk-return trade-off, and every financial decision involves this trade-off.

3.7 RISK ANALYSIS IN CAPITAL BUDGETING

Capital budgeting is a process of identifying, analyzing and selecting investment to determine a firm's expenditures on assets whose cash flows are expected to extend beyond one year. Capital budgeting is used to ascertain the requirements of the long-term investments of a company. Examples of long-term investments are those required for replacement of equipments and machinery, purchase of new equipments and machinery, new products, and new business premises or factory buildings, as well as those required for R&D plans. The different techniques used for capital budgeting include:

- Profitability index
- Net present value
- Modified Internal Rate of Return
- Equivalent annuity
- Internal Rate of Return

The different types of risks that are faced by entrepreneurs regarding capital budgeting are the following:

Corporate risk, International risk, Stand-alone risk, Competitive risk, risk, Project specific risk, Industry specific risk

The following methods are used for Risk Analysis in Capital Budgeting:

- **Sensitivity Analysis:**

This is also known as a "what if analysis". Because of the uncertainty of the future, if an entrepreneur wants to know about the feasibility of a project in variable quantities, for example investments or sales change from the anticipated value, sensitivity analysis can be a useful method. This is calculated in terms of NPV, or net present value.

- **Scenario Analysis:**

In the case of scenario analysis, the focus is on the deviation of a number of interconnected variables. It is different from sensitivity analysis, which usually concentrates on the change in one particular variable at a specific point of time.

- **Break Even Analysis:**

The Break Even Analysis allows a company to determine the minimum production and sales amounts for a project to avoid losing money. The lowest possible quantity at which no loss occurs is called the break-even point. The break-even point can be delineated both in financial or accounting terms.

- **Simulation Analysis:**

Simulation analysis is utilized for formulating the probability analysis for a criterion of merit with the help of random blending of variable values that carry a relationship with the selected criterion.

- **Decision Tree Analysis:**

The principal steps of decision tree analysis are the definition of the decision tree and the assessment of the alternatives.

- **Corporate Risk Analysis:**

Corporate risk analysis focuses on the analysis of risk that may influence the project in terms of the entire cash flow of the firm. The corporate risk of a project refers to its share of the total risk of a company.

- **Risk Management:**

Risk management focuses on factors such as pricing strategy, fixed and variable costs, sequential investment, insurance, financial leverage, long term arrangements, derivatives, strategic alliance and improvement of information.

- **Selection of project under risk:**

This involves procedures such as payback period requirement, risk adjusted discount rate, judgmental evaluation and certainty equivalent method.

- **Practical Risk Analysis:**

The techniques involved include the Acceptable Overall Certainty Index, Margin of Safety in Cost Figures, Conservative Revenue Estimation, Flexible Investment Yardsticks and Judgment on Three Point Estimates.

3.8 SENSITIVITY ANALYSIS

The **Sensitivity Analysis** or **What-if Analysis** means, determining the viability of the project if some variables deviate from its expected value, such as investments or sales. In other words, since the future is uncertain and the entrepreneur wants to know the feasibility of the project in terms of its variable assumptions Viz, investments or sales change, can apply the sensitivity analysis.

Whether to accept or reject the proposed project depends on its net present value (NPV). Hence, sensitivity analysis is calculated in terms of NPV. Firstly, the base-case scenario is developed; wherein the NPV is calculated for the project based on the assumptions which are believed to be the most accurate. Then make some changes in the initial assumptions based on the other potential assumptions, and recalculate the NPV. Once the new NPV is calculated, analyze its sensitivity in terms of the changes made in the initial assumptions.

Sensitivity Analysis is very useful for a firm that shows, the robustness and the vulnerability of the project due to the change in the values of underlying variables. It indicates whether the project is worth to be carried forward or not with the help of NPV value. If the NPV value is highly sensitive to the changes in variables, the firm can explore the variability of that critical factor.

This method is very subjective in nature and suffers from certain limitations. Sensitivity analysis shows the change in NPV due to the change in variables and does not talk about how likely the change will be. Also, under this method, it is assumed that one variable changes at a time, but in reality, variables tend to move together.

Uses of Sensitivity Analysis

- The key application of sensitivity analysis is to indicate the sensitivity of simulation to uncertainties in the input values of the model.
- They help in decision making.
- Sensitivity analysis is a method for predicting the outcome of a decision if a situation turns out to be different compared to the key predictions.
- It helps in assessing the riskiness of a strategy.

- Helps in identifying how dependent the output is on a particular input value. Analyses if the dependency in turn helps in assessing the risk associated.
- Helps in taking informed and appropriate decisions
- Aids searching for errors in the model

3.8.2 Using Sensitivity Analysis for decision making

One of the key applications of Sensitivity analysis is in the utilization of models by managers and decision-makers. All the content needed for the decision model can be fully utilized only through the repeated application of sensitivity analysis. It helps decision analysts to understand the uncertainties, pros and cons with the limitations and scope of a decision model.

Most if not all decisions are made under uncertainty. It is the optimal solution in decision making for various parameters that are approximations. One approach to come to conclusion is by replacing all the uncertain parameters with expected values and then carry out sensitivity analysis. It would be a breather for a decision maker if he/she has some indication as to how sensitive will the choices be with changes in one or more inputs.

3.9 SUMMARY

The term risk with reference to investment decisions may, therefore, be defined as the variability in the actual returns emanating from a project in future over its working life in relation to the estimated return as forecasted at the time of the initial, capital budgeting decision. The decision situations with reference to risk analysis in capital budgeting decisions can be broken up into three types : (i) uncertainty, (ii) risk, and (iii) certainty. The risk situation is one in which the probabilities of a particular event occurring are known. These probabilities are not known under the uncertainty situation. The difference between risk and uncertainty, therefore, lies in the fact that the variability is less in risk than in the uncertainty. In other words, in a strict mathematical sense, there is a distinction between the two : "Risk refers to the set of unique outcomes for a given event which can be assigned probabilities while uncertainty refers to the outcomes of a given event which are too unsure

to be assigned probabilit Capital rationing. When availability of capital to a firm is limited,-the firm is constrained in its choice of projects. Capital rationing is restricting capital expenditure to certain amount, even when projects with positive NPV need be rejected (which would be accepted in unlimited funds case).

3.10 GLOSSARY

- Expected value (or expected monetary value). A weighted average of all possible outcomes, their respective probabilities taken as weights.
- Pay-off. The monetary gain or loss from each of the outcomes.
- Probability. A ratio representing the chance that a particular event will occur. Probability distribution. A distribution indicating the chances of all possible occurrences.
- Risk. Refers to a situation in which there are several possible outcomes, each outcome occurring with a probability that is known to the decision-maker.
- Risk-adjusted discount rate (RADR). Sum of risk-free interest rate and a risk premium. The former is often taken as the interest rate on government securities. The risk premium is what the decision-maker subjectively considers as the additional return necessary to compensate for additional risk.
- Standard deviation. The degree of dispersion of possible outcomes around the expected value. It is the square root of the weighted average of the squared deviations of all possible outcomes from the expected value.
- Certainty equivalent. A ratio of certain cashflow and the expected value of a risky cashflow between which the decision-maker is indifferent.
- Coefficient of variation. A measure of risk is used for comparing standard deviations of projects with unequal expected values.
- Uncertainty. Refers to situations in which there are several possible outcomes of an action whose probabilities are either not known or are not meaningful.

- Decision Tree. A graphic device that shows a sequence of strategic decisions and expected consequences under each possible situation.
- Maximax. Maximum profit is found for each act and the strategy in which the maximum profit is largest is chosen.
- Maximin. When maximum of the minimums are selected. This criterion is used by decision-makers with pessimistic and conservative outlook.
- Minimax. When minimum of the maximums are selected. This criterion is used for minimising cost (unlike maximin, where pay-off and profit are maximised). Minimax Regret. Finding maximax regret value for each act, and then choosing the act having minimum of these maximum regret values.
- Opportunity Loss (or Regret). The difference between actual profit from a decision and the profit from the best decision for the event.
- Simulation Analysis. A method that assigns a probability distribution to each of the key variables and uses random numbers to simulate a set of possible outcomes to arrive at an expected value and dispersion.
- Sensitivity Analysis. Defined as the examination of a decision to find the degree of inaccuracy in the underlying assumptions that can be tolerated without causing the decision to be inappropriate.

3.11 SELF ASSESSMENT QUESTIONS

Q.1 What is Risk?

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Q.2 Explain different sources of Risk?

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Q.3 Explain Sensitivity analysis.

3.12 LESSON END EXERCISE

Q.1 What is risk return trade off and how is it calculated?

Q.2 How expected cash flows are caqlculated by assigning probabilities to estimated cash flows in capital budgeting?

3.13 SUGGESTED READINGS

- Bhattacharya, Hrishikas, Working Capital Management, Strategies and Techniques, Prentice Hall, New Delhi.
- Chandra, Prasanna, Financial Decision Making, Prentice Hall, New Delhi.
- Hampton, John, Financial Decision Making, Prentice Hall, New Delhi.
- Pandey, I.M., Financial management, Vikas Publishing House, New Delhi.
- Van Horne, J.C and J.M Wachowicz Jr, Fundamentals of Financial Management, Prentice Hall, New Delhi.

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Semester-IV **Lesson No. 4**

Course No. FE-414 **Unit - I**

APPLICATION OF OPTION PRICING THEORY IN INVESTMENT DECISIONS

STRUCTURE

4.1 INTRODUCTION

An option provides the holder with the right to buy or sell a specified quantity of an underlying asset at a fixed price (called a strike price or an exercise price) at or before the expiration date of the option. Since it is a right and not an obligation, the holder can choose not to exercise the right and allow the option to expire. There are two types of options—call options and put options.

Call option: A call option gives the buyer of the option the right to buy the underlying asset at the strike price or the exercise price at any time prior to the expiration date of the option. The buyer pays a price for this right. If at expiration the value of the asset is less than the strike price, the option is not exercised and expires worthless. If, however, the value of the asset is greater than the strike price, the option is exercised— the buyer of the option buys the stock at the exercise price, and

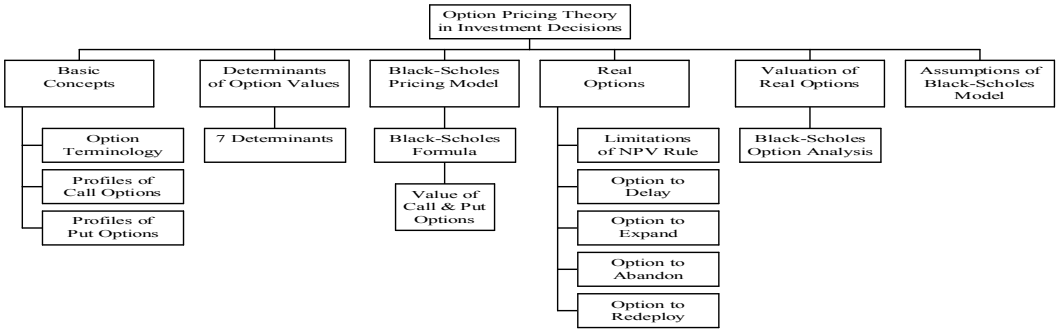
the difference between the asset value and the exercise price comprises the gross profit on the investment. The net profit on the investment is the difference between the gross profit and the price paid for the call initially

Put option: A put option gives the buyer of the option the right to sell the underlying asset at a fixed price, again called the strike or exercise price, at any time prior to the expiration date of the option. The buyer pays a price for this right. If the price of the underlying asset is greater than the strike price, the option will not be exercised and will expire worthless. But if the price of the underlying asset is less than the strike price, the owner of the put option will exercise the option and sell the stock at the strike price, claiming the difference between the strike price and the market value of the asset as the gross profit. Again, netting out the initial cost paid for the put yields the net profit from the transaction.

4.2 OBJECTIVES

After reading this unit you will be able to:

- Apply the Black-Scholes Option Pricing model to financial product valuation and to asset valuation;
  - (a) Determine, using published data, the five principal drivers of option value (value of the underlying, exercise price, time to expiry, volatility and the risk free rate).
  - (b) Discuss the underlying assumptions, structure, application and Limitations of the Black-Scholes model.
- Evaluate embedded real options within a project, classifying them into one of the real option archetypes; and



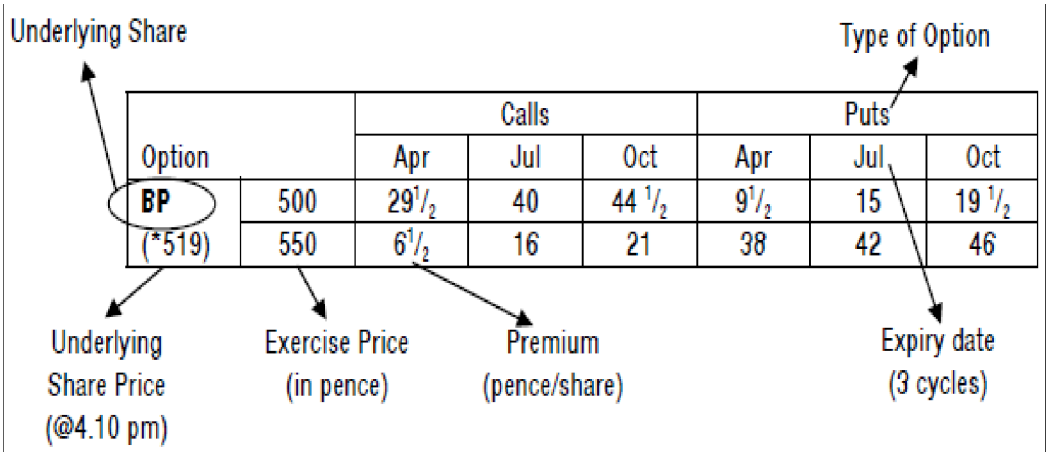
4.3 BASIC CONCEPTS

4.3.1 Option Terminology

Terminology	Explanation
An option	The right but not and obligation, to buy or sess a particular good at an exercise price, at or before a specified date.
Call option	The right but not and obligation, to buy a particular good at an exercise price.
Put option	The right but not and obligation, to sell a particular good at an exercise price.
Exercise/Strike price	The The fixed price at which the good may be bought or sold.
American option	An option that can be exercised on any day up until its expiry date.
European option	An option that can can only be exercised on any day of the option.
Premium	The cost of an option.
Trade option	Standardised option contracts sold on a futures exchange (normally American options).
Over the counter options	Tailor-made option - usually sold by a bank (normally European options).
Long and short position	When an investor buys an option the investor is long, and when the investor sells an option the investor has a short position.

4.3.2 Price quotations

It should be noted that, for simplicity, only price is quoted for each option in the national newspapers. In practice, there will always be two prices quoted for each option, i.e. a bid and an offer price. For example, the January option could be quoted as 500/550. This can be interpreted to mean that it would cost an investor 550 to buy those options and the he would receive 500 for selling it.



4.4 PROFILES OF CALL OPTIONS AT EXPIRATION

4.4.1 Long call

- A call option will be exercised at expiration only if the price of the underlying is higher than the exercise price. Otherwise, the option will not be exercised.
- Since the buyer of a call option has paid a premium to buy the option, the **profit** from the purchase of the call option is the **value of the option minus the premium paid**.

Example 1

Suppose that you buy the October call option with an exercise price of 550. The premium is 21 cents. Calculate the potential profit/loss at expiration.

Solution:

The profit/loss will be calculated for possible values of the underlying at expiration. Here we examine the profit/loss profile for prices ranging from 500 to 600.

- Since the buyer of a call option has paid a premium to buy the option, the **profit** from the purchase of the call option is the **value of the option minus the premium paid**.

Example 2

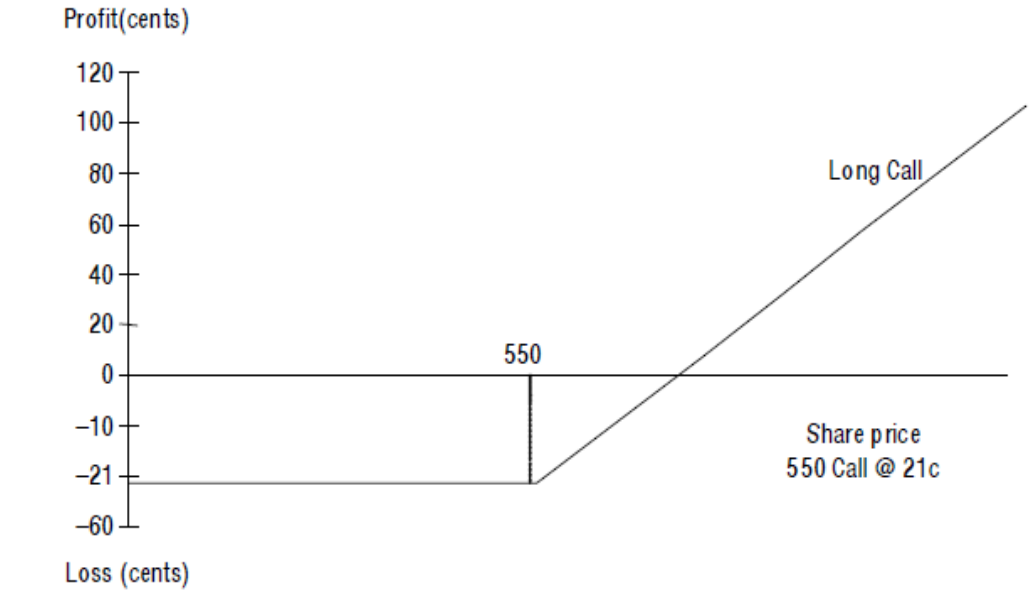
Suppose that you buy the October call option with an exercise price of 550. The premium is 21 cents. Calculate the potential profit/loss at expiration.

Solution:

The profit/loss will be calculated for possible values of the underlying at expiration. Here we examine the profit/loss profile for prices ranging from 500 to 600.

Value of underlying at expiration	Value of underlying-exercise prices	Value of option	Profit/Loss
500	-50	0	-21
530	-20	0	-21
540	-10	0	-21
550	0	0	-21
560	10	0	-11
570	20	20	-1
600	50	50	29

The profit or loss at expiration is shown below:



4.4.2 Short call

- The seller of a call loses money when the option is exercised and gains the premium if the option is not exercised.
- The profit of the short position at expiration = premium received – value of call option
- A short call option has a maximum profit, which is the premium, but unlimited losses

Example 3

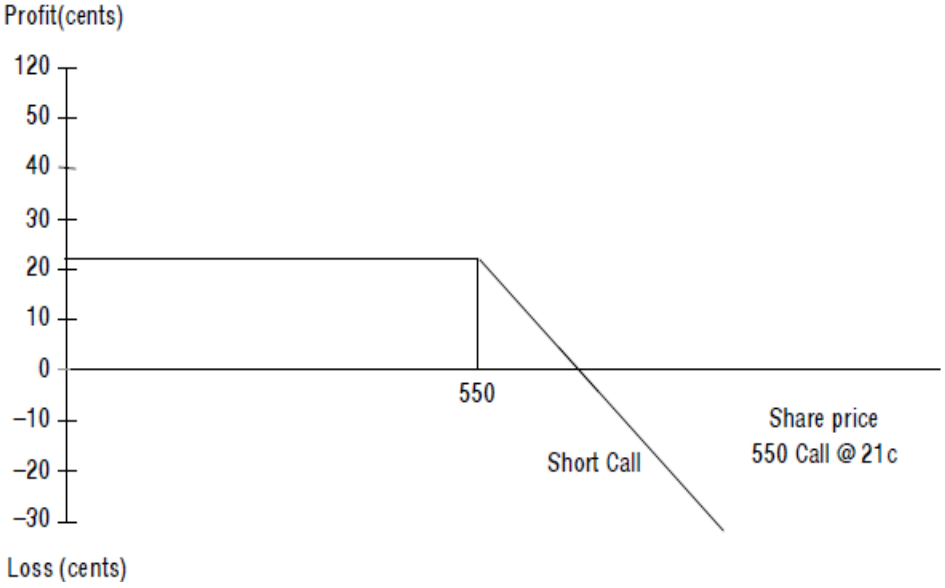
Suppose that you sell the October call option with an exercise price of 550. The premium is 21 cents. Calculate the potential profit/loss at expiration for the writer of the option.

Solution:

The profit/loss will be calculated for possible values of the underlying at expiration. Here we examine the profit/loss profile for prices ranging from 500 to 600.

Column A Value of underlying at expiration	**Column B** Value of underlying-exercise prices	**Column C** Value of option	**Negative Col. C +** Profit/Loss
500	-50	0	-21
530	-20	0	-21
540	-10	0	-21
550	0	0	-21
560	10	0	-11
570	20	20	-1
600	50	50	29

The profit or loss at expiration is shown below:



4.5 PROFILES OF PUT OPTIONS AT EXPIRATION

4.5.1 Long put

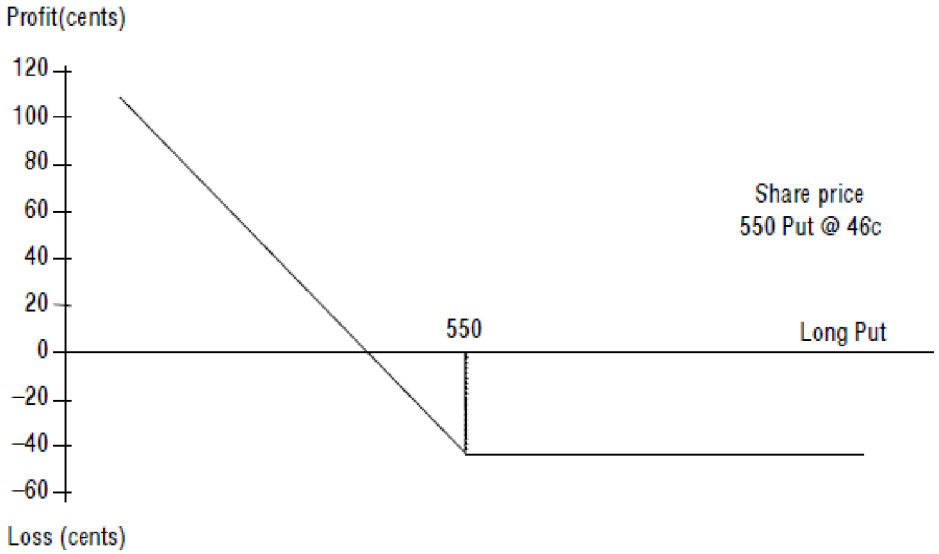
- A put will be exercised at expiration only if the underlying asset is lower than the exercise price of the option.
- The value of the option when exercised is the difference between the exercise price and the value of the underlying.
- Profit = Value of option at expiration – premium paid
- As in the case of the long call option, the buyer of the option has limited losses, that is the premium if the option is not exercise, but unlike the long call which has unlimited upside, the **maximum value of the put option is** X, which is attained **when the price of the underlying is zero**.

Example 4

Suppose that you buy the October put option with an exercise price of 550. The premium is 46 cents. Calculate the potential profit/loss at expiration.

Column A Value of underlying at expiration	**Column B** Exercise price- Value of underlying	**Column C-** Maximum of Column B nd zero	**Column C-** Premium
0	550	550	504
500	50	50	4
530	20	20	-26
540	-10	10	-36
550	0	0	-46
560	-10	0	-46
570	-20	0	-46
600	-50	0	-46

The profit or loss at expiration is shown below



4.5.2 Short put

- Value of put option at expiration is the maximum of the difference between the exercise price and the value of the underlying at expiration and zero.
- Profit = Premium received – value of put option.
- The maximum profit for the writer of a put option is the premium received which occurs when the put option is not exercised (that is, when the value

at expiration = 0). This happens when the value of the underlying at expiration is greater than the exercise price.

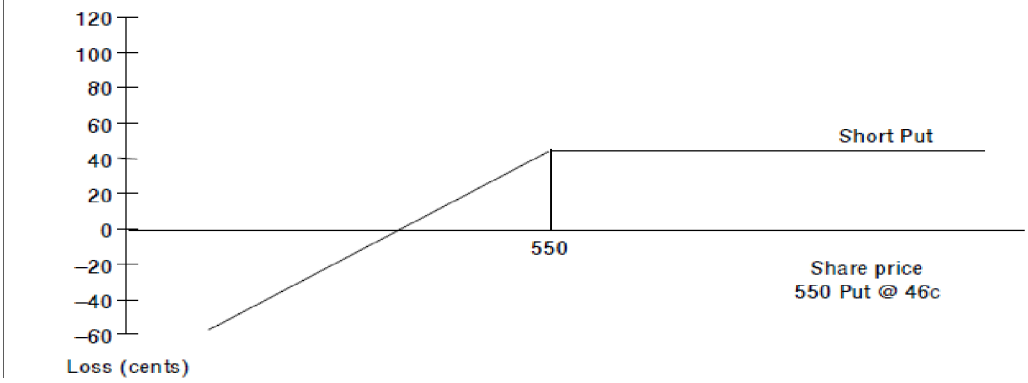
- The **profit will be zero** when the **value of the underlying at expiration** is **equal** to the **sum of the exercise price and the premium paid**.
- The **highest loss** occurs **when** the **value of the underlying = 0**. The **maximum loss** will be **equal to the exercise price**.

Example 5

Suppose that you sell the October put option with an exercise price of 550. The premium is 46 cents. Calculate the potential profit/loss at expiration.

Column A Value of underlying at expiration	**Column B** Exercise price- Value of underlying	**Column C-** Maximum of Column B nd zero	**Column C+** Premium
0	550	-550	-504
500	50	-50	4
530	20	-20	-4
540	-10	-10	-26
550	0	0	46
560	-10	0	46
570	-20	0	46
600	-20	0	46

The profit or loss at expiration is shown below



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4.6 DETERMINANTS OF OPTION VALUES

4.6.1 The factors affecting the price of an option

- Options are financial instruments whose value changes all the time. In this section we shall identify the factors that affect the price of an option prior to expiration.

Factors	Explanation
1. The exercise price	• The **higher the exercise price,** the lower the probability that a call will be exercised. So **call prices will decrease** as the exercise price increase. • For the put, the effect runs in the opposite direction. A higher exercise price means that ther there is higher probability that the put will be exercised. So the put price increases as the exercise price increases.
2. The price of the underlying	• As the **current stock price goes up,** the higher the probability that the call will be in the money. **As a result,** the call price will increase. • As the **stock price goes up,** there is a lower probability that the put will be in the money. So the **put price will increase.**
3. The voltality of the underlying	• Both the call and put will increase in price as the underlying asset becomes more volatile. • The buyer of the option receives full benefit of favourable outcomes but avoids the unfavourable ones (option price value has zero value).
3. The time to expiration	• Both calls and puts will benefit from increased time to expiration. • The reason is that there is more time for a big move in the stock price. • But there are some effects that work in the opposite direction.

	♦ As the time to expiration increase, the PV of the exercise price decreases. This will increase the value of the call and decrease the value of the put. ♦ Also, as the time to expiration increase, there is a greater amount of time for the stock price to be reduced by a cash dividend. This reduces the call value but increases the put value.
5. The interest rate	• The higher the interest rate, the lower the present value of the exercise price. As a result, the value of the call will increase. • The opposite is true for puts. The decrease in the the PV of the exercise price will adversely affect the price of the put option.
6. The intrinsic value	• The price of an option has two components - intrinsic value and time value. • Intrinsic value is the value of the option if it was exercised now. ♦ Call options: Intrinsic value = Underlying stock's current price - call strike price. ♦ Put options:Intrinsic value = Put strike price - underlying stock's current price. • If the intrinsic value is positive the option is in the money. If the intrinsic value is zero, the option is at the money and if the intrinsic value is negative the option is out of the money.
7. The time value	• The difference between the market price of an option and intrinsic value is the time value of the option. • Buyers of at the money or out of the money options are simply buying time value, which decreases as an option approaches expiration. • The more time an option has until expiration, the greater the option's chance of ending up in the money and the larger its time value. • On the expiration dat the time value of an option is zero and all an option is worth is its intrinsic value. It is either in the money or it is not.

4.7 THE BLACK SCHOLES PRICING MODEL

The Black Scholes model values European call option before the expiry date and take account of all five factors that determine the value of an option.

The Black Scholes Formula

The formula for the value of a European call option is given by:

Value of a call option = $P_aN(d_1) - P_eN(d_2)e^{-n}$

Where: P_a = the current price of the underlying asset

P_e = the exercise price

r = the continuously compounded risk-free rate

t = the time to expiration measured as a fraction of one year, for example t = 0.5 means that the time to expiration is 6 months

e = the base of the natural logarithms (= 2.71828)

$$d_1 = \frac{\ln\left(\frac{P_a}{P_e}\right) + \left(r + 0.5s^2\right)t}{s\sqrt{t}}$$

Where: s = volatility of the share price (as measured by the standard deviation expressed as a decimal)

4.8 VALUE OF EUROPEAN PUT OPTIONS

The value of a European put option can be calculated by using the Put Call Parity relationship which is given to you in the exam formulae sheet.

$p = c - P_a + P_e e^{-n}$

Where: p = the value of the put option

c = the value of the call option

4.9 VALUE OF AMERICAN CALL OPTIONS

4.9.1 Although American options can be exercised any time during their lifetime, it is never optimal to exercise an option earlier. The value of an American option will therefore be the same as the value of an equivalent European

option and the Black-Scholes model can be used to calculate its price.

Unfortunately, no exact analytic formula for the value of an American put option on a n on-dividend-paying stock has been produced. Numerical procedures and analytic approximations for calculating American put values are used instead.

Normal distribution

The normal distribution table (provided in the exam) can be used to calculate (d), the cumulative normal distribution function needed for the Black-Scholes model of option pricing.

(a) If d > 0, add 0.5 to the relevant number from normal distribution table.

(b) If d < 0, subtract the relevant number from 0.5.For example, if d is 1.05, N(d) = 0.3531 + 0.5 = 0.8531.

Note: N(d) is the area under the normal curve up to d in the shaped area of the figure beow.

Example 6

Consider the situation where the stock price 6 months from the expiration of an option is \$42, the exercise price of the option is \$40, the risk-free interest rate is 10% p.a. and the volatility is 20% p.a. This means $P_a = 42$, $P_e = 40$, r = 0.1, s = 0.2, t = 0.5.

Solution:

$$d_1 = \frac{\ln\left(\frac{42}{40}\right) + \left(0.1 + 0.5 \times 0.2^2\right) \times 0.5}{0.2\sqrt{0.5}} = 0.7693 = 0.77$$

$d_2 = 0.7693 - 0.2 \times$

and

$$P_e^{-rt} = 40e^{-0.1 \times 0.5} = 38.049$$

The values of the standard normal cumulative probability distribution can be found from the tables and are

N(0.77) = 0.5 + 0.2794 = 0.779

4N(0.63) = 0.5 + 0.2357 = 0.7357

Hence if the option is a European call, its value, is given by:

c = (42 × 0.7794) – (38.049 × 0.7357) = 4.76

If the option is a European put, its value is given by:

p = 4.76 – 42 + 38.049 = 0.81

The stock price has to rise by $2.76 for the purchaser of the call to break even. Similarly, the stock price has to fall by $2.81 for the purchaser of the put to break even.

4.10 REAL OPTIONS

An option exists when the decision maker has the right, but not the obligation, to take a particular action. They add value as they provide opportunities to take advantage of an uncertain situation as the uncertainty resolves itself over time.

Real options are **actual options** – that is, actual choices that a business can make in relation to investment opportunities.For example, a natural resource company may decide to suspend extraction of copper at its mine if the price of cooper falls below the extraction cost. Conversely, a company with the right to mine in a particular area may decide to begin operations if the price rises above the cost of extraction. Such options can be extremely important when valuing potential investments but are often overlooked by traditional investment appraisal techniques (e.g. NPV). They can significantly increase the value of an investment by eliminating potentially unfavourable outcomes.

4.11 LIMITATIONS OF THE NPV RULE

Dealing with uncertainty:

(a) Although the cash flows are discounted at an appropriate cost of capital, NPV does not explicitly deal with uncertainty when valuing the project.

(b) A risk-adjusted discount rate reduces the PV of the cash flows rather than giving the decision maker an indication of the range of cash flows that a project may deliver.

(c) The use of single discount rate means that risk is defined in one measure. This does not allow for the many sources of uncertainty that may surround the project and its cash flows.

Flexibility in responding to uncertainty:

(a) NPV fails to consider the extent of management's flexibility to respond to uncertainties surrounding the project. Such flexibility can be an extremely valuable part of the project and by failing to account for it, NPV may significantly underestimate the project's value.

(b) NPV will only provide an accurate estimate of the project's value if there is not flexibility or no uncertainty, i.e. flexibility will have no value as management knows exactly what is going to happen.

4.12 OPTION TO DELAY

When a firm has exclusive rights to a project or product for a specific period, it can delay taking this project or product until a later date.

A traditional investment analysis just answers the question of whether the project is a 'good' one if taken today. Thus, the fact that a project is not selected today either because its NPV is negative, or its IRR is less than its cost of capital, does not mean that the rights to this project are not valuable.

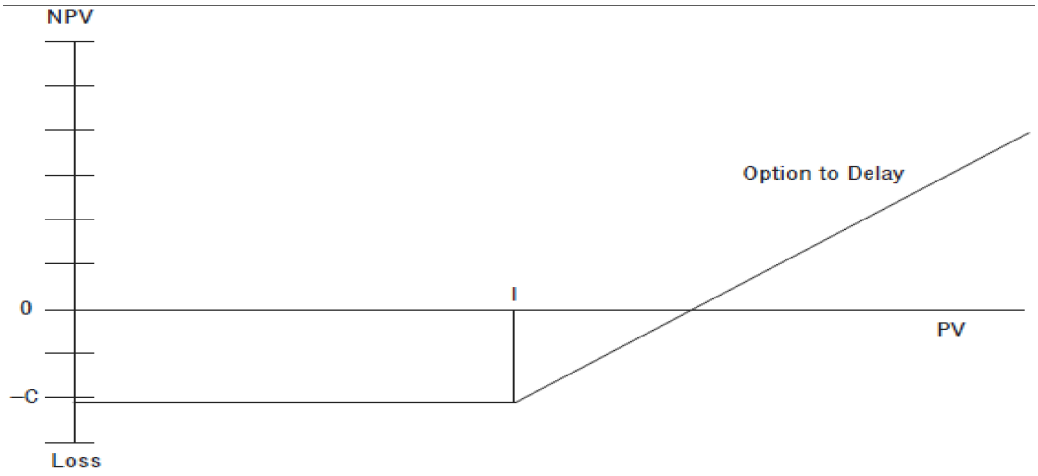
Example 7

Consider a situation where a company considers paying an amount C to acquire a licence to mine copper. The company needs to invest an extra amount (say, I) in order to start operations. The company has three years over which to develop the mine, otherwise it will lose the licence. Suppose that today copper prices are low and the NPV from developing the mine is negative. The company may decide not to start the operation today, but it has the option to start any time over the next three years provided that the NPV is positive. Thus the company has paid a premium C to acquire an American option on the present value of the cash flows from operation, with an exercise price equal to the additional investment (I). The value of the option to delay is therefore:

NPV = PV – I if PV >

INPV = 0 otherwise

The **payoff of the option to delay** is shown below and it is the **same as the payoff of a call option**, the only difference being that the underlying is the present value (that is in this case S = PV) and the exercise price is the additional investment (X = I).

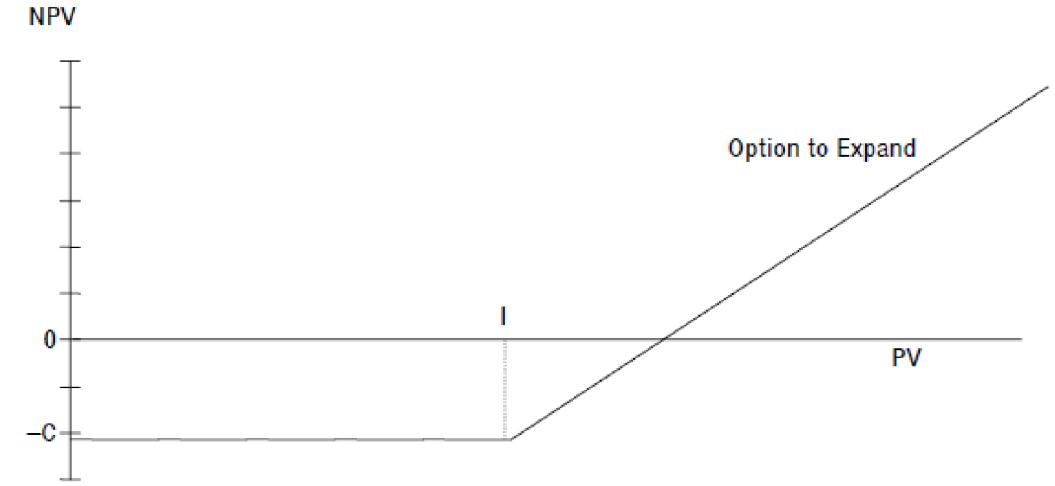


4.13 OPTION TO EXPAND

The option to expand exists when firms invest in projects which allow them to make further investments in the future or to enter new markets. The initial project may be found in terms of its NPV as not worth undertaking.

However, when the option to expand is taken into account, the NPV may become positive and the project worthwhile. The **initial investment** may be **seen as the premium** required to **acquire the option to expand**.

Expansion will normally require an additional investment, call it I. The extra investment will be undertaken only if the present value from the expansion will be higher than the additional investment, i.e. when $PV > I$. If $PV \leq I$, the expansion will not take place. Thus the option to expand is again a call option of the present value of the firm with an exercise equal to the value of the additional investment.



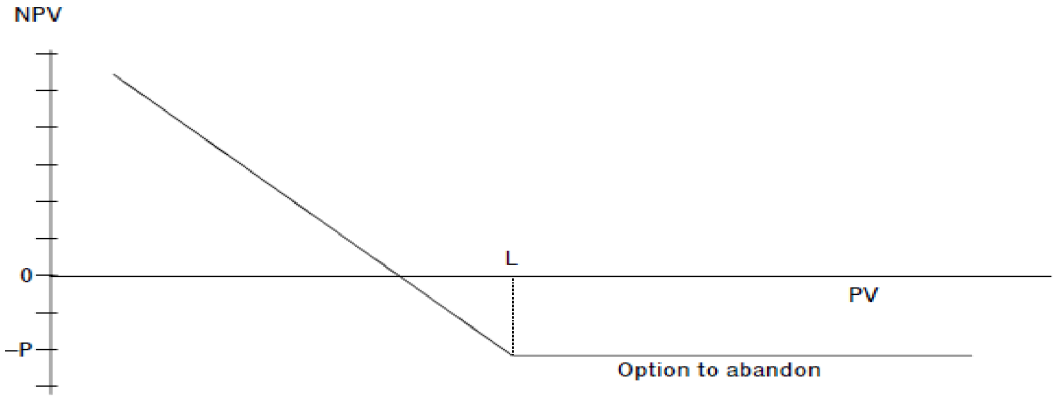
4.14 OPTION TO ABANDON / WITHDRAW

Whereas traditional capital budgeting analysis assumes that a project will operate in each year of its lifetime, the firm may have the **option to cease a project during its life**. This option is known as an abandonment option.

Abandonment options, which are the right to sell the cash flows over the remainder of the project's life for some salvage value, are **like American put options**.

When the **present value of the remaining cash flows (PV) falls below the liquidation value (L)**, the **asset may be sold**. Abandonment is effectively the exercising of a put option.

These options are **particularly important for large capital intensive projects** such as nuclear plants, airlines, and railroads. They are also important for projects involving new products where their acceptance in the market is uncertain and companies would like to switch to more alternative uses.



4.15 OPTION TO REDEPLOY / SWITCH

The option to redeploy exists when the company can use its productive assets for activities other than the original one. The switch from one activity to another will happen if the PV of cash flows from the new activity will exceed the costs of switching. The option to abandon is a special case of an option to redeploy.

These options are particularly important in agricultural settings. For example, a beef producer will value the option to switch between various feed sources, preferring to use the cheapest acceptable alternative.

These options are also valuable in the utility industry. An electric utility, for example, may have the option to switch between various fuel sources to produce electricity. In particular, consider an electric utility that has the choice of building a coal-fired plant or a plant that burns either coal or gas.

4.16 VALUATION OF REAL OPTIONS

The Black-Scholes equation is well suited for simple real options, those with a single source of uncertainty and a single decision date. To use the model we need to identify the five key input variables as follows:

Original Variables	Project Variables
1. Exercise price (P_c)	• For most real options (e.g. options to expand, option to delay, the **capital investment required** can be substituted for the exercise price. These options are examples of **call options.** • For an **option to abandon,** use the **salvage value** on abanddoment. This is an example of a put option.
2. Value of the underlying **Asset (e.g. share price) (p_a)**	• It is usually taken to be the **PV of the future cash flows from the project (i.e. excluding any initial investment).** • This could be the **value of the project being undertaken for a call option** (e.g. option to expand, option to delay), or the **value of the cash flows being foregone for a put option** (e.g. option to abandon).

Original Variables	Project Variables
3. Time to expiry (t)	• E.g. Project life.
4. Volatility (s))	• The volatility of the underlying asset (here the future operating cash flows) can be measured using industry sector risk. • It is usually taken to be the **PV of the future cash flows** from the project (i.e. **excluding any initial investment).**
5. Time to expiry (t)	• E.g. Project life.
6. Volatility (s)	• The volatility of the underlying asset 9here the future operating cash flows) can be measured using industry sector risk.
7. Risk-free rate (r)	• Many writers continue to use the risk-free rate for real options. • However, some argue that a higher rate should be used to reflect the extra risks when replacing the share price with the PV of future cash flows.

Example 8

Assume that Four Seasons International is considering taking a 20-year project which requires an initial investment of $ 250 million in a real estate partnership to develop time share properties with a Spanish real estate developer, and where the present value of expected cash flows is $254 million. While the net present value of $ 4 million is small, assume that Four Seasons International has the option to abandon this project anytime by selling its share back to the developer in the next 5 years for $ 150 million. A simulation of the cash flows on this time share investment yields a variance in the present value of the cash flows from being in the partnership of 0.09. The 5 year risk-free rate is 7%.

Calculate the total NPV of the project, including the option to abandon.

Solution:

The value of the abandonment option can be estimated by determining the

value of the **put option** using the Black-Scholes formula.

Call option = $P_a N(d_1) - P_e N(d_2) e^{-rt}$

Put option = $c - P_a + P_e e^{-n}$

Where:

P_a (Value of underlying asset) = PV of cash flows from project = \$254m

P_e (Strike price) = Salvage value from abandonment = \$150m

Variance in underlying asset's value = 0.09 (standard deviation (s) = 0.3)

Time to expiration = life of the project = 5 years

Risk-free rate (r) = 7%

Value of call option

$$d_1 = \frac{\ln\left(\frac{P_a}{P_e}\right) + \left(r + 0.5s^2\right)t}{s\sqrt{t}}$$

$$d_1 = \frac{\ln\left(\frac{254}{150}\right) + \left(0.07 + 0.5 \times 0.3^2\right) \times 5}{0.3\sqrt{5}} = 1.6424$$

$$d_2 = 1.6424 - 0.3 \times \sqrt{5} = 0.9716$$

Using Using normal distribution tables:

$N(d_1) = 0.5 + 0.4495 = 0.9495$

$N(d_2) = 0.5 + 0.3340 = 0.8340$

Value of call option = $254 \times 0.9495 - 150 \times 0.8340\ e^{-0.07 \times 5} = 214.17 - 88.16 = 153.01$

The value of put option can be calculated as follows:

Put option = $153.01 - 254 + (150 \times e^{-0.07 \times 5}) = \$4.71m$

The value of this abandonment option is added to the project's NPV of \$4m, which gives a total NPV with abandonment option of \$8.71m.

Example 9

A UK retailer is considering opening a new store in Germany with the following details:

Estimated cost	€12m
PV of net receipts	€10m
NPV	–€2m

These figures would suggest that the investment should be rejected. However, if the first store is opened then the firm would gain the option to open a second store (an option to expand).

Suppose this would have the following details:

Timing (t)	5 years' time
Estimated cost (P_e)	€20m
PV of net receipts (P_a)	€15m
Volatility of cash flows (s)	28.3%
Risk-free r	6%

Black-Scholes formula:

$$d_1 = \frac{\ln\left(\frac{P_a}{P_e}\right) + \left(r + 0.5s^2\right)t}{s\sqrt{t}}$$

$$d_1 = \frac{\ln\left(\frac{15}{20}\right) + \left(0.06 + 0.5 \times 0.283^2\right) \times 5}{0.283\sqrt{5}} = 0.33$$

$$d_2 = d_1 - s\sqrt{t}$$

$$d_2 = 0.33 - 0.283 \times \sqrt{5} = -0.30$$

Using normal distribution tables:

$N(d_1) = 0.5 + 0.1293 = 0.6293$

$N(d_2) = 0.5 - 0.1179 = 0.3821$

Call option = $P_a N(d_1) - P_e N(d_2) e^{-rt}$

Value of call option = $15 \times 0.6293 - 20 \times 0.3821\ e^{-0.06 \times 5} =$ €3.8m

Summary:

	€m
Conventional NPV of first store	(2)
Value of call option on second store	3.8
Strategic NPV	1.8

The project should thus be accepted.

4.17 ASSUMPTIONS OF THE BLACK-SCHOOLS MODEL

Assumptions:

(a) Lognormality. The model assumes that the return on the underlying asset follows a normal distribution which means the return itself follows a lognormal distribution.

(b) Perfect markets. This suggests that the direction of the market cannot be consistently predicted and thus the returns on the underlying asset can go up or down at any given moment in time.

(c) Constant interest rates. The risk-free rate is used in the Black-Scholes model and this rate is assumed to be constant and known.

(d) Constant volatility. The model assumes that the volatility of the project is known and remains constant throughout its life.

(e) Tradability of asset. The model assumes that there is a market for the underlying asset and it can therefore be traded. However, real options and their underlying assets are not traded, therefore it is very difficult to establish the volatility of the value.

(f) Style of option. The Black-Scholes model assumes that the option is a European style option – that is, it can only be exercised at the maturity date. Where the option can be exercised at any point up to the maturity date (that is, an American style option), the results of the Black-Scholes model are invalid.

4.18 SUMMARY

An option is an asset with payoffs that are contingent on the value of an underlying asset. A call option provides its holder with the right to buy the underlying

asset at a fixed price, whereas a put option provides its holder with the right to sell at a fixed price, at any time before the expiration of the option. The value of an option is determined by six variables—the current value of the underlying asset, the variance in this value, the expected dividends on the asset, the strike price and life of the option, and the riskless interest rate. This is illustrated in both the binomial and the Black-Scholes models, which value options by creating replicating portfolios composed of the underlying asset and riskless lending or borrowing. These models can be used to value assets that have option like characteristics.

4.19 GLOSSARY

- An option: The right but not an obligation, to buy or sell a particular good at an exercise price, at or before a specified date
- Put option: The right but not an obligation to **sell** a particular good at an exercise price
- Call option: The right but not an obligation to **buy** a particular good at an exercise price.
- Exercise/strike price: The fixed price at which the good may be bought or sold.
- American option: An option that can be exercised on any day up until its expiry date

4.20 SELF ASSESSMENT QUESTIONS

Q.1 Discuss in detail The Black Scholes Pricing Model?

_____

_____

_____

_____

_____

Q.2 Estimate the value of the option to delay the start of the project for two years using the Black and Scholes option pricing model and comment upon your findings. Assume that the government will make its announcement about the potential transport link at the end of the two-year period.

Q3. Discuss how a decrease in the value of each of the determinants of the option price in the Black-Scholes option-pricing model for European options is likely to change the price of a call option.

4.21 LESSON END EXERCISE

Q.1 How the valuation of real options are done?

Q.2 Explain The Black Scholes Pricing options.

4.22 SUGGESTED READINGS

- Bhattacharya, Hrishikas, Working Capital Management, Strategies and Techniques, Prentice Hall, New Delhi.
- Chandra, Prasanna, Financial Decision Making, Prentice Hall, New Delhi.

- Hampton, John, Financial Decision Making, Prentice Hall, New Delhi.
- Pandey, I.M., Financial management, Vikas Publishing House, New Delhi.
- Van Horne, J.C and J.M Wachowicz Jr, Fundamentals of Financial Management, Prentice Hall, New Delhi.

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Semester-IV **Lesson No. 5**
Course No. FE-414 **Unit - I**

CAPITAL BUDGETING AND INFLATION

STRUCTURE

5.1 INTRODUCTION

Capital budgeting is a process of evaluating investments and huge expenses in order to obtain the best returns on investment. An organization is often faced with the challenges of selecting between two projects/investments or the buy *vs* replace decision. Ideally, an

organization would like to invest in all profitable projects but due to the limitation on the availability of capital an organization has to choose between different projects/investments.

Inflation refers to the rise in the prices of most goods and services of daily or common use, such as food, clothing, housing, recreation, transport, consumer staples, etc. Inflation measures the average price change in a basket of commodities and services over time. The opposite and rare fall in the price index of this basket of items is called 'deflation'. Inflation is indicative of the decrease in the purchasing power of a unit of a country's currency. This is measured in percentage.

Inflation affects capital budgeting analysis since the market cost of capital is not completely representative of the real cost of borrowing funds. However, performing the analysis in a manner that compensates for inflation removes its impact from the results of the capital budget.Inflation impacts can be removed from a capital budgeting analysis by calculating the real rate of return and using it in the capital budgeting cash flow calculations. When formulating a capital budgeting scenario with the real rate of return, the answer has been adjusted for inflation. Conversely, if the rate of return is not adjusted, the cash flows can be adjusted for inflation to match the inflation that is "built in" to the market rate of return. In either scenario, it is important to make sure the cash flows and rate of return are on the same basis, either with or without inflation.

5.2 OBJECTIVES

After reading this lesson, you should be able to

- explain effect of inflation on capital budgeting decisions
- explain the principle of four-way equivalence and the impact on exchange rate fluctuations
- explain the impact of alternative exchange rate assumptions on the value of a project involving overseas cash flows
- forecast project or firm free cash flows in any specified currency
- for an international project use the net present value technique to determine the project â€™s net present value or firm value under differing exchange rate, fiscal and transaction cost assumptions
- explain and apply the International CAPM equation

5.3 CAPITAL BUDGETING AND INFLATION

Inflation is an ever persistent condition in today's economy. The purchasing power of money has been reducing year after year for decades now. Apart from the occasional recession where money may gain real value, the usual case is a loss of value. Investors are investing money today. They want to be compensated for the inflation and still get a return over and above it. This simply means that they want to gain value in real terms.

It is important for us to understand this while coming up with our cash flow estimations. This is because projects never give all of their cash flows in the same period. Cash flows from projects are usually spread out over many years, even decades. The treatment of **inflation** therefore becomes very important to come up with the correct value. Minor changes in the assumptions about inflation are capable of producing massive changes in the expected return from the project. A viable project may become unviable simply by tweaking the inflation numbers a little bit.

5.4 EFFECT ON INFLATION ON CAPITAL BUDGETING DECISIONS

The term 'Inflation' refers to the increase in general price level of goods and services. Due to such increase in price level, value of money decreases. As a result, more money is required to acquire same quantity of goods and services or less quantity can be procured with the same amount of money. For example, a person can purchase 5 kg of apple with ` 100 at present, i.e., at ` 20 per kg. If rate of inflation is 5%, the price per kg will be ` 21 and the person would require ` 105 to buy the same quantity (5 kg) of apples, or would get less than 5 kg (` 100/` 21 = 4.76 kg), of apple for ` 100. The causes of inflation are generally attributed to increase in aggregate demand due to increase in private and government spending (Demand Pull Inflation) or drop in aggregate supply of goods and services due to natural disasters, increase in the price of inputs, etc., for which cost increases (Supply Shock Inflation or Cost Push Inflation).

Rate of inflation is measured by observing the change in the price of a specified number of goods and services in an economy over a period of time, usually based on data collected by government agencies and an index is determined to indicate the inflation rate. The some of the widely used measures of inflation include: Consumer

Price Index (CPI), Producer Price Index (PPI), Wholesale Price Index (WPI), Commodity Price Index, etc.

5.5 IMPACT OF INFLATION ON INVESTMENT ANALYSIS

The Capital Investment Analysis will be unrealistic if the impact of inflation is not properly incorporated. As the cash flows of future periods over the life of the project are considered for the analysis and price level does not remain same over such period (usually price level increases over time, i.e., inflationary situation), the nominal value of cash flow estimates will not reflect the real purchasing power resulting in the distortion in the capital budgeting decisions. In order to reflect the true picture, cash flows should be adjusted to accommodate the effect of the inflation. The process of adjustment for inflation is as follows.

Nominal or Money Cash Flows are discounted with the Inflation Rate (IR) to arrive at the Real Cash Flows.

Real cash flows are discounted with the real Discount rate (RDR) to get the Present Value.

Alternatively, Nominal Cash Flows may be discounted with the Nominal Discount Rate (NDR) directly to get the Present Value.

So, either a two-stage process – (i) finding out the real cash flow by discounting the nominal cash flow with the inflation rate and (ii) the real cash flows are discounted with the real discount rate to get the present value of the real cash flows – or a single stage process may be followed to get the present value of real cash flows directly discounting the money / nominal cash flows with the nominal discount rate which incorporates both the inflation rate and real discount rate as shown below.

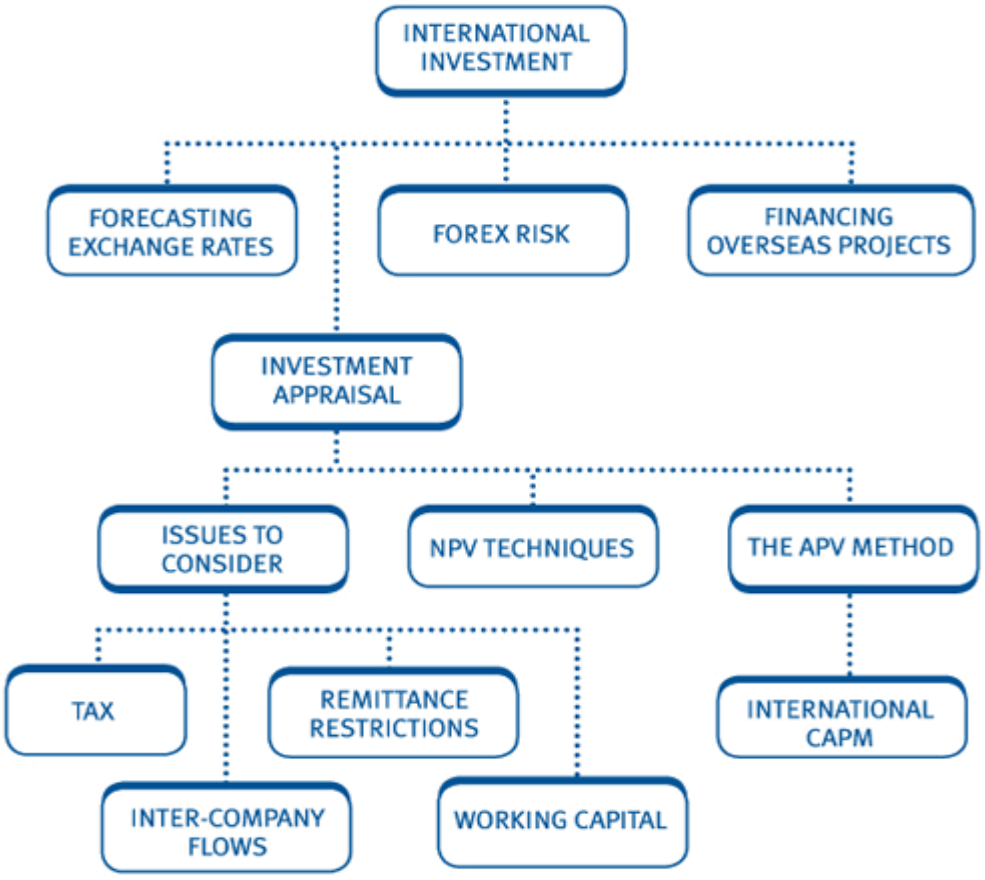
Real Cash Flows = Nominal Cash Flows of the Period 't' ÷ (1 + Inflation Rate)t Present Value of Real Cash Flows = Real Cash Flows of the period 't' as calculated above ÷ (1+ RDR)t Alternatively, Present Value of Real Cash Flows = Nominal Cash Flows of the period 't' ÷ (1+ NDR)t It may be noted that Nominal or Money Cash Flows are the actual amount expected to arise in future while Real Cash Flows are the nominal cash flows expressed in terms of real values representing

purchasing power. Therefore, it is prudent to use the real cash flows for analysis instead of money or nominal cash flows.

Relationship between NDR and RDR:

1 + Nominal Discount Rate = (1 + Real Discount Rate) (1 + Inflation Rate) or, NDR = (1 + RDR) (1 + IR) – 1 It may be observed from the above equation, Nominal Discount Rate contains two elements – Real Discount Rate and Inflation Rate. Real Discount Rate helps maintaining the shareholders wealth and Inflation Rate is the compensation for giving up the purchasing power today for a purchasing power in future.

5.6 INTERNATIONAL INVESTMENT AND FINANCING DECISIONS



1. Foreign projects and investment appraisal

NPV analysis

The appraisal of projects involving overseas investment, uses thesame NPV model you have used in earlier sessions. It includes basicssuch as:

- identifying relevant cash flows
- calculating a projectâ€™s corporation tax liability, including the calculation of tax relief on capital expenditure
- dealing with inflation and distinguishing money and real flows.

However, overseas investment appraisal includes additional challenges:

- Forecasting future exchange rates
- Double taxation.
- Inter-company flows (e.g. management charges or royalties).
- Remittance restrictions.

Impact of a project on the firm's risk exposure

When a firm starts trading in a different country, it is exposed tothree types of risk: transaction, economic and translation risk.

Undertaking a new, foreign currency, project affects the firm's exposure to these risks as follows:

1. Transaction risk

Individual receipts and payments which arise during the newproject's life will be subject to transaction risk, in that the value ofthe transactions will initially be calculated using the forecast rateof exchange which may differ from the actual rate on the transactiondate.

2. Economic risk

The project NPV is initially calculated using forecast exchangerates. A change in these forecasts over the life of the project willincrease or decrease the project NPV, and hence the gain toshareholders.

3. Translation risk

Undertaking a foreign project often involves setting up a foreignbased subsidiary, whose financial statements will have to be translated back into the home currency for the purposes of group accounting(consolidation). A change in exchange rates from one year to the next will cause the value of the subsidiary to fluctuate when its results are translated.

2. Forecasting foreign exchange rates

The relationship between interest, inflation, spot and forward rates

A feature of exam questions covering international investmentdecisions is often the need to calculate the relevant exchange ratesover a number of years, and a summary of the key relationships is there fore given in the four-way equivalence table follows.

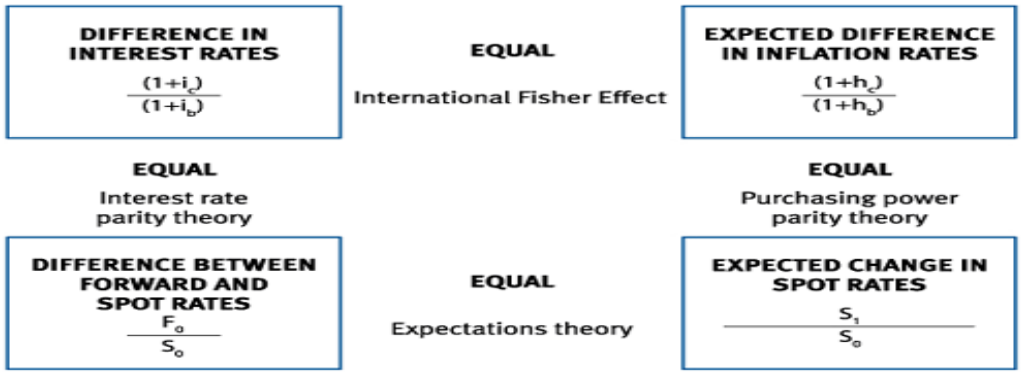


Illustration of parity calculations

The current dollar sterling exchange rate is given as $/Â£1.7025 â€“ 1.7075.

Expected inflation rates are:

Year	USA	UK
1	5%	2%
2	3%	4%
3	4%	4%

Use the relationships above to work out the expected spot rate for the next three years.

Solution:

Using the PPPT formula:

$$S_1 = S_0 \times \frac{(1+h_c)}{(1+h_b)}$$

$$S_1 = S_0 \times \frac{(1+\text{USA inflation})}{(1+\text{UK inflation})}$$

and the mid point of the quoted spread as the exchange rate today:

$$\left(\frac{1.7075+1.7025}{2}\right)=1.7050$$

The calculations for the next three years are:

$$\text{Year 1} \quad 1.7050\times\left(\frac{1.05}{1.02}\right)=1.7551$$

$$\text{Year 2} \quad 1.7551\times\left(\frac{1.03}{1.04}\right)=1.7382$$

$$\text{Year 3} \quad 1.7382\times\left(\frac{1.04}{1.04}\right)=1.7382$$

Note that the exchange rate at the end of one year becomes the basis of the next yearâ€™s calculation.

Cross rates

You may not be given the exchange rate you need for a particularcurrency, but instead be given the relationship it has with a differentcurrency. You will then need to calculate a **cross rate.**

For example, if you have a rate in $/Â£ and a rate in â,¬/Â£, youcan derive a cross rate for $/â,¬ by dividing the $/Â£ rate by theâ,¬/Â£ rate.

Cross rate calculation

A UK company has a Greek subsidiary which is to purchase materialscosting $100,000. The NPV of the overseas cash flows is being calculatedin euros, but you have not been provided with the euro/dollar exchangerate. Instead you have the following information:

$/£	1.90
€/£	1.45

What is the value of the purchase in euros?

Solution:

The solution could be calculated in two stages:

1. Convert the purchase into sterling:

   $100,000/1.90 = Â£52,632

2. Convert the sterling value into euros

   Â£52,632 Ã— 1.45 = â,¬76,316

However an easier alternative, particularly if there are a number of transactions to convert, is to calculate a cross rate:

The $/â,¬ rate will be 1.90/1.45 = 1.3103

The value of the transaction is therefore:

$100,000/1.3103 = â,¬76,318

llustration 1

Inflation is currently 80% in Brazil, although the government hopesto reduce it each year by 25% of the previous year's rate. What willthe inflation rate be in Brazil over the next four years?

Solution

Year 1	80% × 0.75	= 60%
Year 2	60% × 0.75	= 45%
Year 3	45% × 0.75	= 34%
Year 4	34% × 0.75	= 26%
OR	$80\% \times (0.75)^4$	= 25.3% (more accurate)

You should also comment in your answer that it is unlikely the government will achieve this reduction each year.

3. The impact of taxation, inter company cash flows and remittance restrictions

Taxation:

The level of taxation on a project â€™s profits will depend on therelationship between the tax rates in the home and overseas country.

There are three possible tax scenarios for an exam question.

The home country may have a tax rate that is:

- lower than
- the same as
- higher than the overseas country.

The question will always assume a double-tax treaty â‡’ project always taxed at the **highest** rate.

Illustration 2

What will be the rate of tax on a project carried out in the US by a UK company in each of the following scenarios?

	UK tax		US tax
(a)	33%	<	40%
(b)	33%	=	33%
(c)	33%	>	25%

Transfer pricing

The transfer price is the price charged by one part of a companywhen supplying goods or services to another part of the company, e.g.overseas subsidiary.

Transfer prices are particularly problematical. By manipulating thetransfer prices charged it may be possible to minimise the globaltaxation cost for the group, i.e. to report low profits in countrieswith high taxes and high profits in countries with low rates.

For instance, suppose we have two companies within a group that are based in different countries.

Company A sells components to Company B, whilst B sells marketing services to Company A.

- Company A will report low income therefore limiting its tax charge.
- Company B will be reporting high income as it pays less tax.

By manipulating the transfer price the overall tax charge can belowered. However, the government of country A will not look favourablyon this action.

This objective is therefore frustrated in many countries, as therelevant tax authorities require the transfer price to be set on anarm's length basis, i.e. the market price.

If a question tells you that a company is going to considerablyincrease its transfer price, you could incorporate the new price in yourNPV calculations. However it is essential that you then state in your report that the policy may be unsuccessful, as most governments requirethe transfer price to be set on an arm â€™s length basis,

i.e. the marketprice.

Therefore it is preferable, for exam purposes, to assume that thetax authorities will only allow â€˜arm â€™s length â€™/open-market pricesfor tax relief and will not allow an artificially high or low transferprice.

A second problem may also arise. Although the above may decreasethe taxation, the profits will end up in country B. If the currency ofcountry B is weak relative to the holding company, then loss from thedepreciation of the currency may be more than the tax saving.

Illustration 3

A project carried out by a US subsidiary of a UK company is due toearn revenues of $100m in the US in Year 2 with associated costs of$30m. Royalty payments of $10m will be made by the US subsidiary to theUK. Assume tax is paid at 25% in the US and 33% in the UK; and assume aforecast $/Â£ spot rate of $1.50/Â£.

What are the cash flows associated with the project?

Solution:

Year 2	$m
Revenues	100
Costs	(30)
Royalties	(10)
Pre-tax profit	60
25% US tax	(15)
Remit to parent	45
@$/£ Spot	÷1.50
£ Cash flow	30
Royalties	6.7
UK tax	(5.4)*
After tax cash flow	£31.3m

$10m
÷$/£1.50
= £6.7m

	$m
	(10.0)
	1.5
2	2.0
3	3.0
4	6.5

UK tax computation

UK tax on $ profits = 33% - 25% = 8%		
8% UK tax on $ profits:	$60m ÷ 1.50	£40m
	£40m × 0.08 =	= £3.2m
33% UK tax on royalties:	£6.7m × 0.33 =	= £2.2m
UK tax payable		£5.4m*

Remittance restrictions:

Remittance restrictions occur where an overseas government places alimit on the funds that can be repatriated back to the holding company.This restriction may change the cash flows that are received by theholding company.

The actual amount received by the parent company (and therefore theshareholders) is the relevant flow for NPV purposes.

Illustration 4

A project â€™s after-US tax $ cash flow is as follows ($m):

Year	0	1	2	3
	(10)	3	4	6

In any one year, only 50% of cash flows generated can be remittedback to the parent. The blocked funds can be released back to the parentin the year after the end of the project.

Find the cash flows to be evaluated for NPV purposes.

Solution:

Cash flows to parent:

Year	1	2	3	4
Net cash flow	3	4	6	
Blocked funds	(1.5)	(2)	(3)	
Remit to parent	**1.5**	**2**	**3**	**6.5**

It is these remitted cash flows that have to be put through the NPV calculation.

Time	$m
0	(10.0)
1	1.5
2	2.0
3	3.0
4	6.5

The final cash flows for NPV purposes are therefore:

Working Capital

It is a normally assumed that the working capital requirement forthe overseas project will increase by the annual rate of inflation in that country.

Four million pesos in working capital are required immediately for a project running in South America. The inflation rates for the next six years in the South American country are expected to be:

Year	1	2	3	4	5	6
	6%	4%	5%	4%	3%	4%

Identify the working capital flows for the NPV calculation:

Solution:

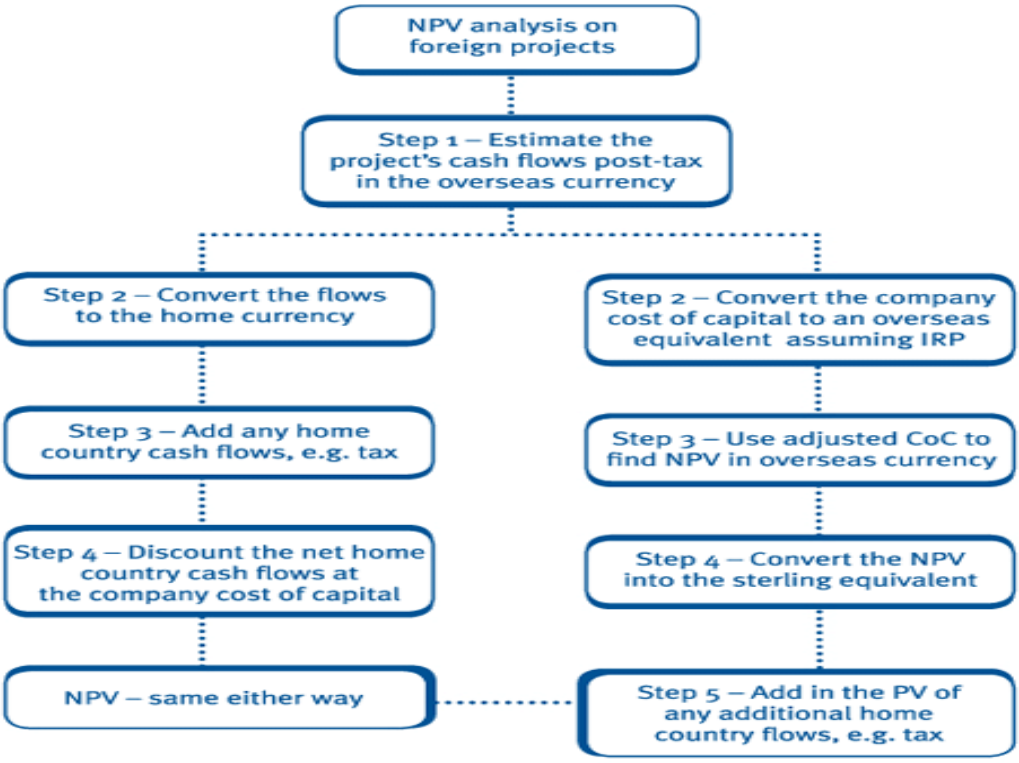
All cash flows in $000â€™s

Year	0	1	2	3	4	5	6	7
Working capital	4,000							
Inflation	1	1.06	1.04	1.05	1.04	1.03	1.04	
Total w/c	4,000	4,240	4,410	4,631	4,816	4,960	5,158	
W/c injection	(4,000)	(240)	(170)	(221)	(185)	(144)	(198)	5,158

Working capital released

4 NPV analysis for foreign projects

There are two methods for calculating the NPV of overseas projects:



The simpler 4-step method is the more conventional one which is used in the majority of cases.

Free cash flows in foreign currency

In an exam question, you may be told specifically what the foreigncurrency free cashflows are for a new project. Alternatively, you may beexpected to estimate the free cashflows from given accountinginformation. This is covered in more detail in Chapter 10: BusinessValuation, but a simple introductory illustration is shown below.

Illustration of how to estimate free cashflow

Wine Co. is considering international expansion by taking over HouseCo, a manufacturing company based in a foreign country (whose currencyis the Foreign Dollar, F$).

According to the most recent accounts of House Co, its turnover andEBIT are F$356m and F$70m respectively. Capital expenditure in the mostrecent year was F$33m and the depreciation charge was F$24m. If Wine Cotakes over House Co, it expects growth in turnover and profitability tobe 3% per annum, and capital expenditure and depreciation to stayconstant. The tax rate in the foreign country is 30% per annum.

The current exchange rate is F$2 = H$1 (H$ is the home currency,the Home Dollar), and this is expected to stay constant for theforseeable future.

Required:

Estimate the free cashflow, in H$, for the first year after the takeover.

Solution:

	Current F$m	Year 1 F$m
EBIT (3% increase)	70	72.1
Less: Tax (30%)	(21)	(21.6)
Add back depreciation	24	24
Operating cashflow	73	74.5
Less Capital Expenditure	(33)	(33)
Free cashflow in F$m	40	41.5
Exchange rate (F$...=H$1)		2
Free cashflow in H$m		20.75

5.7 PROBLEMS IN INVESTMENT DECISIONS

If a business wishes to grow, it needs to invest.

The cash spent on investment in a business is normally referred to as “capital expenditure”. This can be contrasted with spending on day-to-day operations (e.g. paying for mterials, stff costs which is known as revenue expenditure

The distinctions between capital and revenue expenditure is quite an important one.

Capital v/s Revenue Expenditure	
Capital	Revenue
Cash spent on investment in the business: e.g.	Cash spent on day-to-day operstions: e.g..
Plant and machinery	Raw materials enery cost
Factory building	Wages and salaries
IT systems	Marketing costs
Distribution equipment	Office administration
Fixtures and fittings	

The main difference is that capital expenditure is on non- current assets which have an economic life in the business- they are intended to be kept, rather than sold or turned into products

There are several reasons why a business needs to invest in capital expenditure

To add extra production capacity

- To replace worn-out, broken or obsolete machinery and equipment
- To support the introduction of new products and production processes
- To implement improved IT systems
- To comply with changing legislation & regulations

The problem for most businesses is that the finance available for capital investment is limited. There are usually more possible capital investment opportunities than there is available finance. So choices have to be made and some capital investments rejected.

A key consideration with capital investment is the **rate or return** that an investment will make. This is vital because the owners of the business look to management to maximise their return. If the business cannot earn an acceptable return, then the owners would be better off taking their cash out of the business and investing it elsewhere.

There are several methods available which help management make the decisions about which projects to invest in whichy are described and illustrated further below:

- Payback
- Net present value ('NPV")
- Average rate of return ("ARR")

The main methods of Investment Appraisal
Pay back period
The time it takes for a project to repay its initial investment
Average rate of return
Looks at the total accounting return for a project to see if it meets the target return
Discounted cash flow (NPV)
Net present value (NPV) calculates the value now of the projects future cash flow

5.8 SUMMARY

Inflation is an ever persistent condition in today's economy. The purchasing power of money has been reducing year after year for decades now. Apart from the occasional recession where money may gain real value, the usual case is a loss of value. Investors are investing money today. They want to be compensated for the inflation and still get a return over and above it. This simply means that they want to gain value in real terms.

It is important for us to understand this while coming up with our cash flow estimations. This is because projects never give all of their cash flows in the same period. Cash flows from projects are usually spread out over many years, even decades. The treatment of inflation therefore becomes very important to come up with the correct value. Minor changes in the assumptions about inflation are capable of producing massive changes in the expected return from the project. A viable project may become unviable simply by tweaking the inflation numbers a little bit. This article will explain how inflation needs to be treated while performing these calculations:

5.9 GLOSSARY

- **Pay back period:** The time it takes for a project to repay its initial investment
- **Average rate of return:** Looks at the total accounting return for a project to see if it meets the target return
- **Discounted cash flow:** Net present value (NPV) calculates the monetary value now of the projects future cash flow
- **Transfer pricing:** The transfer price is the price charged by one part of a companywhen supplying goods or services to another part of the company, e.g.overseas subsidiary

5.10 SELF ASSESSMENT QUESTIONS

Q1. Explain the Effect of Inflation on Capital Budgeting Decisions.

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Q2. Explain the Impact of Inflation on Investment Analysis.

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Q3. Discuss the problems in Investment decisions.

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5.11 LESSON END EXERCISE

Q.1 Delta company manufactures silicon boards that are used in preparing small, medium and large size electronic circuits. The company is considering to reduce its cost by automating some of its manufacturing tasks. This automation requires the installation of a new equipment. The relevant information for net present value (NPV) analysis of investment in new equipment is given below:

- Cost of equipment : $72,000
- Expected annual cost savings to provide by new equipment : $40,000
- useful life of the equipment : 6 years
- Salvage value at the end of 6 years : $0
- Cost of capital : 23.2%
- Expected inflation rate in cash flows associated with the new equipment : 10%

Required :

1. What would be the net present value (NPV) of new equipment if :
   (a) the inflation is considered?
   (b) the inflation is not considered?
2. Should the new equiment be purchased?

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Semester-IV **Lesson No. 6**
Course No. FE-414 **Unit - II**

CAPITAL STRUCTURE

STRUCTURE

6.1 INTRODUCTION

Capital structure is the mix of different securities to a firm's capitalisation. It is the permanent financing of the company represented primarily by long-term debt and shareholder's equity. It is also a part of a company's financial structure. The choice of capital structure depends upon a number of factors such as natur of business, regularity of earnings, conditions of the financial markets and attitudes of the investors. A capital structure will be considered appropriate if it possesses profitability, solvency, flexibility, conservatism and control. The capital structure of a company is to be determined initially at the time of incorporation of a company. The initial capital structure will have long term implications. It may not be possible to have optimum capitalstructure but the management should set a target capital structure and the initial capital structure should be framed keeping in view the target capital structure. Therefore, the capital structure decision is a continuous one.

6.2 OBJECTIVES

After studying the unit the students will know:

- the concept of capital structure;
- the importance of capital structure;
- the concept of optimum capital structure;
- the choice of capital structure and
- the capital structure theories.

6.3 CONCEPT OF CAPITAL STRUCTURE

Capital structure is the mix of a firm's capitalisation. It includes long term sources of funds such as debentures, shares, etc. According to Gavstenberg, capital structure is the "make-up of a firm's capitalisation." Thus, it represents the mix of different sources of long term funds, in the capitalisation of the company. The term capitalisation is used with reference to the total long term funds raised by a company. The decisions regarding the form of financing, their requirements and their relative proportions in the total capital of a company are known as capital structure decisions. The company management has to take extreme care and prudence in arriving at the proper capital structure. The term capital structure is used for the mix of capitalisation. The capitalisation is used for the sources of long-term capital of a

company. The long term sources of raising capital are issue of shares, debentures or bonds and long-term borrowings. The share is a owned capital and debentures and bonds are borrowed capital. Hence, there should be a mix of sources of capital. The capital structure of a company is to be determined initially, at the time of formation of the company. The initial capital has long-term implication and hence proper care should be taken while deciding the sources of capital at the beginning. The capital structure should be flexible, profitable and simple. The initial capital structure of a company depends upon many factors.

6.3.1 Definitions of Capital Structure

According to the definitions of **Gerstenberg**, "Capital Structure of a company refers to the composition or make up of its capitalization and it includes all long-term capital resources".

According to the definition of **James C. Van Horne**, Captial Structure is "The mix of a firm's permanent long-term financing represented by debt, preferred stock and common stock equity".

6.4 CHOICE OF A CAPITAL STRUCTURE

The choice of an appropriate capital structure depends upon a number of factors. These factors include nature of company's business, regularity of earnings, conditions of financial markets, attitude of the management as well as the investors. However, a firm has the choice to raise funds for financing its projects with the following choices:

(a) Only with equity shares.

(b) With equity and preference shares.

(c) With equity shares and debentures.

(d) With equity shares, preference shares and debentures.

A capital structure will be considered to be appropriate if it possesses the following features:

(i) **Flexibility:** The capital structure should be determined in such a way that there should be some scope for changes according to the changing circumstances. It should be possible for the company to provide funds whenever needed for

financing its activities.

(ii) **Profitability:** The capital structure of a company should be most profitable. The objective of a company is to maximise the return to the shareholders. Therefore, the capital structure should tend to minimise cost of financing and at the same time maximise the returns to the shareholders.

(iii) **Solvency:** The capital structure should be determined in such a way that it should not be a risk of becoming insolvent. Excessive use of debt or borrowed capital in the capital structure results into insolvency. It affects profitability as well as liquidity of the company adversely.

(iv) **Conservative:** The capital structure of a company should be conservative in the sense that the debt portion in the capital structure should not exceed the limit which the company can bear. Normally, the debt-equity ratio should not be more than 2: 1.

(v) **Control**: While deciding the capital structure of a company, the management has to see that its control should not be reduced. The promoter's control should not be reduced. The promoters control the company with more proportion of equity than debt. In order to avoid this, a proper balance between owned capital and debt capital should be maintained.

6.5 OPTIMUM CAPITAL STRUCTURE

Optimum capital structure is that capital structure at which the value of equity share is the maximum while the average cost of capital is the minimum. The value of equity share mainly depends upon the earnings per share. The theory of capital structure deals with the issue of the right mix of debt and equity in the long-term capital of the company. If a company raises debt, the value of equity shares goes up to a certain point. If the debt increases beyond that point, the value of equity shares goes down. Therefore, the company should determine its appropriate level of debt-equity mix which is known as optimum capital structure.

6.6 IMPORTANCE OF CAPITAL STRUCTURE

The capital structure decisions are very important in financial management. These decisions influence debt-equity mix which ultimately affects

shareholders.' return and risk. Since the cost of debt is cheaper, companies prefer to borrow. The value of equity depends upon earnings per share. As long as return on investment is more than the cost of borrowings, extra borrowings will increase the earnings per share. However, beyond the limit, it increases the risk and the share price may fall. The effect of fall in share price due to heavy load of debt is difficult to measure. Market factors are so highly psychological and complex as they hardly follow these theoretical considerations. However, a company can determine an appropriate debt-equity mix empirically, considering various factors. The debt-equity mix in the capital structure is one of the important factors. Affecting the value of a share of a company. There is a significant relationship between the share price and the variables like return, risk, growth size and leverage. Companies in India are now showing almost an equal preference for debt and equity in designing their capital structure. This is due to the freedom in paying dividend and easy to raise money. However, the returns have become uncertain due to increasing competition. An important function of financial management is to decide an appropriate capital structure of their company. The financial performance of a company depends upon the capital structure decisions. A good capital structure will help the company to increase profits, efficiency and reputation of the company. Therefore, capital structure decisions are very important.

6.7 FACTORS AFFECTING CAPITAL STRUCTURE

An appropriate capital structure can be determined on the basis of the following factors:

(1) Trading on Equality

Trading on equity means use of owned capital as well as borrowed capital in the capital structure of a company. A company can raise funds by issue of shares and debentures. Debentures carry a fixed rate of interest and the interest is paid irrespective of profits. A company can also raise capital only by issue of shares. In this case, the shareholders will get less amount of dividend because of large number of shareholders. However, if a company issues shares as well as debentures, the shareholders will be benefited more in the form of dividend. Debenture holders have a limited share in the company's profits and hence want to be protected in terms of earnings and values represented by equitycapital.

Fixed interest on debt does not vary with the firms' earnings before interest and tax, a magnified effect is produced on earnings per share.

(2) Leverage

Leverage is the ability of a firm to use fixed cost assets or funds to magnify the return to its owners. There are two leverages associated with the capital structure i.e. operating leverage and financial leverage. Operating leverage exists when a firm has afixed cost that must be incurred regardless of volume of business. On the other hand, financial leverage is a mix of debt and equity in the capitalisation of the firm. In order to decide proper financial policy, operating leverage may be taken into consideration as the financial leverage is a superstructure built on the operating leverage. The operating profits i.e. earnings before interest and taxes (EBIT) serves as a function in defining these two leverages. Financial leverage represents the relationship between the firms' earnings before interest and taxes and earnings available for equityholders. When there is an increase in EBIT there is a corresponding increase in market price of equity shares. However, increased use of debt in the capital structure has certain limitations. If debt capital is employed in greater proportion, marginal cost of debt will also increase and share price may fall as investors may find it risky. On the other hand, in spite of increased risk, market price of shares may increase due to speculation. Therefore, before using financial leverage, its impact on Earning Per Share (EPS) must be considered. A company having higher operating leverage should use low financial leverage and vice versa otherwise, it may face problems of insolvency and inadequate liquidity.

(3) Interest Coverage Ration

The ability of a firm to use debt in the capital structure may be judged in terms of interest coverage ratio. It is the ratio or relation between operating profit and interest. Higher the ratio, greater is the certainty of meeting interest payment. If the ratio is lower, the firm may not be able to pay interest in future.

(4) Cash Flow Analysis

EBIT-EPS analysis is a good supporting tool in determining a suitable capital structure. Cash flow under adverse situation should be examined in order to determine the debt capacity. A high debt-equity ratio may not be risky if the company has the

ability to generate adequate cash flows. It may be possible to increase the debt until cash flows equal to the risk set out by debt capital. With the help of information available, a range can be determined for an optimum level of debt in the capital structure.

6.8 SUMMARY

A firm's capital structure is determined by the mix of long-term debt and equity it uses in financing its operations. Financial structure means the composition of the entire left hand side of the balance sheet. The basic differences in debt (including preference shares) and equity capital are in respect of the voting rights, the claims on income and assets, and the tax treatment. Timing, flexibility, cost, risk and control principles are the criteria for determining patter of capital structure. A firm's capital structure should be consistent with its business risk and result in an acceptable financial risk. The EBIT-EPS analysis can be used to evaluate various capital structure in the light of the degree of financial risk and the returns to the equity shareholders. The EBIT-EPS analysis shows how the desirable capital structure gives the maximum EPS.

6.9 GLOSSARY

- **Capital Structure** is the proportions of all types of long-term capital. Financial Structure is the proportions of all types of long-term and short-term capital.
- **Optimum capital structure** is that capital structure at which the value of equity share is the maximum while the average cost of capital is the minimum.
- **Leverage** is the ability of a firm to use fixed cost assets or funds to magnify the return to its owners

6.10 SELF ASSESSMENT QUESTIONS

Q1. What is capital structure? What is optimum capital structure?

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Q2. The choice of an appropriate capital structure depends on a number of factors, such as the nature of the companys business, regularity of earnings, conditions of the money market, attitude of the investor, etc.

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Q3. A firm should try to maintain optium capital structure with a view to maintain financial stability.

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6.11 LESSON END EXERCISE

Q.1 How does cost of debt affect the capital structure of a company? State.

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Q.2 Cost of debt is lower than the cost of equity share capital. Give reason why even then a company cannot work only with the debt?

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Semester-IV **Lesson No. 7**

Course No. FE-414 **Unit - II**

CAPITAL STRUCTURE AND MARKET VALUE OF A FIRM, ARBITRAGE PROCESS, CAPITAL STRUCTURE POLICY

STRUCTURE

7.1 INTRODUCTION

Both the cost of capital approach and the APV approach make the value of a firm a function of its financial leverage. Implicitly, we are assuming that the value of a firm is determined not just by the investments it makes but also by the mix of debt and equity that it uses to fund these investments. While this may seem logical, there is substantial debate in corporate finance on whether the financial leverage of a firm should affect its value. In this chapter, we will begin with a quick review of both sides of the capital structure argument and then consider practical ways of analyzing the effect of capital structure on value.

7.2 OBJECTIVES

After reading this lesson, you should be able to:

- to understand the capital structure and market value of a firm;
- to understand arbitrage process in capital structure; and
- to understand capital structure policy.

7.3 MODIGLIANI MILLER APPROACH (MM)

MM theory relating to the relationship between cost of capital and valuation is similar to the NOI approach. According to this approach, the value of the firm is independent of its capital structure. However, there is a basic difference between the two. The NOI approach is purely a definitional term, defining the concept without behavioural justification. MM approach provides analytically sound, logically consistent, behavioral justification in favour of the theory and considers any other theories of Capital structure as incorrect.

Assumption:

Capital markets are perfect. This means,

1. Investors are free to buy and sell securities.
2. Inventors can borrow and lend money on the same terms on which a firm can borrow and lend.
3. There are no transaction costs.
4. They behave rationally.

5. Firms can be classified into homogenous risk categories. All the firms within the same class will have the same degree of business risks.
6. All the investors have the same expectations from a firm's NOI with which to evaluate the value of the firm.
7. Dividends Payout ratio is 100% and there are no retained earnings.
8. There are no corporate income taxes. This assumption is removed later.

There are three basic propositions of MM approach:

1. The overall cost of capital (KO) and the value of the firm (V) are independent of leverage. The Ko and V are constant for all the degree of leverage. The total value of the firm is obtained by capitalizing the EBIT at a discount rate appropriate for its risks class.
2. Cost of equity (Ke) is equal to the capitalization rate of a pure equity stream plus a premium for financial risk. The financial risks increases with the leverage and therefore, Ke increases in a manner to offset exactly the benefit from the use of low cost debt.

   $Ke = Ko + (Ko - Kd)\ B/S.$
3. The cut-off rate for investment purposes is completely independent of the way in which an investment is financed. This is true because cost of capital remains same regardless of the degree of leverage. So both, investment decision and financing decision are independent.

7.3.1 Proof of MM Argument

The value of a firm depends on its profitability and risks. It is in variant with respect to relative changes in the firm's capitalization. Similarly, according to the theory, cost of capital and market value of the firm must be same regardless of the degree of leverage.

7.4 CONCEPT OF ARBITRAGE

The term arbitrage refers to the act of buying a security in the market, where the price is less and simultaneously selling it in another market where the price is more, to take advantage of the difference in price prevailing in two different markets.

The operational justification for the MM hypothesis is the "Arbitrage Argument". The term arbitrage refers to the act of buying a security in the market, where the price is less and simultaneously selling it in another market where the price is more, to take advantage of the difference in price prevailing in two different markets.

Suppose two identical firms, except for their capital structures, have different market values.

In this situation, arbitrage (or switching) will take place to enable investors to engage in the personal or homemade leverage as against the corporate leverage, to restore equilibrium in the market. On the basis of the arbitrage process, MM conclude that the market value of a firm is not affected by leverage. Thus, the financing (or capital structure) decision is irrelevant. It does not help in creating any wealth for shareholders. Hence one capital structure is as much desirable (or undesirable) as the other.

Arbitrage process helps to bring equilibrium in the market. Because of arbitrage, a security cannot be sold at different prices in different markets. MM approach illustrates the arbitrage process with reference to valuation in terms of two firms, which are exactly similar in all aspects with respect to leverage, so that one of them has debt in the capital structure while other does not. Such homogenous firm's are, according to MM, perfect substitutes. If the market value of the two firms which are exactly same in all the respects, except with the leverage, which is not equal, investors of the overvalued firm would sell their shares, borrow additional funds on their personal account and invest in the undervalued firm, in order to obtain the investors for arbitrage is termed as home-made or personal leverage. So investor undertaking arbitrage would be better off. This behaviour of arbitrage will have investors of overvalued firm. Arbitrage would be counting till the market prices of two identical firms become identical.

7.5 ARBITRAGE PROCESS IN CAPITAL STRUCTURE

According to M —M, two firms identical in all respects except their capital structure cannot have different market values or different cost of capital. In case, these firms have different market values, the arbitrage will take place and equilibrium in market values is restored in no time. Arbitrage process refers to switching of investment from one firm to another. When market values are different, the investors will try to take advantage of it by selling their securities with high market price and

buying the securities with low market price. The use of debt by the investors is known as personal leverage or homemade leverage. Because of this arbitrage process, the market price of securities in higher valued market will come down and the market price of securities in the lower valued market will go up, and this switching process is continued until the equilibrium is established in the market values. So, M —M, argue that there is no possibility of different market values for identical firms. Reverse Working of Arbitrage Process Arbitrage process also works in the reverse direction. Leverage has neither advantage nor disadvantage. If an unlevered firm (with no debt capital) has higher market value than a levered firm (with debt capital) arbitrage process works in reverse direction. Investors will try to switch their investments from unlevered firm to levered firm so that equilibrium is established in no time. Thus, M M proved in terms of their proposition I that the value of the firm is not affected by debt-equity mix. Proposition Il M — M's proposition Il defines cost of equity. According to them, for any firm in a given risk class, the cost of equity is equal to the constant average cost of capital (Ko) plus a premium for the financial risk, which is equal to debt — equity ratio times the spread between average cost and cost of debt. Thus, cost of equity is: Ke=Ko+ (KO Kd)x- s Where, Ke = cost of equity D/ S = debt — equity ratio M — M argue that Ko will not increase with the increase in the leverage, because the low — cost advantage of debt capital will be exactly offset by the increase in the cost of equity as caused by increased risk to equity shareholders. The crucial part of the M — M Thesis is that an excessive use of leverage will increase the risk to the debt holders which results in an increase in cost of debt (Ko). However, this will not lead to a rise in Ko. M — M maintains that in such a case Ke will increase at a decreasing rate or even it may decline. This is because of the reason that at an increased leverage, the increased risk will be shared by the debt holders. Hence Ko remain constant.

7.6 REVERSE WORKING OF ARBITRAGE PROCESS

Arbitrage process also works in the reverse direction. Leverage has neither advantage nor disadvantage. If an unlevered firm (with no debt capital) has higher market value than a levered firm (with debt capital) arbitrage process works in reverse direction. Investors will try to switch their investments from unlevered firm to levered firm so that equilibrium is established in no time.

Illustration 4: The operation of arbitrage process is illustrated below.

Assume that there are two firms L and U which are identical in all the respects except that, the firm L has 10% ‘ 5,00,000 debentures. The EBIT of both the firms are ‘ 80,000. The cost of equity of the firm L is higher at 16% and firm U is lower at 12.5%. The total market values of the firm are computed as below.

FIRM L	FIRM U	
EBIT	80,000	80,000
Less:Interest	50,000	-–
Earnings available to ESH (NI)	30,000	80,000
Cost of equity (Ke)	0.16	0.125
Market value of equity shares	1,87,500	6,40,000
	(S = NI/Ke)	
Market value of debt	5,00,000	---
Total value of the firm	6,87,500	6,40,000
	11.63%	12.5%

Thus, the total value of the firm which employed debt is more than the value of the other firm. According to MM, this previous arbitrage would start and continue till the equilibrium is restored.

7.7 WORKING OF THE ARBITRAGE PROCESS

The following example illustrates the working of arbitrage process:

Illustration 4: Suppose there is an investor X, who holds 10% of the outstanding shares in the firm L. This means his holding amounts to ‘ 18,750 and his shares in the earning which belongs to equity shareholders is ‘ 3000 (10% of ‘ 30,000). Mr. X will sell his holding in the firm L and invest money in the firm U. The firm U has no debt in the capital structure and hence, the financial risk to Mr. X would be less in the firm U than firm L . In order to have the same degree of financial risk as of the firm U, Mr. X will borrow additional funds equal to his proportionate shares in substituted personal leverage in place of corporate leverage.

Notes: The position of Mr.X is summarized as below.

Firm L

Investment amount	(10% holding)	18750
Dividend income	(10% of 30000)	3000
Return on funds	3000/18750=16%	

Firm U

Investment amount	(18,750 + 50,000)	68,750
(50,000 borrowed at 10%)		
Total income 68,750/640000* 80, 000 = 8, 593.75		
Less: Interest on loan		5,000
Return on investment		3,593.75
ROI = 3, 593.75 /18750 = 19.16%		18,750

So Mr. X gets a higher income after shifting his investment to company U (Rs 3,000 and 3,593.75) His ROI increases from 16% to 19%. The other investors will also wish to make profit out of arbitrage. This increases the demand for securities of the firm U and will lead to increase in its price. At the same time, the price of the security of the firm L will decline due to the selling pressure. This will continue till the prices of the securities of the firms become identical.

MM argues that the value of the firm will increase and cost of capital will decrease with leverage. Interest paid on the debt is tax deductible and therefore, effective cost of debt is less than the coupon rate of interest. Therefore, levered firm would have a greater market value than the unlevered firm (cost capital of levered firm would be lower).

Symbolically:

VL = VU + BT

VL = Value of levered firm Vu= Value of unlevered firm

7.8 CAPITAL STRUCTURE AND MARKET VALUE OF FIRM

A firm mobilizes funds which, depending upon their maturity period, can be classified as long-term and short-term sources. The former consists of capital, reserves and term loans raised from public and financial institutions, while the latter is made up of current liabilities and provisions. Financing decisions involve raising funds for the firms. It is concerned with formulation and designing of capital structure or leverage.

While investment decisions are related to the asset side of the balance sheet, financing decisions are related to the liabilities and equity side. Capital structure ordinarily implies the proportion of debt and equity in the total capital of a company.

Since a company may tap any one or more of the different available sources of funds to meet its total financial requirement. The total capital of a company may, thus, be composed of all such tapped sources. The term 'structure' has been associated with the term 'capital'. The term 'capital' may be defined as the long-term funds of the firm.

Capital is the aggregation of the items appearing on the left hand side of the balance sheet minus current liabilities. In other words, capital may also be expressed as total assets minus current liabilities. Further, capital of a company may broadly be categorized into 'equity' and 'debt'.

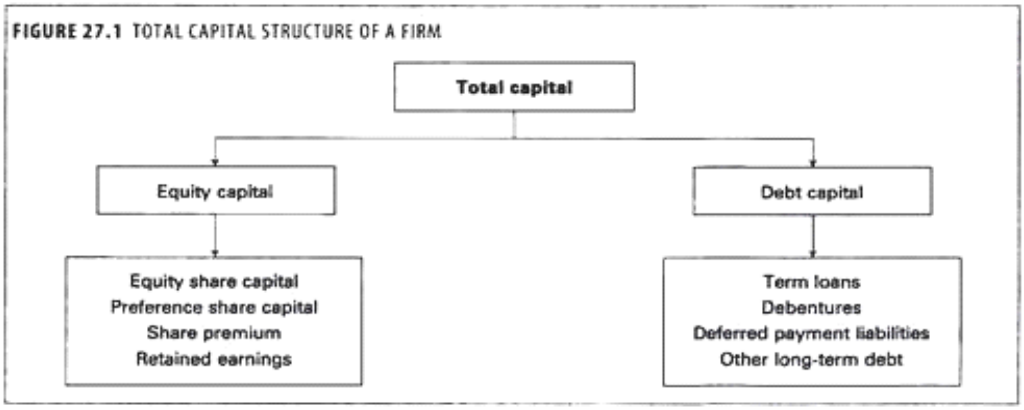
Equity consists of the following:

Equity share capital + Preference share capital + Share premium + Free reserves + Surplus profits + Discretionary provisions for contingency + Development rebate reserve

Debt consists of the following:

All borrowings from Government, Semi-Government, Statutory financial corporations and other agencies + Term loans from banks, financial institution etc. + Debentures + All deferred payment liabilities.

The total capital structure of a firm is represented as:



'Financial structure' in the entire left hand sideof the company's balance sheet which includes current liabilities (equivalent to asset structure). While 'capital structure' refers to sources of long- term funds. The term 'total capital structure' denotes mix of owners' funds and outsiders' funds or it is proportionate relationship of firm's permanent long-term financing represented by equity and debt.

Ordinarily, increase in debt in the capital structure i.e., improvement of debt-equity ratio implies greater amount of interest payment than before. So, the company must have to be sure enough of getting steady return so as to bear the additional burden of interest. Likewise, profitability depends, inter alia, on cost of capital.

Actually, a negative correlation should always exist between cost of capital and profitability. So, increase in cost of capital means decrease in profitability. Since acceptance of more and more debt means payment of greater amount of interest, the company must have to think twice about its effect on profitability.

If due to acceptance of debt, profitability decreases Le., a negative correlation results, such debt acceptance will not be advantageous to the company. On the other hand, if any change in the capital structure by way of increasing the proportion of debt can have favourable effect on profitability, then such change i.e., increase in debt may be considered beneficial to the company.

7.9 CAPITAL STRUCTURE FINANCING POLICY

The capital structure of a company is to be determined initially at the time the company is floated. Great caution is required at this stage, since the initial capital structure will have long-term implications. Of course, it is not possible to have an

ideal capital structure but the management should set a target capital structure and the initial capital structure should be framed and subsequent changes in the capital structure should be made keeping in view the target capital structure. Thus, the capital structure decision is a continuous one and has to be taken whenever a firm needs additional finances.

The following are the factors which should be kept in view while determining the capital structure of a company:

(1) Trading on Equity

A company may raise funds either by issue of shares or by debentures. Debentures carry a fixed rate of interest and this interest has to be paid irrespective of profits. Of course, preference shares are also entitled to a fixed rate of dividend but payment of dividend depends upon the profitability of the company. In case the rate of return on the total capital employed (shareholders' funds plus long-term borrowed funds) is more than the rate of interest on debentures or rate of dividend on preference shares, it is said that the company is trading on equity. For example, the total capital employed in a company is a sum of Rs 2 lakh. The capital employed consists of equity shares of Rs 10 each. The company makes a profit of Rs 30,000 every year. In such a case the company cannot pay a dividend of more than 15 per cent on the equity share capital. However, if the funds are raised in the following manner, and other things remain the same, the company may be in a position to pay a higher rate of return on equity shareholders' funds:

(a) Rs 1 lakh is raised by issue of debentures, carrying interest at 10 per cent per annum.

(b) Rs 50,000 is raised by issue of preference shares, carrying dividend at 12 per cent;

(c) Rs 50,000 is raised by issue of equity shares.

In the above case, out of the total profit of Rs 30,000, Rs 10,000 will be used for paying interest while Rs 6,000 will be used for paying preference dividends. A sum of Rs 14,000 will be left for paying dividends to the equity shareholders. Since the amount of equity capital is Rs 50,000, the company can give a dividend of 28 per

cent. Thus, the company can pay a higher rate of dividend than the general rate of earning on the total capital employed.5 This is the benefit of trading on equity.

Limitations

The trading on equity is subject to the following limitations:

(i) A company can have trading on equity only when the rate of return on total capital employed is more than the rate of interest/dividend on debentures/ preference shares.

(ii) Trading on equity is beneficial only for companies which have stability in their earnings. This is because both interest and preference dividend impose a recurring burden on the company. In the absence of stability in profits the company will run into serious financial difficulties in periods of trade depression.

(iii) Every rupee of extra borrowings increases the risk and hence the rate of interest expected by the subsequent lenders goes on increasing. Thus, borrowings become costlier, which ultimately result in reducing the amount of profits available for equity shareholders.

(2) Retaining Control

The capital structure of a company is also affected by the extent to which the promoter/ existing management of the company desire to maintain control over the affairs of the company. The preference shareholders and debentureholders have not much say in the management of the company. It is the equity shareholders who select the team of managerial personnel. It is necessary, therefore, for the promoters to own the majority of the equity share capital in order to exercise effective control over the affairs of the company. The promoters or the existing management are not interested in losing their grip over the affairs of the company and at the same time, they need extra funds. They will, therefore, prefer preference shares or debentures over equity shares so long as they help them in retaining control over the company.

(3) Nature of Enterprise

The nature of enterprise also to a great extent affects the capital structure of the company. Business enterprises which have stability in their earnings or which

enjoy monopoly regarding their products may go for debentures or preference shares since they will have adequate profits to meet the recurring cost of interest/ fixed dividend. This is true in case of public utility concerns. On the other hand, companies which do not have this advantage should rely on equity share capital to a greater extent for raising their funds. This is, particularly, true in case of manufacturing enterprises.

(4) Legal Requirements

The promoters of the company have also to keep in view the legal requirements while deciding about the capital structure of the company. This is particularly true in case of banking companies which are not allowed to issue any other type of security for raising funds except equity share capital on account of the Banking Regulation Act.

(5) Purpose of Financing

The purpose of financing also to some extent affects the capital structure of the company. In case funds are required for some directly productive purposes, for example, purchase of new machinery, the company can afford to raise the funds by issue of debentures. This is because the company will have the capacity to pay interest on debentures out of the profits so earned. On the other hand, if the funds are required for non-productive purposes, providing more welfare facilities to the employees, such as construction of school or hospital building for company's employees, the company should raise the funds by issue of equity shares.

(6) Period of Finance

The period for which finance is required also affects the determination of capital structure of companies. In case funds are required, say for three to ten years, it will be appropriate to raise them by issue of debentures rather than by issue of shares. This is because in case the funds are raised by issue of shares, their repayment after eight to ten years (when they are not required) will be subject to legal complications. Even if such funds are raised by issue of redeemable preference shares, their redemption is also subject to certain legal restrictions. However, if the funds are required more or less permanently, it will be appropriate to raise them by issue of equity shares.

(7) Market Sentiments

The market sentiments also decide the capital structure of the company. There are periods when people want to have absolute safety. In such cases, it will be appropriate to raise funds by issue of debentures. At other periods, people may be interested in earning high speculative incomes; at such times, it will be appropriate to raise funds by issue of equity shares. Thus, if a company wants to raise sufficient funds, it must take into account market sentiments, otherwise its issue may not be successful.

(8) Requirement of Investors

Different types of securities are to be issued for different classes of investors. Equity shares are best suited for bold or venturesome investors. Debentures are suited for investors who are very cautious while preference shares are suitable for investors who are not very cautious. In order to collect funds from different categories of investors, it will be appropriate for the companies to issue different categories of securities. This is particularly true when a company needs heavy funds.

(9) Size of the Company

Companies which are of small size have to rely considerably upon the owners' funds for financing. Such companies find it difficult to obtain long-term debt. Large companies are generally considered to be less risky by the investors and, therefore, they can issue different types of securities and collect their funds from different sources. They are in a better bargaining position and can get funds from the sources of their choice.

(10) Government Policy

It is also an important factor in planning the company's capital structure. For example, a change in the lending policy of financial institutions may mean a complete change in the financial pattern. Similarly, by virtue of the Securities & Exchange Board of India Act, 1992, and the rules made thereunder, the Securities & Exchange Board of India can also considerably affect the capital issue policies of various companies. Besides this, the monetary and fiscal policies of the government also affect the capital structure decision.

(11) Provision for the Future

While planning capital structure the provision for the future should also be kept in view. It will always be safe to keep the best security to be issued in the last instead of issuing all types of securities in one instalment. In the words of Gerestenberg, 'Manager of corporate financing operations must always think of rainy days or the emergencies. The general rule is to keep your best security or some of your best securities till the last.'

Thus, there are many factors which are to be considered while designing an appropriate capital structure of a company. As a matter of fact, some of them are conflicting in nature. The relative weightage assigned to each of these factors will vary widely from company to company depending upon the characteristics of the company, the general economic conditions and the circumstances under which the company is operating. Companies issue debentures and preference shares to enlarge the earnings on equity shares, while equity share are issued to serve as a cushion to absorb the shocks of business cycles and to afford flexibility. Of course, greater the operating risk, the less debt the firm can use. Hence in spite of the fact that the debt is cheaper the company should use it with caution. Moreover, it should be remembered that 'Financial theory has not developed to the p where data related to these considerations are fed at one end of a computer and an ideal financial structure pops out of the other. Consequently, human judgment must be used to resolve the many conflicting forces in laying plans for the types of funds to be sought.'

7.10 SUMMARY

Arbitrage process helps to bring equilibrium in the market. Because of arbitrage, a security cannot be sold at different prices in different markets. MM approach illustrates the arbitrage process with reference to valuation in terms of two firms, which are exactly similar in all aspects with respect to leverage, so that one of them has debt in the capital structure while other does not. Such homogenous firm's are, according to MM, perfect substitutes. If the market value of the two firms which are exactly same in all the respects, except with the leverage, which is not equal, investors of the overvalued firm would sell their shares, borrow additional funds on their personal account and invest in the undervalued firm, in order to obtain the investors for arbitrage is termed as home-made or

personal leverage. So investor undertaking arbitrage would be better off. This behaviour of arbitrage will have investors of overvalued firm. Arbitrage would be counting till the market prices of two identical firms become identical.

7.11 GLOSSARY

- **Arbitrage:** arbitrage refers to the act of buying a security in the market, where the price is less and simultaneously selling it in another market where the price is more, to take advantage of the difference in price prevailing in two different markets.
- **Capital Structure:** It refers to the mix of different sources of long-term funds, i.e., debt and equity.
- **Financial Structure:** It refers to the way in which the firm's assets are financed. It includes long-term as well as short-term sources of funds.

7.12 SELF ASSESSMENT QUESTIONS

Q1. Explain in detail the arbitrage process in capital structure?

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Q2. What is the relationship between capital structure and market value of a firm?

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Q3. Explain in detail the capital structure policy?

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7.13 LESSON END EXERCISE

Q.1 How can be the capital structure theories categories?

Q.2 Explain the working of arbritage process with illustration.

7.14 SUGGESTED READINGS

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Semester-IV **Lesson No. 8**
Course No. FE-414 **Unit - II**

EBIT - EPS ANALYSIS; ROI AND ROE ANALYSIS

STRUCTURE

8.1 INTRODUCTION

Planning the capital structure is one of the most complex areas of financial decision making because of the inter-relationships among components of the capital

and ownership capital are the two basic components of capital. Equity capital, as one of the components of capitalization, comprises equity share capital and retained earnings. Preference share capital is another distinguishing component of total capital. In this unit, characteristics of important long-term sources of funds, EBIT-EPS analysis, ROI-ROE analysis, factors influencing capital structure, theories of capital structure decision, etc are narrated briefly. In the end, relevance of debt-equity ratio in public enterprises is also discussed.

8.2 OBJECTIVES

After studying this lesson, you should be able to:

- define and distinguish capital structure
- explain briefly the important Characteristics of various long term sources of funds.
- dilate upon the criteria for determining pattern of capital structure.
- analyse EBIT-EPS and ROI-ROE relationship.
- examine critically theories of capital structure-decision
- identify the factors influencing capital structure decision
- evaluate the relevance of debt equity ratio in public enterprises.

8.3 CONCEPTUAL FRAMEWORK

According to Gerstenberg, " capital structure refers to the make up of a firm's capitalization". In other words, it represents the mix of different sources of long-term funds. E.F. Brigham defines the term as the percentage share of each type of capital used by the firm-Debt, preference share capital and equity capital (equity share capital paid up plus retained earnings). According to E.W.Walker, concept of capital structure includes the following:

- The proportion of long-term loans;
- The proportion of equity capital and
- The proportion of short-term obligations

In general, the experts in finance define the term capital structure to include

only long-term debt and total Stockholders' investment Financial structure means the composition of the entire left hand side (liabilities side) of the balance sheet. Financial structure refers to all the financial resources marshelled by the firm. It will include all forms of long as well as short-term debts and equity.

Thus, practically speaking, there is no difference between the capital structure (as defined by walker) and financial structure. In brief,

Capital structure = proportions of all types of Long-Term capital

Financial structure = Proportions of all types of Long-Term and Short-Term capital

Capitalisation = Total Long-Term capital

8.4 CHARACTERISTICS OF IMPORTANT LONG TERM SOURCES OF FUNDS

The four major sources of Long-Term funds in a firm are equity(or ordinary) shares preference shares, retained earnings and long term debt. Many financial analysts and managers tend to think of preference shares as a substitute of debt, as the amount of dividend to be paid is fixed. The difference is that the preference dividend, unlike debt interest, is not a tax- deductible expense. It does not have a fixed maturity date. Preference shareholders have a prior claim to receive income from the firm's earning through dividends. Convertible debentures have the features of both debt and equity capital.

The main focus in the discussion that follows is on deciding the mix of debt and equity which a firm should employ in order to maximize shareholder wealth. Because of the secondary position relative to debt, suppliers of equity capital take greater risk and therefore, must be compensated with higher expected returns. The distinguishing characteristics of debt, preference share capital, equity share capital and Retained Earnings are summarized in Table 3.1.

8.5 CRITERIA FOR DETERMINING PATTERN OF CAPITAL STRUCTURE

While choosing a suitable pattern of capital structure for the firm, finance manager should keep into consideration certain fundamental principles. These principles are militant to each other. A prudent finance manager strikes golden mean among them by giving proper weightage to them.

Table 3.1 : Characteristics of Long Term Sources of Funds			
1. Firm must pay back money with interest.	1. Preference dividends are limited in amount to rate specified in the agreement.	1. Money is raised by selling ownership rights.	1. Lower amount of money for current dividends but can increase future dividends.
2. Interest rate is based on risk of principal and interest payments as perceived by lenders.	2. Dividends are not legally required to be paid. But dividend on equity shares can not be paid unless preference shareholders are paid dividend. Now payment of dividend to preference shareholders for a number of years gives them the voting rights.	2. Value of the share is determined by investors.	2. Shareholders forgo dividend income but they do not lose ownership rights, if new equity shares are issued.
3. Amount of money to be repaid is specified by debt contract.	3. No maturity but usually callable.	3. Dividends are not contractually payable. No maturity.	3. Funds are internal. No need for external involvement.
4. Lenders can take action to get their money back.	4. Usually no voting rights except as per (2) above.	4. Voting rights can create change in ownership.	4. Cost of issuing securities is avoided.
5. Lenders get preferred treatment in liquidation.	5. Preference shareholders come next, when lenders are paid in liquidation.	5. Equity shareholders get the residual assets prorata after lenders and preference shareholders claimes are met in liquidation.	5. It is related to dividend policy decisions.
6. Interest payments are tax-deductable.	6. preference dividends are not tax-deductable.	6. Equity dividends are not tax-deductable.	

(a) Cost Principle

According to this principle, ideal pattern of capital structure is one that tends to minimize cost of financing and maximize the value per share. Cost of capital is subject to interest rate at which payments have to be made to suppliers of funds and tax status of such payments. Debt capital is cheaper than equity capital from both the points of view. According to this, the use of debt capital in the financing process is immensely helpful in raising income of the company.

(b) Risk Principle

This principle suggests that such a pattern of capital structure should be designed so that the firm does not run the risk of bringing on a receivership with all its difficulties and losses. Risk principle places relatively greater reliance on common stock for financing capital requirements of the corporation and forbids as far as possible the use of fixed income bearing securities

(c) Control Principle

While designing sound capital structure for the firm and for that matter choosing different types of securities, finance manager should also keep in mind that controlling position of residual owners remains undisturbed. The use of preferred stock as also bonds offers a means of raising capital without jeopardizing control. Management desiring to retain control must raise funds through bonds and preference capital.

(d) Flexibility Principle

According to flexibility principle, the management should strive for such combinations of securities that enable it to maneuver sources of funds in response to major changes in need for funds. Not only several alternatives are open for assembling required funds but also bargaining position of the corporation is strengthened while dealing with the suppliers of funds (through bonds).

(e) Timing Principle

Timing is always important in financing more particularly in a growing concern. Maneuverability principle is sought to be adhered in choosing the types of funds so as to enable the company to seize market opportunities and minimize cost of raising capital and obtain substantial savings. Important point that is to be kept in mind is to

make the public offering of such securities as are greatly in demand. Depending on business cycles, demand of different types of securities oscillates. Equity share during boom is always welcome.

8.6 RISK AND CAPITAL STRUCTURE

A firm's capital structure should be developed keeping in view risk focus because the risk affects the value of the firm. Risk can be considered in two ways:

(a) The capital structure should be consistent with the business risk of the firm, and

(b) The capital structure results in a certain level of financial risk to the firm.

Business risk is the relationship between the firm's sales and its earnings before interest and taxes (EBIT). In general, the greater the firm's operating leverage i.e. the use of fixed operating costs-the higher is the business risk. In addition to operating leverage, revenue stability and cost stability also affect the business risk of the firm. The revenue stability means the variability of the firm's sales revenues which depends on the demand and the price of the firm's products. Cost stability refers to the relative predictability of input prices such as labour and material. The more predictable these prices are the less is the business risk. Business risk varies among firms. Whatever their lines of business, the business risk is not affected by capital structure decisions. In fact, capital structure decisions are influenced by the business risk. Firms with high business risks, tend to have less fixed operating costs. Let us take an example to illustrate the implications of business risk for capital structure.8

Example:

Raj Cosmetics Ltd., engaged in the process of planning its capital structure, has obtained estimates of sales and associated levels of EBIT. The sales forecasting group feels that there is a 25 percent chance that sales will be Rs. 4,00,000 a 50 percent chance that sales will be Rs. 6,00,000 and 25 percent the sales will total Rs. 8,00,000. These data are summarised Table 3.2.

Table 3.2 : Estimate Sales and Associated Levels of EBIT

Pobability of Sales	.25	.50	.25
Sales	400	600	800
- Variable operating costs (50% of Sales) 200 300 400	200	300	400
- Fixed Operating Costs 200 200 200	200	200	200
Earnings before interest and taxes (EBIT) 0 100 200	0	100	200

The EBIT data, i.e. Rs. 0, 100 or 200 thounds at probability levels of 25%, 50% and 25% respectively reflect the business risk of the firm and has to be taken into consideration when designing a capital structure. The firm's capital structure affects the firm's financial risk arising out of the firm's use of financial leverage which is reflected in the relationship between EBIT and EPS. The more fixed cost financing, i.e. debt and preference capital in the firm's capital structure, the greater is the financial risk. Suppliers of funds will raise the cost of funds if the financial risk increases . Let us take an example to illustrate this point. Raj Cosmetics Let. Is now considering seven – alternative capital structure. Stated in terms of debt ratio) i.e. Percentage of debt in the total capital) these are 0,10,20,30,40,50, and 60, per cent. Assume that (1) the firm has no current liabilities, (2) that its capital structure currently contains all equity (25,000 equity shares are outstanding at Rs. 20 par value), and (3) the total amount of capital remains constant at Rs.5,00,000.

Debit Ratio% Equity (Rs. 000) Equity Shares (Rs. 000) 4 = 2 - 3	Total Assests (Rs. 100)	Debt (Rs. 000)	Equity Shares (Rs. 000) 4 = 2 - 3	Equity Shares outstanding (Numbers 000) 5 = (44 Rs. 20)
0	500	0	500	25
10	500	50	450	22.50
20	500	100	400	20
30	500	150	350	17.50

As debt increases, the increase rate also increase with the increase in financial leverage (i.e. debt ratios). Hence the total interest on all the debt also increase (as successive debenture issues carry higher interest rates) as shown in Table 3.4.

Table 3.4

Capital Structure (Rs. 000) (3 = 1*2)	Debt (Rs. 000)	Interest Rate on all debt % (2)	Interest amount (Rs. 000) (3=1*2)
0	0	0.0	0.00
10	50	9.0	4.50
20	100	9.5	9.50
30	150	10.00	15
40	200	11.0	22
50	250	13.5	33.75
60	300	15.5	49.50

8.7 EBIT - EPS ANALYSIS FOR CAPITAL STRUCTURE

Using the levels of EBIT in Table 3.2, number of equity shares in the columns 5 of Table 3.3 and interest values calculated in Table 3.4, the calculation of EPS for debt ratios of 0,30 and 60 percent respectively is shown in Table 3.5, the effective tax rate is assumed to be 40 percent.

Table 3.6

Probability	0.25	0.50	0.25
When Debt ration =	0.00	100.00	200.00
Less Interest (3.4)	0.00	0.00	0.00
Earnings after taxes	0.00	100.00	200.00
LessTax (0.40)	0.00	40.00	80.00
Earnings after taxes	0.00	60.00	200.00
EPS (25,000 shares) (Table 3.3)	0.00	2.40	4.80

When Debt ration = 30%	0.00	100.00	200.00
EBIT Less Interest	15.00	15.00	15.00
Earnings before taxes	(15.00)	85.00	185.00
LessTax (0.40)	(6.00)	34.00	74.00
Earnings after taxes	(9.00)	51.00	111.00
EPS (17,500 shares))	0.51	2.91	6.34

When Debt ration = 60%	0.00	100.00	200.00
EBIT Less Interest	49.50	49.50	49.00
Earnings before taxes	(49.50)	50.50	150.50
LessTax (0.40)	(19.80) (a)	20.20	60.20
Earnings after taxes	(29.70)	30.30	90.03
EPS (10,000 shares))	2.97	3.03	9.03

Notes: (a) It is assumed that the firm received the tax benefits from its loss in the current period, as a result of carrying forward and setting off the loss against in the following periods. Following the same procedure as in Table 3.5 we may obtain EPS for other debt ratios. Table 3.6 gives expected EPS at 50% probability level (to be viewed as typical level) for seven alternative debt ratios along with the Standard deviation and co-efficient of variation of expected EPS.

Table 3.6: Expected EPS, Standard. Deviation and Co-efficient of variation of EPS at 50% probability level for alternative debt ratios

Capital structure debt ratio (%)	Expected EPS (Rs.) (1)	Standard deviation of EPS (Rs.) (2)	Co-efficient of variation (2) + (1) = (3)
0	2.40	1.70	0.71
10	2.55	1.88	0.74
20	2.72	2.13	0.78
30	2.91	2.42	0.83
40	3.12	2.83	0.91
50	3.18	3.39	1.07
60	3.03	4.24	1.40

Notes:

The standard deviation () represents the square root of the sum of the product of each deviation from the mean of expected value squared and the associated probability of occurrence of each outcome. This is the most common statistical measure of assets risk.

The co-efficient of variation is calculated by dividing the standard deviation for an asset by its mean or expected value. The higher the co-efficient of variation, the risker is the asset.

Table 3.6 shows that as the firm's financial leverage increases, its co-efficient of variation of EPS also increases, signifying that the higher level of risk is associated with higher levels of financial leverage.

The relative risk of the two of the capital structures at debt ratio=0% and 60% respectively is illustrated in Figure 3.1 by showing the subjective probability distribution of EPS associated with each of them. As the expected level of EPS increase with increasing financial leverage, the risk also increases which is reflected in the relative dispersion of each of the distributions. As the higher levels of financial EPS increase. There are chances that there will be negative EPS depending on the probabilities of occurrence of the expected results.

8.8 ROI ROE ANALYSIS

In the preceding section, we looked at the relationship between EBIT and EPS. Pursuing a similar type of analysis, we may look at the relationship between the ROI and ROE for different levels of financial leverage.

Example:

Raj Ltd., which requires an investment outlay of Rs. 200 lakhs, is considering two capital structures propositions:

Capital Structure X	Capital Structure Y
(Rs. in lakhs)	(Rs. in lakhs)
Equity 200	Equity 100
Debt 50	Debt 100

Tax rate = 50 percent Cost of Debt = 12 percent

Based on the above information, the relationship between ROI and ROE would be as shown in Table 3.8.

Table 3.8 : Relationship between ROI and ROE under capital structure X and Y

Partculars	ROI	EBIT	Int.	Profit before tax	Profit after tax	Tax	Return on Equity
Capital Structure X	5%	10	0	10	5	5	2.5%
	10%	20	0	20	10	10	5.0%
	15%	30	0	30	15	15	7.5%
	20%	40	0	40	20	20	10.0%
	25%	50	0	50	25	25	12.5%
Capital Structure Y	5%	10	10	0	0	0	0.0%
	10%	20	10	10	5	5	5.0%
	15%	30	10	20	10	10	10.0%
	20%	40	10	30	15	15	15.0%
	25%	50	10	40	20	20	20.5%

Return on Equity is equity earnings divided by Net worth. Looking at the relationship between ROI and ROE, we find that

(1) The ROI under capital structure X is higher than the ROE under capital structure Y (ROI is less than the cost of Debt).

(2) The indifference value of ROI is equal to the cost of Debt.

(3) The ROE under capital structure X (ROI is more than the cost of Debt).

Mathematically this relationship can be expressed as:

ROE = [ROI + (ROI-r) D/E] (1-t)

Where r = Cost of Debt D/E = Debt- Equity Ratio t = tax rate

Applying the above equation when D/E Ratio is 1, we may calculate the value of ROE for two values of ROI namely, 15 percent and 20 percent.

ROI = 15% ROE = [15+(15-10) 1]0.5 = 10 %

ROI = 20% ROE = [20+(220-10) 1]0.5 = 15%

8.9 SUMMARY

A firm's capital structure is determined by the mix of long-term debt and equity it uses in financing its operations. Financial structure means the composition of the entire left hand side of the balance sheet. The basic differences in debt (including preference shares) and equity capital are in respect of the voting rights, the claims on income and assets, and the tax treatment. Timing, flexibility, cost, risk and control principles are the criteria for determining patter of capital structure.

A firm's capital structure should be consistent with its business risk and result in an acceptable financial risk. The EBIT-EPS analysis can be used to evaluate various capital structure in the light of the degree of financial risk and the returns to the equity shareholders. The EBIT-EPS analysis shows how the desirable capital structure gives the maximum EPS.

The mathematical relationship between ROI is [(ROE + ROI - R)

ROI -

NI and NOI theories of capital structures are extreme. The MM analysis suggests that the optimal capital structure does not matter and that as much debt as possible should be used because the interest is tax-deductible. The MM hypothesis is criticized because of its unreal assumptions. Tax adjustment makes it more realistic.

The traditional approach to capital structure indicates that the optimal capital structure for the firm is one in which the overall cost of capital is minimized and the share value is maximized.

The cost of debt increases beyong a certain level of leverage. Certain qualitative considerations such as cash flow, corporate control, contractual obligations, management's risk tolerance, etc. are taken into consideration while determining the capital structure.

The practical significance of Debt-Equity ratio for public enterprises is limited and has different perspectives.

8.10 GLOSSARY

- **Capital Structure** is the proportions of all types of long-term capital. FinancialStructure is the proportions of all types of long-term and short-term capital.
- **EBIT** = Earnings before Interest and taxes.
- **EPS** = Earnings per share
- **NI** = Approach says more usage of debt will enhance the value of the firm.
- **NOI** = Approach says that the total value of the firm remains constantirrespective of the debt-equity mix. Arbitrage refers to an act of buying asecurity in one market having lower price and selling it in another market at a higher price. The consequence of such action is that the market price of the securities will become the same.

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8.11 SELF ASSESSMENT QUESTIONS

Q.1 What is capital structure? How is it different from financial structure?

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Q.2 Bring out in brief, characteristics of equity share capital.

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Q.3 List out sources of long – term finance used by a company of India origin.

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Q.4 Distinguish between EBIT and EPS

8.12 LESSON END EXERCISE

Q.1 With a real company example make ROI - ROE analysis.

Q.2 Discuss the criteria for determining pattern of capital structure.

8.13 SUGGESTED READINGS

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Semester-IV **Lesson No. 9**
Course No. FE-414 **Unit - II**

DIVIDEND DECISIONS

STRUCTURE

9.1 INTRODUCTION

Retained earnings constitute an important source of corporate financing. The funds are relatively economic and without any obligation to refund the same. These funds can be effectively utilized for modernisation and expansion requirements and that too without creating any charge against any asset. The earning position of the company

improves tremendously when the modernisation and expansion schemes are successfully undertaken. Consequently, the company is in a position to pay fair amount of dividend to its shareholders regularly. It can also retain a portion of the enhanced earnings for financing further growth requirements. This will carry forward further the pace of development and progress of the company. The excess of assets over capital and liabilities of company is the surplus attained by it. This surplus is used for payment of dividends. If only a part of this surplus is paid as dividends, the balance would be carried forward from year to year as accumulated surplus. This in fact is the amount of retained earnings of the company. With a fair amount of accumulated surplus or retained earnings, a company can also absorb the shocks of business vicissitudes and resist adverse conditions with confidence. Again, since the retained earnings result in the company being strong and stable, it will be, in turn, in a better position to attract investors and creditors. With this, it can raise funds from external sources conveniently at reasonable rates.

9.2 OBJECTIVES

After reading this lesson, you should be able to:

- Explain the factors determining the mobilisation of internal funds;
- State the importance of dividend decisions;
- List out the determinants of dividend policy and
- Discuss the legal and procedural aspects of dividend.

9.3 CONCEPT AND SIGNIFICANCE OF DIVIDEND DECISIONS

The term 'dividend' refers to that portion of profit (after tax) which is distributed among the owners/shareholders of the company and the profit which is not distributed is known as retained earnings. A company may have preference share capital as well as equity share capital and dividends may be paid on both types of capital. However, there is as such, no decision involved as far as the dividend payable to preference shareholders is concerned. The reason being that the preference dividend is more or less, a contractual liability and is payable at a fixed rate. On the other hand, a firm has to consider a whole lot of factors before deciding for the equity dividend. The expected level of cash dividend, from the point of view of equity shareholders, is the key variable from which

the shareholders and equity investors determine the share value. The establishment and determination of an effective dividend policy is, therefore, of significant importance to the firm's overall objective. However, the development of such a policy is not an easy job. A whole gamut of considerations affects the dividend decision. The dividend decision may seem to be simple enough, but it evokes a surprising amount of controversy The dividend decision is one of the three basis decisions which a finance manager is required to take, the other two being the investment decisions and the financing decisions. In each period, any earning that remains after satisfying obligations to the creditors, the Government, and the preference shareholders can either be retained or paid out as dividends or bifurcated between retained earnings and dividends. The retained earnings can then be invested in assets which will help the firm to increase or at least maintain its present rate of growth. The dividend decision requires a finance manager to decide about the distribution of profits as dividends. It may be noted that the profits may be distributed either in the form of cash dividends to shareholders or in the form of stock dividends (also known as bonus shares). In dividend decision, a finance manager is concerned to decide one or more of the followings:

(i) Should the profits be ploughed back to finance the investment decisions?

(ii) Whether any dividend be paid?

(iii) How much dividends be paid?

(iv) When these dividends be paid?

(v) In what form the dividends be paid?

All these decisions are inter-related and have bearing on the future growth plans of the company. If a company pays dividends, it affects the cash flow position of the firm but earns a goodwill among the investors who, therefore, may be willing to provide additional funds for the financing of investment plans of the firm. On the other hand, the profits which are not distributed as dividends become an easily available source of funds at no explicit costs. However, in the case of ploughing back of profits, the firm may loose the goodwill and confidence of the investors and may also defy the standards set by other firms. Therefore, in taking the dividend decision,

the finance manager has to consider and analyze various factors. Every aspects of dividend decision is to be critically evaluated. The most important of these considerations is to decide as to what portion of profit should be distributed. This is also known as the dividend payout ratio. While deciding the dividend payout ratio, the firm should consider the effect of such policy on the objective of maximization of shareholder's wealth. If payment of dividend is expected to increase the market value of the share (increase in the wealth of the shareholders), the dividend must be paid, otherwise, the profits may be retained and used as an internal source of finance. So, the firm must find out and establish a relationship between the dividend policy and the market value of the share.

9.4 DETERMINANTS OF DIVIDEND POLICY

The payment of dividend involves financial as well as legal considerations. It is difficult to determine a general dividend policy which can be followed by different firms at different times because the dividend decision has to be taken considering the special circumstances of an individual case. The factors which determine the dividend policy are as follow:

1. Dividend Payout (D/P) Ratio

A major aspect of the dividend policy of a firm is its dividend payout (D/P) ratio, that is, the percentage share of the net earnings distributed to the shareholders as dividends. Dividend policy involves the decision to pay out earnings or to retain them for reinvestment in the firm. The retained earnings constitute a source of financing. The payment of dividends results in the reduction of cash and, therefore, is a depletion of total assets. In order to maintain the asset level, as well as to finance investment opportunities, the firm must obtain funds from the issue of additional equity or debt. If the firm is unable to raise external funds, its growth would be affected. Thus, dividends imply outflow of cash and lower future growth. In other words, the dividend policy of the firm affects both the shareholders' wealth and the long-term growth of the firm. The optimum dividend policy should strike the balance between current dividends and future growth which maximises the price of the firm's shares. The D/P ratio of a firm should be determined with reference to two basic objectives – maximising the wealth of the firm's owners and providing sufficient funds to finance growth. The objectives are not mutually exclusive, but interrelated Given the objective of wealth

maximising, the firm's dividend policy (D/P ratio) should be one which can optimise the wealth of its owners in the 'long run'. In theory, it can be expected that the shareholders take into account the longrun effects of D/P ratio, that is, if the firm is paying low dividends and having high retentions, they recognise the element of growth in the level of future earnings of the firm. However, in practice, they have a clear cut preference for dividends because of uncertainty and imperfect capital markets. The payment of dividends can, therefore, be expected to affect the price of shares: a low D/P ratio may cause a decline in share prices, while a high ratio may lead to a rise in the market price of the shares. Making a sufficient provision for financing growth can be considered a secondary objective of dividend policy. Without adequate funds to implement acceptable projects, the objective of wealth maximising cannot be achieved. The firm must forecast its future needs for funds, and taking into account the external availability of funds and certain market considerations, determine both the amount of retained earnings needed and the amount of retained earnings available after the minimum dividends have been paid. Thus, dividend payments should not be viewed as a residual, but rather a required outlay after which any remaining funds can be reinvested in the firm.

2. General State of Economy

As a whole, it affects the decision of the management to a great extent whether the dividend should be retained or the same should be distributed amongst the shareholders. In the following cases, the business may prefer to retain the whole or part of the earnings in order to build up reserves:

(a) where there is uncertain economic and business conditions;

(b) if there is a period of depression (management may withhold the payment if dividends for maintaining the liquidity position of the firm.);

(c) if there is a period of prosperity (since there is large profitable investment opportunities); and

(d) where there is a period of inflation

3. Capital Market Considerations

This also affects the dividend policy to the extent to which the firm has access to the capital market. In other words, if easy access to the capital market is possible

whether due to financially strong or, big in size, the firm in that case, may adopt a liberal dividend policy. In the opposite case, i.e., if easy access to capital market is not possible, it must have to adopt a low dividend pay out ratio, i.e., they have to follow a conservative dividend policy. As such, they must have to rely more on their own funds, viz., retained earnings.

4. Legal, Contractual, Internal Constraints and Restrictions

The dividend decision is also affected by certain legal, contractual, and internal requirements and constraints. The legal factors stem from certain statutory requirements, the contractual restrictions arise from certain loan covenants and the internal constraints are the result of the firm's liquidity position.

(a) Legal Requirements

Legal stipulations do not require a dividend declaration but they specify the condition under which dividends must be paid. Such conditions pertain to (i) capital impairment, (ii) net profits and (iii) insolvency.

(i) Capital Impairment Rules: Legal enactment limit the amount of cash dividends that a firm may pay. A firm cannot pay dividends out of its paid-up capital, otherwise there would be a reduction in the capital adversely affecting the security of its lenders. The rationale of this rule lies in protecting the claims of preference shareholders and creditors on the firm's assets by providing a sufficient equity base since the creditors have originally relied upon such an equity base while extending credit. Any dividends that impair capital are illegal and the directors are personally held liable for the amount of illegal dividend. Therefore, the finance manager should keep in mind that payment of dividend is in order and does not violate capital impairment rules.

(ii) Net Profits: The net profits requirement is essentially a corollary of the capital impairment requirement and restricts the dividend to be paid out of the firm's current profits plus past accumulated retained earnings. Alternatively, a firm cannot pay cash dividends greater than the amount of current profits plus the accumulated balance of retained earnings. For instance, Indian Companies Act provides that dividends shall be paid only out of the current profits or past profits after providing for depreciation. The point to be recognised is that the company can count on the profits of previous years, if the current years' profits fall short of the required funds for maintaining a

desired stable dividend policy. Likewise, if there are past accumulated losses, they should be first set off against current earnings before the payment of dividend.

(iii) Insolvency: A firm is said to be insolvent in two situations: *First*, when its liabilities exceed the assets; and *second*, when it is unable to pay its bills. If the firm is currently insolvent in either sense, it is prohibited from paying dividends. Similarly, a firm would not pay dividends if such a payment leads to insolvency of either type. The rationale of the rule is to protect the creditors by prohibiting the liquidation of near bankrupt firms through cash dividend payments to the equity owners.

(b) Contractual Requirements

Important restrictions on the payment of dividend may be accepted by a company when obtaining external capital either by a loan agreement, a debenture indenture, a preference share agreement or a lease contract. Such restrictions may cause the firm to restrict the payment of cash dividends until a certain level of earnings has been achieved or limit the amount of dividends paid to a certain amount or percentage of earnings. Since the payment of dividend involves a cash outflow, firms are forced to reinvest the retained earnings within the firm. The restriction on dividends may take three forms. In the first place, firms may be prohibited from paying dividends in excess of a certain percentage, say, 12 per cent. Alternatively, a ceiling in terms of the maximum amount of profits that may be used for dividend payment may be laid down, say not more than 60 per cent of the net profits or a given absolute amount of such profits can be paid as dividends. Finally, dividends may be restricted by insisting upon a minimum of earnings to be retained. Reinvestment leads to a lower debt/ equity ratio and, thus, enhances the margin of cushion (safety) for the lenders.

Therefore, contractual constraints on dividend payments are quite common. The payment of cash dividend in violation of a restriction would amount to default in the case of a loan and the entire principal would become due and payable. Keeping in view the severity of penalty, the finance manager must ensure that the amount of dividend is within the covenants already committed to lenders.

(c) Internal Constraints

Such factors are unique to a firm and include (i) liquid assets, (ii) growth prospects, (iii) financial requirements, (iv) availability of funds, (v) earnings stability

and (vi) control.

(i) Liquid Assets: Once the payment of dividend is permissible on legal and contractual grounds, the next step is to ascertain whether the firm has sufficient cash funds to pay cash dividends. It may well be possible that the firm's earnings are substantial, but the firm may be short of funds. This situation is common for (a) growing companies; (b) companies which have to retire past loans as their maturity year has come; and (c) companies whose preference shares are to be redeemed. Such companies may not like to borrow at exorbitant rates because of the increased financial risk especially if their existing leverage ratio is already very high. Moreover, lenders may be reluctant to lend money for dividend payments since they produce no tangible or operating benefits that will help the firm to repay the loan. Thus, the firm's ability to pay cash dividends is largely restricted by the level of its liquid assets. On the other hand, if excess cash is available, the firm can have a more liberal dividend policy.

(ii) Growth Prospects: Another set of factors that can influence dividend policy relates to the firm's growth prospects. The firm is required to make plans for financing its expansion programmes. In this context, the availability of external funds and its associated cost together with the need for investment funds would have a significant bearing on the firm's dividend policy.

(iii) Financial Requirements: Financial requirements of a firm are directly related to its investment needs. The firm should formulate its dividends policy on the basis of its foreseeable investment needs. If a firm has abundant investment opportunities, it should prefer a low payout ratio, as it can usually reinvest earnings at a higher rate than the shareholders can. Such firms, designated as 'growth' companies, are constantly in need of funds. Their financial requirements may be characterized as large and immediate. That retention of earnings is less costly than selling a new issue of equity needs no reiteration. Moreover, retention of earnings provides the base upon which the firm can borrow additional funds. Therefore, it provides flexibility in the company's capital structure, that is, it make room for unused debt capacity. The importance of creation of debt raising potential for a growing firm is overwhelming. On the other hand, if the firm has little or no growth opportunities, it will probably prefer low retention and relatively high dividend payouts. This is so for two vital reasons. *First*,

the shareholders can reinvest earnings at a higher rate than the firm can do, and, *secondly*, such firms may need funds largely to replace or modernise assets. In many instances, these outlays may not be required immediately but after two or three years. Therefore, the need for funds is small and periodic vis-a-vis large and fast growing companies. The nature of the firm's needs, therefore, is an important factor in determining the destination of the firm's fund-retention or distribution.

(iv) Availability of Funds: The dividend policy is also constrained by the availability of funds and the need for additional investment. In evaluating its financial position, the firm should consider not only its ability to raise funds but also the cost involved in it and the promptness with which financing can be obtained. In general, large mature firms have greater access to new sources for raising funds than firms which are growing rapidly. For this reason alone, the availability of external funds to the growing firms may not be sufficient to finance a large number of acceptable investment projects. Obviously, such firms have to depend on their retained earnings so as to amount of maximum number of available profitable projects. Therefore, large retentions are necessary for such firms.

(v) Earnings Stability: The stability of earnings also has a significant bearing on the dividend decision of a firm. Generally, the more stable the income stream, the higher is the dividend payout ratio. Public utility companies are classic examples of firms that have relatively stable earnings pattern and high dividend payout ratio. Growing firms, characterised by stable earnings, can muster debt funds at a relatively lower cost because of a smaller total risk (business and financial). This is unlike the experience of other firms which, though growing, suffer form fluctuating earnings. However, the finance manager should remember that dividends have information value. Withholding the payment of dividends will raise the required rate of return of the investors and, therefore, depress the market price of the shares. The increase in earnings should be such that it can offset the unfavourable effect of the increased cost of equity (ke).

(vi) Control: Dividend policy may also be strongly influenced by the shareholders' or the management's control objectives. That is to say, sometimes management employs dividend policy as an effective instrument to maintain its position of command and control. The management, in order to retain control of the company in its own hands,

may be reluctant to pay substantial dividends and would prefer a smaller dividend payout ratio. This will particularly hold good for companies which require funds to finance profitable investment opportunities when an outside group is seeking to gain control of the firm. Added to this, if a controlling group of shareholders either cannot or does not wish to purchase new shares of equity, under such circumstances, by the issue of additional shares to finance investment opportunities, management may lose its existing control. Conversely, if management is securely in control, either through substantial holdings or because the shares are widely held, and the firm has a good image, it can afford to have a high dividend payout ratio. If it requires funds later, the firm can easily raise additional funds owing to its reputation.

5. Owner's Considerations

The dividend policy is also likely to be affected by the owner's considerations of (a) the tax status of the shareholders, (b) their opportunities of investment, and (c) the dilution of ownership. It is well-nigh impossible to establish a policy that will maximise each owner's wealth. The firm must aim at a dividend policy which has a beneficial effect on the wealth of the majority of the shareholders.

(a) Taxes Status: The dividend policy of a firm may be dictated by the income tax status of its shareholders. If a firm has a large percentage of owners who are in high tax brackets, its dividend policy should seek to have higher retentions. Such a policy will provide its owners with income in the form of capital gains as against dividends. Since capital gains are taxed at a lower rate than dividends, they are worth more after taxes to the individuals in a high tax bracket. On the other hand, if a firm has a majority of low income shareholders who are in a lower tax bracket, they would probably favour a higher payout of earnings because of the need for current income and the greater certainty associated with receiving the dividend now, instead of the less certain prospects of capital gains later

(b) Opportunities of Investment: The firm should not retain funds if the rate of return earned by it would be less than one which could have been earned by the investors themselves from external investments of funds. Such a policy would obviously be detrimental to the interests of shareholders. It is difficult to ascertain the alternative investment opportunities of each of its shareholders and, therefore, the alternative investment opportunity rate. However, the firm should evaluate the rate of

return obtainable from external investments in firms belonging to the same risk class. If evaluation shows that the owners have better opportunities out side, the firm should opt for a higher dividend payout ratio. On the other hand, if the firm's investment opportunities yield a higher rate than that obtained from similar external investment, a low dividend payout is suggested. Therefore, in formulating dividend policy, the evaluation of the external investment opportunities of owners is very significant.

(c) Dilution of Ownership: The finance manager should recognize that a high dividend payout ratio may result in the dilution of both control and earnings for the existing equity holders. Dilution in earnings results because low retentions may necessitate the issue of new equity shares in the future, causing an increase in the number of equity shares outstanding and ultimately lowering earnings per share and their price in the market. By retaining a high percentage of its earnings, the firm can minimize the possibility of dilution of earnings.

6. Inflation

It may also affect the dividend policy of a firm. With rising prices, funds which are generated by way of depreciation may fall short in order to replace obsolete equipment. The shortfall may be made from retained earnings (as a source of funds). This is very significant when the assets are to be replaced in the near future. As such, the dividend payout ratio tends to be low during the periods of inflation.

7. Stability of Dividends

Stability of dividends is another guiding principle in the formulation of a dividend policy. Stability of dividend policy refers to the payment of dividend regularly and shareholders, generally, prefer payment of such regular dividends. The dividend policy, of course, should have a degree of stability, i.e., earnings/profits may fluctuate from year to year but not the dividend since the equity shareholders prefer to value stable dividends than the fluctuating ones. In other words, the investors favour a stable dividend in as much as they do the payment of dividend. The stability of dividends can be in any of the following three forms:

(a) Constant Dividend Per Share;

(b) Constant Percentage of Net Earnings (constant dividend payout ratio); and

(c) Constant Dividend Per Share plus Extra Dividend.

(a) Constant Dividend Per Share: Under this form, a firm pays a certain fixed amount per share by way of dividend. For example, a firm may pay a fixed amount of, say, ‘ 5 as dividend per share having a face value of ‘ 50. The fixed amount would be paid regularly year after year irrespective of the actual earnings, i.e., the firm will pay dividend even if there is a loss. In short, fluctuation in earnings will not affect the payment of dividend. It does not necessarily mean that the amount of dividend will remain fixed for all times in future. When the earnings of the company will increase, the rate of dividend will also increase provided the new level can be maintained in future. If there is a temporary increase in earnings, there will not be any change in the payment of dividends.

(b) Constant Percentage of Net Earnings: According to this policy, a certain percentage of the net earnings/profits is paid by way of dividend to shareholders year after year, i.e., when a constant pay out ratio is followed by a firm. In other words, it implies that the percentage of earnings paid out each year is fixed and as such, dividends would fluctuate proportionately with earnings. This is particularly very useful in cases where there is wide fluctuations in the earnings of a firm. This policy suggests that when the earnings of a firm decline, the dividend would naturally be low. For instance, if a firm adopts a 40% dividend payout ratio and earns ‘ 5 per share then it will pay ‘ 2 to the shareholder by way of dividend.

(c) Constant Dividend Per Share Plus Extra Dividend: Under this policy, a firm usually pays a fixed dividend per share to the shareholders. At the time of market prosperity, additional or extra dividend is paid over and above the regular dividend. This extra dividend is waived as soon as the normal conditions return. Now, the question that arise us are which policy is the most appropriate one and what is their relative suitability or which one is most favourable to the investors or what are the implications to the shareholders. The most appropriate policy may be considered as the first one, viz., Constant Dividend Per Share. Because, most of the investors desire a fixed rate of return from their investment which will gradually increase over a period of time. This is satisfied by the said policy. But in case of constant percentage of net earnings, the return actually fluctuates with the amount of earnings and it also involves uncertainties and that is why it is not preferred by the shareholders although

the same is favoured by the management since it correlates the amount of dividends to the ability of the company to pay its dividend. At the same time, in case of constant dividend per share plus extra dividend, there is always an uncertainty about the extra dividend and as a result it is not generally preferred by the shareholders. A stable dividend policy is advantageous due to the following:

(i) Desire for Current Income: There are investors like, old and retired persons, widows etc., who desire to have a stable income in order to meet their current living expenses since such expenses are almost fixed in nature. Such a stable dividend policy will help them.

(ii) Resolution of Investors' Uncertainty: If a firm adopts a stable dividend policy, it must have to declare and pay dividend even if the earnings are temporarily reduced. It actually conveys to the investors that the future is bright. On the contrary, if it follows a policy of changing dividend with cyclical changes in the rate of earnings, the investors will not be confined about their return which may induce them to require a higher discount factor. The same is not desired in case of a stable dividend policy.

(iii) Raising additional finance: If stable dividend policy is adopted by a firm, raising additional funds from external sources become advantageous on the part of the company since it will make the shares of a firm an investment. The shareholders/ investors will hold the shares for a long time as it will create some confidence in the company and as such, for further issue of shares, they would be more receptive to the offer by the company. This dividend policy also helps the company to sale preference shares and debentures. Because, past trend regarding the payment of dividend informs them that the company has been regularly paying the dividends and their interest/ dividend naturally will be paid by the company when it will mature for repayment together with the principal.

(iv) Requirement of Institutional Investors: Sometimes the shares of a company are purchased by financial institutions, like, IFC, IDB, LIC, UTI etc., educational and social institutions in addition to the individuals. These financial institutions are the largest purchasers of shares in corporate securities in our country and every firm is intended to sell their shares to these institutions. These financial institutions are interested to buy the shares of those companies who have a stable dividend policy.

Danger of Stability of Dividends

Once this policy is being adopted by a firm, it cannot be changed with an immediate affect which will adversely affect the investors' attitude towards the financial stability of the company. Because, if a company with stable dividend policy, fails to pay the dividend in any year, there will be a severe effect on the investors than the failure to pay dividend under unstable dividend policy. That is why, in order to maintain that rate, sometimes the directors pay dividend, even if there is insufficient earning, i.e., declaring dividend out of capital which ultimately invites the liquidation of a firm. From the foregoing discussions it becomes clear that the rate of dividend should be fixed at a conservative figure which is possible to pay even in a lean period for several years. Extra dividend can be declared out of extra earnings which, in other words, will not create any adverse effect in future.

9.5 TYPES OF DIVIDEND

Dividends can be distributed by a company in various forms. These forms are cash dividends, stock dividends, scrip dividends and bond dividends. These forms of dividends are briefly explained as under:

(i) Cash Dividends: It is the common practice to pay dividends in cash. These dividends are paid when profits are earned by an enterprise. In the event of a company following a policy of stable dividends, it has to pay the same even though the profits of the enterprise are small. If this is so, the company may even have to borrow to meet the fund requirement for dividend payment. The payment of cash dividend results in the reduction of reserves of the company. Consequently both the net worth and the assets of the company get reduced. Such a reduction may be the cause of reduction of the share prices of the enterprise. At the same time, cash dividends are desirable especially in case of those shareholders who supplement their income with the dividend receipts.

(ii) Stock Dividend: Such dividend payment in India is know as bonus shares. This is an alternative form of dividend payment. In this case, the current shareholders get their share of dividends by way of share distribution. Such a distribution may be either in lieu of cash dividend or it may be in addition to the cash dividend. Stock dividends are distributed in the proportion of shareholding with the result there is no

change in the ownership proportion of the shareholders. The payment by way of stock dividends does not change the net worth of the company. With the help of distribution of dividend through stock dividend method, the company is in a position to conserve its cash. There are two conflict ends that are met by stock dividends. *Firstly*, the retention of earnings and *secondly*, the payment of dividends. With single action of stock dividends both the two conflicting ends of an enterprise are satisfied. A company can declare stock dividends even when it is put in a stringent financial position. Again, such a dividend arrangement helps when the creditors put restriction on cash dividend payment. Thus, the stock dividends are beneficial on this account as well. The stock dividends do not affect the wealth of shareholders and so they are beneficial to them as well. With this, the shareholders are exempted from the payment of tax as otherwise they would be subject to if dividends were paid in cash. In the event of their selling of the stock dividends, they would be subject to capital gains tax which is charged comparatively at a lower rate as against rate applicable to cash dividends. In addition, when the company pays cash dividend in future, the shareholders shall receive higher dividend as they are holding increased number of shares now. This will be so when there is consistency in earnings per share of the company. From creditors point of view also, the stock dividends are preferable. With stock dividends, the creditors realise that the liquidity position of the company becomes strong and with this their interests are more protected. On the other hand, payment of dividends through proportionate stock issues increases administrative costs. Also, the earnings per share tend to drop, if there is no proportionate increase in the earnings. This is turn affects adversely the credit worthiness of the company. As such, while formulating a policy regarding stock dividend payment, these factors need thorough consideration on the part of the management of the company

(iii) Scrip Dividend: This is another form of dividend whereby the dividend is paid by a company in the shape of a scrip or a promissory note. The document bears a maturity date and when it reaches this date, the stated payment is made in cash. However, there are instances wherein no maturity date is given on the promissory note. The payment in that case is made as per the direction of the Board of Directors. The amount of scrip dividend carries interest, though in most of the cases, it is interest-free. This form of dividend payment is resorted by a company when despite high earnings it faces a temporarily tight financial position. With scrip dividend, the

company maintains an established record of dividend payments, of course not making any cash payment, though for a short period. Scrip dividend form is not in practice in India.

(iv) Bond Dividend: This form of dividend payment also is not popular in India. This is just like a scrip dividend wherein bonds are issued by a company when despite sufficient earnings the financial position of the company is tight. The bonds are issued in lieu of dividend payments. But, as against scrip dividends, bonds carry a long maturity period. With bond dividends issued, the shareholders have a stronger claim against the enterprise. Alongwith this, the company has another liability of interest payment. Therefore, before deciding about the payment of dividends through issue of bonds, the company is advised to weigh properly the benefits of each conservation against the cost involved by way of interest liability of the bonds desired to the issued in lieu of dividends

9.6 LEGAL AND PROCEDURAL ASPECTS OF DIVIDEND

Legal Aspects

The amount of dividend that can be legally distributed is governed by company law, judicial pronouncements in leading cases, and contractual restrictions. The important provisions of company law pertaining to dividends are described below:

1. Companies can pay only cash dividends (with the exception of bonus shares).
2. Dividends can be paid only out of the profits earned during the financial year after providing for depreciation and after transferring to reserves such percentage of profits as prescribed by law. The companies (Transfer to Reserve) Rules, 1975, provide that before dividend declaration, a percentage of profit as specified below should be transferred to the reserves of the company:
   (a) Where the dividend proposed exceeds 10 per cent but not 12.5 per cent of the paid-up capital, the amount to be transferred to the reserve should not be less than 2.5 per cent of the current profits.
   (b) Where the dividend proposed exceeds 12.5 per cent but not 15 per cent, the amount to be transferred to reserves should not be less than 5 per cent of the current profits.

(c) Where the dividend proposed exceeds 15 per cent but not 20 per cent, the amount to be transferred to reserves should not be less than 7.5 per cent of the current profits.

(d) Where the dividend proposed exceeds 20 per cent, the amount to be transferred to reserve should not be less 10 per cent.

3. Due to inadequacy or absence of profits in any year, dividend may be paid out of the accumulated profits of previous years. In this context, the following conditions, as stipulated by the Companies (Declaration of Dividend out of Reserves) Rules, 1975 have to be satisfied

(a) The rate of the declared dividend should not exceed the average of the rates at which dividend was declared by the company in 5 years immediately preceding that year or 10 per cent of its paid-up capital, whichever is less.

(b) The total amount to be drawn from the accumulated profits earned in previous years and transferred to the reserves should not exceed an amount equal to one-tenth of the sum of its paid-up capital and free reserves and the amount so drawn should first be utilised to set off the losses incurred in the financial year before any dividend in respect of preference or equity shares is declared.

(c) The balance of reserves after such drawl should not fall below 15 per cent of its paid-up capital

4. Dividends cannot be declared for past years for which accounts have been closed.

Procedural Aspects

The important events and dates in the dividend payment procedure

1. **Board resolution:** The dividend decision is the prerogative of the board of directors. Hence, the board of directors should in a formal meeting resolve to pay the dividend.

2. **Shareholders approval:** The resolution of the board of directors to pay the dividend has to be approved by the shareholders in the annual general meeting.

3. **Record date:** The dividend is payable to shareholders whose names appear in the register of members as on the record date.

4. **Dividend payment:** Once a dividend declaration has been made, dividend warrant must be posted within 42 days. Within a period of 7 days, after the expiry of 42 days, unpaid dividends must be transferred to a special account opened with a scheduled bank.

9.7 SUMMARY

A dividend decision of the firm is another crucial area of financial management. The important aspect of dividend policy is to determine the amount of earnings to distributed to shareholders and the amount to be retained by the firm. Retained earnings are the most significant internal sources of financing the growth of the firm. On the other hand, dividends may be considered desirable from shareholders' point of view as they tend to increase their return. Dividends, however, constitute the use of the firm's funds. The determinants of the dividend policy of a firm are dividend payout ratio, stability of dividends, capital market considerations, general state of economy, legal, contractual and internal constraints and restrictions, owners' considerations, capital market considerations and inflation. A stable dividend policy refers to the consistency or lack of variability in the stream of dividends, that is, a certain minimum amount of dividend is paid out regularly. Of the three forms of stability of dividend, namely, constant dividend per share, constant percentage of net earnings and constant dividend per share plus extra dividend, the first one is the most appropriate. The investors prefer a stable dividend policy for a number of reasons, such as, desire for current income, information contents, institutional requirement, and so on. The legal restrictions on payment of dividends stipulate conditions pertaining to capital impairment, net profits, insolvency and illegal accumulation of excess profits. The contractual restrictions on payment of dividends are imposed by loan agreements. The internal constraints impinging on the dividend restrictions relate to growth prospects, availability of funds, earnings stability and control.

The dividend policy is also likely to be affected by the owners' consideration of (a) tax status of the shareholders, (b) their opportunities for investment and (c) dilution of ownership

9.8 GLOSSARY

- **Dividend:** It is that portion of profit after tax which is distributed among the shareholders of the company.

- **Dividend Payout Ratio:** It represents the percentage of dividend declared and paid out of earning per share.
- **Scrip Dividend:** The dividend paid by the company in the shape of a scrip or a promissory note is known as scrip dividend.

9.9 SELF ASSESSMENT QUESTIONS

1. Explain the various factors which influence the dividend decision of a firm.

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2. What do you understand by a stable dividend policy? Why should it be followed?

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3. Discuss the various types of dividends.

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9.10 LESSON END EXERCISE

Q.1 "A firm should follow a policy of very high dividend pay-out". Do you agree?

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Q.2 "A firm should follow a policy of very high dividend pay-out". Do you agree?

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9.11 SUGGESTED READINGS

- Prasanna Chandra: Financial Management, Tata McGraw Hill
- I.M. Pandey: Financial Management, Vikas Publishing House
- John J. Hampton: Financial Decision Making, PHI
- Khan and Jain: Financial Management, Tata McGraw Hill

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Semester-IV **Lesson No. 10**
Course No. FE-414 **Unit - II**

APPROACHES TO DEVIDEND DECISIONS

STRUCTURE

10.1 INTRODUCTION

Dividend policy is primarily concerned with deciding whether to pay dividend in cash now or to pay increased dividends at a later stage or distribution of ptofits in the form of bonus shares will bring capital gains to the shareholders.

The investor's preferences between the current cash dividend and the future capital gain have been viewed differently. Some are of the opinion that the future capital gains are more risky than the current dividends while others argue that the investors are indifferent between the current dividend and the future capital gains.

The basic question to be resolved while framing the dividend policy may be stated simply: What is sound rationale for dividend payments? In the light of the objective of maximizing the value of the share, the question may be restated as follows: Given the firms investments and financing decisions, what is the effect of the firm's dividend policies on the share price? Does a high dividend payment decrease, increase or does not affect at all the share price? However, the dividend policy has been a controversial issue among the finance managers and is often refer to as a dividend puzzle.

Various models have been proposed to evaluate the dividend policy decision in relation to value of firm. While agreement is not found among the models as to the precise relationship, it is still worth-while to examine some of these models to gain insight into the effect which the dividend policy might have on the market price of the share and hence on the wealth of the shareholders. Two schools of thoughts have emerged on the relationship between the dividend policy and value of the firm.

One school associated with Walter, Gordon etc. holds that the future capital gains (expected to result from lower current dividend payout) are more risky and the investors have preference for current dividends. The investors do have a tilt towards those firms which pay regular dividend. So, the dividend payment affects the market value of the share and as a result, the dividend policy is relevant for the overall value of the firm. On the other hand, the other school of thought associated with Modigliani and Miller holds that the investors are basically indifferent between current cash dividends and future capital gains. Both these schools of thought on the relationship between dividend policy and value of the firm have been discussed as follows:

1. Relevance of Dividend Policy
2. Irrelevance of Dividend Policy

10.2 OBJECTIVES

This lesson will make you familiar with:

- various models of relevance of Dividend Policy; and
- initial appraisal of Irrelevance model of Divident Policy.

10.3 RELEVANCE OF DIVIDEND POLICY

Generally, the firm pay dividends and view such dividend payments positively. The investors also expect and like to receive dividend income on their investments. The firms not paying dividends may be adversely rated by the investors affecting the market value of the share. The basic argument of those supporting the dividend relevance is that because current cash dividends reduce investors uncertainty, the investors will discount the firm's earnings at a lower rate, k_e, thereby placing a higher value on the share. If dividends are not paid, then the uncertainty of shareholders/investors will increase, raising the required rate of return, k_e, resulting in relatively lower market price of the share. So, it may be argued that the dividend policy has an effect on the market value of the share and the value of the firm. The market price of the share will increase if the firm pays dividends, otherwise it may decrease. A firm, therefore, must pay a dividend to shareholders to fulfill the expectations of the shareholders in order to maintain or increase the market price of the share. Two models representing this argument may be discussed here:

1. Walter Model

The dividend policy given by James E. Walter considers that dividends are relevant and they do affect the share price. In this model, he studied the relationship between the internal rate of return (r) and the cost of capital of the firm (k) to give a dividend policy that maximizes the shareholders' wealth.

The model studies the relevance of the dividend policy in three situations: (i) $r > k_e$ (ii) $r < k_e$ (iii) $r = k_e$. According to the Walter Model, when the return on investment (r) is more than the cost of equity capital (k_e), the earnings can be retained by the firm since it has better and more profitable investment opportunities than the investors. It implies that the returns the investor gets when

the company reinvests the earnings will be greater than what they earn by investing the dividend income. Firms which have their $r > k_e$ are the growth firms and the dividend policy that suits such firms is the one which has a zero payout ratio. This policy will enhance the value of the firm.

In the second case, the return on investment is less than the cost of equity capital and in such situation, the investor will have a better investment opportunity than the firm. This suggests a dividend policy of 100% payout. This policy of a full payout ratio will maximise the value of the firm.

Finally, when the firm has rate of return that is equal to the cost of equity capital, the firms' dividend policy will not affect the value of the firm. The optimum dividend policy for such normal firms will range between zero to a 100% payout ratio, since the value of the firm will remain constant in all cases.

In nutshell, a firm can maximize the market value of its share and the value of the firm by adopting a dividend policy as follows:

(i) If $r > k_e$, the payout ratio should be zero (i.e. retention of 100% profit).

(ii) If $r < k_e$, the payout ratio should be 100% and the firm should not retain any profit, and

(iii) If $r = k_e$, the dividend is irrelevant and the dividend policy is not expected to affect the market value of the share.

Assumptions: The relevance of the dividend policy as explained by the Walter's Model is based on a few assumptions, which are as follows:

(i) Retained earnings is the only source of finance available to the firm, with no outside debt or additional equity used.

(ii) r and k are assumed to be constant and thus additional investments made by the firm will not change its risk and return profiles.

(iii) Firm has an infinite life.

(iv) For a given value of the firm, the dividend per share and the earnings per share remain constant.

In order to testify, Walter has suggested a mathematical valuation model i.e.

$$P = \frac{D}{k_e} + \frac{(r/k_e)\,(E-D)}{k_e}$$

Where

P	=	Market price of Equity share
D	=	Dividend per share paid by the Firm
r	=	Rate of return on Investment of the Firm
k_e	=	Cost of Equity share capital, and
E	=	Earnings per share of the firm

As per the above formula, the market price of a share is the sum of two components i.e.,

(i) The present value of an infinite stream of dividends, and

(ii) The present value of an infinite stream of return from retained earnings.

Thus, the Walter's formula shows that the market value of a share is the present value of the expected stream of dividends and capital gains. The effect of varying payout ratio on the market price of the share under different rate of returns, r, have been shown in Example 14.1.

Example 14.1: Given the following information about ABC Ltd., show the effect of the dividend policy on the market price of its shares using the Walter's model:

Equity capitalization rate (k_e) = 12%

Earnings per share (E) = Rs. 8

Assumed return on investments (r) as follows:

(i) r = 15%

(ii) r = 10%

(iii) r = 12%

Solution

To show the effect of the different dividend policies on the share value of the firm for the three levels of r, let us consider the dividend payout (D/P) ratios of zero, 25%, 50%, 75% and 100%.

(i) $r > k_e$ (r= 15%, k_e = 12%)

a. D/P ratio = 0; dividend per share = zero

$$P = \frac{0 + (0.15/0.12)\ (8-0)}{0.12}$$

$$= 83$$

b. D/P ratio = 25%; dividend per share: 2.00

$$P = \frac{2.0 + (0.15/0.12)\ (8-2)}{0.12}$$

$$= 79$$

c. D/P ratio = 50%; dividend per share = 4

$$P = \frac{4.0 + (0.15/0.12)\ (8-4)}{0.12}$$

$$= 75$$

d. D/P ratio = 75%; dividend per share = 6

$$P = \frac{6 + (0.15/0.12)\ (8-6)}{0.12}$$

$$= 71$$

e. D/P ratio = 100%; dividend per share = 8

$$P = \frac{8.0 + (0.15/0.12)\ (8-8)}{0.12}$$

$$= 67$$

Interpretation: From the above calculations, it can be observed that when the return on investment is greater than the cost of capital, there is an inverse relation between the value of the share and the pay-out ratio. Thus, the value of ABC Ltd. is the highest when the D/P ratio is zero (P= 83) and this goes on declining as the D/P ratio increases. Hence, the optimum dividend policy for a growth firm is a zero dividend payout ratio.

(ii) $r < k_e$ ($r=10\%$, $k_e = 12\%$)

a. D/P ratio = 0; dividend per share = zero

$$P = \frac{0 + (0.10/0.12)\ (8-0)}{0.12}$$

$$= 56$$

b. D/P ratio = 25%; dividend per share = 2

$$P = \frac{2.0 + (0.10/0.12)\ (8-2)}{0.12}$$

$$= 58$$

c. D/P ratio = 50%; dividend per share = 4

$$P = \frac{4.0 + (0.10/0.12)\ (8-4)}{0.12}$$

$$= 61$$

d. D/P ratio = 75%; dividend per share = 6

$$P = \frac{6 + (0.10/0.12)\ (8-6)}{0.12}$$

$$= 64$$

e. D/P ratio = 100%; dividend per share = 8

$$P = \frac{8.0 + (0.10/0.12)\ (8-8)}{0.12}$$

$$= 67$$

Interpretation: When the return on investment is less than the cost of equity capital, the calculations reveal that the firm's value will enhance as the D/P ratio increase. Due to this positive correlation between the share price and the dividend payout ratio, firms which have their return on investment less than the cost of equity capital should prefer a higher dividend payout ratio in order to maximize the share value.

(iii) $r = k_e$ ($r=12\%$, $k_e = 12\%$)

a. D/P ratio = 0; dividend per share = zero

$$P = \frac{0 + (0.12/0.12)\,(8-0)}{0.12}$$

$$= 67$$

b. D/P ratio = 25%; dividend per share = 2

$$P = \frac{2 + (0.12/0.12)\,(8-2)}{0.12}$$

$$= 67$$

c. D/P ratio = 50%; dividend per share = 4

$$P = \frac{4 + (0.12/0.12)\,(8-4)}{0.12}$$

$$= 67$$

d. D/P ratio = 75%; dividend per share = 6

$$P = \frac{6 + (0.12/0.12)\,(8-6)}{0.12}$$

$$= 67$$

e. D/P ratio = 100%; dividend per share = 8

$$P = \frac{8 + (0.12/0.12)\,(8-8)}{0.12}$$

$$= 67$$

Interpretation: In the final case where the firm has its' return on investment equal to the cost of equity capital, the dividend policy does not effect the share

price of the firm. The price of the firm remains 67 for all the given levels of the D/P ratio. However, in actual practice r and k will not be the same and it can only be hypothetical case. Excepting the hypothetical cases of $r = k_e$ in other cases where $r<k_e$ or $r>k_e$, according to Walter model the dividend policy of a firm, as shown above is relevant for maximizing the share price of the firm.

Limitations of the Walter's Model

Most of the limitations for this model arise due to the assumptions made. The *first* assumption of exclusive financing by retained earnings make the model suitable only for all-equity firms. *Secondly*, Walter assumes the return on investments to be constant. This again will not be true for firms making high investments. *Finally*, Walter's model on dividend policy ignores the business risk of the firm which has a direct impact on the value of the firm. Thus, k cannot be assumed to be constant.

2. Gordon's Dividend Capitalization Model

Yet another model that has given importance to the dividend policy of the firm is the Gordon Model. Myron Gordon used the dividend capitalization approach to study the effect of the firm's dividend policy on the stock price. The model is however, based on the following assumptions:

Assumptions: The following are the assumptions based on which Gordon gave the dividend policy for firms:

(i) The firm will be an all-equity firm with the new investment proposals being financed solely by the retained earnings.

(ii) Return on investment (r) and the cost of equity capital (k_e) remain constant.

(iii) Firm has an infinite life

(iv) The retention ratio remains constant and hence the growth rate also is constant (g=br).

(v) $k > br$ i.e. cost of equity capital is greater than the growth rate.

Gordon's Model assumes that the investors are rational and risk- averse. They prefer certain returns to uncertain returns and thus put a premium to the certain returns and discount the uncertain returns. Thus, investors would prefer current

dividends and avoid risk. Retained earnings involve risk and so the investor discounts the future dividends. This risk will also affect the stock value of the firm. Gordon explains this preference for current income by *bird-in-hand* argument. Since a bird-in-hand is better than two in the bush, the investors would prefer the income that they earn currently to that income in future which may or may not be available. Thus, investors would prefer to pay a higher price for the stocks which earn them current dividend income and would discount those stocks which either postpone/reduce the current income. The discounting will differ depending on the retention rate (percentage of retained) and the time.

10.4 IRRELEVANCE OF DIVIDEND POLICY

A firm operating in a perfect or ideal capital market conditions, may many times face the following dilemmas with regard to payment of dividends

1. The firm has sufficient cash to pay dividends but such payments may erode its cash balance
2. The firm does not have enough cash to pay dividends and to meet its dividend payment needs, the firm may have to issue to new shares
3. The firm does not pay dividends, but shareholders expect and need cash

In the first case, when the firm pays dividends, shareholders get cash in their hands but the firm's cash balance gets reduced. Though the shareholders gain in the form of such dividends, they lose in the form of their claims on the cash assets of the firm. This can be viewed as a transfer of wealth of the shareholder from one portfolio to another. Thus there is no net gain or loss. In a perfect market condition, this will not affect the value of the firm.

In the second one, the issue of new shares to finance dividend payments results in two transactions – existing share holders gets cash in the form of dividends and the new shareholders part with their cash to the company in exchange for new shares. The existing shareholders suffer an equal amount of capital loss since the value of their claim on firm's assets gets reduced. The new shareholders gain new shares at a fair price per share. The fair price per share is the share price before the payment of dividends less dividend per share to the existing shareholders. The existing

shareholders transfer a part of their claim on the firm to the new shareholders in exchange for cash. Thus there is no gain or loss. Since these two transactions are fair, the value of the firm will remain unaffected.

In the third scenario, if the firm does not pay dividend, the shareholder can still create cash to meet his needs by selling a part or whole of his shares at the market price in the stock exchange. The shareholder will have lesser number of shares as he has exchanged a part of his claim on the firm to the new shareholder in exchange for cash. The net effect is the same once again. The transaction is a fair one as there is no gain or loss. The value of the firm will remainunaffected.

1. Miller – Modigliani (MM)

This dividend irrelevance theory goes by the name Miller – Modigliani (MM) Hypothesis as they have propounded the same. Miller and Modigliani have put forward the view that the value of a firm depends solely on its earnings power and is not influenced by the manner in which its earnings are split between dividends and retained earnings. This view is expressed as the MM – Dividend Irrelevance theory and is put forward in their acclaimed 1961 research work – *Dividend policy, growth and the valuation of shares* – in the Journal of Business Vol 34 (Oct 1961).

In this work, Miller and Modigliani worked out their argument on the following presumptions:

1. Capital markets are perfect and investors are rational: information is freely available, transactions are spontaneous, instantaneous, and costless; securities are divisible and no one particular investor can influence market prices
2. Floatation costs are nil and negligible
3. There are no taxes
4. Investment opportunities and future profits of firms are known and can be found out with certainty – subsequently Miller and Modigliani have dropped this presumption
5. Investment and dividend decisions are independent

Thus, the MM hypothesis reveals that under a perfect market conditions, the dividend policies of a firm are irrelevant, as they do not affect the value and worth of

the firm. It further unfolds that the value of the firm depends on its earnings and they result from its investment policy. Therefore, the dividend decision of the firm – whether to declare dividend or not, whether to distribute the earnings towards dividends or retained earnings – does not affect the investment decision.

M&M contend that the effect of dividend payments on shareholder wealth is exactly offset by other means of financing. The dividend plus the "new" stock price after dilution exactly equals the stock price prior to the dividend distribution.

M&M and the total-value principle ensure that the sum of market value plus current dividends of two firms identical in all respects other than dividend-payout ratios will be the same. Investors can "create" any dividend policy they desire by selling shares when the dividend payout is too low or buying shares when the dividend payout is excessive.

10.5 CORPORATE DIVIDEND BEHAVIOUR

It attempts to answer whether the companies have dividend policies or, is the reported cash dividend true dividend for the shareholders. It also purports to isolate the various determinants of corporate dividend policy, both internal as well as external. The dividend practices are studied by classifying the companies according to size, industry, growth and control. The difference in the dividend policy for these classifications are statistically tested. The companies, in general, observe a stable dividend rate and avoid dividend cuts. The reported dividend rates were observed to have a downward trend, and were biased downwards, while the dividend rates adjusted for bonus and right issue increased over the period. The gap between reported dividend rate and the adjusted dividend rate was high among foreign companies indicating the intention of the managements to understate the dividend rates. The variation in dividend payments with respect to industry or size classifications were not significant. However, they varied, as expected, with growth and control classifications. Companies belonging to large business groups had the lowest payout ratio so as to breed further growth of the group, while foreign companies had high payout ratio. Testing of various dividend models show that dividend decisions, in general, are well explained by lagged dividend and current year's

profit and are autonomous of other financial decisions. However, in categories of foreign, group or high growth companies, financial variables – investment and debt – affected dividend decisions during the period of high investment. Companies were observed to change their depreciation method from the written down value to the straight line method. Growth companies changed so as to have equitable distribution of depreciation over the life of the companies, while in other companies the change was to dress up their earnings, to declare high dividend and to understate the reported payout ratio. The change in most of the cases was with retrospective effect and the change was to enable the company to issue bonus shares. The role of financial institutions in influencing dividend declaration by companies is analysed and the influence of other government policy measures and restrictions on dividends are presented without quantifying their influence on dividends.

10.6 MEANING OF DIVIDEND POLICY

The term dividend refers to that part of profits of a company which is distributed by the company among its shareholders. It is the reward of the shareholders for investments made by them in the shares of the company. The investors are interested in earning the maximum return on their investments and to maximise their wealth. A company, on the other hand, needs to provide funds to finance its long-term growth.

If a company pays out as dividend most of what it earns, then for business requirements and further expansion it will have to depend upon outside resources such as issue of debt or new shares. Dividend policy of a firm, thus affects both the long-term financing and the wealth of shareholders.

As a result, the firm's decision to pay dividends must be reached in such a manner so as to equitably apportion the distributed profits and retained earnings.

Since dividend is a right of shareholders to participate in the profits and surplus of the company for their investment in the share capital of the company, they should receive fair amount of the profits. The company should, therefore, distribute a reasonable amount as dividends (which should include a normal rate of interest plus a return for the risks assumed) to its members and retain the rest for its growth and survival.

10.7 TYPES OF DIVIDEND POLICY

The various types of dividend policies are discussed as follows:

(a) Regular Dividend Policy

Payment of dividend as the usual rate is termed as regular dividend. The investors such as retired persons, widows and other economically weaker persons prefer to get regular dividends.

A regular dividend policy offers the following advantages:

(a) It establishes a profitable record of the company.

(b) It creates confidence amongst the shareholders

(c) It aids in long-term financing and renders financing easier.

(d) It stabilises the market value of shares.

(e) The ordinary shareholders view dividends as a source of funds to meet their day-to-day living expenses.

(f) If profits are not distributed regularly and are retained, the shareholders may have to pay a higher rate of tax in the year when accumulated profits are distributed.

However, it must be remembered that regular dividends can be maintained only by companies of long standing and stable earnings, A company should establish the regular dividend at a lower rate as compared to the average earnings of the company.

(b) Stable Dividend Policy:

The term 'stability of dividends' means consistency or lack of variability in the stream of dividend payments. In more precise terms, it means payment of certain minimum amount of dividend regularly.

A stable dividend policy may be established in any of the following three forms:

(i) Constant dividend per share

Some companies follow a policy of paying fixed dividend per share irrespective of the level of earnings year after year. Such firms, usually, create a 'Reserve for Dividend Equalisation' to enable them pay the fixed dividend even in

the year when the earnings are not sufficient or when there are losses.

A policy of constant dividend per share is most suitable to concerns whose earnings are expected to remain stable over a number of years.

(ii) Constant payout ratio

Constant pay-out ratio means payment of a fixed percentage of net earnings as dividends every year. The amount of dividend in such a policy fluctuates in direct proportion to the earnings of the company. The policy of constant pay-out is preferred by the firms because it is related to their ability to pay dividends. Figure given below shows the behaviour of dividends when such a policy is followed.

(iii) Stable rupee dividend plus extra dividend

Some companies follow a policy of paying constant low dividend per share plus an extra dividend in the years of high profits. Such a policy is most suitable to the firm having fluctuating earnings from year to year.

10.8 SUMMARY

Dividends are earnings distributed to its share holders by a company

- The (distribution) dividends expressed in percentage terms is called pay out ratio.
- Retention ratio is there fore 1 minus pay out ratio.
- A high pay out or a low retention ratio represents more dividends and therefore less funds for growth and expansion.
- A low pay out or a high retention ratio represents less dividends and therefore more funds for growth and expansion.
- Dividend policies affect the market value of the firm in the short run. However, whether such dividend increase value or not will depend on the profitable investment avenues available to the company.
- Walter considers that it depends on the profitability of the investment avenues available to company and the cost of capital. If the company has profitable avenues, its value will be very high and maximum when entire earnings are retained.

- Another view is that due to uncertainty of capital gains, investors will prefer dividends and more dividends.

10.9 GLOSSARY

- **Inflation:** It is the state of the economy in which the prices of the products have been increasing.
- **Scrip Dividend:** It is the dividend payment method in the form of promissory note.
- **Stock Dividend:** It is the payment of the additional shares of common stocks to the ordinary shareholders.

10.10 SELF ASSESSMENT QUESTIONS

Q.1 Explain various models of relevance of Dividend Policy.

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Q.2 State Walters's model. How it is derieved?

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Q.3 What are the implications of Walters model?

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10.11 LESSON END EXERCISE

Q.1 Why is determining dividend policy more difficult today than in decades past?

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Q.2 State dividend decision. Briefly explain the factors which govern this decision.

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10.12 SUGGESTED READINGS

- Chandra, P. *Financial Management - Theory and Practice*, New Delhi, Tata McGraw- Hill Publishing Company Ltd., 2002, p. 3.
- Sudhindra Bhat, *Financial Management,* New Delhi, Excel Books, 2008
- Van Horne, J.C. and Wachowicz, Jr, J.M., *Fundamentals of Financial Management,* New Delhi, Prentice Hall of India Pvt. Ltd., 1996. p. 2.

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Semester-IV **Lesson No. 11**
Course No. FE-414 **Unit - III**

CONCEPT AND MODELS OF DETERRING OPTIMAL CASH BALANCES

STRUCTURE

11.1 INTRODUCTION

Without monitoring your **cash**—how to measure it, invest it, borrow it, and collect it you can cheat yourself out of extra profits or even avoid trouble with creditors and bankruptcy. The main objective of cash management is an **optimal cash balance;** minimizing the sum of fixed cost of transactions and the opportunity cost of holding **cash balance.** Optimal balance here means a position when the cash balance amount is on the most ideal proportion so that the company has the ability to invest the excess cash for a return [profit] and at the same time have sufficient liquidity for future needs.

The key ingredient here is that the cash balance should neither be excessive nor deficient. For example, companies with many bank accounts may be accumulating excessive balances. Do you know how much cash you need, how much you have, where the cash is, what the sources of cash are, and where the cash will be used? This is especially crucial in recession.

The minimum cash to hold is the greater of (1) compensating balances (a deposit held by a bank to compensate it for providing services) or (2) precautionary balances (money held in cash for an emergency) plus transaction balances (money to cover uncleared cheques) The company needs sufficient cash to satisfy daily requirements. Determining the optimal cash balance is one among the most a crucial task in cash management area.

Cash means actual cash and any cheque accounts with a bank. From a financial viewpoint (not an accounting one!) one might include any unused portion of bank overdraft facilities that could be called upon to fill a need for cash.

Other liquid assets include **near-cash assets,** such as marketable securities. Marketable securities are financial instruments that earn interest and are readily convertible into cash through the marketplace or can be redeemed 'at call' or on short notice. Usually, when a financial instrument is redeemed early there is an associated opportunity cost, such as losing part of the interest earnings.

11.2 OBJECTIVES

After reading this unit, you should be able to:

- Understand the management of cash balances;
- Know the motives for holding cash;
- Discuss the ways to determine the appropriate levels of cash balances;
- Appreciate the approach to invest idle cash;
- Know the Baumol model of cash management;
- Identify the other models of cash management including Miller Orr model and Stone model; and
- Have deep understanding of short term investment decisions.

11.3 MOTIVES FOR HOLDING CASH

There are three main motives for a firm to hold cash or liquid assets:

- A transaction motive
- A precautionary motive
- A speculative motive

Transaction motive: This is triggered by the perceived (and real) need to hold cash balances for ordinary business transactions. For example, a business needs cash to pay suppliers and to pay wages to its employees. The firm also receives cash from its customers. These receipts and payments form a continuous flow through the firm's working cash balance. Seasonal or trade cycle factors create cash surpluses, part of

which will be held in near-cash form so as to earn interest.

Precautionary motive: Sometimes, cash is needed at short notice when unforeseen situations arise. Precautionary cash balances are usually held as near-cash, on call assets earning interest.

Speculative Motive: From time to time investment or cost saving opportunities arises unexpectedly which can only be taken advantage of if cash or near-cash is available on call.

11.4 CASH MANAGEMENT POLICY

Cash management policy involves three main areas:

- How to manage working cash balances, that is, managing the storage, payments and collections over the cash conversion cycle.
- How to determine the optimum or appropriate level of cash balances.
- How to invest temporarily surplus or idle cash in interest bearing assets.

Managing payments and collections

The cash cycle is a series of events in which cash is used to buy materials for producing goods; pay workers wages and other expenses during production. The finished goods are sold to customers and, when the customers pay their bills cash is received, and the cycle is completed.

The longer it takes to complete this cycle, the more the firm needs to hold cash or liquid assets. Reducing the time period between cash payments and cash collections reduces the amount of inactive cash holdings required.

Speeding collections and banking

One way of speeding up the collection process is to offer incentives for prompt or early payment. A second method is to reduce the lag between customers paying and the time taken for cheques to be cleared through the banking system. Some firms make arrangements for customers to make deposits directly into the firm's bank account (for example, Eftpos, Bpay, telephone and on-line banking).

To further minimise any delay firms should bank all cash and cheques on the day they are received. Cash not banked increases the cash conversion cycle

unnecessarily, and allows possibilities for theft or misuse. Daily banking is an important internal control procedure for cash.

Controlling payments

Slowing payment to creditors and suppliers is another way of conserving cash. On way of doing this is to delay payments to creditors for as long as possible, *without* losing settlement discounts or getting a poor credit rating.

11.5 CONCEPT OF DETERMINING THE APPROPRIATE LEVELS OF CASH BALANCES

How much money should a firm keep in its cheque account and as cash in hand?

The working cash balance is maintained for transaction purposes, such as paying bills as they fall due and collecting cash from debtors. If cash balances are too low, the firm may run out of cash, and it must liquidate some marketable securities or borrow the amount it needs. In both cases there are associated transaction costs. If cash balances are too high, the firm loses the opportunity to earn interest on the surplus cash.

Finding the optimal cash balance involves a trade-off between transaction costs (which are high for low working balances) and opportunity costs (which are high for high working balances). Under conditions of certainty determining optimal cash balances can be seen as an inventory problem.

Unfortunately, cash receipts and payments are not completely predictable. Past data about the pattern of cash receipts and payments will allow a firm to estimate maximum and minimum balances relevant to the business cycle. Where a business is seasonal, it needs a higher minimum balance in peak activity periods than in low activity periods.

Cash balances fluctuate in a semi-random manner in response to inflows and outflows of cash. When they reach the maximum levels x rupeess will be invested in marketable securities. The fluctuations continue until the balance reaches the minimum control limit when y rupeess of marketable securities are sold and banked in the working cash account. The minimum level z represents a safety level to satisfy,

in part, the precautionary motive for holding cash.

Taking into account uncertainty, variability and the seasonal nature of cash inflows and outflows, it is not reasonable to expect that an optimal working cash balance can be calculated. However, appropriate working cash balances that are *reasonable* can be established by experience, statistical analysis and observation. The optimal cash balance is another aspect of cash management. There are a number of methods that try to determine the magical cash balance, which should be targeted so that costs are minimized and yet adequate liquidity exists to ensure bills are paid on time (hopefully with something left over for emergency purposes). One of the first steps in managing the cash balance is measuring liquidity. There are numerous ways to measure this, including: cash to total assets ratio, current ratio (current assets divided by current liabilities), quick ratio (current assets less inventory, divided by current liabilities), and the net liquid balance (cash plus marketable securities less short-term notes payable, divided by total assets). The higher the number generated by the liquidity measure, the greater the liquidity and vice versa. There is a trade off, however, between liquidity and profitability that discourages firms from having excessive liquidity.

11.6 INVESTING SURPLUS OR IDLE CASH

Surplus or idle cash balances are usually held in short-term interest-bearing investments. If surplus cash is greater than that needed for precautionary and speculative reasons, it will be invested in longer-term and even permanent revenue-producing assets.

Instead of holding excess cash in short-term investments, a firm can borrow to meet variable cash requirements as they occur. This is what many firms do when they obtain overdraft facilities on their working cash account. Under such a policy a firm will never have excess cash.

There are three main factors to consider when investing excess cash in interest bearing securities. These are:

- **Default risk**

The reasons for investing excess cash balances make it unlikely that investments will be made in assets that have a high chance of failing. In selecting securities in which to invest remember that default risk and interest return are

related, which means that low risk securities will give the lowest return.

- **Maturity**

Maturity is the period over which the investment is made. As the purpose of investing excess cash is short-term, the maturity period should be matched as closely as possible to the initial purpose of the investment. Consideration must be given to investments that can be redeemed before the end of their maturity period.

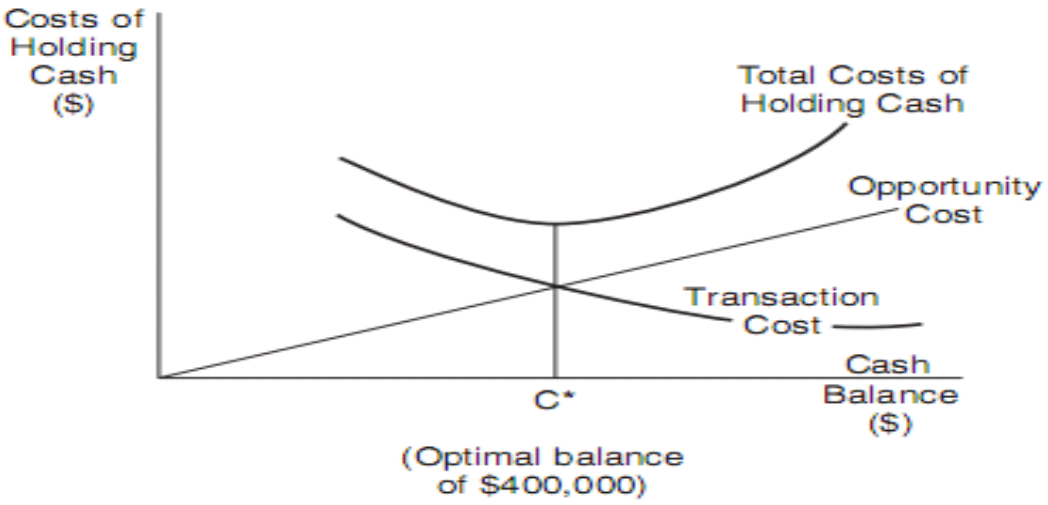
- **Marketability**

This refers to how easily the investment can be converted into cash. This includes early redemption and possibility of selling the security in the marketplace. Marketability is measured by the ability to sell within a given timeframe at a fair price.

11.7 MODELS OF DETERRING OPTIMAL CASH BALANCES - BAUMOL MODEL OF CASH MANAGEMENT

Baumol model of cash management helps in determining a firm's optimum cash balance under certainty. It is extensively used and highly useful for the purpose of cash management. As per the model, cash and inventory management problems are one and the same. William J. Baumol developed a model (The transactions Demand for Cash: An Inventory Theoretic Approach) which is usually used in Inventory management & cash management. Baumol model of cash management trades off between opportunity cost or carrying cost or holding cost & the transaction cost. As such firm attempts to minimize the sum of the holding cash & the cost of converting marketable securities to cash.

The objective is to minimize the sum of the fixed costs of transactions and the opportunity cost of holding cash balances.



These costs are expressed as:

F × [T/C] + i.[C/2]

Where:

F = the fixed cost of a transaction

T = the total cash needed for the time period involved

i = the interest rate on marketable securities

C = cash balance

The optimal level of cash is determined using the following formula:

$$C^* = \sqrt{\frac{2FT}{i}}$$

You estimate a cash need for Rs.4 million over a one month period where the cash account is expected to be disbursed at a constant rate. The opportunity interest rate is 6 percent per annum or 0.5 percent for a one-month period. The transaction cost each time you borrow or withdraw is Rs.100.

The optimal transaction size (the optimal borrowing or withdrawal lot size)

and the number of transactions you should make during the month follow:

$$C^* = \sqrt{\frac{2FT}{i}} = \sqrt{\frac{2(100)(4,000,000)}{0.005}} = \$400,000$$

)00.

- The average cash balance is: C/2 = Rs.400,000/2 = Rs.200,000
- The number of transactions required is: Rs.4,000,000/Rs.400,000 = 10 transactions during the month.

11.7.1 Relevance

At present many companies make an effort to reduce the costs incurred by owning cash. They also strive to spend less money on changing marketable securities to cash. The Baumol model of cash management is useful in this regard.

11.7.2 Use of Baumol Model

The Baumol model enables companies to find out their desirable level of cash balance under certainty. The Baumol model of cash management theory relies on the trade off between the liquidity provided by holding money (the ability to carry out transactions) and the interest foregone by holding one's assets in the form of non-interest bearing money. The key variables of the demand for money are then the nominal interest rate, the level of real income which corresponds to the amount of desired transactions and to a fixed cost of transferring one's wealth between liquid money and interest bearing assets.

11.7.3 Assumptions

There are certain assumptions or ideas that are critical with respect to the Baumol model of cash management:

- The particular company should be able to change the securities that they own into cash, keeping the cost of transaction the same. Under normal circumstances, all such deals have variable costs and fixed costs.
- The company is capable of predicting its cash necessities. They should be able to do this with a level of certainty. The company should also get a fixed

amount of money. They should be getting this money at regular intervals.

- The company is aware of the opportunity cost required for holding cash. It should stay the same for a considerable length of time.
- The company should be making its cash payments at a consistent rate over a certain period of time. In other words, the rate of cash outflow should be regular.

11.7.4 Limitations of the Baumol model

1. It does not allow cash flows to fluctuate.
2. Overdraft is not considered.
3. There are uncertainties in the pattern of future cash flows.

11.8 MILLER AND ORR MODEL OF CASH MANAGEMENT

The Miller and Orr model of cash management is one of the various cash management models in operation. It is an important cash management model as well. It helps the present day companies to manage their cash while taking into consideration the fluctuations in daily cash flow. As per the Miller and Orr model of cash management the companies let their cash balance move within two limits - the upper limit and the lower limit. The companies buy or sell the marketable securities only if the cash balance is equal to any one of these. When the cash balances of a company touches the upper limit it purchases a certain number of salable securities that helps them to come back to the desired level. If the cash balance of the company reaches the lower level then the company trades its salable securities and gathers enough cash to fix the problem. It is normally assumed in such cases that the average value of the distribution of net cash flows is zero. It is also understood that the distribution of net cash flows has a standard deviation. The Miller and Orr model of cash management also assumes that distribution of cash flows is normal.

You can use a stochastic model for cash management where uncertainty exists for cash payments. The Miller-Orr model places an upper and lower limit for cash balances. When the upper limit is reached, a transfer of cash to marketable securities is made. When the lower limit is reached, a transfer from securities to cash occurs. A transaction will not occur as long as the cash balance falls within the limits.

The Miller-Orr cash model takes into account the fixed costs of a securities transaction (**F**), which is assumed to be the same for buying as well as selling, the daily interest rate on marketable securities (**i**), and the variance of daily net cash flows.

The purpose is to satisfy cash requirements at the least cost. A major assumption is the randomness of cash flows.

The two control limits in the Miller-Orr model may be specified as "**d**" rupeess as an upper limit and zero rupeess at the lower limit. When the cash balance reaches the upper level, **d** less **z** rupeess of securities are bought and the new balance becomes **z** rupeess. When the cash balance equals zero, **z** rupeess of securities are sold and the new balance again reaches **z**. Of course, practically speaking, you should note that the minimum cash balance is established at an amount greater than zero due to delays in transfer as well as to having a safety buffer.

The optimal cash balance "z" is computed as:

$$z = \sqrt[3]{\frac{3F\sigma^2}{4i}}$$

The optimal value for d is computed as **3z**. The average cash balance will approximate (z + d)/3

Case Example

You wish to use the Miller-Orr model. The following information is supplied:

- Fixed cost of a securities transaction = Rs.10
- Variance of daily net cash flows = Rs.50
- Daily interest rate on securities (10%/360) = 0.0003

The optimal cash balance, the upper limit of cash needed, and the average cash balance are:

$$z = \sqrt[3]{\frac{3(10)(50)}{4(0.0003)}} = \sqrt[3]{\frac{3(10)(50)}{0.0012}} = \sqrt[3]{\frac{1,500}{0.0012}}$$

$$= \sqrt[3]{1,250,000} = \$102$$

The optimal cash balance is = Rs.102.

The upper limit is = Rs.306 [=3 × Rs.102].

The average cash balance is: Rs.136 = (Rs.102 + Rs.306)/3

A brief elaboration on these findings is needed for clarification. When the upper limit of Rs.306 is reached, Rs.204 of securities (Rs.306–Rs.102) will be purchased to bring you to the optimal cash balance of Rs.102. When the lower limit of zero rupeess is reached, Rs.102 of securities will be sold to again bring you to the optimal cash balance of Rs.102.

11.8.1 Application of Miller and Orr Model of Cash Management

The Miller and Orr model of cash management is widely used by most business entities. However, in order for it applied properly the financial managers need to make sure that the following procedures are followed:

- Finding out the approximate prices at which the salable securities could be sold or bought
- Deciding the minimum possible levels of desired cash balance
- Checking the rate of interest
- Calculating the SD (Standard Deviation) of regular cash flows

11.9 STONE MODEL OF CASH MANAGEMENT

The Stone Model is somewhat similar to the Miller-Orr Model insofar as it uses control limits. It incorporates, however, a look-ahead forecast of cash flows when an upper or lower limit is hit to take into account the possibility that the surplus or deficit of cash may naturally correct itself. If the upper control limit is reached, but is to be followed by cash outflow days that would bring the cash balance down to an acceptable level, then nothing is done. If instead the surplus cash would substantially remain that way, then cash is withdrawn to get the cash balance to a predetermined return point. Of course, if cash were in short supply and the lower control limit was reached, the opposite would apply. In this way the Stone Model takes into consideration the cash flow forecast.

The goals of these models are to ensure adequate amounts of cash on hand for bill payments, to minimize transaction costs in acquiring cash when deficiencies exist, and to dispose of cash when a surplus arises. These models assume some cash flow pattern as a given, leaving the task of cash collection, concentration, and disbursement to other methods.

11.10 SHORT TERM INVESTMENT DECISISONS

A key cash management problem (including how much money and for how long) concerns in which money market instruments should the temporary excess funds be placed. This short-term investment decision necessitates the analysis of return (need to annualize returns in order to compare) and liquidity. Only short-term investments meet the liquidity test, as long-duration instruments expose the investor to too much interest rate risk. In addition, federal government obligations are popular due to the absence of default risk and ease of resale in the secondary market. Nonetheless, there are numerous money market securities available with varying characteristics from many types of issuers.

Cash management is evolving with the increasing acceptance and use of electronic payments, such as debit cards. Shifting from paper-based payments to electronic transfers reduces the uncertainty in cash flow forecasting**.** The change in form of payment decreases both float and per item transaction costs. Stumbling blocks to the complete switchover to electronic payments include the initial equipment investment for businesses and resistance by consumers who still prefer checks. Nevertheless, the use of electronic versus paper payments is gaining, affecting the importance of current cash management techniques.

11.10.1 The classification of investment projects

(a) By project size

Small projects may be approved by departmental managers. More careful analysis and Board of Directors' approval is needed for large projects of, say, half a million rupeess or more.

(b) By type of benefit to the firm

- An increase in cash flow

- a decrease in risk
- an indirect benefit (showers for workers, etc).

(c) By degree of dependence

- Mutually exclusive projects (can execute project A or B, but not both)
- Complementary projects: taking project A increases the cash flow of project B.
- Substitute projects: taking project A decreases the cash flow of project B.

(d) By degree of statistical dependence

- Positive dependence
- Negative dependence
- Statistical independence.

(e) By type of cash flow

- Conventional cash flow: only one change in the cash flow sign

  e.g. -/++++ or +/——, etc

* Non-conventional cash flows: more than one change in the cash flow sign,

e.g. +/-/+++ or -/+/-/++++, etc.

11.10.2 The economic evaluation of investment proposals

The analysis stipulates a decision rule for:

(I) accepting or

(II) rejecting Investment projects

11.10.3 The time value of money

Recall that the interaction of lenders with borrowers sets an equilibrium rate of interest. Borrowing is only worthwhile if the return on the loan exceeds the cost of the borrowed funds. Lending is only worthwhile if the return is at least equal to that which can be obtained from alternative opportunities in the same risk class.

The interest rate received by the lender is made up of:

(i) The time value of money: the receipt of money is preferred sooner rather than later. Money can be used to earn more money. The earlier the money is received, the greater the potential for increasing wealth. Thus, to forego the use of money, you must get some compensation.

(ii) The risk of the capital sum not being repaid. This uncertainty requires a premium as a hedge against the risk, hence the return must be commensurate with the risk being undertaken.

(iii) Inflation: money may lose its purchasing power over time. The lender must be compensated for the declining spending/purchasing power of money. If the lender receives no compensation, he/she will be worse off when the loan is repaid than at the time of lending the money.

(a) Future values/compound interest

Future value (FV) is the value in rupeess at some point in the future of one or more investments.

FV consists of:

(i) the original sum of money invested, and

(ii) the return in the form of interest.

The general formula for computing Future Value is as follows:

$FV_n = V_o (l + r)^n$

where

V_o is the initial sum invested

r is the interest rate

n is the number of periods for which the investment is to receive interest.

Thus we can compute the future value of what V_o will accumulate to in n years when it is compounded annually at the same rate of r by using the above formula.

(b) Net present value (NPV)

The NPV method is used for evaluating the desirability of investments or projects.

$$NPV = \frac{C_1}{I+r} + \frac{C_2}{(I+r)^2} + \frac{C_3}{(I+r)^3} + \ldots + \frac{C_2 \ldots I_o}{(I+r)^n}$$

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

where:

C_t = the net cash receipt at the end of year t

I_o = the initial investment outlay

r = the discount rate/the required minimum rate of return on investment

n = the project/investment's duration in years.

The discount factor r can be calculated using:

$$q(t,i) = \frac{1}{(1+i)^t}$$

Decision rule:

If NPV is positive (+): *accept the project*

If NPV is negative(-): *reject the project*

(c) Annuities

N.B. Introduce students to annuity tables from any recognised published source.

A set of cash flows that are equal in each and every period is called an annuity.

Example:

Year	Cash Flow (Rs.)
0	-800
1	400
2	400
3	400

PV = Rs.400(0.9091) + Rs.400(0.8264) + Rs.400(0.7513)

= Rs.363.64 + Rs.330.56 + Rs.300.52

= Rs.994.72

NPV = Rs.994.72 - Rs.800.00

= Rs.194.72

Alternatively,

PV of an annuity = Rs.400 (PVFAt.i) (3,0,10)

= Rs.400 (0.9091 + 0.8264 + 0.7513)

= Rs.400 x 2.4868

= Rs.994.72

NPV = Rs.994.72 - Rs.800.00

= Rs.194.72

(d) Perpetuities

A perpetuity is an annuity with an infinite life. It is an equal sum of money to be paid in each period forever.

$$\textbf{PV of a perpetuity} = \frac{C}{r}$$

where:

C is the sum to be received per period

r is the discount rate or interest rate

(e) The internal rate of return (IRR)

Refer students to the tables in any recognised published source.

The IRR is the discount rate at which the NPV for a project equals zero. This rate means that the present value of the cash inflows for the project would equal the present value of its outflows.

The IRR is the break-even discount rate.

The IRR is found by trial and error.

$$\sum_{t=1}^{n} \frac{C_t}{(I+r)^t} - I_o = o$$

where r = IRR

IRR of an annuity:

$$\mathbf{Q(n,r)} = \frac{I_o}{C}$$

where:

Q (n,r) is the discount factor

$\mathbf{I_o}$ is the initial outlay

C is the uniform annual receipt ($C_1 = C_2 = ... = C_n$).

11.10.4 Net present value vs internal rate of return

Independent vs dependent projects

NPV and IRR methods are closely related because:

(i) both are time-adjusted measures of profitability, and

(ii) their mathematical formulas are almost identical.

So, which method leads to an optimal decision: IRR or NPV?

(a) NPV vs IRR: Independent projects

Independent project: Selecting one project does not preclude the choosing of the other.

With conventional cash flows (-|+|+) no conflict in decision arises; in this case both NPV and IRR lead to the same accept/reject decisions.

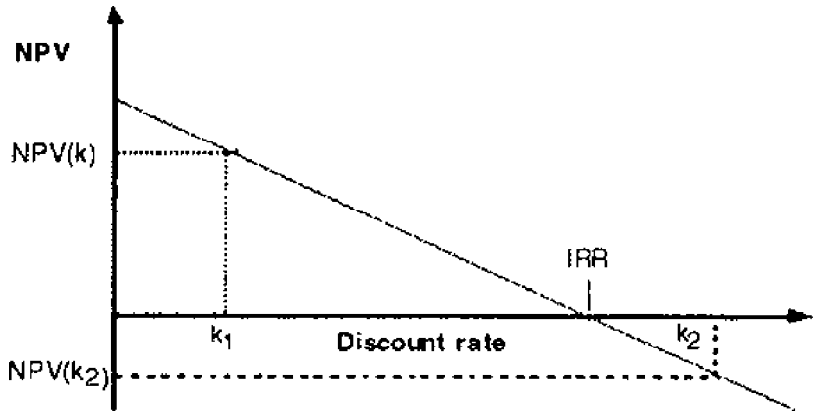


Figure 2 NPV vs IRR Independent projects

If cash flows are discounted at k_1, NPV is positive and IRR > k_1: accept project.

If cash flows are discounted at k_2, NPV is negative and IRR < k_2: reject the project.

Mathematical proof: for a project to be acceptable, the NPV must be positive, i.e.

$$\sum_{t=1}^{n} \frac{C_t}{(I+k)^t} - I_o > 0 or \sum_{t=1}^{n} \frac{C_t}{(I+k)^t} - I_o > I_o$$

Similarly for the same project to be acceptable:

$$\sum_{t=1}^{n} \frac{C_t}{(I+R)^t} = I_o$$

Where **R** is the IRR.

Since the numerators C_t are identical and positive in both instances:

- Implicitly/intuitively R must be greater than k (R > k);
- If NPV = 0 then R = k: the company is indifferent to such a project;
- Hence, IRR and NPV lead to the same decision in this case.

(b) NPV vs IRR: Dependent projects

NPV clashes with IRR where mutually exclusive projects exist.

Example:

Agritex is considering building either a one-storey (Project A) or five-storey (Project B) block of offices on a prime site. The following information is available:

	Initial Investment Outlay	**Net Inflow at the Year End**
Project A	-9,500	11,500
Project B	-15,000	18,000

Assume k = 10%, which project should Agritex undertake?

$$NPV_A = \frac{\$11{,}500}{1.1} - \$9{,}500$$

= Rs.954.55

$$NPV_B = \frac{\$18{,}000}{1.1} - \$15{,}000$$

= Rs.1,363.64

Both projects are of one-year duration:

IRR$_A$: $\frac{\$11{,}500}{1+R_A} = \$9{,}500$

Rs.11,500 = Rs.9,500 (1 +R_A)

$$\frac{\$11{,}500}{\$9{,}500} = 1 + R_A$$

$$R_A = \frac{\$11{,}500}{\$9{,}500} - 1$$

= 1.21-1

therefore **IRR$_A$** = 21%

IRR_B: $\frac{\$18,000}{1+R_B} = \$15,000$

Rs.18,000 = Rs.15,000(1 + R_B)

$R_B = \frac{\$18,000}{\$15,000} - 1$

= 1.2-1

therefore **IRR_B** = 20%

Decision:

Assuming that k = 10%, both projects are acceptable because:

NPV_A and NPV_B are both positive

$IRR_A > k$ AND $IRR_B > k$

Which project is a "better option" for Agritex?

If we use the NPV method:

NPV_B (Rs.1,363.64) > NPV_A (Rs.954.55): Agritex should choose Project B.

If we use the IRR method:

IRR_A (21%) > IRR_B (20%): Agritex should choose Project A. See figure 3.

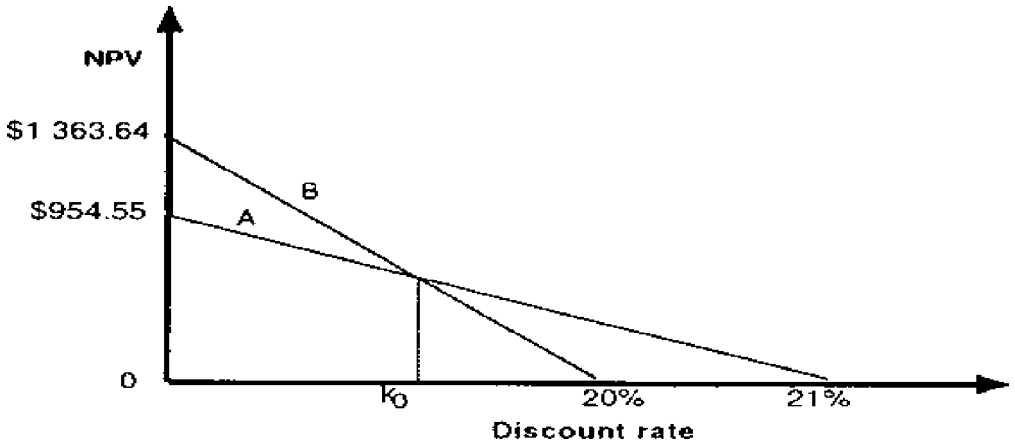


Figure 3 NPV vs IRR: Dependent projects

Up to a discount rate of k_o: project B is superior to project A, therefore project B is preferred to project A.

Beyond the point k_o: project A is superior to project B, therefore project A is preferred to project B

The two methods do not rank the projects the same.

Differences in the scale of investment

NPV and IRR may give conflicting decisions where projects differ in their scale of investment. Example:

Years	**0**	**1**	**2**	**3**
Project A	-2,500	1,500	1,500	1,500
Project B	-14,000	7,000	7,000	7,000

Assume k= 10%.

NPV_A = Rs.1,500 x PVFA at 10% for 3 years

= Rs.1,500 x 2.487

= Rs.3,730.50 - Rs.2,500.00

= Rs.1,230.50.

NPV_B == Rs.7,000 x PVFA at 10% for 3 years

= Rs.7,000 x 2.487

= Rs.17,409 - Rs.14,000

= Rs. 3,409.00.

$$\mathbf{IRR_A} = \frac{I_o}{C_t}$$

$$= \frac{\$2,500}{\$1,500}$$

= 1.67.

Therefore $\mathbf{IRR_A}$ = 36% (from the tables)

$$\mathbf{IRR_B} = \frac{I_o}{C_t}$$

= 2.0

Therefore $\mathbf{IRR_B}$ = 21%

Decision:

Conflicting, as:

- NPV prefers B to A
- IRR prefers A to B

	NPV	**IRR**
Project A	Rs. 3,730.50	36%
Project B	Rs.17,400.00	21%

See figure 4.

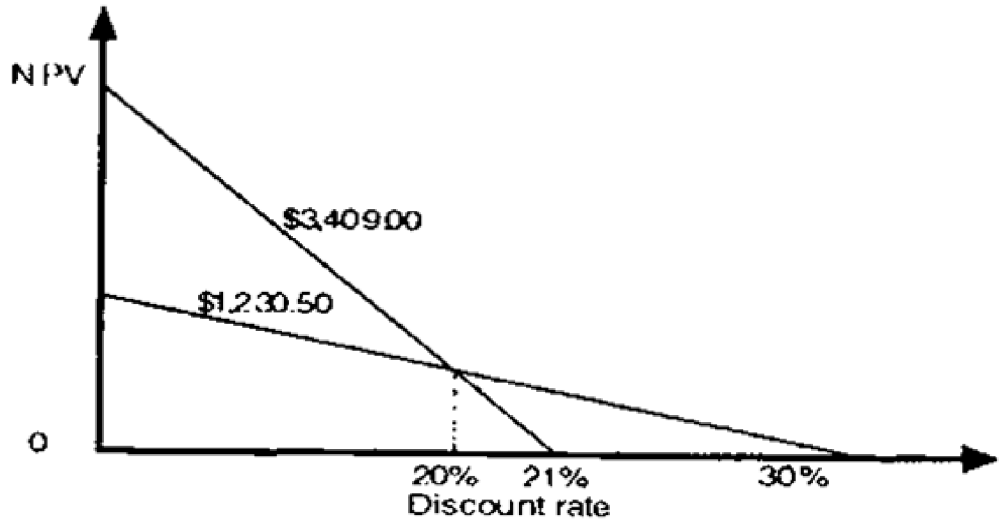


Figure 4 Scale of Investment

To show why:

(i) The NPV prefers B, the larger project, for a discount rate below 20%

(ii) The NPV is superior to the IRR

(a) Use the incremental cash flow approach, "B minus A" approach

(b) Choosing project B is tantamount to choosing a hypothetical project "B minus A".

	0	**1**	**2**	**3**
Project B	- 14,000	7,000	7,000	7,000
Project A	- 2,500	1,500	1,500	1,500
"B minus A"	- 11,500	5,500	5,500	5,500

$$IRR_{\text{"B Minus A"}} = \frac{\$2,500}{\$1,500}$$

= 2.09

= 20%

(c) Choosing B is equivalent to: A + (B - A) = B

(d) Choosing the bigger project B means choosing the smaller project A plus an additional outlay of Rs.11,500 of which Rs.5,500 will be realised each year for the next 3 years.

(e) The $IRR_{\text{"B minus A"}}$ on the incremental cash flow is 20%.

(f) +Given k of 10%, this is a profitable opportunity, therefore must be accepted.

(g) But, if k were greater than the IRR (20%) on the incremental CF, then reject project.

(h) At the point of intersection,

$NPV_A = NPV_B$ or $NPV_A - NPV_B = 0$, i.e. indifferent to projects A and B.

(i) If k = 20% (IRR of "B - A") the company should accept project A.

this justifies the use of NPV criterion.

Advantage of NPV:

It ensures that the firm reaches an optimal scale of investment.

Disadvantage of IRR

It expresses the return in a percentage form rather than in terms of absolute rupees returns, e.g. the IRR will prefer 500% of Rs.1 to 20% return on Rs.100. However, most companies set their goals in absolute terms and not in % terms, e.g. target sales figure of Rs.2.5 million.

The timing of the cash flow

The IRR may give conflicting decisions where the timing of cash flows varies between the 2 projects.

Note that initial outlay I_o is the same.

	0	**1**	**2**
Project A	- 100	20	125.00
Project B	- 100	100	31.25
"A minus B"	0	- 80	88.15

Assume k = 10%

	NPV	**IRR**
Project A	17.3	20.0%
Project B	16.7	25.0%
"A minus B"	0.6	10.9%

IRR prefers B to A even though both projects have identical initial outlays. So, the decision is to accept A, that is B + (A - B) = A. See figure 5

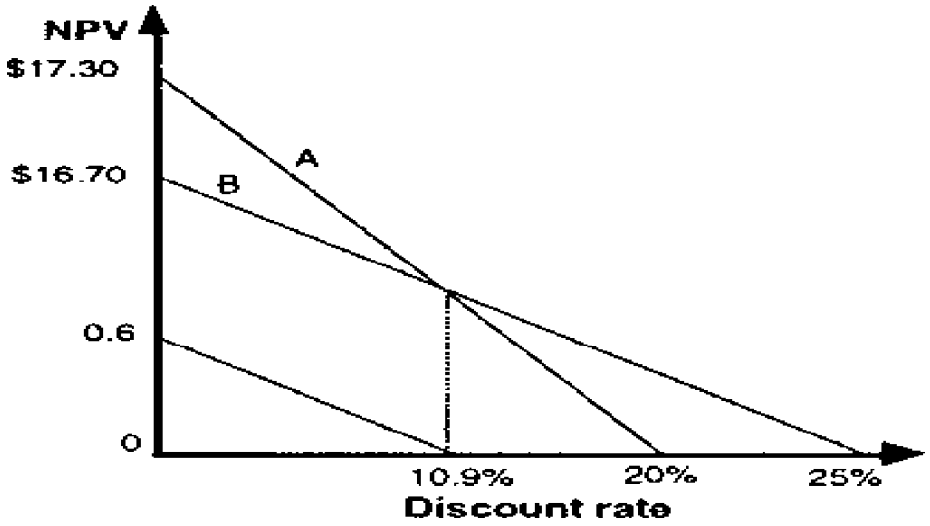


Figure 5 Timing of the cash flow

The horizon problem

NPV and IRR rankings are contradictory. Project A earns Rs.120 at the end of the first year while project B earns Rs.174 at the end of the fourth year.

	0	1	2	3	4
Project A	-100	120	-	-	-
Project B	-100	-	-	-	174

Assume k = 10%

	NPV	IRR
Project A	9	20%
Project B	19	15%

Decision:

NPV prefers B to A

IRR prefers A to B.

The profitability index - PI

This is a variant of the NPV method.

$$PI = \frac{PV}{I_o}$$

Decision rule:

PI > 1; accept the project

PI < 1; reject the project

If NPV = 0, we have:

$NPV = PV - I_o = 0$

$PV = I_o$

Dividing both sides by I_o we get:

$$\frac{PV}{I_o} > 1$$

PI of 1.2 means that the project's profitability is 20%. Example:

	PV of CF	**I_o**	**PI**
Project A	100	50	2.0
Project B	1,500	1,000	1.5

Decision:

Choose option B because it maximises the firm's profitability by Rs.1,500.

Disadvantage of PI:

Like IRR it is a percentage and therefore ignores the scale of investment.

11.10.5 The payback period (PP)

The CIMA defines payback as 'the time it takes the cash inflows from a capital investment project to equal the cash outflows, usually expressed in years'. When deciding between two or more competing projects, the usual decision is to accept the one with the shortest payback.

Payback is often used as a "first screening method". By this, we mean that when a capital investment project is being considered, the first question to ask is: 'How long will it take to pay back its cost?' The company might have a target payback, and so it would reject a capital project unless its payback period were less than a certain number of years.

Example:

Years	0	1	2	3	4	5
Project A	1,000,000	250,000	250,000	250,000	250,000	250,000

For a project with equal annual receipts:

$$PP = \frac{I_o}{C_t}$$

$$\frac{\$1,000,000}{\$250,000}$$

= 4 years

Disadvantages of the payback method

- It ignores the timing of cash flows within the payback period, the cash flows after the end of payback period and therefore the total project return.
- It ignores the time value of money. This means that it does not take into account the fact that Rs.1 today is worth more than Rs.1 in one year's time. An investor who has Rs.1 today can either consume it immediately or alternatively can invest it at the prevailing interest rate, say 30%, to get a return of Rs.1.30 in a year's time.
- It is unable to distinguish between projects with the same payback period.
- It may lead to excessive investment in short-term projects.

Advantages of the payback method

Payback can be important: long payback means capital tied up and high investment risk. The method also has the advantage that it involves a quick, simple calculation and an easily understood concept.

11.10.6 The accounting rate of return - (ARR)

The ARR method (also called the return on capital employed (ROCE) or the return on investment (ROI) method) of appraising a capital project is to estimate the accounting rate of return that the project should yield. If it exceeds a target rate of return, the project will be undertaken.

$$\text{ARR on total investment} = \frac{\text{Net Annual Profit}}{\text{Investment Outlay}} or \left[Rt + \frac{(C - D)}{I_o} \right]$$

Note that net annual profit excludes depreciation.

Example:

A project has an initial outlay of Rs.1 million and generates net receipts of Rs.250,000 for 10 years.

Assuming straight-line depreciation of Rs.100,000 per year:

$$\text{the RR on total investment} = \frac{\$250,000 - \$100,000}{1,000,000}$$

= 15%

$$\text{ARR on total investment} = \frac{\text{Net Annual Profit}}{\text{Investment Outlay} / 2} or \left[R_a + \frac{(C - D)}{I_o / 2} \right]$$

$$= \frac{\$250,000 - \$100,000}{\$1,000,000 \div 2}$$

$$= \frac{\$150,000}{\$500,000}$$

= 30%

Disadvantages

- It does not take account of the timing of the profits from an investment.
- It implicitly assumes stable cash receipts over time.
- It is based on accounting profits and not cash flows. Accounting profits are subject to a number of different accounting treatments.
- It is a relative measure rather than an absolute measure and hence takes no account of the size of the investment.
- It takes no account of the length of the project.
- it ignores the time value of money.

The payback and ARR methods in practice

Despite the limitations of the payback method, it is the method most widely used in practice. There are a number of reasons for this:

- It is a particularly useful approach for ranking projects where a firm faces liquidity constraints and requires fast repayment of investments.
- It is appropriate in situations where risky investments are made in uncertain markets that are subject to fast design and product changes or where future cash flows are particularly difficult to predict.
- The method is often used in conjunction with NPV or IRR method and acts as a first screening device to identify projects which are worthy of further investigation.
- It is easily understood by all levels of management.
- It provides an important summary method: how quickly will the initial investment be recouped?

11.10.7 Allowing for inflation

So far, the effect of inflation has not been considered on the appraisal of capital investment proposals. Inflation is particularly important in developing countries as the rate of inflation tends to be rather high. As inflation rate increases, so will the minimum return required by an investor. For example, one might be happy with a

return of 10% with zero inflation, but if inflation was 20%, one would expect a much greater return.

Example:

Keymer Farm is considering investing in a project with the following cash flows:

	ACTUAL CASH FLOWS
TIME	**ZRs.**
0	(100,000)
1	90,000
2	80,000
3	70,000

Keymer Farm requires a minimum return of 40% under the present conditions. Inflation is currently running at 30% a year, and this is expected to continue indefinitely. Should Keymer Farm go ahead with the project?

Let us take a look at Keymer Farm's required rate of return. If it invested Rs.10,000 for one year on 1 January, then on 31 December it would require a minimum return of Rs.4,000. With the initial investment of Rs.10,000, the total value of the investment by 31 December must increase to Rs.14,000. During the year, the purchasing value of the rupees would fall due to inflation. We can restate the amount received on 31 December in terms of the purchasing power of the rupees at 1 January as follows:

Amount received on 31 December in terms of the value of the rupees at 1 January:

$$= \frac{\$14,000}{(1.30)^1}$$

= Rs.10,769

In terms of the value of the rupees at 1 January, Keymer Farm would make a profit of Rs.769 which represents a rate of return of 7.69% in "today's money" terms. This is known as the real rate of return. The required rate of 40% is a money rate of

return (sometimes known as a nominal rate of return). The money rate measures the return in terms of the rupees, which is falling in value. The real rate measures the return in constant price level terms.

The two rates of return and the inflation rate are linked by the equation:

(1 + money rate) = (1 + real rate) x (1 + inflation rate)

where all the rates are expressed as proportions.

In the example,

(1 + 0.40) = (1 + 0.0769) x (1 + 0.3)

= 1.40

So, which rate is used in discounting? As a rule of thumb:

(a) If the cash flows are expressed in terms of actual rupeess that will be received or paid in the future, the money rate for discounting should be used.

(b) If the cash flows are expressed in terms of the value of the rupees at time 0 (i.e. in constant price level terms), the real rate of discounting should be used.

In Keymer Farm's case, the cash flows are expressed in terms of the actual rupeess that will be received or paid at the relevant dates. Therefore, we should discount them using the money rate of return.

TIME	**CASH FLOW**	**DISCOUNT FACTOR**	**PV**
	Rs.	**40%**	**Rs.**
0	(150,000)	1.000	(100,000)
1	90,000	0.714	64,260
2	80,000	0.510	40,800
3	70,000	0.364	25,480
			30,540

The project has a positive net present value of Rs.30,540, so Keymer Farm should go ahead with the project.

The future cash flows can be re-expressed in terms of the value of the rupees at time 0 as follows, given inflation at 30% a year:

TIME	ACTUAL CASH FLOW	CASH FLOW AT TIME 0 PRICE LEVEL	
	Rs.	Rs.	
0	(100,000)	(100,000)	
1	90,000	$90{,}000 \times \frac{1}{(1.30)^1} =$	69,231
2	80,000	$80{,}000 \times \frac{1}{(1.30)^2} =$	47,337
3	70,000	$70{,}000 \times \frac{1}{(1.30)^3} =$	31,862

The cash flows expressed in terms of the value of the rupees at time 0 can now be discounted using the real value of 7.69%.

TIME	CASH FLOW	DISCOUNT FACTOR	PV
	Rs.	7.69%	Rs.
0	(100,000)	1.000	(100,000)
1	69,231	$\frac{1}{(1.0769)^1}$	64,246
2	47,337	$\frac{1}{(1.0769)^2}$	40,804
3	31,862	$\frac{1}{(1.0769)^3}$	25,490
			30,540

The NPV is the same as before.

Expectations of inflation and the effects of inflation

When a manager evaluates a project, or when a shareholder evaluates his/her investments, he/she can only guess what the rate of inflation will be. These guesses will probably be wrong, at least to some extent, as it is extremely difficult to forecast the rate of inflation accurately. The only way in which uncertainty about inflation can be allowed for in project evaluation is by risk and uncertainty analysis.

Inflation may be *general,* that is, affecting prices of all kinds, or *specific* to particular prices. Generalised inflation has the following effects:

(a) Inflation will mean higher costs and higher selling prices. It is difficult to predict the effect of higher selling prices on demand. A company that raises its prices by 30%, because the general rate of inflation is 30%, might suffer a serious fall in demand.

(b) Inflation, as it affects financing needs, is also going to affect gearing, and so the cost of capital.

(c) Since fixed assets and stocks will increase in money value, the same quantities of assets must be financed by increasing amounts of capital. If the future rate of inflation can be predicted with some degree of accuracy, management can work out how much extra finance the company will need and take steps to obtain it, e.g. by increasing retention of earnings, or borrowing.

However, if the future rate of inflation cannot be predicted with a certain amount of accuracy, then management should estimate what it will be and make plans to obtain the extra finance accordingly. Provisions should also be made to have access to 'contingency funds' should the rate of inflation exceed expectations, e.g. a higher bank overdraft facility might be arranged should the need arise.

Many different proposals have been made for accounting for inflation. Two systems known as "Current purchasing power" (CPP) and "Current cost accounting" (CCA) have been suggested.

CPP is a system of accounting which makes adjustments to income and capital values to allow for the general rate of price inflation.

CCA is a system which takes account of specific price inflation (i.e. changes in the prices of specific assets or groups of assets), but not of general price inflation. It involves adjusting accounts to reflect the current values of assets owned and used.

At present, there is very little measure of agreement as to the best approach to the problem of 'accounting for inflation'. Both these approaches are still being debated by the accountancy bodies.

11.11 SUMMARY

The bottom line to good cash management is that, in a any situation good or bad, an appropriate balance of cash must be there with organisation to meet its business requirements. This unit discusses the approaches to manage cash balances. Specific motives of holding cash were discussed and cash management policy was explained in detail. Propositions to determine appropriate level of cash were revealed. In the next section investment of surplus cash was dealt.

Certain important models of cash management were taken into consideration including Baumol model, Miller Orr model and Stone model of cash management. Short term investment decisions finally were tackled with special focus on investment in projects. Net present value of project, accounting rate of return, internal rate of return and Pay back period were discussed with the help of suitable examples.

11.12 GLOSSARY

- **Transaction motive:** This is triggered by the perceived (and real) need to hold cash balances for ordinary business transactions
- **Precautionary motive:** Sometimes, cash is needed at short notice when unforeseen situations arise
- **Speculative Motive:** From time to time investment or cost saving opportunities arises unexpectedly which can only be taken advantage of if cash or near-cash is available on call

11.13 SELF ASSESSMENT QUESTIONS

Q.1 Discuss motives of holding cash with the help of suitable examples. What is the relevance of cash management policy?

Q.2 How will you determine the appropriate levels of cash balances? Write a brief note on investment of idle cash.

Q.3 Explain various models of cash management. What are the limitations of Baumol model of cash management?

11.14 LESSON END EXERCISE

Q.1 You are promised perpetuity of Rs. 700 per year at a rate of interest of 15% per annum. What price (PV) should you be willing to pay for this income?

Q.2 What is the IRR of an equal annual income of Rs.20 per annum which accrues for 7 years and costs Rs.120?

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11.15 SUGGESTED READINGS

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Semester-IV **Lesson No. 12**
Course No. FE-414 **Unit - III**

CREDIT MANAGEMENT THROUGH CREDIT POLICY VARIABLES, ORDERING LEVEL, REORDERING LEVEL, DANGER LEVEL, MARGINAL ANALYSIS

STRUCTURE

12.1 INTRODUCTION

We have seen how firms determine their needs for current assets and manage their holdings in cash and marketable securities. In a typical manufacturing company the debtors to total asset ratio varies from 20 to 25% which is a considerable investment of funds. The effective management of this asset will have a significant effect on the profitability of the company. The receivable (debtors) arise due to credit sales, which is undertaken in order to encourage customers to purchase goods or services. Accounts receivable use funds, and tying up funds in these investments has an associated cost which, must be considered along with the benefits from enhanced sales of goods and services. In this unit we are going to discuss the various issues involved in management decisions of extending credit (i.e., accounts receivable).

12.2 OBJECTIVES

After going through this unit, you should be able to:

- understand the need for establishing sound credit policy;
- understand the various credit policy variables;
- understand the credit evaluation process;
- understand the techniques of monitoring receivables; and
- understand the concept of factoring.

12.3 TERMS OF PAYMENT

Terms of payment vary widely in practice. At one end, if the seller has financial resources, s/he may extend liberal credit to the buyers, on the other hand the buyer pays in advance and finances the entire trade cycle. The terms of credit vary for different industries and are dictated by prevailing trade practices. In general, businesses operating in monopoly environment will insist on advance/cash payment whereas business operating in a competitive environment will extend credit to the buyers. The major terms of payment are listed below:

Cash Terms

When goods are sold on cash terms, the sales consideration (payment) is received either before goods are sold (advance payment) or when the goods are delivered (cash on delivery) Cash term generally exist under the following conditions:

(a) when goods are made to order

(b) when the buyer is perceived to be less credit worthy

(c) the seller is in strong bargaining position.

Open Account

Credit sales is generally on open account which implies that the seller ships the goods to the buyer and thereafter sends the bill (invoice).

Consignment

Under this type of terms, the goods are merely shipped to the consignee; they are not sold to the consignee. The consignee then sell these goods to the third party. One should note here that the title of the goods is retained by the seller till they are sold by the consignee to the third party. Sales proceeds are remitted by the consignee to the seller.

Negotiable Instruments/Hundi

When the goods are sold on credit either through an open account or through consignment an formal legal evidence of the buyers obligation is not created. In order to overcome this a more secure agreement usually in the form of a draft is sought. A draft represents an unconditional order issued by the seller to the buyer asking the buyer to pay on demand (demand draft) or at some future certain date (time draft) the amount specified on the draft. The draft is usually accompanied by the shipping documents that are deliverable to the drawee when he pays or accepts the draft. Time drafts can be discounted with the bank. The draft performs four useful functions: (a) it creates an evidence of buyer obligation (b) it helps in reducing the cost of finance (c) it provides liquidity to the seller (d) it is a negotiable instrument.

Letter of Credit

Under the documentary bills the seller faces a lot of risk " the risk of non-payment or non-acceptance of goods. This poses a major risk for the seller. This additional security under this method comes from the fact that, the letter of credit is issued by the bank and not by the party to the contract buyer. This instrument guarantees payment to the seller on fulfilment of certain conditions specified therein. The Letter of Credit can be defined as an instrument issued by a bank in favour of the seller (known as beneficiary) whereby the issuing bank undertakes to pay the beneficiary a certain sum against delivery of specific documents within a stated period of time. There are many forms of a letter of credit; the most widely used are as follows: 1) Revocable vs. Irrevocable Letter of Credit 2) Confirmed vs. Unconfirmed Letter of Credit 3) Revolving Letter of Credit 4) Transferable Letter of Credit 5) Back to Back Letters of Credit 6) With Recourse vs. Without Recourse Letter of Credit.

12.4 CREDIT MANAGEMENT THROUGH CREDIT POLICY VARIABLES

Each company should establish its own credit policy depending upon the ground situation and the environment in which it is operating. The main objective of the credit policy is to stimulate sales as well as control expenses and bad debts associated with granting credit. The following are the main components of a credit policy. 1) credit period to be allowed to general customers 2) credit period to be allowed to special customers and the criteria for defining special customer to be predefined 3) credit rating system 4) cash discount policy or discount policy for pre-payment by debtors 5) collection policy 6) accounting system and management information system (MIS) for scrutiny and efficient management of debtors 7) policy for dealing with bad and doubtful debts 8) credit insurance cover 9) proper documentation of credit sales. If we regroup the above components they can be classified under the four dimensions of a firm's credit policy which are as follows: a) credit standards b) credit period c) cash discount d) collection effort. Deciding on the credit policy involves a trade off between sales and expenses/losses. Decreasing credit standards would increase sales but at the same time would lead to increase in bad debt losses. The same is true for other variables of credit policy

also. Now let us examine the effect of each of these variables on the net profit on the firm.

Credit Standards

This variable deals with the granting of credit. On one extreme all the customers are granted credit and on the other extreme none of them are granted credit irrespective of their credit rating, but in today's competitive environment this is not possible. In general liberal credit standards lead to increased sales accompanied by higher incidence of bad debts, tying of funds in accounts receivable and increased cost of credit collection. Stiff or tight credit standards lead to decreased sales, lower incidence of bad debts, decreased investment in accounts receivable and decreased collection cost.

Credit Period

Credit period refers to the length of time provided to the buyer to pay for their purchases. During this period no interest is charged on the outstanding amount. The credit period generally varies from 30 to 90 days and in some businesses even a period of 180 days is allowed. If a firm allows 45 days of credit with no discount for early payment credit terms are stated as 'net 45'. In case the firm allows discount for early payment the credit terms are stated as 1.5/15, net 45' implying that if the payment is made within 15 days a discount of 1.5 percent is allowed else the whole amount is to be paid within 45 days. Increasing the credit period results in increased sales but at the same time entails increased investment in debtors and higher incidence of bad debts. Decreasing the credit period would have the opposite result.

Cash Discount

Cash discount is offered to buyers to induce them to make prompt payment. The credit terms specify the percentage discount and the period during which it is available. Liberal cash discount policy imply that either the discount percentage is increased or the discount period is increase. This leads to enhanced sales, decrease in average collection period and increase in cost

Collection Effort

The collection policy of a firm is aimed at timely collection of overdue amount

and consist of the following. 1) Monitoring the state of debtors (account receivable) 2) Reminders 3) Personal letters 4) Telephone calls 5) Personal visit of salesman 6) Restriction of credit 7) Use of collection agencies 8) Legal action. An efficient and rigorous collection program tends to decrease sales, shorten average collection period, reduce bad debts percentage and increase the collection expenses, whereas a lax collection program will have just the opposite effect.

12.5 CREDIT EVALUATION

One of the important elements of credit management is the assessment of the credit risk of the customer. While assessing risk two type of errors occur which are as follows. Type 1 error: Good customers are misclassified as poor credit risk Type 2 error: Bad customers are misclassified as good credit risk. Both the errors are costly. Type 1 error leads to loss of profit on sales and also loss of good customers. Type II errors leads to bad debts and other costs associated with the bad debts. These type of errors can't be totally eliminated but a proper credit evaluation process can reduce these two types of errors. The credit evaluation process involves the following steps. 1) Credit information 2) Credit investigation 3) Credit limits 4) Collection policy.

Credit Information

In order to ensure that the receivables are collected in full and on due date from the customers, prior information of their credit worthiness should be available. This information can be gathered from a variety of sources, which we are going to discuss shortly. One important thing which needs to be kept in mind while gathering credit information is that collecting credit information involves cost, therefore the cost of collecting information should be less than the potential profitability of credit sales. Another factor which should be borne in mind is that collecting credit information may involve a lengthy period of time, on account of this the credit granting decision should not be delayed for long. Depending upon these two factor any or a combination of the following process may be employed to collect the information.

- **Financial Statements:** Profit and loss a/c and Balance sheet of customers firm provide valuable insight on the operating financial soundness, sources of funds,

application of funds, and debtors and creditors. The following ratios calculated from financial statements seems particularly helpful in this context: Current ratio, and acid test ratio, debt equity ratio, Earning Before Interest and Taxes (EBIT) to total assets ratio and return on equity.

- **Bank References:** A customer's bank account is also a valuable source of information regarding the credit worthiness of the customer. A thorough analysis of bank transactions would reveal the financial behaviour and characteristics of the customer. Bank references can be obtained either directly or by requesting the customer to instruct his bank to provide the same.

- **Trade references:** The seller can ask the prospective customer to give trade references. Trade references are usually of those firms with whom the customer is having current dealings. • Other Sources: A firm can also obtain information about the prospective customer from credit rating agencies like (CRISIL, ICRA, CARE) and trade and industry associations.

Credit Investigation

Once the credit information is gathered the next step is to analyse the gathered information and isolate those matters, which may require further investigation. The factors that affect the extent and nature of credit investigation are as follows:

- Type of customer, whether new or existing.
- The customer's business line, background and the related trade risks.
- The nature of products-perishable or seasonal.
- The size of the customer's order and expected further volume of business with him/her.
- Company's credit policies and practices.
- **Capacity:** Capacity refers to the ability of the buyer to pay the due on time and is generally judged by the past turnover and the repayment behaviour.
- **Character:** Character refers to the willingness of the buyer to pay. The character of the buyer is generally judged by his/ her past record of payments and default

history if any.

- **Collateral:** Collateral means the security against the credit granted to customers. A buyer willing to furnish adequate collateral is judged as more creditworthy as compared to buyers who are unable to furnish any collateral.
- **Conditions:** Conditions here refer to the sensitivity of the buyer to general economic environment

Analysis of Credit File: Credit file is a compilation of all the relevant credit information of the customer. All the credit information collected during the credit information process is annexed to this file. The information of all the previous transactions and payments related to it are also recorded in the credit file. Any change in customer's payment behaviour like extension of time delayed payments enhancing credit limits etc. are also recorded in the credit file. In case of new customers the credit information collected should be thoroughly analysed and examined and in case of existing customer the credit file should be analysed while extending credit for larger accounts or for longer periods.

Analysis of Financial Ratios: Ratios are calculated to determine the customer's liquidity position and ability to repay debts. The ratios so calculated should be compared with the industry average and the nearest competitors.

Analysis of Business and its Management: Besides analysing the fundamental strength of the customers business the firm should also take into consideration the quality of the management and the nature of the customer business. Some business are inherently risky and granting credit to such customers may prove risky.

Credit Limit

A credit limit is the maximum amount of credit, which the firm will extend at a point of time. It indicates the extent of risk taken by the firm by supplying goods on credit to a customer. Once the firm has decided to extend credit to the customer the amount and duration of the credit will have to be decided. The amount of credit to be granted will depend on the customer's financial strength.

Collection Policy

Proper management of receivables require an appropriate collection

policy which outlines the collection procedures. Collection policy refers to the procedure adopted by a firm to collect payments due on past accounts. The basic objective of the collection policy is to minimise average collection period and bad debt losses. A strict collection policy can affect the goodwill and can adversely affect potential future sales whereas on the other hand a lenient collection policy can lead to increased average collection period and increased bad debt losses. An optimum collection policy should aim towards reducing collection expenditure.

12.6 MONITORING RECEIVABLES

A firm needs to continuously monitor and control its receivables to ensure that the dues are paid on the due date and no dues remain outstanding for a long period of time. The following two methods are used to evaluate the management of receivables.

1. Average collection period

2. Aging schedule. Average collection period (ACP): Average collection period is defined as Credit Sales Debtors 365 ACP × = The average collection period so calculated is compared with the firm's stated credit period to judge the collection efficiency. For example, if the firm's stated collection period is 45 days and the actual collection period is 60 days, one may conclude that the firm's collection efforts are lax. An extended credit period leads to liquidity problems and may also result in bad debts. Two major drawbacks of this method are: (i) It gives an average picture of collection efforts and is based on aggregate data. It fails to pin point the receivables which are overdue. (ii) It is susceptible to sales variation and the period over which sales and receivable have been aggregated. Ageing Schedule: The ageing schedule (AS) classifies outstanding accounts receivable at a given point of time into different age brackets. An

illustrative ageing schedule is given below.

Age groups	Outstanding	Percentage
0-30	45000	37.50
31-60	15000	12.50
61-90	10000	12.50
91-120	30000	250
Over 120	120000	100

The actual aging schedule of the firm is compared with some standard ageing schedule so as to determine whether accounts receivables are in control. If the greater proportion receivable are in the higher age schedule than there is a need for some corrective action.

Receivable management is a specialised activity and requires a lot of time and effort on the part of the firm. Collection of receivables often poses problems, particularly for small and medium size organisations. Banks do finance receivables but this accommodation is for a limited period and the seller has to bear the risk in case debtors default on payment.

In order to overcome these problems the firms can assign its credit management and collection to specialist organisation known as factoring organisations.

12.7 CONCEPT OF MARGINAL ANALYSIS

Marginal analysis is the examination of the costs and benefits of certain activities. Marginal analysis can show the cost of additional production until you reach the break-even point, where the costs the company incurs and the income it receives from production is equal.

Companies use marginal analysis to ensure that the benefits of certain activities outweigh the costs. For example, if a company is considering increasing the volume of goods that they produce, they will perform a marginal analysis to ensure the cost of producing more products outweighs the added expenses that will accompany that decision, such as an increase in labor costs or additional materials that you may need to manufacture the goods. Marginal analysis is

useful for helping people and businesses decide how to allocate resources in order to maximize profitability and benefits and minimize costs.

12.7.1 Marginal benefit vs. marginal cost

Marginal benefit is the difference you receive when you make a different choice. In business, this typically is the additional revenue the company receives when it increases with production and/or sells more items. Marginal cost is the additional cost that you incur when you produce additional units of a product. Marginal costs typically decline as a company increasingly produces a higher number of goods.

12.7.2 Marginal analysis and opportunity cost

In order to understand the cost and benefit of certain activities, you must also understand opportunity cost. An opportunity cost is a valuable benefit that you miss when you choose one option over another. For example, if a company has room in its budget for another employee and is considering hiring another person to work in a factory, a marginal analysis indicates that hiring that person provides a net marginal benefit. In other words, the ability to produce more products outweighs the increase in labor costs. However, hiring that person still may not be the best decision for the company.

For example, if the company recognizes that hiring an additional sales representative could provide a higher net marginal benefit, then hiring someone else for sales rather than someone to work in the factory is the right decision. The additional productivity that the company would have earned by hiring someone to work in the factory is the opportunity cost.

12.7.3 Example of marginal analysis

If a company is thinking about expanding to increase the volume of products that it produces, management may choose to perform a marginal analysis to determine whether the additional costs the company will incur is a good investment in the growth of the business. In order to do this, management will first have to add all of the additional costs that are associated with an increase in production. For example, they may need to invest in additional equipment to

manufacture products, hire new employees to work in the factory, which will mean additional salary and benefit expenses and purchase additional materials to manufacture more goods. They may also have to rent or purchase additional warehouse space so they can store the additional products before they're distributed and sold.

Once the managers have estimated the total costs that will accompany the decision to expand company operations, they can then determine the additional income they can expect. By subtracting the total expenses from the income of more sales, management can then determine whether the increase in income outweighs the increase in cost.

For a simple example, let's say that a t-shirt company is considering whether they should increase production. Every shirt they manufacture requires $0.80 of fabric. The t-shirt company has $200 of fixed costs per month. If you make 100 shirts per month, then each t-shirt incurs $2.00 of those fixed costs. That means that the total cost per shirt is $2.80. However, if the company decided to increase production to 200 shirts per month, then the fixed cost that each shirt incurs would drop to $1.00. The total cost of the shirt, then, is $1.80, as the cost of materials remains the same. In this scenario, doubling production significantly lowers marginal costs.

12.8 FACTORING

Factoring is financial as well as management support to a firm. Through factoring non-productive, inactive assets (Book debts or receivables) are assigned to a factor which may be a bank or a financial institution or any other organisation which in turn collects receivables from the debtors for a commission. The factoring can be defined as "a business involving a continuing legal relationship between the factor and a business concern (the client) selling goods and services to trade customers (the customers) whereby the factor purchases the clients accounts receivable and in relation thereto, controls the credit extended to customers and administers the sales ledger".

Factoring Services: The following basic services are provided by the factor apart from the core service of purchasing receivables.

(1) Sales Ledger administration and credit management

(2) Credit collection and protection against default and bad debt losses

(3) Financial accommodation against the assigned book debts (receivables).

In addition to these services the following services are also being provided by the factor:

(1) Providing information about prospective buyers

(2) Providing financial counselling

(3) Assistance in liquidity management and sickness prevention

(4) Financing acquisition of inventories

(5) Providing assistance for opening letter of credit for the client.

Types of Factoring

The factoring facilities can be broadly classified in four groups which are as follows:

(1) Full service non recourse (old line)

(2) Full service recourse factoring

(3) Bulk agency factoring

(4) Non notification factoring.

Full Service Non Recourse: Under this method the book debts are purchased by the factor assuming 100 percent credit risk. In case of default by the debtor the whole risk is borne by the factor. In addition to this the factor may also advance 80-90% of the books debts immediately to the client. Payments are made directly to the factor by the customers. The factor also maintains the sales ledger and accounts and prepares age- wise reports of outstanding book debts. This type of factoring services are specially suited to the following conditions when,

(a) Amounts involved per customer are relatively substantial

(b) There are large number of customers of whom the client can't have personal knowledge

(c) Clients wish to have 100% cover rather than 70 to 80% cover provided by the insurance companies

Full Service Recourse Factoring: In this type of factoring the client has to bear the risk of default made by the debtors. In case the factor had advanced funds against book debts on which the customer subsequently defaults the client will have to refund the money. This type of factoring is more a method of short-term financing rather than pure credit management and protection service. This type of factoring is suitable for cases where there is high spread customers with relatively low exposure or where the client is selling to high risk customers.

Advance Factoring and Maturity Factoring: In both non-recourse and recourse factoring if the factor advances cash against book debts to the client immediately on assignment of book debts it is known as advanced factoring. In maturity factoring the factor makes payment to the client on maturity of book debts i.e., when they are due. In non-recourse maturity factoring the payment is on maturity or when book debts are collected or when the customer becomes insolvent. In recourse factoring the factor pays the client when book debts have been collected.

Bulk Agency Factoring: This type of factoring is basically used as a method of financing book debts. Under this type of factoring the client continues to administer credit and maintain sales ledger. The factor finances the book debts against bulk either on recourse or without recourse. This sort of factoring became popular with the development of consumer durable market where credit management is not a problem, but the firms require temporary financial accommodation.

Non-Notification Factoring: In this type of factoring customers are not informed about the factoring agreement. The factor performs all the usual functions without disclosing to customer that they own the book debts.

Costs and Benefits of Factoring

There are two types of costs involved in factoring:

(1) the factoring commission or service fee, and

(2) the interest on advances granted by the factor to the firm.

Factoring commission is paid to cover credit evaluation, collection, maintenance of sales ledger, other services and to cover bad debt losses. The factoring commission will depend upon the total volume of receivables, the size of individual

receivables and quality of receivables. The commission for non- recourse factoring is higher than recourse factoring as the former factor assumes full credit risk.

In India the cost of factoring varies from 2.5% to 4% where as in developed countries it ranges from 1% to 3%.

The interest on advances is usually higher than the prime lending rates of the bank or the bank overdraft rate. In the United States of America, factors charge a premium of 2 to 5% over and above the prime interest rate.

The high cost of factoring is partly off set by the benefits of factoring some of which are as follows:

- factoring provide specialised service in credit management, thereby freeing resources in the form of management's time and attention which they can focus on core issues of manufacturing and marketing, and
- factoring helps the firm to save cost of credit administration due to the scale of economies and specialisation.

12.9 SUMMARY

Trade credit creates debtors or accounts receivables. Trade credit is used as a marketing tool to gain competitive advantage over trade rivals. A firm's investment in accounts receivable would depend upon the volume of credit sales and collection period. This investment in receivables can be increased or decreased by altering the credit policy variables. The main variables of credit policy are credit period and cash discount. The collection efforts of the firm are aimed at reducing bad debt losses and accelerating collection from slow players. Factoring involves sale of receivables to specialised firms known as factors. Factoring is basically used to improve liquidity and for the timely collection of debts. Factors charge interest on advances and commission for other services.

12.10 GLOSARRY

- **Consignment :** Under this type of terms, the goods are merely shipped to the consignee; they are not sold to the consignee
- **Open account**: Credit sales is generally on open account which implies that the seller ships the goods to the buyer and thereafter sends the bill (invoice).

- **Credit period** : refers to the length of time provided to the buyer to pay for their purchases.

12.11 SELF ASSESSMENT QUESTIONS

Q.1 Describe the major's terms of payment in practice.

Q.2 What are the importance dimensions of a firm's credit period.

Q.3 Discuss the consequences of lengthening versus shortening of the credit period.

Q.4 Discuss the effects of liberal versus stiff credit standards.

12.12 LESSON END EXERCISE

Q.1 What are the major credit policy variables a firm can use to control its level of receivables investment

Q.2 What credit and collection procedures shopuld be adopted in case of individual accounts?

12.13 SUGGESTED READINGS

- K. John and T.A. John, "Private Corporate Funding," The New Palgrave Dictionary of Money and Finance, McMillian Press Reference Books, October 1992.
- D. Flath and C. Knoeber, "Taxes, Failure Costs, and Optimal Industry Capital Structure: An Empirical Test," Journal of Finance (March 1980)
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Semester-IV **Lesson No. 13**
Course No. FE-414 **Unit - III**

CONTROL OF ACCOUNTS RECEIVABLES

STRUCTURE

13.1 INTRODUCTION

Receivables mean the book debts or debtors and these arise, if the goods are sold on credit. Debtors form about 30% of current assets in India. Debt involves an element of risk and bad debts also. Hence, it calls for careful analysis and proper management. The goal of receivables management is to maximize the value of the firm by achieving a tradeoff between risk and profitability. For this purpose, a finance manager has: a. to obtain optimum (non-maximum) value of sales; b. to control the cost of receivables, cost of collection, administrative expenses, bad debts and opportunity cost of funds blocked in the receivables. c. to maintain the debtors at minimum according to the credit policy offered to customers. d. to offer cash discounts suitably depending on the cost of receivables, bank rate of interest and opportunity cost of funds blocked in the receivables.

13.2 OBJECTIVES

After going through this lesson, you will be able to:

- understand the meaning of receivable;
- benefits of maintaining receivables; and
- control of account receivable.

13.3 COSTS OF MAINTAINING RECEIVABLES

The costs with respect to maintenance of receivables can be identified as follows:

(a) Capital costs - Maintenance of accounts receivable results in blocking of the firm's financial resources in them. This is because there is a time lag between the sale of goods to customers and the payments by them. The firm has, therefore, to arrange for additional funds to meet its own obligations, such as payment to employees, suppliers of raw materials, etc., while awaiting for payments from its customers. Additional funds may either be raised from outside or out of profits retained in the business. In first the case, the firm has to pay interest to the outsider while in the latter case, there is an opportunity cost to the firm, i.e., the money which the firm could have earned otherwise by investing the funds elsewhere.

(b) Administrative costs - The firm has to incur additional administrative costs for maintaining accounts receivable in the form of salaries to the staff kept for maintaining accounting records relating to customers, cost of conducting investigation regarding potential credit customers to determine their credit worthiness etc.

(c) Collection costs - The firm has to incur costs for collecting the payments from its credit customers. Sometimes, additional steps may have to be taken to recover money from defaulting customers.

(d) Defaulting costs - Sometimes after making all serious efforts to collect money from defaulting customers, the firm may not be able to recover the over dues because of the inability of the customers. Such debts are treated as bad debts and have to be written off since they cannot be realized.

13.4 BENEFITS OF MAINTAINING RECEIVABLES

(a) Increase in Sales - Except a few monopolistic firms, most of the firms are required to sell goods on credit, either because of trade customers or other conditions. The sales can further be increased by liberalizing the credit terms. This will attract more customers to the firm resulting in higher sales and growth of the firm.

(b) Increase in Profits - Increase in sales will help the firm (i) to easily recover the fixed expensesand attaining the break-even level, and (ii) increase the operating profit of the firm. In a normal situation, there is a positive relation between the sales volume and the profit.

(c) Extra Profit - Sometimes, the firms make the credit sales at a price which is higher than the usual cash selling price. This brings an opportunity to the firm to make extra profit over and above the normal profit.

13.5 FACTORS AFFECTING THE SIZE OF RECEIVABLES

The size of accounts receivable is determined by a number of factors. Some of the important factors are as follows:

1. Level of sales - This is the most important factor in determining the size of accounts receivable. Generally in the same industry, a firm having a large volume

of sales will be having a larger level of receivables as compared to a firm with a small volume of sales. Sales level can also be used for forecasting change in accounts receivable. For example, if a firm predicts that there will be an increase of 20% in its credit sales for the next period, it can be expected that there will also be a 20% increase in the level of receivables.

2. **Credit policies -** The term credit policy refers to those decision variables that influence the amount of trade credit, i.e., the investment in receivables. These variables include the quantity of trade accounts to be accepted, the length of the credit period to be extended, the cash discount to be given and any special terms to be offered depending upon particular circumstances of the firm and the customer. A firm's credit policy, as a matter of fact, determines the amount of risk the firm is willing to undertake in its sales activities. If a firm has a lenient or a relatively liberal credit policy, it will experience a higher level of receivables as compared to a firm with a more rigid or stringent credit policy. This is because of the two reasons:

   (i) A lenient credit policy encourages even the financially strong customers to make delays in payment resulting in increasing the size of the accounts receivables.

   (ii) Lenient credit policy will result in greater defaults in payments by financially weak customers thus resulting in increasing the size of receivables.

3. **Terms of trade -** The size of the receivables is also affected by terms of trade (or credit terms) offered by the firm. The two important components of the credit terms are (i) Credit period and (ii) Cash discount.

Credit Period

The term credit period refers to the time duration for which credit is extended to the customers. It is generally expressed in terms of "Net days". For example, if a firm's credit terms are "Net 15", it means the customers are expected to pay within 15 days from the date of credit sale.

Cash Discount

Most firms offer cash discount to their customers for encouraging them to

pay their dues before the expiry of the credit period. The terms of cash discount indicate the rate of discount as well as the period for which the discount has been offered. For example, if the terms of cash discount are changed from "Net 30" to "2/10 Net 30", it means the credit period is of 30 days but in case customer pays in 10 days, he would get 2% discount on the amount due by him. Of course, allowing cash discount results in a loss to the firm because of recovery of fewer amounts than what is due from the customer but it reduces the volume of receivables and puts extra funds at the disposal of the firm for alternative profitable investment. The amount of loss thus suffered is, therefore, compensated by the income otherwise earned by the firm.

13.6 CONTROL OF ACCOUNTS RECEIVABLES

Controls over accounts receivable really begin with the initial creation of a customer invoice, since you must minimize several issues during the creation of accounts receivable before you can have a comprehensive set of controls over this key asset. Controls then span the proper maintenance of accounts receivable, and their elimination through either payments from customers or the generation of credit memos. The key controls to consider are:

- **Require credit approval prior to shipment.** You will have problems collecting accounts receivable if an order is shipped to a customer with a bad credit rating. Therefore, require the signed approval of the credit department on all sales orders over a certain dollar amount.
- **Verify contract terms.** If there are unusual payment terms, verify them before creating an invoice. Otherwise, accounts receivable will contain invoices that customers refuse to pay.
- **Proofread invoices.** If an invoice for a large-dollar amount contains an error, the customer may hold up payment until you send a revised invoice. Consider requiring the proofreading of larger invoices to mitigate this problem.
- **Authorize credit memos.** People who have access to incoming customer payments could intercept incoming cash and then create a credit memo to cover their tracks. One step in the prevention of this problem is to require the formal approval of a

manager for credit memos, which are then verified at a later date by the internal audit staff. Do not take this control to extremes and require approval for extremely small credit memos - allow the accounting staff to create small ones without approval, just to clean up small remaining account balances.

- **Restrict access to the billing software.** As just noted, someone could intercept incoming payments from customers and hide the theft with a credit memo. You should password-protect access to the billing software to prevent the illicit generation of credit memos.
- **Segregate duties.** As just noted, no one should be able to handle incoming customer payments and create credit memos, or else they will be able to take the money and cover their tracks with credit memos. Therefore, assign these tasks to different people.
- **Review accounts receivable journal entries.** Accounts receivable transactions almost always go through a sales journal in the accounting software that generates its own accounting entries. Therefore, there should almost never be a manual journal entry in the accounts receivable account. You should investigate these entries carefully.
- **Audit invoice packets.** After invoices are completed, there should be a packet on file that contains the sales order, credit authorization, bill of lading, and an invoice copy. The internal audit staff should review a selection of these packets to verify that the billing clerk properly reviewed all of the supporting paperwork and correctly generated an invoice.
- **Match billings to shipping log.** It is possible that items will be shipped without a corresponding invoice, or vice versa. To detect these situations, have the internal audit staff compare billings to the shipping log, and investigate any differences.
- **Audit the application of cash receipts.** The accounting staff may incorrectly apply cash receipts to open invoices, perhaps not even applying them to the accounts of the correct customers. Have the internal audit staff periodically trace a selection of cash receipts to customer invoices to verify proper cash application.

These items constitute the basic accounts receivable controls. A company with a specialized receivables system may need to implement additional controls, or may not need some of the items listed here.

13.7 OPTIMUM SIZE OF RECEIVABLES

The optimum investment in receivables will be at a level where there is a trade-off between costs and profitability. When the firm resorts to a liberal credit policy, the profitability of the firm increases on account of higher sales. However, such a policy results in increased investment I receivables, increased chances of bad debts and more collection costs. The total investment in receivables increases and, thus, the problem of liquidity is created. On the other hand, a stringent credit policy reduces the profitability but increases the liquidity of the firm. Thus, optimum credit policy occurs at a point where there is a "Trade-off" between liquidity and profitability.

13.8 PROBLEMS ON GRANTING CREDIT DECISION

The word "credit" is derived from the ancient Latin word *credere*, which means "to believe" or "to entrust." In the world of finance and investment, credit refers to a **contractual agreement** in which a borrower receives something of value now and agrees to repay the lender at a later date – generally with interest. Credit is built upon a foundation of trust. The borrower can meet obligations as set out in the contract or fail to so, a situation that can lead to loss for the lender. As such, the lender must assess the likelihood that the borrower will pay back the loan in accordance with the terms of the agreement.

Credit risk is the probability that a borrower will not pay back a loan in accordance with the terms of the agreement. It is the risk of loss caused by consumer default on credit products, including amortized loans, credit cards, revolving credits, and residential mortgages. Credit risk can arise in different ways. For example, it can emerge when:

- One party performs services for another and then sends a bill for the services rendered for payment.
- One party has an advanced payment to the other and awaits receipt of the items purchased or where one party has advanced the items purchased and awaits payment.

- A retailer/producer offers a product on credit, i.e., trade credit. For example, a computer manufacturer might allow customers to buy now and pay later. The terms of credit could specify the number of days the customer has to make the required payments.

  For retail banks, credit risk is simply unavoidable. Banks receive deposits from customers and then lend the money to individuals and firms. In this process, every borrower is associated with some level of credit risk. However, the **incremental risk** of any single risk exposure is small. A single obligor is not big enough to threaten the operations of the bank.

  To manage credit risk, banks invest heavily in credit analysis models that estimate future default rates and related losses. They also use a range of **risk mitigants** such as loan guarantees and collateral.

The variables most directly affecting relative credit risk include:

- The capacity and willingness of the obligor to meet its obligations
- The external environment (e.g., business climate and country risk) which affects the probability of default and the expected loss given default
- The characteristics of the relevant credit instrument (credit terms, disbursement schedule, repayment schedule, etc.)
- The quality of credit risk mitigants utilized
- The length of time over which exposure exists

13.9 OPTIMUM CREDIT POLICY

A firm should establish receivables policies after carefully considering both benefits and costs of different policies. These policies relate to: (i) Credit Standards, (ii) Credit Terms, and (iii) Collection Procedures. Each of these have been explained below:

(i) **Credit standards -** The term credit standards represent the basic criteria for extension of credit to customers. The levels of sales and receivables are likely to be high if the credit standards are relatively loose, as compared to a situation when they are relatively tight. The firm's credit standards are generally

determined by the five "C's". Character, Capacity, Capital, Collateral and Conditions. Character denotes the integrity of the customer, i.e. his willingness to pay for the goods purchased. Capacity denotes his ability to manage the business. Capital denotes his financial soundness. Collateral refers to the assets which the customer can offer by way of security. Conditions refer to the impact of general economic trends on the firm or to special developments in certain areas of economy that may affect the customer's ability to meet his obligations.

Information about the five C's can be collected both from internal as well as external sources. Internal sources include the firm's previous experience with the customer supplemented by its own well developed information system. External resources include customer's references, trade associations and credit rating organisations such as Don & Brad Street Inc. of USA. This Organisation has more than hundred years experience in the field of credit reporting. It publishes a reference book six times a year containing information about important business firms region wise. It also supplies credit reports about different firms on request.

An individual firm can translate its credit information into risk classes or groups according to the probability of loss associated with each class. On the basis of this information, the firm can decide whether it will be advisable for it to extend credit to a particular class of customers.

(ii) **Credit terms -** It refers to the terms under which a firm sells goods on credit to its customers. As stated earlier, the two components of the credit terms are

(a) **Credit period-** Extending the credit period stimulates sales but increases the cost on account of more tying up of funds in receivables. Similarly, shortening the credit period reduces the profit on account of reduced sales, but also reduces the cost of tying up of funds in receivables. Determining the optimal credit period, therefore, involves locating the period where the marginal profits on increased sales are exactly offset by the cost of carrying the higher amount of accounts receivable.

(b) **Cash discount -** The effect of allowing cash discount can also be analysed on the same pattern as that of the credit period. Attractive cash discount

terms reduce the average collection period resulting in reduced investment in accounts receivable. Thus, there is a saving in capital costs. On the other hand, cash discount itself is a loss to the firm. Optimal discount is established at the point where the cost and benefit are exactly offsetting.

(iii) **Collection procedures -** A stringent collection procedure is expensive for the firm because of high out-of-pocket costs and loss of goodwill of the firm among its customers. However, it minimizes the loss on account of bad debts as well as increases savings in terms of lower capital costs on account of reduction in the size of receivables. A balance has therefore to be stuck between the costs and benefits of different collection procedures or policies.

13.10 CREDIT EVALUATION OF CUSTOMER

Credit evaluation of the customer involves the following 5 stages:

i. Gathering credit information of the customer through:

(a) financial statements of a firm,

(b) bank references,

(c) references from Trade and Chamber of Commerce,

(d) reports of credit rating agencies,

(e) credit bureau reports,

(f) firm's own records (Past experience),

(g) other sources such as trade journals, Income-tax returns, wealth tax returns, sales tax returns, Court cases, Gazette notifications etc.

ii. Credit analysis - After gathering the above information about the customer, the credit- worthiness of the applicant is to be analyzed by a detailed study of 5 C's of credit as mentioned above.

iii. Credit decision - After the credit analysis, the next step is the decision to extend the credit facility to potential customer. If the analysis of the applicant is not upto the standard, he may be offered cash on delivery (COD) terms even by extending trade discount, if necessary, instead of rejecting the credit to the customer.

iv. **Credit limit -** If the decision is to extend the credit facility to the potential customer, a limit may be prescribed by the financial manager, say, Rs. 25,000 or Rs. 1,00,000 or so, depending upon the credit analysis and credit-worthiness of the customer.

v. **Collection procedure -** A suitable and clear-cut collection procedure is to be established by a firm and the same is to be intimated to every customer while granting credit facility. Cash discounts may also be offered for the early payment of dues. This facilitates faster recovery.

13.11 SUMMARY

The use of credit in the purchase of goods and services is so common that it is taken for granted. Selling goods or providing services on credit basis lead to accounts receivables. Though a lot of discussion is going on in the Indian industry on how to cut down the investments in inventories through concepts such as Just-in-Time (JIT), MRP, etc., investments in receivables have gone up and firms are demanding more credit from banks and specialised institutions to deal with receivables. Since investment in receivables has a cost, managing receivables assumes importance. Receivables management starts with designing appropriatecredit policy. Credit policy involves fixing credit period, discount to be offered in the event of early payment, conditions to be fulfilled to grant credit and fixing credit limit for different types of customers. It is essential for the operating managers to strictly follow the credit policy in evaluating credit proposals and granting credit. To evaluate the credit proposal, it is necessary to know the credit worthiness of the customers. Credit worthiness is assessed by collecting information about the customers and then fitting the values into credit evaluation models. There are number of credit evaluation models which range from simple decision tree analysis to sophisticated multivariate statistical models. The firm has to develop a suitable model, test the model with historical data to validate the model and use it for credit evaluation. Models also need to be periodically updated. Once the credit is granted, then it should be monitored for collection. Different methodologies are available to get a macro picture on collection efficiency. Micro analysis in the form of individual customer analysis is done wherever there is a deviation from the expectation. It is equally important in dealing with delinquent customers. There are several options, simple reminders to legal action,

available before the credit managers in dealing with such default accounts and appropriate method is to be selected with an objective of benefit exceeding cost. The use of credit policy and credit analysis is not restricted to the operational managers in dealing with day-to-day activities of the firm. In the competitive world, credit policy and analysis provide a lot of strategic inputs. Credit policy of an organisation is in line with the desired strategy that the organisation wants to pursue to gain certain competitive advantages.

13.12 GLOSARRY

- **Terms of Credit :** These refer to eligibility conditions and payment details for granting credit by the company to a customer.
- **Credit worthiness :** Capacity of the customer to meet payment obligations.
- **Credit Policy :** Decision of the firm to grant or not to grant credit. It consists of the components such as credit period, discount, credit eligibility and credit limit.
- **Credit Period :** Refers to the minimum and maximum time limits for which credit is granted.
- **Credit limit :** Is the limit upto which credit is granted.
- **Decision Tree :** Is a model indicating decision points and chance events for taking a decision.
- **Credit Scoring System :** A system which attempts to rank customers as good, bad or average by a scoring mechanism.
- **Business Analysis :** An examination of risk factors influencing business prospects in terms of competition, demand and supply position, structure of industry, cost structure, labour relations, etc.
- **Financial Analysis :** An examination of financial performance and ability of a business unit to generate income.
- **Fundamental Analysis :** Refers to capital adequacy asset quality, liquidity management and interest over tax sensitivity.
- **Collection Period :** Indicates the time taken by the collection department in

collecting its book debts. A comparison of collection period with credit period tells us whether the debts were collected within the stipulated time or not.

13.13 SELF ASSESSMENT QUESTIONS

Q.1 Explain In Detail The Benefits Of Account Receivables?

Q.2 What is the optimum credit policy?

Q.3 What are the determinants of credit policy?

13.14 LESSON END EXERCISE

Q.1 What are the credit granting problems for firms?

Q.2 Explain in detail the optimum size of receivable.

13.15 SUGGESTED READINGS

- K. John and T.A. John, "Private Corporate Funding," The New Palgrave Dictionary of Money and Finance, McMillian Press Reference Books, October 1992.
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Semester-IV **Lesson No. 14**
Course No. FE-414 **Unit - III**

DETERMINANTS OF INVENTORY CONTROL LEVELS

STRUCTURE

14.1 INTRODUCTION

Inventories are assets of the firm, and as such they represent an investment. Because such investment requires a commitment of funds, managers must ensure that the firm maintains inventothose funds more effectively. Similarly, if they are too small, the firm may lose sales. Thus, there is an optimal level of inventories and there is an economic order quantity model for determining the correct level of inventory.

Inventories, like receivables, are a significant portion of most firms' assets and, accordingly, require substantial investments. To keep these investments from becoming unnecessarily large, inventories must be managed efficiently ries at the correct level. If they become too large, the firm loses the opportunity to employ.

14.2 OBJECTIVES

After going through this lesson, you will be able to:

- Understand the meaning of inventory;
- Explain the benefits as well as objectives of inventory management; and
- Discuss the various techniques of inventory management.

14.3 MEANING AND NATURE OF INVENTORY

The term 'inventory' refers to the stockpile of the product a firm is offering for sale and the components that make up the product. In other words, inventory is composed of assets that will be sold in the future in the normal course of business operations. The assets which firms store as inventory in anticipation of needs are raw materials, work in process (semi-finished goods), consumables, finished goods and spares. The raw material inventories certain items that are purchased by the firm from others and are converted into finished product through manufacturing (production) process. They are an important impact of the final product. The work in progress is normally, partially or semi-finished goods, at the various stages of production in a multi-stage production process. Finished goods represent final or completed products, which are available for sale. The inventory of such goods consists of items that have been produced but are yet to be sold.

Inventory, as a current asset, differs from other current assets because it is

not finance managers who alone are involved here. Rather, all the functional areas in finance, marketing, production and purchasing are involved.

Inventory includes the following things:

(a) **Raw Material**. Raw materials form a major input into the organization. They are required to carry out production activities uninterruptedly.

(b) **Work-in-Progress.** The work-in-progress is that stage of stocks which are in between raw materials and finished goods.

(c) **Consumables.** These are the materials which are needed to smoothen the process of production. These materials do not directly enter production but they act as catalysts, etc. Consumables may be classified according to their consumption and criticality. Generally, consumable stores do not create any supply problem and form a small part of production cost.

There can be instances where these materials may account for much value than the raw materials. The fuel oil may form a substantial part of cost.

(d) **Finished goods.** These are the goods which are ready for the consumers. The stock of finished goods provides a buffer between production and market. The purpose of maintaining inventory is to ensure proper supply of goods to customers.

(e) **Spares.** Spares also form a part of inventory. The Consumption pattern of raw materials, consumables, finished goods are different from that of spares. The stocking policies of spares are different from industry to industry. Some industries like transport will require more spares than the other concerns. The costly spare parts like engines, maintenance spares etc. are not discarded after use, rather they are kept in ready position for further use. All decisions about spares are based on the financial cost of inventory on such spares and the costs that may arise due to their non-availability.

The quantity and value of the above three kinds of inventories differ depending upon the nature of the business. For example, a manufacturer will have levels of all the three kind of inventories. While a retailer or a wholesaler will have a

high level of inventories of finished goods but will have no inventories of raw materials or work-in-process. Moreover, depending upon the nature of the business, inventories may be durable or non-durable, valuable or inexpensive, perishable or non-perishable etc.

14.4 BENEFITS OF HOLDING INVENTORIES

Holding of inventories has costs as well as benefits associated with it. While determining the optimal level of inventories, the financial manager must consider the necessity of holding inventory and costs thereof. The following are some of the benefits or reasons for holding inventories.

1. **Quick Service:** Customers desire a prompt fulfilment of orders. A firm will have to make the goods available for sale. In the event of its not being able to offer quick service to customers, the latter are likely to get their orders executed by competitors.

2. **Uninterrupted production schedule:** Every manufacturing firm must have sufficient stock of raw materials in order to have the regular and uninterrupted production schedule. If there is stock out of raw material at any stage of production process, then the whole production processmay come to a halt. This may result in customer dissatisfaction as the goods cannot be delivered in time. Moreover, the fixed costs will continue to be incurred even if there is not production.

3. **Discounts:** A firm is in a position to take advantage of trade discounts by placing bulk orders with suppliers. A proper proportion will have to be maintained between the cost of maintaining inventories and the discount that is likely to be gained.

4. **Reduction in Order Costs:** Each order of supply of goods or materials carries certain costs. If the number of orders is reduced, it is possible to economise on these costs as the procedure involving each order need not be repeated each time.

5. **Protection against shortages:** Adequate inventories protect a firm against the shortages that would result in production stoppages and considerable losses.

14.5 RISKS AND COSTS ASSOCIATED WITH INVENTORIES

The costs of holding inventories can be put as follows:

1. **Materials Cost:** This includes the cost of purchasing the goods, transportation and handling charges less any discount allowed by the supplier of goods.

2. **Ordering cost:** The costs of ordering include the cost of acquisition of inventories. It is the cost of preparation and execution of an order, including cost of paper work and communicating with the supplier. There is always minimum cost involved whenever an order for replenishment of goods is placed. The total annual cost of ordering is equal to the cost per order multiplied by the number of orders placed in a year. The number of orders determines the average inventory being held by the firm Therefore, the total order cost is inversely related to the average inventory of the firm.

3. **Carrying Costs:** This includes the expenses for storing the goods. It comprises storage costs, insurance costs, spoilage costs, costs of funds tied up in inventories, etc. The funds used in the purchase/production of inventories have an opportunity cost i.e., the income which could have been earned by investing these funds elsewhere. The ordering cost may be referred as the "cost of acquiring" while the inventory carrying cost as "cost of holding" inventory. The cost of acquiring decreases while the cost of holding increases with very increase in the quantity of purchase lot. A balance is therefore struck between the two opposing factors.

4. **Costs of Stock-outs:** A stock-out is a situation when the firm is not having units of an item in store but there is a demand for that either from the customers or the production department. The stock-out refers to demand for an item whose inventory levle has already reduced to zero or insufficient level. It may be noted that the stock out does not appear if the item is not demanded even if the inventory level has fallen to zero. There is always a cost of stock-out in the sense that the firm faces a situation of lost sales or orders not honoured. If the item demanded is not in stock, the customer may buy the item/good someone else. This result in loss of goodwill too.

14.6 OBJECTIVES OF INVENTORY MANAGEMENT

Inventory management covers a large number of issues including fixation of

minimum and maximum levels; determining the size of the inventory to be carried; deciding about the issue price policy; setting up receipt and inspection procedure; determining the economic order quantity; and providing proper storage facilities. However, the firm is faced with the problem of meeting two conflicting needs while dealing with these issues.

1. To maintain a large size of inventory for efficient and smooth production and sales operations.
2. To maintain a minimum investment in inventories to maximise profitability. Both 'excessive' and 'inadequate' inventories are not desirable. There are two danger points which the firm should operate. The objective of inventory management should be to determine and maintain optimum level of inventory investment. This level of inventory will lie between two danger points of excessive and inadequate inventories. More specifically, the following are the objectives of inventory management.

(i) To have stocks available as and when they are required;

(ii) To utilise available store space, but prevent stock levels from exceeding space availability;

(iii) To meet a high percentage of demand without creating excess stock levels. In other words, "Neither to over-stock nor to run out" is the best policy;

(iv) To provide, on item-by-item basis, for re-order points and order such quantity as would ensure that the aggregate results conform with the constraints and objectives of inventory control;

(v) To decide which item to stock and which item to procure on demand;

(vi) To ensure an adequate supply of materials, stores, spares, etc, minimise stockouts and shortages; and avoid costly interruption in operations;

(vii) To enable the management to make costs and consumption comparisons between operations and periods;

(viii) Minimising the inventory carrying costs; and

(ix) To ensure investment in inventories at the optimum level

14.7 TECHNIQUES OF INVENTORY MANAGEMENT

Effective inventory management requires an effective control over inventories. Inventory control refers to a system which ensures supply of required quantity and quality of inventories at the required time and prevent unnecessary investment in inventories. The techniques of inventory control/inventory management are as follows:

1. **Determination of Economic Order Quantity:** Determination of the quantity for which the order should be placed is one of the important problems concerned with efficient inventory management. If the firm is buying raw materials, it has to decide lots in which it has to be purchased on each replenishment. Determining an optimum inventory level involves two types of costs: (a) ordering costs and (b) carrying costs. The economic order quantity is that inventory level which minimises the total of ordering and carrying costs.

2. **(a) Ordering costs:** It has been already discussed that the cost of placing an order and securing the supplies is termed as ordering cost. They include costs incurred in the following activities: requisitioning, purchase ordering, transporting, receiving, inspecting and storing. Ordering costs increase in proportion to the number of orders placed. The clerical and staff costs, however, do not have to vary in proportion to the number of orders placed, and one view is that so long as they are committed costs, they need not be reckoned in computing ordering cost.

1. If the number of orders are drastically reduced, the clerical and staff force released now can be used in other departments. Thus, these costs may be included in the ordering costs.

2. **(b) Carrying Costs:** They are costs of keeping a given level of inventory in stock. They include storage, insurance, taxes, deterioration and obsolescence. The storage costs comprise cost of storage space (warehousing cost), stores handling costs and clerical and staff service costs incurred in recording and providing special facilities such as fencing, lines, racks, etc. Carrying costs vary with inventory size. The behaviour is contrary to that of ordering costs which decline with increase in inventory size. The economic size of inventory would thus depend on trade-off between carrying costs and ordering costs.

Actually, the economic order quantity is determined at a level for which the aggregate of two costs is the minimum.

Formula for determining EOQ = "2U x p

Where,

EOQ = Economic ordering quantity

U = Quantity (units) purchased in a year (month)

P = Cost of placing an order

S = Annual (Monthly) cost of storage of one unit

Illustration 1: Sumit, a colour television manufacturer, purchases 1,600 units of a certain component from Amit. His annual usage is 1,600 units. The order placing cost is Rs. 100 and cost of carrying one unit for a year is Rs. 8. Calculate the Economic Ordering Quantity (EOQ) and tabulate your results.

EOQ = $\sqrt{2U \times p}$

S

= $\sqrt{\frac{2 \times 1,600 \times 100}{}}$ = $\sqrt{40,000}$ = 200 units

Table 1 : Economic Order Quantity Annual Requirement

S. No.	Order Per Year	Units Per Order	Order Cost	Carrying Costs (Rs.)	Total Annual Cost
1	1600	100	800	6,400	6,500
2	800	200	400	3,200	3,400
3	533	300	267	2,136	2,436
4	400	400	200	1,600	2,000
5	320	500	160	1,280	1,780
6	267	600	134	1,075	1,672
7	229	700	115	920	1,620
8	200	800	100	800	1,600
9	178	900	89	762	1,612
10	160	1000	80	640	1,640

It is obvious from the above table that total cost is the minimum when each order is of 200 units. Therefore, economic ordering quantity is 200 units only.

Assumptions

The EOQ model, as a technique to determine the economic order quantity, is based on three restrictive assumptions, namely:

(i) The firm knows with certainty the annual usage (consumption) of a particular item of inventory.

(ii) The rate at which the firm uses inventory is steady over time.

(iii) The orders placed to replenish inventory stocks are received at exactly that point in time when inventories reach zero. In addition, it may also be assumed that ordering and carrying costs are constant over the range of possible inventory levels being considered.

2. Determination of Optimum Production Quantity: The use of the EOQ model can be extended to production runs to determine the optimum size of manufacture. Two costs involved are ordering costs (set-up costs) and carrying costs. Production costs or et-up costs will reduce with bulk production runs, but carrying costs will increase as large stocks of manufactured inventories will be held. The economic production size will be the one where the total of set-up and carrying costs is minimum.

The formula for EOQ can also be used for determining the optimum production quantity as given below:

$$EPQ = \sqrt{\frac{2U \times P}{S}}$$

Where EPQ is economic production quantity, U is Annual (monthly) output, P is set-up cost for each production run and S is the cost of carrying inventory per unit per annum (per month).

Determination of Re-order Level: The EOQ provides an answer to the question: how much inventory should be ordered in one lot? Another important question pertaining to efficient inventory management is: when should the order to procure

inventory be placed? This aspect of inventory management is covered under the re-order point problem.

The re-order point is stated in terms of the level of inventory at which an order should be placed for replenishing the current stock of inventory. In other words, re-order point may be defined as that level of inventory when fresh order should be placed with the suppliers for procuring additional inventory equal to the economic order quantity.

In order to determine reorder level, information is required about two things namely (i) the lead time and (ii) the usage rate.

The term 'Lead Time' refers to the time normally taken in receiving the delivery of inventory after the order has been placed. In case there is no uncertainty about the usage rate and the lead time, the order level can be determined by simply applying the following formula:

Re-order level = Average usage × Lead Time

For example, if the lead time is 3 weeks and the average usage is 50 units per week, the reorder level can be computed as

Reorder level: Lead time × Average usage

= 3 weeks × 50 units

= 150 units.

One can note that if the economic order quantity in the above case is 500 units and there is no lead time, the economic order quantity would have been sufficient for 10 weeks and the order would have been placed only at the end of the 10th week- the time when the recorded quantity reaches the zero level.

Since in the above problem, the lead time is three weeks and, therefore, the order should be placed at the end of the 7th week when only 150 units are left.

Safety Stock: The re-order point is computed under the assumption of certainty. But it is difficult to predict usage and lead time accurately. The demand for material may fluctuate from day to day or from week to week. Similarly, the actual delivery time may be different from the normal lead time. If the actual usage increases or the delivery of inventory is delayed, the firm can face a problem of stock-out. Therefore, in order

to guard against the stock-out, the firm may maintain a safety stock-some minimum or buffer inventory as cushion against expected increased usageand/or delay in delivery time. The level of safety stock can be calculated by applying the following formula:

Safety Stock = Average Usage × Period of Safety Stock.

For example, if the usage rate is 100 units per week, and the firm wants to hold sufficient inventory for at least one week of production the amount of safety stock would be 100 units.

The formula for determining the reorder level when safety stock is maintained will be as follows:

Reorder level = Lead Time × Average usage + Safety stack

ABC Classification: An ABC analysis offers an important solution to the problem of a scientific planning and control of inventories, and is an important technique of inventorymanagement. It is based upon the value of different items constituting an inventory. It may be concerned with several items - raw materials, purchases and self-fabricated component parts, sub- assemblies, factory supplies, office supplies, tools, machinery and handling equipment items. An inventory may be differentiated on the basis of bulk, size, weight, usage, value, durability, availability, etc., and should be controlled with due weightage to differential characteristics. The idea underlying an ABC analysis is in this recognition of the principle that some items of inventory are more important than others. Thus, items are classified under broad categories -A, B and C. The ABC technique enables an enterprise to keep its investment low and avoid stock- outs of critical items. Its objective is to reduce the minimum stock as well as the working a stock.

Items under category A constitute a small percentage of the total volume, but account for a large percentage of the product value of a unit. A large glossary of items entering a bulk of the total volume and accounting for an insignificant product value is placed under class C. Items under class B constitute a moderate class which are neither substantial nor insignificant in relation to the product value of a unit. Thus, B group stands mid-way. It deserves less attention than A but more than C. It can be controlled by employing less sophisticated techniques.

The function of inventory management is to properly classify all the inventory items into one of these three groups. Inventory surveys in general have shown the following trends regarding the components of inventory of manufacturing organisations:

Table 2

Category	% of total value	No. of Iems
A	70	10
B	20	35
C	10	55

The advantages of ABC analysis are as follows:

(i) It ensures closer control on costly items in which a large amount of capital has been invested.

(ii) It helps in developing a scientific method of controlling inventories, clerical costs are reduced and stock is maintained at optimum level.

(iii) It helps in achieving the main objective of inventory control at minimum cost. The stock turnover rate can be maintained at comparatively higher level through scientific control of inventories.

However, the ABC system suffers from a serious limitation. Under this system, the items are analysed according to their value and not according to their importance in the production process. It may create sometimes problems. For instance, an item may not be very costly and hence it may have been put in category C. But this item may be very important for production process because of its scarcity. This type of item requires utmost attention of the management though according to ABC system it is not advisable to do so. Therefore, the technique of ABC analysis should be followed cautiously not blindly.

4. Ratio Analysis in Inventory Management: Inventory turnover ratios are also calculated to minimise the investment in inventories. Turnover ratio can be calculated regarding each item of inventory on the basis of the following formula:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of goods consumed/sold during the period}}{\text{Average inventory held during the period}}$$

For example, if the annual sale is of 208000 units and the average inventory held during the year is 20000 units, the inventory turnover ratio comes to 10.4.

A high turnover ratio is usually indicative of efficient operations, provided that the unprofitable out-of-stock conditions do not result from a fast rate of sales at a dangerously low level of inventory. The turnover ratio affects a number of areas of a business. First, a satisfactory turnover ratio reduces "markdowns" of damaged merchandise which has been "lying around". Secondly, a product which has a good turnover rate is comparatively fresh product for the customer. Thirdly, items which turnover fast cost less in storage. Last but not the least use ofcalculating a turnover ratio is in the area of sales. The selling cost per unit on fast turnover items is low. This manifests in a greater contribution to net profit.

Aging Schedule: Classification of the inventories according to age also helps in identifying inventories which are moving slowly into production of sales. This requires identifying the data of purchase/manufacture of each item of the inventory and classifying them as shown in the table below:

Table 3

Aging schedule of Inventories as on 31, Dec. 2018

Age (in days)	Date of purchase	Amount	Percentage
0-15	Dec. 18	8,000	20
16-30	Dec. 14	4,000	10
31-45	Nov. 27	2,000	5
46-60	Nov. 10	20,000	50
61 & above	Oct. 26	6,000	15
Total		40,000	100

The above table shows that 50% of the inventory is of the age group of 46-60 days. In case steps are not taken to clear the inventories, it is possible that more than 50% inventories may suffer deterioration in its value or may even become obsolete.

14.8 PROBLEMS IN INVENTORY MANAGEMENT

The techniques of inventory management, discussed above, are very useful in determining the optimum level of inventory and finding answer to the problems of the economic order quantity, the re-order point and the safety stock. These techniques are very essential to economise the use of resources by minimising the total inventory cost. The inventory management involves a number of problems. Some of these are given below:

(i) Knowledge of demand, certainty, risk and uncertainty;

(ii) Method of obtaining a commodity;

(iii) The decision process; and

(iv) Time lag in receiving on order: Constant time lag or probability distribution.

14.9 DETERMINANTS OF INVENTORY CONTROL LEVELS

An analysis of inventory problems is fundamentally based on a very simple, common sense observation - that in any genuine inventory problem whatsoever, there must be 'opposing costs'.

By this we may think simply that there is a cost associated with doing "too large" and there is a cost associated with doing "too little". Sometime there are several such costs, but there must always be at least one in each direction.

Carrying of too much and too little of inventories is detrimental to the firm. If the inventory level is too little, the firm will face frequent stock-outs involving heavy ordering cost and if the inventory level is too high it will be unnecessary tie-up of capital. Therefore, an efficient inventory management requires that a firm should maintain an optimum level of inventory where inventory costs are the minimum and at the same time there is not stock-out which may result in loss of sale or stoppage of production. Various stock levels are discussed as such.

(a) Minimum Level

This represents the quantity which must be maintained in hand at all times. If stocks are less than the minimum level then the work will stop due to shortage of materials. Following factors are taken into account while fixing minimum stock level:

Lead Time: A purchasing firm requires some time to process the order and time is also required by supplying firm to execute the order. The time taken in processing the order and then executing it is known as lead time.

Rate of Consumption: It is the average consumption of materials in the factory. The rate of consumption will be decided on the basis pas experiences and production plans.

Nature of Material: The nature of material also affects the minimum level. If material is required only against special orders of customer then minimum stock will not be required for such materials.

Minimum stock level = Re-ordering level - (Normal consumption × Normal Reorder period)

(b) Re-ordering Level:

When the quantity of materials reaches at a certain figure then fresh order is sent to get materials again. The order is sent before the materials reach minimum stock level. Reordering level is fixed between minimum and maximum level. The rate of consumption, number of days required to replenish the stock and maximum quantity of material required on any day are taken into account while fixing reordering level.

Re-ordering Level = Maximum Consumption × Maximum Re-order period

(c) Maximum Level:

It is the quantity of materials beyond which a firm should not exceed its stocks. If the quantity exceeds maximum level limit then it will be overstocking. A firm should avoid overstocking because it will result in high material costs.

Maximum Stock Level = Re-ordering Level + Re-ordering Quantity

- (Minimum Consumption × Minimum Re-ordering period)

(d) Danger Level:

It is the level beyond which materials should not fall in any case. If danger level arises then immediate steps should be taken to replenish the stock even if more cost is incurred in arranging the materials. If materials are not arranged immediately there is possibility of stoppage of work.

Danger Level = Average Consumption × Maximum reorder period for emergency purchases

(e) Average Stock Level:

The average stock level is calculated as such:

Average Stock level = Minimum Stock Level + ½ of Re-order quantity

14.10 FINANCIAL MANAGER AND INVENTORY MANAGEMENT

Although the financial manager is not directly concerned with inventory policies, yet he cannot ignore them since they directly affect the financial needs of the firm to a significant extent. It is, therefore, necessary for the financial manager to get familiar with ways to control inventories effectively so that there can be efficient allocation of funds. He should make all-out efforts to reduce lead time, regulate usage and minimise the safety stock. In case he does so, he will be in a position to reduce investment in inventories to the optimum level and leave sufficient funds for more profitable channels which will ultimately result in maximisation of the shareholders' wealth.

14.11 SUMMARY

Inventory is composed of assets that will be sold in the future in the normal course of business operations. Inventories provide a 'buffer' between purchasing, producing and marketing goods. Five types of inventories may be identified which are raw material inventory, stores and work-in-process inventory, consumables and finished goods inventory. The main objective of inventory management is to achieve maximum efficiency in production and sales with the minimum investment in inventory. Minimum level indicates the lowest figure of inventory balance which must be maintained in hand at all times, so that there is no stoppage of production. In ABC Analysis, the items are divided into three categories according to their importance,

value and frequency of replenishment during a period. Economic Order Quantity (EOQ) is the order size for some particular inventory item that results in lowest total inventory cost for the period.

14.12 GLOSARRY

- **Inventory:** The stockpile of the products a firm is offering for sales and the components that make up the product.
- **Raw materials:** It is the input that is converted into finished goods through a manufacturing or conversion process.
- **Work-in-progress:** It is the stage of stocks between raw materials and finished goods.
- **Economic Order Quantity (EOQ):** It refers to that level of inventory at which the total cost of inventory is minimum.

14.13 SELF ASSESSMENT QUESTIONS

Q.1 "There are two dangerous situations that management should usually avoid in controlling inventories". Explain.

_____
_____
_____
_____
_____

Q.2 Why is inventory management important? Explain objectives of inventory management.

_____
_____
_____
_____
_____

Q.3 Define the economic order quantity. How is it computed?

_____
_____

Q.4 What arte ordering and carrying costs? What is their role in inventory control?

14.14 LESSON END EXERCISE

Q.1 Illustrate with an example and graph the ABC analysis.

Q.2 Write notes on the following:

(a) Safety stock (b) Reorder point (c) Lead time (d) Aging Schedule of inventories.

14.15 SUGGESTED READINGS

- M Y Khan & P K Jain: Basic Financial Management; McGraw Hill Education (India) Pvt Ltd., New Delhi.
- R. P. Rustagi: Financial Management–Theory, Concepts and Problems; Taxmann

Publications (P) Ltd., New Delhi.

- Prasanna Chandra: Investment Analysis and Portfolio Management; McGraw Hill Education (India) Pvt. Ltd., New Delhi.
- I M Pandey: Financial Management; Vikas Publication House Ltd., New Delhi.
- Eugene F Brigham & Michael C Ehrhardt: Financial Management– Theory and Practice; Cengage Learning (India) Pvt. Ltd., New Delhi.

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Semester-IV **Lesson No. 15**

Course No. FE-414 **Unit - III**

COMMITTEES ON WORKING CAPITAL MANAGEMENT

STRUCTURE

15.1 INTRODUCTION

Working capital is very important aspect for an organisation. It is called the blood of the organisation.As without proper blood circulation in our body. We suffer from various diseases, similarly proper circulation of working capital is vital for the proper and smooth functioning of an organisation. Seeing the importance of working capital management, it is very necessary for a corporate professional to know about management of different constituents of working capital.

15.2 OBJECTIVES

The object of the study is to enable the student to understand:

- Concept of Working Capital;
- Dheja Committee Report 1969;
- Tandon Committee Report 1975;
- Chore Committee Report 1980; and
- Marathe Committee Report 1984.

15.3 WORKING CAPITAL

The capital which is required to finance current assets is called working capital. It is the capital of a busniess which is used to carry out day-to-day business operations of a firm.

"Working capital may be defined as all the short term assets used in daily operation"—John. J Harpton.

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;

(ii) the asset is held primarily for the purpose of trading;

(iii) it is expected to be realised within twelve months after the reporting period;

(iv) it is non-restricted cash or cash equivalent.

Generally current assets of an entity, for the purpose of working capital management can be grouped into the following main heads:

(a) Inventory (raw material, work in process and finished goods);

(b) Receivables (trade receivables and bills receivables);

(c) Cash or cash equivalents (short-term marketable securities);

(d) Prepaid expenses.

Current Liabilities: A liability is classified as current when:

(i) It is expected to be settled in normal operating cycle of the entity;

(ii) The liability is held primarily for the purpose of trading;

(iii) It is expected to be settled within twelve months after the reporting period.

Generally current liabilities of an entity, for the purpose of working capital management can be grouped into the following main heads:

(a) Payable (trade payables and bills receivables);

(b) Outstanding payments (wages & salary etc.).

In general, Working capital management is essentially managing Current Assets, management of working capital arises as a part of the process of such management.

Short term assets of a firm means cash money, short-term securities, inventory, bill receivable, note receivable, debtors etc. In operating daily business, fixed assets

are also needed in addition to current assets. Though some fixed assets help on the daily operation of a firm, these can't be termed as working capital, because these can't be converted into cash in the current accounting period. So, the assets which can be converted into raw material from cash—R/M—Finished Goods—B/R—Cash and helps in operating daily business of the firm, is called working Capital. Working capital is also called 'Trading Capital", Circulating capital/Short term capital / Short /Current Assets management.

Working capital is defined keeping in view the varying objectives and purposes. To businessmen, working capital comprises current assets of business whereas to the accountant/creditors/investment analysts working capital is understood as the difference of current assets and current liabilities. This is also called the Net Working Capital. There is operative aspects of working capital i.e. current assets (which is known as 'funds' also) employed in the business process from the gross working capital. Current assets comprise: cash, receivables, inventories, marketable securities held as short-term investment and other items near cash or equivalent to cash. This is also known as going-concern concept of working capital.

15.4 VARIOUS COMMITTEE REPORTS ON WORKING CAPITAL

The following committees were especially appointed for the purpose to administer the working capital:

(i) Dheja Committee Report 1969

(ii) Tandon Committee Report 1975

(iii) Chore Committee Report 1980

(iv) Marathe Committee Report 1984

The various committee report implications are the following:

15.5 Dheja Committee Report 1969

"The study carried out on the credit need of the industry and trade and how that needs inflated and such trends were checked" by the under the chairmanship of Dheja Committee.

Findings:

(i) General tendency was found among the firms to avail the bank credit more than their requirements.

(ii) Another tendency was among them that the short term credit was generally made use of by thee for the acquisition of the long term assets.

(iii) The lending through cash credit should be done on the basis of security in order to assess the financial position of the firm.

Recommendations:

(i) Appraisal should be done by the bankers on the present and future performance of the firms.

(ii) The total dealings are segmented into two categories viz core and short-term needs.

(iii) The committee suggested the firms to maintain only one account with the one banker For huge amount of borrowing, consortium was suggested among the bankers to lend the corporate borrowers.

15.6 TANDON COMMITTEE

The next committee was appointed Tandon Committee 1975, in an intention of granting loans and advances to the industry on the need basis through the study of the development proceeds only in order to improve the weaker section of the people.

Findings of the Committee:

(i) The bank should not reveal this much only to lent to the requirements of the firm in accordance with lending policy, in spite of that the banks were expected to lend to the tune of firm's requirement.

(ii) It should be treated as supplementary source of finance but not as major source of finance.

(iii) Loans were lent only in accordance on the basis of the securities produced by the borrower but not on basis of level of operations.

(iv) Security compliance wont provide any safety to the banks but the periodical follow

up only should facilitate the banker to get back the amount of loans and advances lent.

Recommendations:

It reached the land mark in studying the need of the industries towards the requirements of the working capital. The committee has submitted its report on 9th Aug , 1975 by studying the lending policies.

(i) Necessary information about the future operations are to be supplied

(ii) The supporting current assets should be shown to the banker at the moment of borrowing

(iii) The bank should understand that the bank credit is only for the purposes to meet out the needs of the borrower but not for any other.

15.7 CHORE COMMITTEE REPORT 1979

This committee especially constituted only for the purpose to study the sanctionable limits of the banker and the extent of the loan amount utilization of the borrower. The another purpose of the committee to appoint that to provide the alternate ways and means to afford credit facility to the industries to enhance the productive activities in the country.

(i) Continuance of the existing three system of credits by the banker viz cash credit, loans and bills.

(ii) No need to bifurcate the cash credit accounts of the borrower for the implementation of the differential rate of interest.

(iii) According to the specifications of the borrower, the banker should come to one conclusion which in normal peak level and non peak level of operations only to the tune of operations.

(iv) No frequent sanction of ad hoc limits of borrowing from the banker.

(v) The overdependence on the bank credit should be lessened among the practices of the industrialists through emphasizing the need of term finance.

15.8 MARATHE COMMITTEE REPORT 1984

The fourth committee is Marathe committee which was instituted by the Reserve

bank of India and it submitted the report on 1983. The recommendations were implemented by the Government of India from April 1,1984.

Recommendations:

(i) Reasonability of the projection statements are to be studied by the banks more carefully

(ii) Current assets and liabilities are to be classified in accordance with the norms issued by the Reserve bank of India

(iii) Maintenance of the current assets ratio 1.33:1

(iv) Timely supply the information stipulated by the bankers

(v) Apt supply of annual accounting information

Illustration:

ABC Ltd. decides to liberalise credit to increase its sales . The liberalized credit policy will bring additional sales of Rs. 3,00,000. The variable costs will be 60% of sales and there will be 10% risk for non-payment and 5% collection cost .Will the company benefit from the new credit policy ?

Particulars Rs

Additional sales volume 3,00,000

(-) Variable cost 1,80,000

Additional revenue 1,20,000

(-)Non payment risk 10% on additional sales volume 30,000

(-) 5% on collection 15,000

Additional revenue from increased sales due to liberal credit policy 75,000

The new credit policy pave way for the firm to earn Rs.75,000 as an additional revenue through the volume of incremental sales.

15.9 KANNAN COMMITTEE

In view of the ongoing liberalisation in the financial sector, the Indian Banks Association (IBA) constituted a committee headed by shri. K.Kannan, chairmanship

and managing director of bank of Baroda to examine all the aspects of working capital finance including assessment of maximum permissible bank finance (MPBF). The committee submitted its report on 25th February 1997. It recommended that the arithmetical rigidities imposed by Tandon committee (and reinforced by chore committee) in the form of MPBF computation so far in practice, should be scrapped. The committee further recommended that freedom to each bank should be given in regard to evolving its own system of working capital finance for a faster credit delivery so as to serve various borrowers more effectively. It also suggested that **line of credit system (LCS)**, as prevalent in many advanced countries, should replace the existing system of assessment/fixation of sub-limits within total working capital requirements. The committee proposed to shift emphasis from the liquidity level lending (security based lending) to the cash deficit lending called **desirable bank finance (DBF)**. Some of the recommendations of the committee have been already been accepted by the Reserve Bank of India with suitable modifications.

Recommendations:

The important measures adopted by RBI in this respect are given below:

1. Assessment of working capital finance based on the concept of MPBF, as recommended by Tandon committee, has been withdrawn. The bank have been given **full freedom** to evolve an appropriate system for assessing working capital needs of the borrowers within the guidelines and norms already prescribed by reserve bank of India.
2. The turnover method may continue to be used as a tool to assess the requirement of small borrowers. For small scale and tiny industries, this method of assessment has been extended upto total credit limits of Rs 2 crore as against existing limit of 1 crore.
3. Banks may now adopt cash budgeting system for assessing the working capital finance in respect of large borrowers.
4. The banks have also been allowed to retain the present method of MPBF with necessary modification or any other system as they deem fit.
5. Banks should lay down transparent policy and guidelines for credit dispensation in respect of each broad category of economic activity.

6. The RBI's instrument relating to directed credit, quantitative limits on lending and prohibitions of credit shall continue to be in force. The present reporting system to RBI under the Credit Monitoring Arrangement (CMA) shall also continue in force.

15.10 DAHEJIA STUDY GROUP

The National Credit Council constituted, in October 1968, a study Group under the Chairmanship of Shri V.T. Dahejia to examine the subjected of the extent to which credit needs of industry and trade are likely to be inflated and how such trends could be checked. Since the bulk of bank credit is short-term, the Group's enquiry was primarily concerned with the inflation of the short-term bank credit. The credit needs of industry or trade may be considered to be inflated or either of the two sectors may be regarded to have received credit in excess of its genuine requirements 1. If, over a period of years, the rise in short-term credit is found to be substantially higher than the growth in the value of industrial production; 2. If the rise in short-term credit in appreciably higher than the increase in inventories with industry or trade; 3. If there is a diversion of short-term bank borrowings of concerns in industry for building up of fixed assets or other non-current assets such as loans and investments; 4. If there is double or multiple financing of the same stock; 5. If the period of credit is unduly lengthened. The Group submitted its report in September, 1969.

Major Findings

The major findings of Dahejia study Groups are listed below:

1. Expansion of Bank Credit to Industry in Excess of Output

The Group found that the bank credit during the period from 1960–61 to 1966–67 expanded at a higher rate than the rise in industrial output. This finding was supported by the available data on inventories in relation to short-term bank credit. Between 1961–62 and 1966–67, the rise in the value of inventories with industry was 80% while the rise in short-term bank credit was as much as 130%. The ratio of short-term bank borrowings to inventories went up from 40% in 1961–62 to 52% in 1966–67. A similar analysis showed that some industries, particularly those in the traditional group, and several industrial units obtained

credit from banks over and above the rise in their production. The Group therefore came to the conclusion that in the absence of specific restraint, there was a tendency on the part of the industry generally to avail itself of short term credit from banks in excess of the amount based on the growth in production and/or inventories in value terms.

2. Fixing Credit Limits by Banks:

The basis on which banks fix credit limits has an important bearing on the size of bank credit in relation to the requirements of individual borrowers. For fixing credit limit bans generally took into account several features of the working of the loaned concerns, such as production, sales, inventory levels, past utilization etc. Theprevalent practices of banks in this regard were so varied that they were unlikely to Notes prevent the emergence of excess demand for credit from certain borrowers. By and large, the scheduled banks were inclined generally to relate their credit limits to the security offered by their constituents but many do not appear to make any attempt to assess the overall financial position of the borrowers through a cash flow analysis and in the light of this study fixed their credit limits.

3. Valuation of Stock and Margin Requirements:

Banks did not generally adopt a uniform method of valuation of stocks. The usual method, for indigenous goods was based on 'cost' or 'market value' whichever is lower and for imported goods on landed cost. Similarly, there was considerable divergence in practice as regards the prescription of margins by the banks. Some banks stipulated a lower margin or pledge advances against hypothecation of stocks, while a few others did not make this distinction. In the opinion of the Group, the varying practice could not be said to constitute an important factor in the emergence of excess credit.

4. Diversion of Short-term Credit to Acquisition of Long-term Assets

A study of 255 companies over the period from 1961–62 to 1966–67 showed a deterioration in their current ratio and the increase in short-term liabilities was utilized for financing the gap between long-term assets and long-term liabilities. One-fifth of the gross-fixed assets of these companies were

financed by expansion in short-term liabilities including the bank loans. The tendency on the part of a number of industrial units to utilize short-term bank credit and other current liabilities for acquisition of non-current assets was, in the Group, due to (a) generally sluggish condition in the capital market since 1962 (b) the limited nature of the appraisal of application for short-term loans as compared to medium term loans and (c) stipulation of repayment schedules for medium loans.

Lending System:

The Group considered that the lending system, as was prevalent in India banking, would have appeared greatly assisted prevalent in India banking, would have appear greatly assisted certain units in industry on increased reliance on short-term debt to finance their non-current investment. The working capital advances of banks were grated by way of cash credit limits which were only technically repayable on demand. The system was found convenient in view of the emphasis placed by banks on the security aspect. These short-term advances though secured by current assets were not necessarily utilized for short-term or self-liquidating in as much as although cash accruals arising from sales were adjusted in a cash credit account from time to time. The Group found that on a large number no credit balance emerged or debt balances fully wiped out over a period of years as the withdrawals were in excess of receipts. The possibility of heavy reliance on bank credit by industry arose mainly out of the way in which the system of cash credit-which accounted from about 70% of total bank credit, had been operated.

Suggestions

The Group was of the opinion that unless measures were taken to check the tendency for diversion of bank credit for acquiring long term assets, it might assume wider dimensions. The Group made following suggestions for a change in the lending system:

1. **Method of Appraisal of Credit Applications:** The appraisal of credit applications should be made with reference to the total financial situation, existing and projected, as shown by cash flow analysis and forecasts submitted by borrowers. This would help a diagnosis of the extent to which current liabilities of industrial units had bee put to non-current use and the manner in which liabilities and assets of borrowers were

likely to move over a period of time. Initially, advances of, say 50 lakh and over should be analyzed this way and then the system may gradually be extended to borrowers with advances of over 10 lakh

2. **Segregation of the Credit Market:** The out standings in the existing as well as further cash credit accounts should be distinguished as between (i) 'the hard core' which would represent the minimum level of raw materials, finished goods and stores which the industry was required to hold for maintaining given level of production and (ii) the strictly short-term component which would be the fluctuating part of the account. The latter part of the account would represent the requirements of funds for temporary purchases, e.g. short-term increases in inventories, tax, dividend and bonus payments etc., the borrowing being adjusted in a short period out of sales. In the case of financially sound companies, the Group was of the opinion to segregate the hard ore element in the cash credit borrowings and put on a formal term loan basis and subject to repayment schedule. But when the borrowers' financial position was not too good or the size of the hard core was so large that repayment could not be expected within 7/10 years, it would be difficult for the banks to continue to carry these liabilities over along period of time. The possible solutions the promoters and their friends, additional issue of equity or preference capital, a debenture issue with a long maturity. When the hard core was to be placed on a formal should contain covenants in regard to the end-use of the loan, maintenance of minimum financial ratios, repayment obligations restrictions on investments on shares and debentures. To determine the hard core element of the cash credit account, the Group considered that it would be worthwhile to attempt to study of industry-wise norms for minimum inventory levels.

3. **Double or Multiple Financing:** Double or multiple financing may result where credit facilities are granted against receivables either by way of documents against acceptance bills or drawing against book debts; the purchases is also in position to obtain bank credit by way of hypothecation/pledge of the stock which have not been paid for. For eliminating double or multiple financing, the Group suggested that a customer should generally be required to confine his dealings to one bank only. In case the credit requirements of borrowers were to be large and could not be met out of resources of one bank, the Group has recommended the

adoption of 'consortia' arrangement.

4. **Period of Trade Credit:** To prevent undue stretching of the period of trade credit and the typing up of resources of banks for unproductive purpose, the group suggested that the period of trade credit should not normally exceed 60 days and in special circumstance up to 90 days (excluding sales of capital equipment on deferred payment term). The undue delay in the settlement of bills by governments could be discouraged by stipulating that the latter should pay interest on bills if they were not paid within 90 days after their receipt.

5. **Commitment Charges on Unutilised Limits:** As a complementary measure to check the extension of extra credit, the group suggested that a levy of commitment charge on unutilized limited coupled with, if necessary, a minimum interest charge could be considered. The commitment levy might be progressively raised with the size of the unutilized limits. As the initial stages, limits sanctioned upon ' 10 lakh might be exempted from the point of view of administrative convenience.

6. **Need for Greater Recourse to Bill Finance:** The Study Group emphasized the need for greater recourse to bill finance. The Group recommended that commercial banks, industry and trade should try, where feasible and administratively convenient, to initiate and develop the practice of issuing usance bills as this would not only impose financial discipline, on the purchaser out also help supplier or producer to plan his financial commitments in a realistic manner. An adequate growth in the volume of usance bills would also facilitate the development of a genuine bill market in India. With a view to encouraging the development of such Group to the government. The Group believed that the loss in revenue following a reduction in stamp duty would be more than made good by the resultant larger volume of usance bills.

7. **Inventory Control:** With regard to inventory control, the Group considered that as an Notes integral part of restraining the demand for bank credit by industry, adequate attention should be paid to the question of adequacy or otherwise of stocks of inventories held by various industries and the scope for minimizing the stocks needed by industry.

8. **Implications:** Financial discipline implicit in Dehejia Study Group was intended to help the corporate and other borrowers in formulating financial plans, regulating production on a more rational basis and economizing the demand for bank credit as regards banks. A periodical release of the part of the resources otherwise locked up in 'roll over' cash credit/overdraft to industry would enable them to meet to these extent further demands of priority sectors of the economy and to diversify their loan transactions. This, in turn, would increase the scope for mobilization of deposits. Commercial banks would thus be able to play a more effective role in serving the community and the ends of social justice.

15.11 RECOMMENDATIONS OF TANDON COMMITTEE

The Reserve Bank of India constituted Study Group to frame guidelines for follow up of bank credit in July 1974 under the Chairmanship of Shri Prakash Tandon. The terms of reference of the Group were:

1. To suggest guidelines for commercial bank to follow-up and supervise credit from the point of view of ensuring proper end-use of funds and keeping a watch on the safety of the advances and to suggest the type of operational data and other information that may be obtained by banks periodically from such borrowers and by the Reserve Bank of India from the leading banks.
2. To make recommendations for obtaining periodical forecasts from borrowers of (a) business/production plants, (b) credit needs.
3. To make suggestions for prescribing inventory norms for different industries both in the private and public sectors and indicate the broad criteria for deviating from these norms.
4. To suggest criteria regarding satisfactory capital structure and sound financial basis in relation to borrowings.
5. To make recommendations regarding the sources for financing the minimum working capital requirements.

6. To make recommendations as to whether the existing pattern of financing working capital requirements by cash credit/overdraft system etc. requires to be modified, if so, to suggest suitable modifications.

7. To make recommendations on any other related matter as the Group may consider germane to the subject of enquiry or any other allied matter which may be specifically referred to it by the Reserve Bank of India.

15.12 PROBLEMS IN IMPLEMENTING TANDON COMMITTEE REPORT

The Reserve Bank of India in its notification dated August 21, 1975 considered some of the main recommendations of the Group and advised the banks accordingly. The scheme was required to be implemented at the micro-level where advances were made to the borrowers. But a thorough understanding of the scheme required knowledge about the analysis of financial statements and credit appraisal by the officers at branch level. This knowledge was slowly spreading and till the officers at the grass root level were equipped with the basic knowledge of credit appraisal, the implementation was bound to be quite slow. Another problem was that of gearing the attitudes of the bank men to this new scheme being something new as being not in the routine nature of credit appraisal, it was difficult task to kindle the interest of the staff to study the Tandon Scheme for enforcing it in the case of big industrial customers. In addition, the new scheme also called for in-depth knowledge about each industry and various units in each industry so that the norms could be realistically applied in each case to determine the level of current assets, working capital gap and the style of credit.

It's not only the bankers but also the customers were required to be trained in understanding the implications of the norms and the quarterly information system, an innovation brought in by the Tandon committee. No doubt the big parties had the qualified staff to give the data in forms prescribed on quarterly basis, but these forms were not forthcoming in time. If they were submitted each time after the current quarter or even much later upon reminder, the very purpose of calling for quarterly data were to be defeated as in that event follow-up supervision and control were difficult or not possible. In the case of some of the big parties, it had been found that they were run like family concerns on partnership

or proprietary basis and they did not maintain proper books of accounts. Such parties were likely to plead inability to furnish the data as per the Tandon form. To make matter worse or difficult for banks, they maintained account in regional language too. Even if the forms were coming with lot of persuasion and understanding form the borrowers it was difficult to convince them in individual cases to abide by the norms for carrying current assets if they were already above the norms. No doubt, ultimately it was the banker's judgment that should prevail in credit decisions after a dialogue with the parties, but in superimposing such decisions over the customers' judgment, there was likely to be misunderstanding or clash sort of thing with the borrowers. It was quite possible that aggrieved borrowers getting lesser limit might perhaps consider higher limits. Another problem which was no less important could be about the manipulation in the figures of "other current assets", "other current liabilities", etc. as the permissible bank finance was based on figure work only. Further it was felt that the calculation of excess finance poses a realistic problem because while the working capital gap was computed on the basis of the projected net current assets, the figures of liability were the existing ones and not the projected levels. For growing higher levels of current assets, the Committee provided exceptions where under higher holdings might be permitted. It was feared that each party might argue to be brought within the exceptions to circumvent the rigors of the norms.

However, in order to improve the operational efficiency and to develop and better understanding of the new lending system of banks, if all the banks are serious in implementing the Tandon Scheme and if they are able to get the cooperation from their customers, the problem areas are nothing and can be ignored. On the other hand, if unwarranted concessions and deviations are shown by banks against the ethics of the implementation of the scheme as a whole, the very philosophy of the Tandon Scheme will be defeated and it will create a situation in which the scrupulous banks will regret for going the Tandon way.

15.13 RECOMMENDATIONS OF CHORE COMMITTEE

While reviewing the monetary and credit trends in March 1979, the Governor of the Reserve Bank of India stressed the need for exercising continued restraint on expansion of credit. He also indicated in his meeting with bankers the need for considering certain

long-term issues relating to baking operations. In his letter dated 16th March, 1979 to all scheduled commercial banks, he indicated: "I would like to initiate action on certain structural matters which need further examination. It is necessary to take a fresh look at another major problem faced by banks in implementing the credit regulatory measures, viz., the extensive use of the cash credit system. Its drawbacks have been pointed out by the various Committees in the past including the Tandon Committee, which suggested the bifurcation of credit limits into a demand loan and a fluctuating cash credit component. Although the banks were advised to implement this recommendation, I am afraid; the progress achieved has been very slow. Clearly, this problem needs to be looked into further and for this purpose I purposes to set up immediately a small Working Group, to report to me….. on the reforms to be introduced"

It was in this context that the Reserve Bank of India appointed the Working Group under the Notes Chairmanship of Shri K.B. Chore to review the system of credit in all aspects. The term of reference of the Working Group was as follows: 1. To review the operation of the cash credit system with reference to the gap between sanctioned credit limits and the extent of their utilization; 2. In the light of the review, to suggest: (a) Modification in the system with a view to making the system more amenable to rational management of funds by commercial banks, and/or (b) Alternative types of credit facilities, which would ensure greater credit discipline and also enable banks to relate credit limits to increase in output or other productive activities; and 3. To make recommendations and any other related matter as the Group may germane to the subject.

15.14 RECOMMENDATIONS OF MARATHE COMMITTEE

The Reserve Bank of India, in 1982, appointed a committee under the chairmanship of Marathe to review the working of Credit Authorisation Scheme (CAS) and suggest measures for giving meaningful directions to the credit management function of the Reserve Bank. The recommendations of the committee have been accepted by the Reserve Bank of India with minor modifications. The principal recommendations of the Marathe Committee include:

1. The committee has declared the Third Method of Lending as suggested by the Tandon Committee to be dropped. Hence, in future, the banks would provide credit for working capital according to the Second Method of Lending.

2. The committee has suggested the introduction of the 'Fast Track Scheme' to improve the quality of credit appraisal in banks. It recommended that commercial banks can release without prior approval of the Reserve Bank 50% of the additional credit required by the borrowers (75% in case of export oriented manufacturing units) where the following requirements are fulfilled:

(a) The estimates/projections in regard to production, sales, chargeable current assets, other current assets, current liabilities other than bank borrowings, and net working capital are reasonable in terms of the past trends and assumptions regarding most likely trends during the future projected period.

(b) The classification of assets and liabilities as 'current' and 'non-current' is in conformity with the guidelines issued by the Reserve Bank of India.

(i) The projected current ratio is not below 1.33: 1.

(ii) The borrower has been submitting quarterly information and operating statements (Form I, II and III) for the past six months within the prescribed time and undertakes to do the same in future also. Public Deposits: Business firms borrow directly from public in the nature of unsecured deposits. Banks accept public deposits or term deposits. It is very popular for medium term finance, when there is no availability of finance from banks. Public deposits as a source of finance have a benefit like simple and convenient tax benefit, trading on equity, no security etc. NBFCs cannot borrow by issue of public deposits more than 25 per cent of its paid up capital and free reserve. Loan from Financial Institutions: Financial institutions such as Commercial Banks, Life Insurance Corporation of India (LIC), General Insurance Corporation (GIC), Unit Trust of India (UTI), State Financial Corporations (SFCs), Industrial Development Bank of India (IDBI), etc., provide shortterm medium term and long-term loans. It is most suitable for financing medium-term demand of working capital. There will be a fixed rate of interest charge that is changed to profit and loss account and can get tax benefit.

15.15 RECOMMENDATIONS OF KANNAN COMMITTEE

A committee constituted by the Indian Banks' Association to examine the relevance of the concept of Maximum Permissible Bank Finance (MPBF) as a

method of assessing the requirements of bank credit for working capital, and to suggest alternative methods. The committee was headed by K. Kannan, Chairman, Bank of Baroda and its report submitted in 1997, includes the following recommendations:

1. The MPBF prescription is not to be enforced and banks may use their discretion to determine the credit limits of corporates.
2. The Credit Monitoring Arrangement and QIS may cease to be regulatory requirements.
3. The financing bank may use its discretion to determine the level of stocks and receivables as security for working capital assistance.
4. The mechanism for verifying the end-use of bank credit should be strengthened.
5. A credit Information Bureau may be floated independently by banks. Since April 1997, banks have been given the freedom to assess working capital requirement within prudential guidelines and exposure norms. Banks may evolve their methods to assess the working capital needs of borrowers – the Turnover Method or the Cash Budget Method or the MPBF System with necessary modifications or any other system.

15.16 RECENT GUIDELINES ON WORKING CAPITAL FINANCE

The Reserve Bank of India's decision to tighten rules for working capital facilities offered by banks could mean tougher days for Indian corporates. Banks will be more judicious in sanctioning working capital limits to firms and would most likely provide these facilities at a higher cost. That's according to bankers and analysts who spoke to BloombergQuint. The change in the landscape for working capital facilities stems from guidelines released by the Reserve Bank of India on Wednesday. According to these guidelines: Borrowers with a working capital limit of Rs 150 crore and above will need avail of the first 40 percent of their limit in the form of a "working capital demand loan". This provision comes into effect from April 1, 2019. From July 1, the loan component will go upto 60%.

Additionally, banks will need to set aside capital for the unused portion of a working capital facility. The rules are intended to enhance credit discipline among the larger borrowers enjoying working capital facility from the banking system, said the RBI in its circular.

How Will The Loan Component Work? Until now, a firm which held a certain cash credit limit with a bank would withdraw money from that account whenever they wanted and repay it whenever they wanted. A rate of interest agreed upon between the lender and the borrower would be charged accordingly.

Cash credit is the most popular form of working capital and essentially functions like an overdraft account. While having the ability to avail of this cash credit whenever the need arose was useful for firms, it created some volatility in liquidity management for banks, explained a senior banker.

Borrowers often enjoy substantial (working capital) limits but hardly use them, said PK Gupta, managing director of the State Bank of India. However, banks intermittently see a surge in working capital demand, making it hard to manage liquidity.

Under the new rules, if 'Company A' wanted to avail of its working capital limit, it will need to take the first 40 percent of this limit as a working capital demand loan. The tenure of this loan can be between 7 days to 1 year. What this does it give the bank some certainty on when a firm would avail of the funds and when they would be repaid.

While the new rules help banks, they put the onus on firms to manage their cash needs better. Cash credit is usually extended for one year but is currently used a perpetual instrument by rolling it over. Having to treat the borrowing as a loan will require borrowers to plan cash flow better.In particular, the move may be onerous for borrowers with weaker cash flows, added Soumyajit Niyogi, associate director at India Ratings. "Cash management will have to become more sophisticated, especially if they belong to industries such as engineering, procurement, and construction, which have more volatile cash flow cycles.

Lower, Costlier Cash Credit Limits? The new rules could also mean lower cash credit limits which come with a cost attached. Until now, corporations, particularly large firms which have banking relationships with a certain lender, would get access to generous cash credit limits. Since banks had to set aside no capital against these sanctioned, but often unused limits, there was no reluctance on tthe part of lenders to give these limits out. This changes now with the RBI attaching a "risk weight" to the unused limits.

Banks will now work with customers to get a clearer fix on the extent of working capital limits required by the firm, explained Brijesh Mehra, who heads corporate banking at RBL Bank. Earlier banks were willing to give firms a large buffer via cash credit but lenders may now be willing to sanction just a little more than what they think is the genuine need, Mehra said. He added that this will alsoensure better end-use of funds. The cash credit limits may also come with a cost attached.

15.17 SUMMARY

Working capital is a means to run the business smoothly and profitably, and not an end. Thus, concept of working capital is a means to run importance in a going concern. A going concern, usually, has a positive balance of working capital as its own excess of current assets over current liabilities, but sometimes the uses of working capital may be more than the sources resulting into a negative value of working capital. This negative balance is generally offset soon by gains in the following periods. A study of changes in the uses and sources of working capital is necessary to evaluate the efficiency with which the working capital is employed in a business. This involves the need of working capital analysis. The norms of working capital finance followed by bank since mid-70's were mainly based on the recommendations of the Tandon Committee. The Chore Committee made further recommendations to strengthen the procedures and norms for working capital finance by banks. In the deregulated economic environment in India recently, banks have considerably relaxed their criteria of lending. In fact, each bank can develop its own criteria for the working capital finance.

5.18 GLOSSARY

- **Aggressive Approach**: The aggressive approach suggests that the entire estimated requirements of currents asset should be financed from short-term sources and even apart of fixed assets investments be financed from short-term sources.
- **Conservative Approach:** This approach suggests that the entire estimated investments in current assets should be financed from long-term sources and the short-term sources should be used only for emergency requirements.
- **Funds flow analysis:** A technical device designated to study the sources from which additional funds were derived and the use to which these sources were put.

- **Hedging:** The term 'hedging' usually refers to two off-selling transactions of a simultaneous but opposite nature which counterbalance the effect of each other.
- **Letter of credit:** A letter of credit popularly known as L/C is an undertaking by a bank to honour the obligations of its customer up to a specified amount.

5.19 SELF ASSESSMENT QUESTIONS

1. Critically evaluate the recommendations of Kannan Committee on cash management.

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2. Do you think that discount houses as suggested by Chore Committee have any significance in Indian parlance? Justify your answer with well grounded reasons.

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3. Examine the significance of the recommendations made by Tandon Committee on cash management.

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4. Why do you agree/disagree by the third method of lending as suggested by the Tandon Committee to be dropped?

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15.20 LESSON END EXERCISE

Q.1 Critically evaluate the recommendations of Chore Committee.

Q.2 Put light on the recent guidelines on workling capital finance.

15.21 SUGGESTED READINGS

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Semester-IV **Lesson No. 16**

Course No. FE-414 **Unit - IV**

FINANCIAL STRATEGY FORMULATION, ETHICS IN FINANCE, STRATEGIC BUSINESS AND FINANCIAL PLANNING FOR MULTINATIONAL ORGANISATIONS

STRUCTURE

16.1 INTRODUCTION

Financial strategy of an organisation is essentially concerned with procurement and utilization of funds. The basic purpose is to ensure adequate and regular supply of funds fulfilling the present and future requirements of the business enterprise. Financial strategy deals with areas such as financial resources, analysis of cost structure, estimating profit potential, accounting functions and so on. In short, financial strategy deals with the availability of sources, usages, and management of funds. It focuses on the alignment of financial management with the corporate and business objectives of an organisation to gain strategic advantage.

16.2 OBJECTIVES

After reading this lesson, you should be able to:

- Explain Financial Startegy;
- Ethics in finance;
- Strategic business; and
- Financial planning.

16.3 MEANING OF FINANCIAL STRATEGY

Financial strategy aims to maximize the financial value of a firm. Financial strategy can provide competitive advantage through low costs funds. In any financial strategy, achieving the desirable debt equity ratio by borrowing for long term financial needs and generating cash flow internally is a crucial issue. Studies point out that high debt levels lead to improved productivity and improved cash flows. Studies also point out that diversification strategy mainly influences the financial strategy. Equity financing is much preferred for related diversification whereas debt financing is preferred for unrelated diversification.

According to Thomas Wheelen and David Hunger, "Financial strategy examines the financial implications of corporate and business-level strategic options and identifies the best financial course of action. It can also provide competitive advantage through a lower cost of funds and a flexible ability to raise capital to support a business strategy. Financial strategy usually attempts to maximize the financial value of a firm."

16.4 FORMULATION OF FINANCE STRATEGY

Strategic Financial Management (SFM) SFM is concerned with development of a finance strategy by identification of some key strategic alternatives which are capable of maximizing entity's Net Present Value (NPV) and by allocation of scarce capital resources among the competing opportunities. It is concerned with taking these three key financial decisions:

Investment decision

It is the first and foremost important component of financial strategy. In the course of business, the available finance with business is usually limited but the opportunities to invest are plenty. Hence the finance manager is required to access the profitability or return of various individual investment decisions and choose a policy which ensures high liquidity, profitably of an organization. It includes short term investment decisions known as working capital management decisions and long term investment decisions known as capital budgeting decisions.

Capital Budgeting:- It is the process of making investment decisions in capital expenditure, benefits of which are expected over a long period of time exceeding one year. Investment decision should be evaluated in the terms of expected profitability, costs involved and the risks associated. This decision is important for setting new units, expansion of present units, reallocation of funds etc.

Short Term Investment Decision:- It relates to allocation of funds among cash and equivalents, receivables and inventories. Such decision is influenced by trade-off between liquidity and profitability. Proper working capital management policy ensures higher profitability, proper liquidity and sound structural health of the organization.

Financing Decision

Once the requirement of funds has been estimated, the next important step is to determine the sources of finance. The manager should try to maintain a balance between debt and equity so as to ensure minimized risk and maximum profitability to business. dividend decision.

Dividend Decision

The third and last function of finance includes dividend decisions. Dividend

is that part of profit, which is distributed to shareholders as a reward to high risk investment in business. It is basically concerned with deciding as to how much part of profit will be retained for the future investments and how much part of profit will be distributed among shareholders. High rate of dividend ensures higher wealth of shareholders and also increase market price of shares.

16.5 ETHICS IN FINANCE

Ethics in general is concerned with human behavior that is acceptable or "right" and that is not acceptable or "wrong" based on conventional morality. General ethical norms encompass truthfulness, honesty, integrity, respect for others, fairness, and justice. They relate to all aspects of life, including business and finance. Financial ethics is, therefore, a subset of general ethics.

Ethical norms are essential for maintaining stability and harmony in social life, where people interact with one another. Recognition of others' needs and aspirations, fairness, and cooperative efforts to deal with common issues are, for example, aspects of social behavior that contribute to social stability. In the process of social evolution, we have developed not only an instinct to care for ourselves but also a conscience to care for others. There may arise situations in which the need to care for ourselves runs into conflict with the need to care for others. In such situations, ethical norms are needed to guide our behavior. As Demsey (1999) puts it: "Ethics represents the attempt to resolve the conflict between selfishness and selflessness; between our material needs and our conscience."

Ethical dilemmas and ethical violations in finance can be attributed to an inconsistency in the conceptual framework of modern financial-economic theory and the widespread use of a principal-agent model of relationship in financial transactions. The financial-economic theory that underlies the modern capitalist system is based on the rational-maximizer paradigm, which holds that individuals are self-seeking (egoistic) and that they behave rationally when they seek to maximize their own interests. The principal-agent model of relationships refers to an arrangement whereby one party, acting as an agent for another, carries out certain functions on behalf of that other. Such arrangements are an integral part of the modern economic and financial system, and it is difficult to imagine it functioning without them.

The behavioral assumption of the modern financial-economic theory runs

counter to the ideas of trustworthiness, loyalty, fidelity, stewardship, and concern for others that underlie the traditional principal-agent relationship. The traditional concept of agency is based on moral values. However, if human beings are rational maximizers, then agency on behalf of others in the traditional sense is impossible. As Duska (1992) explains it: "To do something for another in a system geared to maximize self-interest is foolish. Such an answer, though, points out an inconsistency at the heart of the system, for a system that has rules requiring agents to look out for others while encouraging individuals to look out only for themselves, destroys the practice of looking out for others" (p. 61).

The ethical dilemma presented by the problem of conflicting interests has been addressed in some areas of finance, such as corporate governance, by converting the agency relationship into a purely contractual relationship that uses a carrot-and-stick approach to ensure ethical behavior by agents. In corporate governance, the problem of conflict between management (agent) and stockholders (principal) is described as an agency problem. Economists have developed an agency theory to deal with this problem. The agency theory assumes that both the agent and the principal are self-interested and aim to maximize their gain in their relationship. A simple example would be the case of a store manager acting as an agent for the owner of the store. The store manager wants as much pay as possible for as little work as possible, and the store owner wants as much work from the manager for as little pay as possible. This theory is value-free because it does not pass judgment on whether the maximization behavior is good or bad and is not concerned with what a just pay for the manager might be. It drops the ideas of honesty and loyalty from the agency relationship because of their incompatibility with the fundamental assumption of rational maximization. "The job of agency theory is to help devise techniques for describing the conflict inherent in the principal-agent relationship and controlling the situations so that the agent, acting from self-interest, does as little harm as possible to the principal's interest" (DeGeorge, 1992). The agency theory turns the traditional concept of agency relationship into a structured (contractual) relationship in which the principal can influence the actions of agents through incentives, motivations, and punishment schemes. The principal essentially uses monetary rewards, punishments, and the agency laws to command loyalty from the agent.

Most of our needs for financial services—management of retirement savings, stock and bond investing, and protection against unforeseen events, to name a few—are such that they are better entrusted to others because we have neither the ability nor the time to carry them out effectively. The corporate device of contractualization of the agency relationship is, however, too difficult to apply to the multitude of financial dealings between individuals and institutions that take place in the financial market every day. Individuals are not as well organized as stockholders, and they are often unaware of the agency problem. Lack of information also limits their ability to monitor an agent's behavior. Therefore, what we have in our complex modern economic system is a paradoxical situation: the ever-increasing need for getting things done by others on the one hand, and the description of human nature that emphasizes selfish behavior on the other. This paradoxical situation, or the inconsistency in the foundation of the modern capitalist system, can explain most of the ethical problems and declining morality in the modern business and finance arena.

Ethical Violations

The most frequently occurring ethical violations in finance relate to insider trading, stakeholder interest versus stockholder interest, investment management, and campaign financing. Businesses in general and financial markets in particular are replete with examples of violations of trust and loyalty in both public and private dealings. Fraudulent financial dealings, influence peddling and corruption in governments, brokers not maintaining proper records of customer trading, cheating customers of their trading profits, unauthorized transactions, insider trading, misuse of customer funds for personal gain, mis-pricing customer trades, and corruption and larceny in banking have become common occurrences.

16.6 STRATEGIC BUSINESS

Business strategy can be understood as the course of action or set of decisions which assist the entrepreneurs in achieving specific business objectives.

It is nothing but a master plan that the management of a company implements to secure a competitive position in the market, carry on its operations, please customers and achieve the desired ends of the business.

In business, it is the long-range sketch of the desired image, direction and destination of the organisation. It is a scheme of corporate intent and action, which is carefully planned and flexibly designed with the purpose of:

- Achieving effectiveness,
- Perceiving and utilising opportunities,
- Mobilising resources,
- Securing an advantageous position,
- Meeting challenges and threats,
- Directing efforts and behaviour and
- Gaining command over the situation.

A business strategy is a **set of competitive moves and actions** that a business uses to attract customers, compete successfully, strengthening performance, and achieve organisational goals. It outlines **how business should be carried out to reach the desired ends**.Business strategy equips the top management with an integrated framework, to discover, analyse and exploit beneficial opportunities, to sense and meet potential threats, to make optimum use of resources and strengths, to counterbalance weakness.

Levels of Business Strategy

CORPORATE LEVEL
BUSINESS LEVEL
FUNCTIONAL LEVEL

1. **Corporate level strategy**: Corporate level strategy is a long-range, action-oriented, integrated and comprehensive plan **formulated by the top management**. It is used to ascertain business lines, expansion and growth, takeovers and mergers, diversification, integration, new areas for investment and divestment and so forth.
2. **Business level strategy**: The strategies that relate to a particular business are known as business-level strategies. It is **developed by the general managers**,

who convert mission and vision into concrete strategies. It is like a blueprint of the entire business.

3. **Functional level strategy**: **Developed by the first-line managers or supervisors**, functional level strategy involves decision making at the operational level concerning particular functional areas like marketing, production, human resource, research and development, finance and so on.

In business, there is always a need for multiple strategies at various levels as a single strategy is not only inadequate but improper too. Therefore, a typical business structure always possesses three levels.

16.7 FINANCIAL PLANNING FOR MULTI NATIONAL ORGANISATIONS

Like any finance function, international finance, the finance function of a multinational firm has two functions namely, treasury and control. The treasurer is responsible for financial planning analysis, fund acquisition, investment financing, cash management, investment decision and risk management. On the other hand, controller deals with the functions related to external reporting, tax planning and management, management information system, financial and management accounting, budget planning and control, and accounts receivables etc. For maximising the returns from investment and to minimise the cost of finance, the firms has to take portfolio decision based on analytical skills required for this purpose. Since the firm has to raise funds from different financial markets of the world, which needs to actively exploit market imperfections and the firm's superior forecasting ability to generate purely financial gains. The complex nature of managing international finance is due to the fact that a wide variety of financial instruments, products, funding options and investment vehicles are available for both reactive and proactive management of corporate finance. Multinational finance is multidisciplinary in nature, while an understanding of economic theories and principles is necessary to estimate and model financial decisions, financial accounting and management accounting help in decision making in financial management at multinational level. Because of changing nature of environment at international level, the knowledge of latest changes in forex rates, volatility in capital market, interest rate fluctuations, macro level charges, micro level economic indicators, savings, consumption pattern, interest preference, investment behaviour of investors, export and import trends, competition, banking

sector performance, inflationary trends, demand and supply conditions etc. is required by the practitioners of international financial management.

16.8 SUMMARY

Financial strategy aims to maximize the financial value of a firm. Financial strategy can provide competitive advantage through low costs funds. In any financial strategy, achieving the desirable debt equity ratio by borrowing for long term financial needs and generating cash flow internally is a crucial issue. Studies point out that high debt levels lead to improved productivity and improved cash flows. Studies also point out that diversification strategy mainly influences the financial strategy. Equity financing is much preferred for related diversification whereas debt financing is preferred for unrelated diversification.

Next dimension of financial strategy is the leveraged buyout. In a leveraged buyout, a company is acquired in a transaction, which is mainly financed by funds arranged from a third party such as a bank or financial institution. The main problems with leveraged buyout are too much expectations, management burn out, utilization of slack and lack of strategic management and decline of the firm.

16.9 GLOSSARY

- **Ethics :** is concerned with human behavior that is acceptable or "right" and that is not acceptable or "wrong" based on conventional morality.
- **Financial strategy :** is concerned with procurement and utilization of funds.
- **Business strategy :** course of action or set of decisions which assist the entrepreneurs in achieving specific business objectives.

16.10 SELF ASSESSMENT QUESTIONS

1. Explain in detail the formulation of financial strategy.

2. Explain in detail the ethics in finance.

3. Explain financial planning for multi national organisations.

16.11 LESSON END EXERCISE

Q.1 What are the ethical issues in financial management?

Q.2 Discuss the potential strategic financial objectives that an entity may have.

16.12 SUGGESTED READINGS

- K. John and T.A. John, "Private Corporate Funding," The New Palgrave Dictionary of Money and Finance, McMillian Press Reference Books, October 1992.

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Semester-IV **Lesson No. 17**

Course No. FE-414 **Unit - IV**

DIVIDEND POLICY IN MULTINATIONAL ORGANISATION

STRUCTURE

17.1 INTRODUCTION

Among the four functions of finance, allocation of profit (cash flows) is very important function.. Since an MNC operates in an environment which is global and integrated, it is quite difficult to decide the dividend distribution to its

shareholders (which are spread in different parts of the globe). An MNC raises finance (funds) from outside (abroad) either by way of foreign direct investment (FDI) or purchasing securities from the financial markets of different countries. The funding is done through bonds which have fixed maturity period or equities which have no fixed maturity period. The liabilities arising out of holding these securities have to be paid to the investors. Since different countries have different tax structures and exchange rates, the dividend decision of an MNC is affected by the rates of exchange, interest rates and volatility in the same. An investor wants to have required return on investment i.e. dividend yield and capital appreciation. The dividend yield is the dividend provided by the MNC to its shareholders and the capital appreciation is the enhancement value due to change in market value of the securities held by the investors. Both components of return are influenced by various macro economic factors like exchange rate, tax rates and interest on borrowings and lending etc. The ultimate objective of the firm is to maximise the wealth (value) of the firm.

17.2 OBJECTIVES

After reading this lesson, you should be able to:

- understand dividend distribution decisions of multinational firms; and
- elaborate determinants and their impact on dividend decisions of the firm working in multinational settings/environment.

17.3 DETERMINANTS OF DIVIDEND BY MNC

International dividend policy is influenced by tax considerations, political risk, and foreign exchange risk, as well as a return for business guidance and technology.

- **Tax implications**: Host-country tax laws influence the dividend decision. Countries such as Germany tax retained earnings at one rate while taxing distributed earnings at a lower rate. Most countries levy withholding taxes on dividends paid to foreign parent firms and investors. Again, most (but not all) parent countries levy a tax on foreign dividends received but allow a 'tax credit' for foreign taxes already paid on that income stream.

- **Political risk**: Political risk may motivate parent firms to require foreign affiliates to remit all locally generated funds in excess of stipulated working capital requirements and planned capital expansions. Such policies, however, are not universal. To enhance the financial self-reliance Lincoln Brazil, assuming Brazil is perceived to be politically risky, Lincoln U.S. might not require dividend remittances. In many cases neither extreme is followed. Instead, managerial response to potential government restrictions may be to maintain a constant dividend payout ratio so as to demonstrate that an established policy is being consistently carried out. In the context of Lincoln Brazil, the Brazilian government is more likely to accept the idea of regular dividend payments because they provide a framework based on precedent against which to judge whether a particular dividend is 'normal' or an attempt to transfer liquid funds out of Brazil's currency, to the detriment of Brazil's foreign exchange reserves.
- **Foreign Exchange Risk**: If a foreign exchange loss is anticipated, Lincoln may speed up the transfer of funds from Brazil through dividends. This 'lead' is usually part of a larger strategy of moving from weak currencies to strong currencies and can include speeding up intra-firm payments on accounts receivable and payable. However, decisions to accelerate dividend payments ahead of what might be normal must take into account interest rate differences and the negative impact on host country relations.
- **Age and size of affiliates**: Among other factors that influence dividend policy are the age and size of the foreign affiliate. Older affiliates often provide a greater share of their earnings to their parent, presumably because as the affiliate matures it has fewer reinvestment opportunities.
- **Availability of funds**: Dividends are a cash payment to owners equal to all or a portion of earnings of a prior period. To pay dividends, an affiliate needs both past earnings and available cash. Affiliates sometimes have earnings without cash, because earnings are measured at the time of a sale but cash is received later when the receivable is collected. Profits of rapidly growing affiliates are often tied up in ever-increasing receivables and inventory. Hence,

rapidly growing foreign affiliates may lack the cash to remit a dividend equal to even a portion of earnings.

The reverse may also be true; firms may be receiving cash from the collection of old receivables even when profits are down because current sales have fallen off or current expenses have risen relative to current sales prices. Such firms might want to declare a dividend in order to remove a bountiful supply of cash from a country but lack the earnings against which to charge such payments.

In either of these cases a firm must look at both measured earnings and available cash before settling upon a cash dividend policy. Payment of cash dividends, then, can be considered only in the context of a firm's entire cash budget.

- **Joint venture factors**: Existence of joint-venture partners or local stockholders also influences dividend policy. Optimal positioning of funds internationally cannot dominate the valid claims of independent partners or local stockholders for dividends. The latter do not benefit from the world success of the multinational parent, but only from the success of the particular affiliate in which they own a minority share. Firms might hesitate to reduce dividends when earnings falter. They also might hesitate to increase dividends following a spurt in earnings because of possible adverse reaction to reducing dividends later should earnings decline. Lincoln's affiliates are all 100% owned, so neither Lincoln U.S. nor Lincoln U.K., both of whom own foreign affiliates, is constrained by the wishes of outside shareholders. Many MNEs insist on 100% ownership of affiliates in order to avoid possible conflicts of interest with outside shareholders.

An MNC takes into consideration the following aspects while declaring and distributing dividends.

1. Tax effects
2. Financial statement effects
3. Exchange rate volatility
4. Currency controls

5. Financing requirement availability and cost of funds and the parent company's dividend payout ratio.

The payout ratio of the parent company plays a crucial role in deciding the dividend policy of the MNC. The policy is based on two perspectives.

1. Some firms require same payout ratio (% age) as that of the parent company.
2. Others target payout ratio as a percentage of total overall foreign earnings without receiving the same amount from each subsidiary.

The consequence of first is that if parent company pays 60% of their earnings then foreign operations must contribute at least 60% to meet the target.

Following considerations are required to decide dividend policy of the firm:

(a) Effective tax rates on payments from different subsidiaries. By varying payment ratio among its foreign subsidiaries it can reduce the total tax burden. Once the firm decides to remit dividends to its parent company, it can reduce the tax bill by withdrawing funds from high tax location to low tax location through transfer pricing or in other forms of withdraws.

(b) In addition to the tax considerations, the parent company has also to take into account the fact that dividend withdrawls also shift the liquidity. The value of moving these funds depend upon different opportunity costs of money among various subsidiaries. A subsidiary desirous of borrowing funds in future will have greater opportunity cost than a subsidiary having excess liquidity. Some subsidiaries may have access to low cost funding source, while the others may have no resource.

(c) Sometimes nations impose restrictions on repatriation to control balance of payment problems. Hence exchange control play major role in deciding dividend policy of the MNC firm.

(d) If on MNC joins hands with a local partner, then due to differing interest of both parties, dividend is to be adjusted.

17.4 DIVIDEND POLICY IN MULTINATIONAL CORPORATIONS

When deciding how much cash to distribute to shareholders, company directors must keep in mind that the firm's objective is to maximise shareholder value.

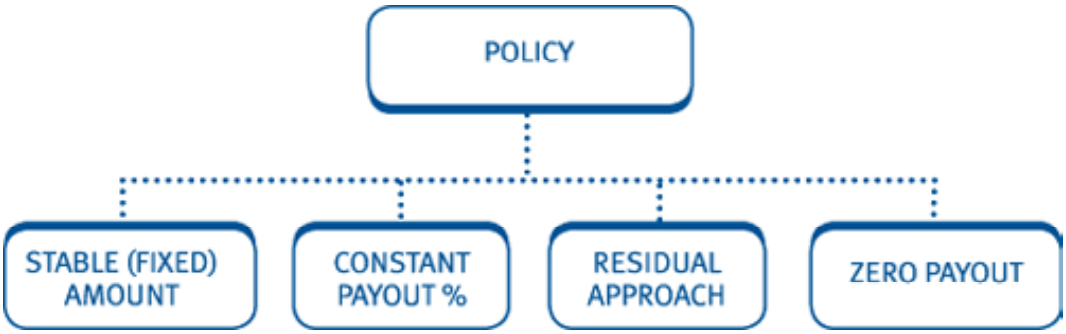
The dividend payout policy should be based on investor preferences for cash dividends now or capital gains in future from enhanced share value resultant from re-investment into projects with a positive NPV.

Many types of multinational company shareholder (for example, institutions such as pension funds and insurance companies) rely on dividends to meet current expenses and any instability in dividends would seriously affect them.

An additional factor for multinationals is that they have more than one dividend policy to consider:

- Dividends to external shareholders.
- Dividends between group companies, facilitating the movement of profits and funds within the group.

Alternative dividend policies used by MNCs



Probably the most common policy adopted by multinationals for external shareholders is a variant on stable dividend policy. Most companies go for a stable, but rising, dividend per share:

- Dividends lag behind earnings, but are maintained even when earnings fall below the dividend level, as happens when production is lost for several

months during a major industrial dispute. This was referred to as a 'ratchet' pattern of dividends.

- This policy has the advantage of not signalling 'bad news' to investors. Also if the increases in dividend per share are not too large it should not seriously upset the firm's clientele of investors by disturbing their tax position.

A policy of a constant payout ratio is seldom used by multinationals because of the tremendous fluctuations in dividend per share that it could bring:

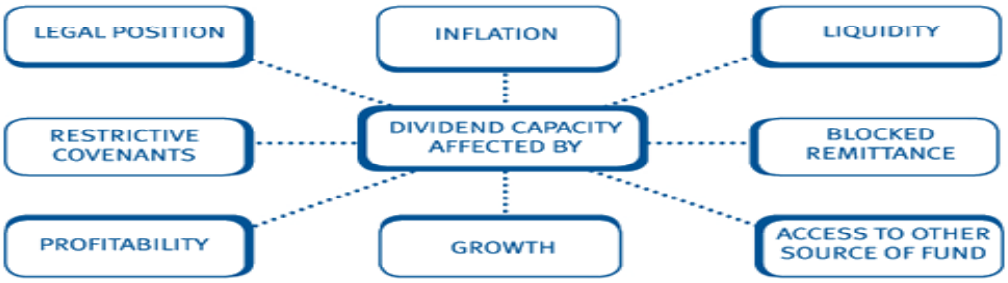
- Many firms, however, might work towards a long-run target payout percentage smoothing out the peaks and troughs each year.
- If sufficiently smoothed the pattern would be not unlike the ratchet pattern demonstrated above.

The residual approach to dividends contains a lot of financial common sense:

- If positive NPV projects are available, they should be adopted, otherwise funds should be returned to shareholders.
- This avoids the unnecessary transaction costs involved in paying shareholders a dividend and then asking for funds from the same shareholders (via a rights issue) to fund a new project.
- The major problem with the residual approach to dividends is that it can lead to large fluctuations in dividends, which could signal bad news to investors.

Dividend capacity and free cash flow to equity for multinational companies

As for any company, dividend capacity is a major determinant of dividend policy for multinationals. Key factors include:



The additional factor for multinationals is remittance 'blocking'.

If, once a foreign direct investment has taken place, the government of the host country imposes a restriction on the amount of profit that can be returned to the parent company, this is known as a 'block on the remittance of dividends':

- Often done through the imposition of strict exchange controls.
- Limits the amount of centrally remitted funds available to pay dividends to parent company shareholders (i.e. restricts dividend capacity).

Blocked remittances may be avoided by one of the following methods:

- Increasing transfer prices paid by the foreign subsidiary to the parent company
- Lending the equivalent of the dividend to the parent company.
- Making payments to the parent company in the form of royalties, payments for patents, and/or management fees and charges.
- Charging the subsidiary company additional head office overheads.
- Parallel loans (currency swaps), whereby the foreign subsidiary lends cash to the subsidiary of another a company requiring funds in the foreign country. In return the parent company would receive the loan of an equivalent amount of cash in the home country from the other subsidiary's parent company.

The government of the foreign country might try to prevent many of these measures being used.

17.5 DIVIDEND DISTRIBUTION DECISION : SOME ILLUSTRATIONS

Illustration 9.1: Let us calculate the expected return (dividend yield + capital appreciation). Suppose an investor in the USA wants to invest in two equities-one in US and another in India. Let us assume that the dividend received in US is denoted by δ_{US} and in India by δ_{IND}. Also assume exchange rate is (S_o) dollars per rupee and the capital appreciation are δ_{US} and δ_{IND} in US and India respectively. After k years, a dollar invested in US will give the following return.

$\$ (1 + \delta_{US} + \alpha_{US})^k$ while a rupee invested in India will give return as follows:

$\$ (1/S_o) (1 + \delta_{US} + \alpha_{IND})^k (S^e)_k$

Where the $(S^e)_k$ is expected (1NR/USD), exchange rate at the end of k years.

Assume that there is no differential tax on dividend income and capital gains. The investor would invest in Indian stock if return on investment in India > return on investment in US i.e.

$(1/S_o)\ (1 + \delta_{IN} + \alpha_{IN})\ (S^e)_k > (1 + \delta_{US} + \alpha_{US})^k$ …(1)

and vice-versa is the case of US stock.

Let's further assume that $\hat{S}^e$ denotes the expected annual proportionate rate of change of the exchange rate S. then.

$[(S^e)_k / S_o] = (1 + \hat{S}^e)k$

the inequality (I) can be written as:

$(1 + \hat{S}^e)\ (1 + \delta_{IN} + \alpha_{IN}) > (1 + \delta_{US} + \alpha_{US})$

Ignoring the cross products of $\hat{S}^e$, S_{in}, L_{in} this can be approximated by

$1 + S^e + \delta_{IN} + \alpha_{IN} > 1 + \delta_{US} + \alpha_{US}$

on $S^e > \delta_{US} + \delta_{IN} + (\alpha_{US} - \alpha_{IN})$ …(2)

Thus, irrespective of lower dividend yield and capital gains, foreign equities are attractive if the foreign currency is expected to appreciate strongly. Now lets see the impact of tax on ordinary income and capital gains. If exchange gains (gains arising from differential exchange rates) are treated as capital gain and capital gains are taxed at lower rate.

Suppose θ_y & θ_k be tax rates for ordinary income and capital gains respectively with θ_y & θ_k the after tax return on US will be

$(1 - \theta_y)\ \delta_{US} + (1 - \theta_k)\ \alpha_{US}$

and the return on indian investment would be

$(1 - \theta_y)\ \delta_{IN} + (1 - \theta_k)\ (\alpha_{IN} + S^e)$

the latter will exceed the former if

$S^e > (1-\theta_y)/(1 - \theta_k)\ \delta_{US} + \delta_{IN} + (\alpha_{US} - \alpha_{IN})$ … (3)

It is apparent that eqn. (3) holds more likely than eqn. (2) when θ_y is

greater than θ_k.

Hence, foreign equities are more prone to exchange rate risk due to exchange rate fluctuations than the domestic equities. For a US investor the risk of investing in Indian equities is compounded if rupee depreciates against dollar whenever Indian stock markets are performing badly.

Illustration 9.2: Let's learn the process of determining dividend in the following five cases for a foreign subsidiary of a U.S. corporation that earns $ 10,000 before local taxes. The U.S. corporate income tax rate is 35%. The foreign tax rate is 30% in cases 1 through 4 and 40% in case 5. The five cases are-

(i) Foreign subsidiary with 100% payout (No withholding tax);

(ii) Foreign subsidiary with 100% payout (10% withholding tax);

(iii) Foreign subsidiary with 50% payout (10% withholding tax);

(iv) Foreign affiliate with 50% payout (10% withholding tax); and

(v) Foreign affiliate with 50% payout (40% foreign corporate tax, 10% withholding tax);

Case 1:

Foreign subsidiary with 100% payout (No withholding Tax): Assuming the foreign subsidiary earns $ 10,000 before local taxes, it pays $ 3,000 in foreign taxes (30% foreign tax rate) and distributes all $ 7,000 of remaining net income to its U.S. parent (100% payout rate) and distributes all $ 7,000 of remaining net income to its U.S. parent (100% payout rate). Because there are no withholding taxes, the U.S. parent receives a net remittance of the full $ 7,000.

The U.S. parent corporation takes the full before-tax foreign income of the foreign corporation— apportioned by its proportional ownership in the foreign corporation (in this case 100%)— into its taxable income. This is called grossing-up.

The U.S. parent then calculates a tentative U.S. tax against the grossed- up foreign income. Assuming a 35% U.S. tax rate, the tentative U.S. tax on a grossed-up income of $ 10,000 is $ 3,500. The U.S. parent is then entitled under U.S. tax law

to reduce this U.S. tax liability by a deemed- paid foreign tax credit for taxes already paid on the same income in the foreign country. The deemed-paid tax credit is calculated as follows:

Deemed-paid credit =

$$\frac{\text{Dividends received (including withholding tax)} \times \text{Creditable foreign taxes.}}{\text{After tax net profits and earnings of foreign corporation}}$$

Creditable taxes are foreign income taxes that are paid on earnings by a foreign corporation that has paid a dividend to a qualifying U.S. corporation. The deemed-paid credit in Case 1 is calculated as follows:

$$\text{Deemed-paid credit} = \frac{\$7{,}000 \times \$3{,}000}{\$7{,}000} = \$3{,}000$$

The U.S. parent owes an additional $500 in U.S. taxes ($3,500 tentative U.S. tax less the deemed-paid credit of $3,000). The after-tax income earned by the U.S. parent corporation is $6,500, and the overall tax rate on the foreign income is 35% (total taxes of $ 3,500 on total income of $ 10,000). Ote that although the foreign corporate tax rate was lower (30% to the U.S. 35% rate), the U.S. corporation ends up paying the higher effective rate.

Case 2:

Foreign subsidiary with 100% payout (10% withholding tax): Assume that the same foreign corporation earns the same income, but now all dividends paid to the U.S. parent corporation are subject to a 10% withholding tax. All other values remain the same as in Case 1. Although the actual net remittance to the U.S. parent is now lower,

$6,300 instead of $7,000, the U.S. parent calculates the tentative U.S. tax on a grossed-up dividend of $ 7,000.

The tentative U.S. tax liability is again $3,500. The U.S. corporation can then deduct the amount of the deemed-paid credit ($3,000) and the full amount of withholding tax ($700) from its U.S. tax liability. Because the total foreign tax credits of $3,700 are greater than the tentative U.S. tax of $3500, the U.S. parent

owes no additional U.S. taxes. The U.S. parent has, in fact, an excess foreign tax credit of $ 200 ($3,700-$3,500), which it can carry back two years or carry forward five years. the effective foreign tax rate is now 37% as a result of the firm's paying higher taxes abroad than it would have theoretically paid at home, including the withholding tax.

Case 3:

Foreign subsidiary with 50% payout (10% withholding tax): In this case it is assumed that all tax rates remain the same, but the foreign corporation chooses to pay out only 50% of net income rather than 100%. As a result, all dividends, withholding taxes, deemed-paid credits, tentative U.S. tax liabilities, foreign tax credits, after-tax income from the foreign subsidiary, and finally total taxes paid are cut in half. The overall effective tax rate is again 37%, higher than what would theoretically have been paid if the income had been earned inside rather than outside the United States.

Case 4:

Foreign affiliate with 50% payout (10% withholding tax): Case 4 illustrates to what degree these cash flows change when the U.S. parent corporation owns only 40% of the foreign corporation. As illustrated in Exhibit 17.3, the 40% ownership acts only as a 'Scale factor' in apportioning dividends paid, withholding tax withheld, and tax liabilities and credits resulting. Once again, the U.S. parent corporation has excess foreign tax credits as a result of paying more taxes abroad than it is liable for at home. The overall effective tax rate on the reduced after-tax net income for the foreign affiliate of $ 1,400 is 37%.

Case 5:

Foreign affiliate with 50% payout (40% foreign corporate tax, 10% withholding tax): This fifth and final case illustrates the increasing tax burden on the U.S. parent corporation when the corporate income tax in the foreign country is higher than that in the United States. The combined impact of a 40% foreign income tax and a 10% withholding tax, even after calculation of deemed-paid foreign tax credits, results in a rising excess foreign tax credit and a substantially higher effective tax rate of 46%. Clearly, when the implications of Case 5 are combined with the number

of countries with corporate tax rates higher than that of the United States, the tax burden borne by U.S. based MNEs is a significant competitive concern.

17.6 TAX ASPECTS OF DIVIDEND DECISION BY MNCS

To understand the impact of taxation on distributed income (dividend) by an MNC, the following aspects should be very much clear:

- **Tax Philosophies**: Countries usually claim the right to tax income either on a global basis or on territorial basis. Global claims assume that countries have the right to tax companies and all their subsidiaries. This practice invites double taxation. Suppose an Indian Company has a subsidiary in France, then the income of the subsidiary will be taxed in France as well as in India.
- **Unitary taxation is quite prevalent in California**: USA in which the state assesses the multinational companies on a proportion of their world wide profits. The tax assessment is based on a formula that required world wide combined reporting (WWCR), which calculates taxes for MNCs on the basis of local sales, payroll and property as proportion of MNCs world wide total income.

Some countries follow the principle of sovereignty which says that countries claim their right to tax income earned within their own country.

Again there are two types of concepts of taxation which are:

(i) Tax Neutrality

(ii) Tax equity

(i) Tax Neutrality: It says that decisions regarding investments are not affected by tax laws i.e. taxes are neutral while taking investment decisions. The justification of tax neutrality is that capital should be allowed to move from one country to another country in order to get higher returns. The neutrality of tax has two dimensions– (i) Domestic neutrality; and (ii) Foreign neutrality.

(a) Domestic neutrality: This mean that citizens investing in domestic market and foreign markets are equally treated. In this case marginal tax burden on the domestic returns is equal to the marginal tax burden on the income earned overseas. This form has two levels of uniformity (a) uniformity in both the applicable tax rate and the determination of taxable income and (b)

equalisation of all taxes on profit whether earned domestically or overseas. Generally uniformity is influenced by differing govt. policies and accounting methods. Capital expenditure is granted concessional taxation while other expenditures are not treated in the same manner.

e.g. in the US, the foreign income is taxed at the same rate as the domestic income and in India foreign income even may be provided subsidy at domestic level.

(b) Foreign Neutrality: It means that subsidiaries of domestic companies and foreign subsidiaries operating in the domestic economy face same level of taxation.

The subsidiaries of domestic companies face competition from the domestic companies and subsidiaries of non US origins. Hence in case of tax structures changed by one country would automatically lead to changes in other countries' tax structures.

(ii) Tax equity: This principle suggests that all tax payers, irrespective of their source of income, should be taxed according to the same rules.

The taxation of various income sources including dividend is much affected by the following reasons to have different tax burdens:

1. Statutory tax rates may very from country to country.
2. Differences in definition of corporate taxable income.
3. Different interpretation of how to achieve tax neutralitiy.
4. Treatment of tax deferral privilege.
5. Method of granting credit for foreign income taxes paid to host country.
6. Concessions received in bilateral tax treaties.
7. Treatment of inter-company transactions.
8. Differing tax systems.

In India the tax rate applied to a non-resident assessee is fixed at the following rate:

Income accruing to a foreign institutional investor (FII) from securities listed in a recognised stock exchange in India is taxed at 20% of such income. Long term capital gains arising from the transfer of such securities is taxed at 10% of such income. Short term capital gains arising on the transfer of securities is taxed at 30% of such income. For the purpose of this provision "FII" means such investor as the Central Govt. may by notificaion in the official gazette, specify in this behalf (Section 115 AD).

GDRs, ADRs & Dividend: The most attractive source of finance today is GDR (Global depository Receipts) and American Depository Receipts (ADRs) to tap foreign equity market. In case of depository receipts (DRs), usually a large international bank (Depository) holds the shares issued by a company, which receives dividends, reports and so on and issues claims against these shares. The depository receipts are denominated in a convertible currency - usually US dollars. The depository receipts may be listed and treated on a stock exchange or may trade in OTC market. The issuer firms pays dividends in home currency and hence no exchange risk is involved and the same is converted into dollars and distributed to the receipt holders. From the investors' point of view, they achieve portfolio diversification while acquiring an instrument which is denominated in a convertible currency and is traded on developed stock markets. Of course, the investors bear exchange risk and all the other risks borne by an equity holder (dividend uncertainty, capital loss). There are also taxes, such as withholding taxes on dividends and capital gaint taxes. Indian Govt. imposes a 10% withholding tax on dividends and a 65% maximum marginal capital gains tax on short term capital gains. (tax on long term capital gain is only 10% thus encouraging the investor to hold on to the stock).

17.7 SUMMARY

The motive behind investment decision is to get the return. Again the return constitutes two parts– yield (dividend or interest) and the capital appreciation (change in the market value of the firm). Since an MNC operates in different parts of the globe, dividend decision is generally affected by the policies of the country where its subsidiary is situated. Because of differing tax structures in various countries, dividend remittances are affected. The other factors like exchange rate fluctuations and economic

policy also affect the dividend decisions of MNCs.

17.8 GLOSSARY

- **American Depository Receipts (ADRs)** Claims issued against foreign shares and traded in the over-the-counter market. ADRs are used so that the foreign shares can trade their home market but nevertheless be sold in the United States.
- **Dividend** That part of profit after interest and taxes which is distributed among share holders.
- **Foreign Subsidiary** A foreign operation that is incorporated in the foreign country but owned by a parent company.
- **Indirect Tax** A tax which is ultimately paid by somebody other than the person or firm being taxed.
- **Territorial Taxation** A method of declaring tax jurisdiction in which all income earned within a country by any tax-payer, domestic or foreign, is taxed.
- **Withholding Tax** A tax applied to non-residents at the source of their earnings.

17.9 SELF ASSESSMENT QUESTIONS

1. What are the factors determining dividend policy of an MNC?

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2. Explain with the help of illustration the impact of exchange rate volatility on the dividend decision of a multinational Company?

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3. How international taxation affects the dividend decisions of a multinational firm?

4. What are different theories of dividend decisions?

17.10 LESSON END EXERCISE

Q.1 Explain the dividend policy in Multi Nation corporations.

Q.2 Discuss the dividend distribution decisions with some illustrations.

17.11 SUGGESTED READINGS

- Bischel, Jon E., and Robert Feinscheiber, *Fundamentals of International Taxation*, 2nd ed. New York: Practicing Law Institute, 1985.
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- Kuntz, Joel D., and Robert J. Peroni. *U.S. International Taxation*, Vols. I and II. Boston: Warren, Gorham and Lamont, 1994.

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Semester-IV **Lesson No. 18**

Course No. FE-414 **Unit - IV**

CONCEPT OF MERGERS AND ACQUISITIONS

STRUCTURE

18.1 INTRODUCTION

Wealth maximisation is the main objective of financial management and its growth is ssential for increasing the wealth of equity shareholders. The growth can be achieved through expanding its existing markets or entering in new markets. A company can expand/diversify its business internally or externally which can also be known as internal growth and external growth. Internal growth requires that the company increase its operating facilities i.e. marketing, human resources, manufacturing, research, IT etc. which requires huge amount of funds. Besides a huge amount of funds, internal growth also require time. Thus, lack of financial resources or time needed constrains a company's space of growth. The company can avoid these two problems by acquiring production facilities as well as other resources from outside through mergers and acquisitions.

18.2 OBJECTIVES

After going through this lesson, the learners will be able to:

- know the meaning and advantages of merger and acquisition;
- understand the financial evaluation of a merger and acquisition;

- Elaborate the financing techniques of merger and acquisition; and
- understand regulations and SEBI guidelines regarding merger and acquisition.

18.3 MERGERS AND ACQUISITIONS

Mergers and acquisitions are the most popular means of corporate restructuring or business combinations in comparison to amalgamation, takeovers, spin-offs, leverage buy-outs, buy-back of shares, capital re-organisation, sale of business units and assets etc. Corporate restructuring refers to the changes in ownership, business mix, assets mix and alliances with a motive to increase the value of shareholders. To achieve the objective of wealth maximisation, a company should continuously evaluate its portfolio of business, capital mix, ownership and assets arrangements to find out opportunities for increasing the wealth of shareholders. There is a great deal of confusion and disagreement regarding the precise meaning of terms relating to the business combinations, i.e. mergers, acquisition, take-over, amalgamation and consolidation. Although the economic considerations in terms of motives and effect of business combinations are similar but the legal procedures involved are different. The mergers/amalgamations of corporates constitute a subject-matter of the Companies Act and the acquisition/takeover fall under the purview of the Security and Exchange Board of India (SEBI) and the stock exchange listing agreements.

A merger/amalgamation refers to a combination of two or more companies into one company. One or more companies may merge with an existing company or they may merge to form a new company. Laws in India use the term amalgamation for merger for example, Section 2 (IA) of the Income Tax Act, 1961 defines amalgamation as the merger of one or more companies (called amalgamating company or companies) with another company (called amalgamated company) or the merger of two or more companies to form a new company in such a way that all assets and liabilities of the amalgamating company or companies become assets and liabilities of the amalgamated company and shareholders holding not less than nine-tenths in value of the shares in the amalgamating company or

companies become shareholders of the amalgamated company. After this, the term merger and acquisition will be used interchangeably. Merger or amalgamation may take two forms: merger through absorption, merger through consolidation. Absorption is a combination of two or more companies into an existing company. All companies except one lose their identity in a merger through absorption. For example, absorption of Tata Fertilisers Ltd. (TFL) by Tata Chemical Limited (TCL). Consolidation is a combination of two or more companies into a new company. In this form of merger, all companies are legally dissolved and new company is created for example Hindustan Computers Ltd., Hindustan Instruments Limited, Indian Software Company Limited and Indian Reprographics Ltd. Lost their existence and create a new entity HCL Limited.

18.3.1 Types of Mergers

Mergers may be classified into the following three types- (i) horizontal, (ii) vertical and (iii) conglomerate.

Horizontal Merger

Horizontal merger takes place when two or more corporate firms dealing in similar lines of activities combine together. For example, merger of two publishers or two luggage manufacturing companies. Elimination or reduction in competition, putting an end to price cutting, economies of scale in production, research and development, marketing and management are the often cited motives underlying such mergers.

Vertical Merger

Vertical merger is a combination of two or more firms involved in different stages of production or distribution. For example, joining of a spinning company and weaving company. Vertical merger may be forward or backward merger. When a company combines with the supplier of material, it is called backward merger and when it combines with the customer, it is known as forward merger. The main advantages of such mergers are lower buying cost of materials, lower distribution costs, assured supplies and market, increasing or creating barriers to entry for competitors etc.

Conglomerate merger

Conglomerate merger is a combination in which a firm in one industry combines with a firm from an unrelated industry. A typical example is merging of different businesses like manufacturing of cement products, fertilisers products, electronic products, insurance investment and advertising agencies. Voltas Ltd. is an example of a conglomerate company. Diversification of risk constitutes the rationale for such mergers.

18.3.2 Advantages of merger and acquisition

The major advantages of merger/acquisitions are mentioned below:

Economies of Scale: The operating cost advantage in terms of economies of scale is considered to be the primary objective of mergers. These economies arise because of more intensive utilisation of production capacities, distribution networks, engineering services, research and development facilities, data processing system etc. Economies of scale are the most prominent in the case of horizontal mergers. In vertical merger, the principal sources of benefits are improved coordination of activities, lower inventory levels.

Synergy: It results from complementary activities. For examples, one firm may have financial resources while the other has profitable investment opportunities. In the same manner, one firm may have a strong research and development facilities. The merged concern in all these cases will be more effective than the individual firms combined value of merged firms is likely to be greater than the sum of the individual entities.

Strategic benefits: If a company has decided to enter or expand in a particular industry through acquisition of a firm engaged in that industry, rather than dependence on internal expansion, may offer several strategic advantages: (i) it can prevent a competitor from establishing a similar position in that industry; (ii) it offers a special timing advantages, (iii) it may entail less risk and even less cost.

Tax benefits: Under certain conditions, tax benefits may turn out to be the underlying motive for a merger. Suppose when a firm with accumulated losses and unabsorbed

depreciation mergers with a profit- making firm, tax benefits are utilised better. Because its accumulated losses/unabsorbed depreciation can be set off against the profits of the profit-making firm.

Utilisation of surplus funds: A firm in a mature industry may generate a lot of cash but may not have opportunities for profitable investment. In such a situation, a merger with another firm involving cash compensation often represent a more effective utilisation of surplus funds.

Diversification: Diversification is yet another major advantage especially in conglomerate merger. The merger between two unrelated firms would tend to reduce business risk, which, in turn reduces the cost of capital (K_0) of the firm's earnings which enhances the market value of the firm.

18.4 LEGAL PROCEDURE OF MERGER AND ACQUISITION

The following is the summary of legal procedures for merger or acquisition as per Companies Act, 1956:

18.4.1 Permission for merger

Two or more companies can amalgamate only when amalgamation is permitted under their memorandum of association. Also, the acquiring company should have the permission in its object clause to carry on the business of the acquired company.

18.4.2 Information to the stock exchange

The acquiring and the acquired companies should inform the stock exchanges where they are listed about the merger/acquisition.

18.4.3 Approval of board of directors

The boards of the directors of the individual companies should approve the draft proposal for amalgamation and authorize the managements of companies to further pursue the proposal.

18.4.4 Application in the High Court

An application for approving the draft amalgamation proposal duly approved by the boards of directors of the individual companies should be made to the High Court. The High Court would convene a meeting of the shareholders and creditors to

approve the amalgamation proposal. The notice of meeting should be sent to them at least 21 days in advance.

18.4.5 Shareholders' and creditors' meetings

The individual companies should hold separate meetings of their shareholders and creditors for approving the amalgamation scheme. At least, 75 per cent of shareholders and creditors in separate meeting, voting in person or by proxy, must accord their approval to the scheme.

18.4.6 Sanction by the High Court

After the approval of shareholders and creditors, on the petitions of the companies, the High Court will pass order sanctioning the amalgamation scheme after it is satisfied that the scheme is fair and reasonable. If it deems so, it can modify the scheme. The date of the court's hearing will be published in two newspapers, and also, the Regional Director of the Company Law Board will be intimated.

18.4.7 Filing of the Court order

After the Court order, its certified true copies will be filed with the Registrar of Companies.

18.4.8 Transfer of assets and liabilities

The assets and liabilities of the acquired company will be transferred to the acquiring company in accordance with the approved scheme, with effect from the specified date.

18.4.9 Payment by cash or securities

As per the proposal, the acquiring company will exchange shares and debentures and/or pay cash for the shares and debentures of the acquired company. These securities will be listed on the stock exchange.

18.5 FINANCIAL EVALUATION OF A MERGER / ACQUISITION

A merger proposal be evaluated and investigated from the point of view of number of perspectives. The engineering analysis will help in estimating the extent of operating economies of scale, while the marketing analysis may be undertaken to estimate the desirability of the resulting distribution network. However, the most important of all is the financial analysis or financial evaluation of a target candidate. An acquiring firm should pursue a merger only if it creates some real economic values which may arise from any source such as better and ensured supply of raw materials, better access to capital market, better and intensive distribution network, greater market share, tax benefits, etc.

The shareholders of the target firm will ordinarily demand a price for their shares that reflects the firm's value. For prospective buyer, this price may be high enough to negate the advantage of merger. This is particularly true if several acquiring firms are seeking merger partner, and thus, bidding up the prices of available target candidates. The point here is that the acquiring firm must pay for what it gets. The financial evaluation of a target candidate, therefore, includes the determination of the total consideration as well as the form of payment, i.e., in cash or securities of the acquiring firm. An important dimension of financial evaluation is the determination of Purchase Price.

Determining the purchase price: The process of financial evaluation begins with determining the value of the target firm, which the acquiring firm should pay. The total purchase price or the price per share of the target firm may be calculated by taking into account a host of factors. Such as assets, earnings, etc.

The market price of a share of the target can be a good approximation to find out the value of the firm. Theoretically speaking, the market price of share reflects not only the current earnings of the firm, but also the investor's expectations about future growth of the firm. However, the market price of the share cannot be relied in many cases or may not be available at all. For example, the target firm may be an unlisted firm or not being traded at the stock exchange at all and as a result the market price of the share of the target firm is not available. Even in case of listed and oftenly traded company, a complete reliance on the market price of a

share is not desirable because (i) the market price of the share may be affected by insiders trading, and (ii) sometimes, the market price does not fully reflect the firm's financial and profitability position, as complete and correct information about the firm is nto available to the investors.

Therefore, the value of the firm should be assessed on the basis of the facts and figures collected from various sources including the published financial statements of the target firm. The following approaches may be undertaken to assess the value of the target firm:

1. Valuation based on assets

In a merger situation, the acquiring firm 'purchases' the target firm and, therefore, it should be ready to pay the worth of the latter. The worth of the target firm, no doubt, depends upon the tangible and intangible assets of the firm. The value of a firm may be defined as:

Value = Value of all assets – External liabilities

In order to find out the asset value per share, the preference share capital, if any, is deducted from the net assets and the balance is divided by the number of equity shares. It may be noted that the values of all tangible and intangible assets are incorporated here. The value of goodwill may be calculated if not given in the balance sheet, and included. However, the fictious assets are not included in the above valuation. The assets of a firm may be valued on the basis of book values or realisable values as follows:

2. Valuation based on earnings

The target firm may be valued on the basis of its earnings capacity. With reference to the capital funds invested in the target firm, the firms value will have a positive correlations with the profits of the firm. Here, the profits of the firm can either be past profits or future expected profits. However, the future expected profits may be preferred for obvious reasons. The acquiring firm shows interest in taking over the target firm for the synergistic efforts or the growth of the new firm. The estimate of future profits (based on past experience) carry synergistic element in it. Thus, the future expected earnings of the target firm give a better valuation. These

expected profit figures are however, accounting figures and suffer from various limitations and therefore, should be converted into future cash flows by adjusting non-cash items.

In the earnings based valuation, the PAT (Profit After Taxes) is multiplied by the Price-Earnings Ratio to find out the value.

Market price per share = EPS × PE ratio

The earnings based valuation can also be made in terms of earnings yield as follows:

$$\text{Earnings yield} = \frac{\text{EPS}}{\text{MPS}} \times 100$$

The earnings yield gives an idea of earnings as a percentage of market value of a share. It may be noted that for this valuation, the historical earnings or expected future earnings may be considered.

Earnings valuation may also be found by capitalising the total earnings of the firm as follows:

$$\text{Value} = \frac{\text{Earnings}}{\text{Capitalisation rate}} \times 100$$

3. Dividend-based valuation

In the cost of capital calculation, the cost of equity capital, k_e, is defined (under constant growth model) as:

$$k_e = \frac{D_o (1 + g)}{P_o} + g = \frac{D_1}{P_o} + g$$

D_0 = Dividend in current year

D_1 = Dividend in the first year g =

g = Growth rate of dividend P_0

P_o = Initial price

This can be used to find out the P_0 as follows:

$$P_0 = \frac{D_o(1+g)}{k_e - g} = \frac{D_1}{k_e - g} = \frac{D_1}{Ke - g}$$

For example, if a company has just paid a dividend of Rs. 15 per share and the growth rate in dividend is 7%. At equity capitalisation of 20%, the market price of the share is:

$$P_0 = \frac{15\,(1 + 0.7)}{.20 - .07} = \frac{16.05}{.13} = \text{Rs. } 123.46$$

The dividend yield, like earnings yield can be calculated as:

$$\text{Dividend yield} = \frac{\text{Div. Per Share}}{\text{Market Price}} \times 100$$

4. Capital Asset Pricing Model (CAPM)-based share valuation

The CAPM is used to find out the expected rate of return, R_s, as follows:

$$R_s = I_{RF} + (R_M - I_{RF})^{\beta}$$

Where,

R_s = Expected rate of return, I_{RF} = Risk free rate of return, R_M = Rate of Return on market portfolio, β = Sensitivity of a share to market.

For example, R_M is 12%, I_{RF} is 8% and β is 1.3, the R_s is: R_s

$= I_{RF} + (R_M - I_{RF})\,\beta$

$= 0.08 + (0.12 - 0.08)\ 1.3 = 13.2$

If the dividend paid by the company is Rs. 20, the market price of the share is:

$$P_0 = \frac{\text{Div}}{R_S} = \frac{20}{0.132} = \text{Rs. } 151.51$$

5. Valuation based on cash flows

Valuation of a target firm can also be made on the basis of firm's cash flows. In this case, the value of the target firm may be arrived at by discounting the cash flows, as in the case of NPV method of capital budgeting as follows:

(i) Estimate the future cash inflows (i.e., Profit after tax + Non- cash expenses).

(ii) Find out the total present value of these cash flows by discounting at an appropriate rate with reference to the risk class and other factors.

(iii) If the acquiring firm is agreeing to takeover the liabilities of the target firm, then these liabilities are treated as cash outflows at time zero and hence deducted form the present value of future cash inflows [as calculated in step (ii) above].

(iv) The balancing figure is the NPV of the firm and may be considered as the maximum purchase price, which the acquiring firm should be ready to pay. The procedure for finding out the valuation based on cash flows may be summarized as follows:

$$MPP = \sum_{i=1}^{n} \frac{C_i}{(1+k)^i} = L$$

where MPP = Maximum purchase price, C_i = Cash inflows over different years, L = Current value of liabilities, and k = Appropriate discount rate.

6. Other methods of valuation

There are two other methods of valuation of business. Investors provide funds to a company and expect a minimum return which is measured as the opportunity cost of the investors, or, what the investors could have earned elsewhere. If the company is earning less than this opportunity cost of the investors, the company is belying the expectations of the investors. Conversely, if it is earning more, then it is creating additional value. New concepts such as Economic Value Added (EVA) and Market Value Added (MVA) can be used along with traditional measures of Return on Net Worth (RONW) to measure the creation of shareholders value over a period.

(a) Economic Value Added: EVA is based upon the concept of economic return which refers to excess of after tax return on capital employed over the cost of capital employed. The concept of EVA, as developed by Stern Steward and Co. of the U.S., compares the return on capital employed with the cost of capital of the firm. It takes into account the minimum expectations of the shareholders. EVA is defined in terms of returns earned by the company in excess of the minimum expected return of the shareholders. EVA is calculated as the net operating profit (Earnings before Interest but after taxes) minus the capital charges (capital employed × cost of capital). This can be presented as follows:

EVA = EBIT - Taxes - Cost of funds employed

= Net Operating Profit after Taxes - Cost of Capital Employed

where, Net Operating Profit after Taxes represents the total pool of profit available to provide a return to the lenders and the shareholders, and Cost of Capital Employed is Weighted Average Cost of Capital × Average Capital employed.

So, EVA is the post-tax return on capital employed adjusted for tax shield of debt) less the cost of capital employed. It measures the profitability of a company after having taken cost of debt (Interest) is deducted in the income statement. In the calculation of EVA, the cost of equity is also deducted. The resultant figure shows as to how much has been added in value of the firm, after meeting all costs. It should be pointed out that there is more to calculation of cost of equity than simple deduction of the dividends paid. So, EVA represents the value added in excess of the cost of capital employed. EVA increases if:

(i) Operating profits grow without employing additional capital, i.e., through greater efficiency.

(ii) Additional capital is invested in the projects that give higher returns than the cost of procuring new capital, and

(iii) Unproductive capital is liquidated, i.e., curtailing the unproductive uses of capital.

EVA can be used as a tool in decision-making within an enterprise. It can help integration of customer satisfaction, operating efficiencies and, management and financial policies in a single measure. However, EVA is based on the performance of one year and does not allow for increase in economic value that may result from investing in new assets that have not yet had time to show the results.

In India, EVA has emerged as a popular measure to understand and evaluate financial performance of a company. Several companies have started showing the EVA during a year as a part of the Annual Report. Hero Honda Ltd., BPL Ltd., Hindustan Lever Ltd., Infosys Technologies Ltd. And Balrampur Chini Mills Ltd. Are a few of them.

(b) Market Value Added (MVA) is another concept used to measure the performance and as a measure of value of a firm. MVA is determined by measuring the total amount

of funds that have been invested in the company (based on cash flows) and comparing with the current market value of the securities of the company. The funds invested include borrowings and shareholders funds. If the market value of securities exceeds the funds invested, the value has been created.

18.6 FINANCING TECHNIQUES IN MERGER / ACQUISITION

After the value of a firm has been determined on the basis of the preceding analysis, the next step is the choice of the method of payment to the acquired firm. The choice of financial instruments and techniques in acquiring a firm usually has an effect on the purchasing agreement. The payment may take the form of either cash or securities, i.e., ordinary shares, convertible securities, deferred payment plans and tender offers.

Ordinary shares financing: When a company is considering to use ordinary shares to finance a merger, the Relative Price-Earnings (P/E) ratios of two firms are an important consideration. For instance, for a firm having a high P/E ratio, ordinary shares represent an ideal method for financing mergers and acquisitions. Similarly, the ordinary shares are more advantageous for both companies when the firm to be acquired has low P/E ratio. This is illustrated below:

TABLE 1.1: EFFECT OF MERGER ON FIRM A'S EPS AND MPS

(a) Pre-merger situation:	Firm A	Firm B
Earnings after taxes (EAT)	5,00,000	2,50,000
Number of shares outstanding (N)	1,00,000	50,000
EPS (EAT/N)	5	5
Price-earnings (P/E) ratio	10 times	4 times
Market price per share, MPS (EPS ×P/E ratio)	50	20
Total market value of the firm [(N × MPS) Or (EAT × P/E ratio)]	50,00,000	10,00,000
(b) Post merger situation: assuming exchange ratio of shares as	2.5 : 1	1 : 1

EATc of combined firm	7,50,000	7,50,000
Number of shares outstanding after additional shares issued	1,20,000	1,50,000
EPSc (EATc/N)	6.25	5.00
P/Ec ratio	×10	×10
MPSc	62.50	50.00
Total market value	75,00,000	75,00,000

From a perusal of Table 1.1, certain facts stand out. The exchange ratio of 2.5 : 1 is based on the exchange of shares between the acquiring and acquired firm on their relative current market prices. This ratio implies that Firm A will issue 1 share for every 2.5 shares of Firm B. The

EPS has increased from Rs. 5.0 (pre-merger) to Rs. 6.25 (post-merger). The post-merger market price of the share would be higher at Rs. 6.25 × 10 (P/E ratio) = Rs. 62.50.

When the exchange ratio is 1 : 1, it implies that the shareholders of the Firm B demand a heavy premium per share (Rs. 30 in this case). The EPS and the market price per share remain constant. Therefore the tolerable exchange ratio for merger of Firm A and B is 1 : 1. Thus, it may be generalised that the maximum and minimum exchange ratio in merger situations should lie between the ratio of market price of shares of two firms and 1 : 1 ratio. The exchange ratio eventually negotiate/agreed upon would determine the extent of merger gains to be shared between the shareholders of two firms. This ratio would depend on the relative bargaining position of the two firms and the market reaction to the merger move is given below:

APPORTIONMENT OF MERGERS GAINS BETWEEN THE SHAREHOLDERS OF FIRMS A AND B

(I)	Total market value of the merged firm	Rs 75,00,000
	Less market value of the pre-merged firms:	
	Firm A Rs. 50,00,000	
	Firm B Rs. 10,00,000	15,00,000
	Total merger gains	15,00,000
(II)	(1) Apportionment of gains (assuming exchange ratio of 2.5 : 1	
	Firm A: Post-merger market value (1,00,000 shares × Rs. 62.50)	62,50,000
	Less pre-merger market value	50,00,000
	Gains for shareholders of Firm A	12,50,000
	Firm B: Post-merger market value (20,000 shares × Rs. 62.50)	12,50,000
	Less pre-merger market value	10,00,000
	Gain for shareholders of Firm B	2,50,000
	(2) Assuming exchange ratio of 1 : 1	
	Firm A: Post-merger market value	50,00,000
	(1,00,000 × Rs. 50.00)Less pre-merger market value	50,00,000
	Gain for shareholders of Firm A	Nil
	Firm B: Post-merger market value (50,000 × Rs. 50.00)	25,00,000
	Less pre-merger market value	10,00,000
	Gains for shareholders of Firm B	15,00,000

Debt and Preference Shares Financing: From the foregoing it is clear that financing of mergers and acquisitions with equity shares is advantageous both to the acquiring firm and the acquired firm when the P/E ratio is high. Since, however, some firms may have a relatively lower P/E ratio as also the requirement of some investors might be different, the other types of securities, in conjunction with/in lieu of equity shares, may be used for the purpose.

In an attempt to tailor a security to the requirement of investors who seek dividend/interest income in contrast to capital appreciation/growth, convertible debentures and preference shares might be used to finance merger. The use of such sources of financing has several advantages, namely, (i) potential earning dilution may be partially minimised by issuing a convertible security. For example, suppose the current market price of the shares of an acquiring company is Rs. 50 and the value of the acquired firm is Rs. 50,00,000. If the merger proposal is to be financed with equity, 1,00,000 additional shares will be required to be issued. Alternatively, convertible debentures of the face value of Rs. 100 with conversion ratio of 1.8, which would imply conversion value of Rs. 90 (Rs. 50 × 1.8) may be issued. To raise the required Rs. 50,00,000, 50,000 debentures convertible into 90,000 equity shares would be issued. Thus, the number of shares to be issued would be reduced by 10,000, thereby reducing the dilution in EPS that could ultimately result, if convertible security in place of equity shares was not resorted to; (ii) A convertible issue might serve the income objective of the shareholders of target firm without changing the dividend policy of the acquiring firm; (iii) convertible security represents a possible way of lowering the voting power of the target company; (iv) convertible security may appear more attractive to the acquired firm as it combines the protection of fixed security with the growth potential of ordinary shares.

In brief, fixed income securities are compatible with the needs and purpose of mergers and acquisitions. The need for changing the financing leverage and for a variety of securities is partly resolved by the use of senior securities.

Deferred Payment Plan: Under this method, the acquiring firm, besides making initial payment, also undertakes to make additional payment in future years to the target firm in the event of the former being able to increase earnings consequent also known as earn-out plan. There are several advantages of adopting such a plan to

the acquiring firm: (i) It emerges to be an appropriate outlet for adjusting the difference between the amount of shares the acquiring firm is willing to issue and the amount the target firm is agreeable to accept for the business; (ii) in view of the fact that fewer number of shares will be issued at the time of acquisition, the acquiring firm will be able to report higher EPS immediately; (iii) there is built-in cushion/ protection to the acquiring firm as the total payment is not made at the time of acquisition; it is contingent to the realisation of the potential/projected earnings after merger.

There are various types of deferred payment plan in vogue. The arrangement eventually agreed upon depends on the imagination of the management of the two firms involved. One of the often-used plans for the purpose is base-period earn-out. Under this plan the shareholders of the target firm are to receive additional shares for a specified number of future years, if the firm is able to improve its earnings vis-à-vis the earnings of the base period (the earnings in the previous year before the acquisition). The amount becoming due for payment in shares in future years will primarily be a function of excess earnings, price-earnings ratio and the market price of the share of the acquiring firm. The basis for determining the required number of shares to be issued is

$$\frac{\text{Excess earnings} \times \text{P/E ratio}}{\text{Share price (acqiring firm)}}$$

To conclude, the deferred-plan technique provides a useful means by which the acquiring firm can eliminate part of the guess-work involved in purchasing a firm. In essence, it allows the merging management the privilege of hindsight.

Tender Offer: An alternative approach to acquire another firm is the tender offer. A tender offer, as a method of acquiring firms, involves a bid by the acquiring firm for controlling interest in the acquired firm. The essence of this approach is that the purchaser approaches the shareholders of the firm rather than the management to encourage them to sell their shares generally at a premium over the current market price.

Since the tender offer is a direct appeal to the shareholders, prior approval of the management of the target firm is not required. In case, the management of the

target firm does not agree with the merger move, a number of defensive tactics can be used to counter tender offers. These defensive tactics include WHITE KNIGHTS and PAC-MANS. A white knight is a company that comes to the rescue of a firm that is being targeted for a takeover. Such a company makes its own tender offer at a higher price. Under Pac-mans form of tender offer, the firm under attack becomes the attacker.

As a form of acquiring firms, the tender offer has certain advantages and disadvantages. The disadvantages are: (i) If the target firm's management attempts to block it, the cost of executing offer may increase substantially; (ii) the purchasing company may fail to acquire a sufficient number of shares to meet the objective of controlling the firm. The major advantages of acquisition through tender offer include: (i) if the offer is not blocked, it may be less expensive than the normal route of acquiring a company. This is so because it permits control by purchasing a smaller proportion of the firm's shares; (ii) the fairness of the purchase price is not questionable as each shareholder individually agrees to part with his shares at the negotiated price.

Merger as a Capital Budgeting Decision: Like a capital budgeting decision, merger decision requires comparison between the expected benefits (measured in terms of the present value of expected benefits/cash inflows (CFAT) from the merger) with the cost of the acquisition of the target firm. The acquisition costs include the payment made to the target firm's shareholders, payment to discharge the external liabilities of the acquired firm less cash proceeds expected to the realised by the acquiring firm from the sale of certain asset (s) of the target firm. The decision criterion is 'to go for the merger' if Net Present Value (NPV) is positive; the decision would be 'against the merger' in the event of the NPV being negative.

18.6.1 Financial problems after merger and acquisition

After merger and consolidation the companies face a number of financial problems. The liquidity of the companies has to be established afresh. The merging and consolidating companies pursue their own financial policies when they are working independently. A number of adjustments are required to be made in financial planning and policies so that consolidated efforts may enable to improve short-term

and long-term finances of the companies. Some of the financial problems of merging and consolidating companies are discussed as follows:

Cash Management: The liquidity problem is the usual problem faced by acquiring companies. Before merger and consolidation, the companies had their own methods of payments, cash behaviour patterns and arrangements with financial institutions. The cash pattern will have to be adjusted according to the present needs of the business.

Credit Policy: The credit policies of the companies are unified so that same terms and conditions may be applied to the customers. If the market areas of the companies are different, then same old policies may be followed. The problem will arise only when operating areas of the companies are the same and same credit policy will have to be pursued.

Financial Planning: The companies may be following different financial plans before merger and consolidation. The methods of budgeting and financial controls may also be different. After merger and consolidation, a unified financial planning is followed. The divergent financial controls will be unified to suit the needs of the acquiring concerns.

Dividend Policy: The companies may be following different policies for paying dividend. The stockholders will be expecting higher rates of dividend after merger and consolidation on the belief that financial position and earning capacity has increased after combining the resources of the companies. This is a ticklish problem and management will have to devise an acceptable pay-out policy. In the earlier stages of merger and consolidation it may be difficult to maintain even the old rates of dividend.

Depreciation Policy: The companies follow different depreciation policies. The methods of depreciation, the rates of depreciation, and the amounts to be taken to revenue accounts will be different. After merger and consolidation the first thing to be decided will be about the depreciable and non-depreciable assets. The second will be about the rates of depreciation. Different assets will be in different stages of use and appropriate amounts of depreciation should be decided.

18.6.2 Capital structure after merger and consolidation

The acquiring company in case of merger and the new company in case of consolidation takes over assets and liabilities of the merging companies and new shares are issued in lieu of the old. The capital structure is bound to be affected by new changes. The capital structure should be properly balanced so as to avoid complications at a later stage.

A significant shift may be in the debt-equity balance. The acquiring company will be requiring cash for making the payments. If it does not have sufficient cash then it will have to give new securities for purposes of an exchange. In all cases the balance of debt and equity will change. The possibility is that equity may be increased more than the debt.

The mergers and consolidations result into the combining of profits of concerned companies. The increase in profitability will reduce risks and uncertainties. It will affect the earnings per share. The investors will be favourably inclined towards the securities of the company. The expectancy of dividend declarations in the future will also have a positive effect. If merging companies had different pay-out policies, then shareholders of one company will experience a change in dividend rate. The overall effect on earnings will be favourable because the increased size of business will experience a number of economies in costs and marketing which will increase profits of the company.

The capital structure should be adjusted according to the present needs and requirements. The concern might sell its unrelated business, and consolidate its remaining businesses as a balanced portfolio.

18.7 REGULATIONS OF MERGERS AND TAKEOVERS IN INDIA

Mergers and acquisitions may degenerate into the exploitation of shareholders, particularly minority shareholders. They may also stifle competition and encourage monopoly and monopolistic corporate behaviour. Therefore, most countries have legal framework to regulate the merger and acquisition activities. In India, mergers and acquisitions are regulated through the provision of the Companies Act, 1956, the Monopolies and Restrictive Trade Practice (MRTP) Act, 1969, the Foreign Exchange Regulation Act (FERA), 1973, the Income Tax Act, 1961, and the Securities and

Controls (Regulations) Act, 1956. The Securities and Exchange Board of India (SEBI) has issued guidelines to regulate mergers, acquisitions and takeovers.

Legal measures against takeovers

The Companies Act restricts an individual or a company or a group of individuals from acquiring shares, together with the shares held earlier, in a public company to 25 per cent of the total paid-up capital. Also, the Central Government needs to be intimated whenever such holding exceeds 10 per cent of the subscribed capital. The Companies Act also provides for the approval of shareholders and the Central Government when a company, by itself or in association of an individual or individuals purchases shares of another company in excess of its specified limit. The approval of the Central Government is necessary if such investment exceeds 10 per cent of the subscribed capital of another company. These are precautionary measures against the takeover of public limited companies.

Refusal to register the transfer of shares

In order to defuse situation of hostile takeover attempts, companies have been given power to refuse to register the transfer of shares. If this is done, a company must inform the transferee and the transferor within 60 days. A refusal to register transfer is permitted if:

- A legal requirement relating to the transfer of shares have not be complied with; or
- The transfer is in contravention of the law; or
- The transfer is prohibited by a court order; or
- The transfer is not in the interests of the company and the public.

Protection of minority shareholders' interests

In a takeover bid, the interests of all shareholders should be protected without a prejudice to genuine takeovers. It would be unfair if the same high price is not offered to all the shareholders of prospective acquired company. The large shareholders (including financial institutions, banks and individuals) may get most of the benefits because of their accessibility to the brokers and the takeover dealmakers. Before the small shareholders know about the proposal, it may be too

late for them. The Companies Act provides that a purchaser can force the minority shareholder to sell their shares if:

- The offer has been made to the shareholders of the company;
- The offer has been approved by at least 90 per cent of the shareholders of the company whose transfer is involved, within 4 months of making the offer; and
- The minority shareholders have been intimated within 2 months from the expiry of 4 months referred above.

If the purchaser is already in possession of more than 90 per cent of the aggregate value of all the shares of the company, the transfer of the shares of minority shareholders is possible if:

- The purchaser offers the same terms to all shareholders and
- The tenders who approve the transfer, besides holding at least 90 per cent of the value of shares, should also form at least 75 per cent of the total holders of shares.

18.8 SEBI GUIDELINES FOR TAKEOVERS

The salient features of some of the important guidelines as follows:

Disclosure of share acquisition/holding: Any person who acquires 5% or 10% or 14% shares or voting rights of the target company, should disclose of his holdings at every stage to the target company and the Stock Exchanges within 2 days of acquisition or receipt of intimation of allotment of shares.

Any person who holds more than]5% but less than 75% shares or voting rights of target company, and who purchases or sells shares aggregating to 2% or more shall within 2 days disclose such purchase or sale along with the aggregate of his shareholding to the target company and the Stock Exchanges.

Any person who holds more than 15% shares or voting rights of target company and a promoter and person having control over the target company, shall within 21 days from the financial year ending March 31 as well as the record date fixed for the purpose of dividend declaration, disclose every year his aggregate shareholding to

the target company.

Public announcement and open offer: An acquirer who intends to acquire shares which along with his existing shareholding would entitle him to exercise] 5% or more voting rights, can acquire such additional shares only after making a public announcement to acquire at least additional 20% of the voting capita] of target company from the shareholders through an open offer.

An acquirer who holds 15% or more but less than 75% of shares or voting rights of a target company, can acquire such additional shares as would entitle him to exercise more than 5% of the voting rights in any financial year ending March 31 only after making a public announcement to acquire at least additional 20% shares of target company from the shareholders through an open offer.

An acquirer, who holds 75% shares or voting rights of a target company, can acquire further shares or voting rights only after making a public announcement to acquire at least additional 20% shares of target company from the shareholders through an open offer.

Offer price: The acquirer is required to ensure that all the relevant parameters are taken into consideration while determining the offer price and that justification for the same is disclosed in the letter of offer. The relevant parameters are:

- Negotiated price under the agreement which triggered the open offer.
- Price paid by the acquirer for acquisition, if any, including by way of allotment in a public or rights or preferential issue during the twenty six week period prior to the date of public announcement, whichever is higher.
- The average of the weekly high and low of the closing prices of the shares of the target company as quoted on the stock exchange where the shares of the company are most frequently traded during the twenty six weeks or the average of the daily high and low prices of the shares as quoted on the stock exchange where the shares of the company are most frequently traded during the two weeks preceding the date of public announcement, whichever is higher.

In case the shares of Target Company are not frequently traded then parameters

based on the fundamentals of the company such as return on net worth of the company, book value per share, EPS etc. are required to be considered and disclosed.

Disclosure: The offer should disclose the detailed terms of the offer, identity of the offerer, details of the offerer's existing holdings in the offeree company etc. and the information should be made available to all the shareholders at the same time and in the same manner.

Offer document: The offer document should contain the offer's financial information, its intention to continue the offeree company's business and to make major change and long-term commercial justification for the offer.

The objectives of the Companies Act and the guidelines for takeover are to ensure full disclosure about the mergers and takeovers and to protect the interests of the shareholders, particularly the small shareholders. The main thrust is that public authorities should be notified within two days.

In a nutshell, an individual or company can continue to purchase the shares without making an offer to other shareholders until the shareholding exceeds 10 per cent. Once the offer is made to other shareholders, the offer price should not be less than the weekly average price in the past 6 months or the negotiated price.

18.9 SUMMARY

Corporate restructuring refers to changes in ownership, business mix, assets mix and alliances with a motive to increase the value of shareholders. The economic considerations in terms of motives and effect of business combinations are similar but the legal procedures involved are different. A merger refers to a combination of two or more companies into one company. One or more companies may merge with an existing company or they may merge to form a new company. Mergers may be of three types (i) horizontal, (ii) vertical and (iii) conglomerate merger. The advantages of merger are economics of scale, synergy, strategic benefits, tax benefits and utilisation of surplus funds. The process of financial evaluation begins with determining the value of the target firm. The different approaches may be undertaken to assess the value of the target firm namely valuation based on assets, earnings, dividend, cash flows etc. After the value of a firm has been determined the next step is the

choice of the method of payment to the acquired firm. The payment take the form of either cash or securities i.e., ordinary shares, convertible securities, deferred payment plans and tender offers.

18.10 GLOSSARY

- **Merger**: A merger is said to occur when two or more companies combine into one company. One or more companies may merge with an existing company or they may merge to form a new company.
- **Absorption**: A combination of two or more companies into an existing company.
- **Acquisition**: Acquisition may be defined as an act of acquiring effective control over assets or management of a company by another company without any combination of businesses.
- **Takeover**: Unwilling acquisition is called takeover.
- **Synergy**: Synergy refers to benefits other than those related to economies of scale.
- **Lever aged Buy-outs (LBO)**: An acquisition of a company in which the acquisition is substantially financed through debt.
- **Spin-off**: When a company creates a new firm from the existing entity.
- **Self-off**: Selling a part of business to a third party is called sell-off.

18.11 SELF ASSESSMENT QUESTIONS

1. What do you understand by mergers? Explain the different types of mergers.

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2. Discuss the legal and procedural aspects of a merger.

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3. Elaborate the various forms of financing a merger.

4. What do you mean by tender offer? Explain the provisions relating to tender offer?

18.12 LESSON END EXERCISE

Q.1. Describe the financial problems faced by concerns after mergers and consolidation.

Q. 2. Discuss various methods of valuation at the time of merger and consolidation.

18.13 SUGGESTED READINGS

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5. R.P. Rustogi, "Financial Analysis and Financial Management, Sultan Chand and Sons.
6. R.K. Sharma, Shashi K Gupta, "Management Accounting", Kalyani Publishers.
7. M.Y. Khan, "Fundamental of Financial Management", Tata McGraw Hill, New Delhi.
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Semester-IV **Lesson No. 19**

Course No. FE-414 **Unit - IV**

REVIVAL STRATEGIES FOR SICK UNITS

STRUCTURE

19.1 INTRODUCTION

Many objectives have been imputed to the corporate entity but perhaps the most important is that of its survival. To survive, a firm needs to be profitable and financially sound. Shareholders, employees, financial institutions, suppliers, customers and the society as a whole experience the consequences of failure. In all economies, business failure is a reality of commercial life. World- over sickness in industries is a recognised fact. Often, it is inevitable for various reasons. The vast strides made in technological development render old technologies obsolete, industrial recessions make some unviable, international trade policies make some uncompetitive and tardy progress in some related sectors shrink markets for others. These features are generally combated by closing down unviable units, adopting new technologies, diversifying products, nursing a few that are victims of trade cycles till recoveries set in and revive those that are sustainable with appropriate measures. A sick unit incurs cash losses and fails to generate internal surplus on a continuing basis. There are different forms, varieties and degrees of industrial sickness. Various authorities have viewed industrial sickness differently but in sense and substance their findings are more or less the same.

19.2 OBJECTIVES

After reading this lesson, you should be able to:

- define a sick industrial company and explain the causes of industrial sickness;
- list out the reasons for business failure;
- describe the importance of working capital management in sick industries;
- predict the industrial sickness through ratio analysis, univarite models, Z score and Argenti score;
- explain the legal provisions as to revival and rehabilitation of Sick Industrial Companies;

- describe the theme of actions taken by BIFR; and
- draw a list of concessions and sacrifices by different agencies.

19.3 DEFINITION OF SICK INDUSTRIAL COMPANY

The definition given under the provisions of the Companies Act, 1956 and the definitions given by Reserve Bank of India are as follows:

The Companies Act, 1956 defined 'Sick Industrial Company' and 'Net Worth' as follows:

'Sick Industrial Company' means an industrial company which has:

(a) the accumulated losses in any financial year equal to fifty percent or more of its average net worth during four years immediately preceding such financial year, or

(b) failed to repay its debts within any three consecutive quarters on demand made in writing for its repayment by a creditor or creditors of such company.

Section 2 (46AA)

'Net worth' means the sum total of the paid up capital and free reserves after deducting the provisions or expenses as may be prescribed. Section 2 (29A)

Explaination

For the purpose of this clause 'free reserves' means all reserves created out of the profits and share premium account but does not include reserves created out of revaluation of assets, write back of depreciation provision and amalgamation.

RBI's Definition

Sick Industrial Company: Sick industrial company means an industrial company (being a company registered for not less than five years) which has at the end of any financial year accumulated losses equal to or exceeding its entire net worth.

Potentially Sick Industrial Company: If the accumulated losses of an industrial company as at the end of any financial year have resulted in the erosion of fifty per cent or more of its peak net- worth during the immediately preceding four financial years.

Weak Unit: An industrial unit is defined as 'weak' if its accumulated losses as at the end of any financial year resulted in the erosion of 50% or more of its peak net worth in the immediately preceding four accounting years. Weak units as defined above will, not only include those which fall under SICA (viz. sick Industrial companies Act) but also other categories such as partnership firms, proprietary concerns, etc. Thus a weak industrial company should be termed as a potentially sick company as and when the bank reports which companies to BIFR in terms of SICA.

19.4 CAUSES OF INDUSTRIAL SICKNESS

Factually, no single factor is responsible for this growing malady of industrial sickness. The following causes will generally lead to industrial sickness:

(a) Internal Causes

The following internal causes may lead to sickness of an industrial unit:

1. PLANNING AND IMPLEMENTATION STAGE

(i) Technical Feasibility

- Inadequate technical know-how
- Locational disadvantage
- Outdated production process

(ii) Economic Viability

- High cost of inputs
  Break-even point being too high
- Uneconomic size of project
- Under-estimation of financial requirements
- Unduly large investment in fixed assets
- Over-estimation of demand
- Cost over runs resulting from delays in getting licenses/sanctions etc.
- Inadequate mobilisation of finance

2. COMMERCIAL PRODUCTION STAGE

(i) Production Management

- Inappropriate product-mix
- Poor quality control
- Poor capacity utilisation
- High cost of production
- Poor inventory management
- Inadequate maintenance and replacement
- Lack of timely and adequate modernisation
- High wastage of resources

(ii) Financial Management

- Poor resource management and financial planning
- Faulty costing
- Liberal dividend policy
- General financial indiscipline and application of funds for unauthorised purposes
- Deficiency of funds
- Over-trading
- Unfavourable gearing or keeping adverse debt-equity ratio
- Inadequate working capital
- Absence of cost consciousness
- Lack of effective collection machinery

(iii) Labour Management

- Excessively high wage structure
- Inefficient handling of labour problem

- Excessive manpower
- Poor labour productivity
- Poor labour relations
- Lack of trained/skilled labour or technically competent personnel

(iv) Marketing Management

- Dependence on a single customer or a limited number of customers
- Dependence on single or a limited number of products
- Poor sales realisation
- Defective pricing policy
- Booking of large order at fixed prices in an inflationary market
- Weak market organisation
- Lack of market feedback and market research
- Lack of knowledge of marketing techniques
- Unscrupulous sales/purchase practices

(v) Administrative Management

- Over centralisation
- Lack of professionalism
- Lack of feed back to management
- Lack of proper management information systems
- Lack of controls
- Lack of timely diversification
- Excessive expenditure of R&D
- Divided loyalties
- Dissension within management
- Incompetent management
- Dishonest management

(b) External Causes

The external factors that cause industrial sickness are as given below:

(i) Infrastructural Bottlenecks

- Non-availability of irregular supply of critical raw materials or other inputs.
- Chronic power shortage
- Transport bottlenecks

(ii) Financial Bottlenecks

- Non-availability of adequate finance at the right time

(iii) Government Controls

- Government price controls
- Fiscal duties
- Abrupt changes in Government policies affecting costs/prices/imports/ exports/licensing.
- Procedural delays on the part of the financial/licensing/other controlling or regulating authorities

(iv) Market Constraints

- Market saturation
- Technological obsolescence
- Recession-fall in domestic/export demand

(v) Extraneous Factors

- Natural calamities
- Adverse Political situation (domestic as well as international)
- Sympathetic strikes
- Multiplicity of labor unions
- War

19.5 REASONS FOR BUSINESS FAILURE

At one level, a company either ceases to trade because the bank or creditors stop it or voluntarily ceases to trade and calls in the receivers or the administrators. In either case, action is taken because the firm is unable to pay its debts or likely to be unable to pay in the near future. Why do firms get into this situation? The accounts of the company do not cause it to go broke. Rather, accounting information reveals what has gone wrong and there are two levels of cause (i) the accounting manifestation (ii) the root problem.

Accounting Manifestation of Failure

- Too much working capital
- Insufficient working capital
- Too high interest charges
- Too much debt
- Over and high dividends
- No cash
- Making a trading loss
- No growth
- Selling parts of the firm at a loss
- Very poor profit margins
- Marginal profitability

No one of these on its own is a cause of collapse, but when several appear together, the danger signs are there.

Root Problems for Failure

- Not selling enough
- Not selling at the right prices
- Lack of modernization
- No product development or research

- Buying useless assets
- Failure to controls costs
- Failure to control working capital
- Reckless borrowing
- Having a defective dividend policy

Perhaps, to these should be added a failure to invest in people. These things do not happen all at the same time, but if the trends are observed over two or three years then it is often easy to identify trouble brewing unless management does something drastic and takes corrective action. The RBI has also studied the cause-wise reasons for industrial sickness of 378 units and has concluded the following:

Causes	Number	Percentage
Mismanagement	197	52
Faulty planning and technical drawbacks	52	14
Market Recession	86	23
Shortage of power, material, materials inputs etc.	34	9
Labour trouble/unrest	9	2
	378	100

19.6 WORKING CAPITAL MANAGEMENT IN SICK INDUSTRIES

The industrial sickness is caused due to numerous internal and external factors. But the sickness caused may also be attributed to the poor working capital management like:

- Poor financial planning
- Poor resource management
- Faulty costing
- Use of working capital funds for purpose of capital expenditure

- Overtrading, over capitalisation or under capitalisation
- Inadequate working capital
- Prolonged operating cycle
- Inefficiency in collection of receivables
- Lack of effective collection machinery
- Excessive holding of stocks
- Stoppage of production due to stock-outs
- Excessive reliance on trade credit
- Bank finance not available in-time

The planning and control of working capital in sick industries need special attention. A thorough analysis of causes for sickness is required for working capital management in sick industry. The Finance Manager require to take steps to restructure the working capital requirements and the banks may be approached for need based finance instead of operating on the basis of predetermined credit limits given by the bank. The efforts should be made to improve current ratio and quick ratio by reducing the levels of investment in stocks and receivable. The financial restructuring should be done to improve the leverage ratios.

19.7 DETECTION OF INCIPIENT SICKNESS

The sickness creeps into the industrial unit in a gradual and slow moving process. If the incipient sickness is not detected in its early stages, it becomes chronic over a period of time and ultimately ends-up with closure of the unit, in terms of insolvency. The management is required to recognise the symptoms of sickness and set it right immediately to avoid the embracing financial situation in the future, as well as, to save the unit from permanent closure. If necessary the management should engage the services of specialists for proper diagnosis of the situation. A planned course of action with co-ordination and co-operation of all functions and staff can enable to counter the sickness. If necessary, the real situation should be put before the stakeholders like Shareholders, Banks, Financial institutions, Government, Creditors etc. to bring the operation to the smooth-flow. The incipient sickness can

be identified and detected with the help of analysing the following situations:

- he company is continuously making cash losses year after year and the trend is likely to continue in future.
- The working capital is totally insufficient to carry the day-to- day operations.
- The company is working under the situation of negative working capital.
- The operating cycle and cash conversion cycle is too long, affecting the profitability of the organisation.
- The company is working at very low levels of capacity utilisation.
- The operational costs are very high as compared to sales revenue realisation.
- Too much reliance on outside funds, increases the interest burden, as well as, financial risk.
- There is gradual deterioration of debt-equity ratio over a period of time.
- Gradual deterioration of net worth and the situation is likely to continue in future.
- The working capital is diverted to purchase capital assets.
- The company caught in a situation of overtrading i.e. the working capital is insufficient to meet the requirements of increased level of sales activity.
- The current ratio, quick ratio and absolute liquid ratio give an indication of technical solvency over a period of time.
- The managerial imcompetency is unable to counter the competitive forces and their strategies.
- Excess capacity created leads to increase in costs and reduction of profits.

In view of the grave consequences of industrial sickness, an early planned programme is required to remove the incipient sickness.

19.8 PREDICTION OF SICKNESS

The prediction of sickness can be made with the help of the following:

1. Ratio Analysis

Banks and financial institutions have so far provided huge amount of credit to sick industrial undertakings of the country and still the sick account portfolio of the financing agencies is steadily mounting up. Industrial sickness has multiple effects including gross under utilisation of productive facilities, longer working capital cycle, failure to maintain delivery schedule leading to cancellation of orders, failure to maintain repayment schedule for term loans, failure to retain good managers and technocrats, failure to retain and maintain assets and machinery. All these factors result in increase and further mounting of losses. The problems are much more grave in case of SSI units where entrepreneurs are mostly first generation industrialists with their financial liquidity often sent out on capital cost over-run. First of all, the analysts should see whether the three important parameters viz., cash position, net working capital and net worth of the company are positive. If not, they should monitor the following cashflow related variables and improve the overall financial position of the company. The cashflow represents the 'earnings before depreciation and tax (EBDT).'

(a) EBDT to Total Assets – This ratio is a measure of the true productivity of the company's assets. In indicates how effectively the resources of a company are being deployed in its assets. This ratio also reveals the cash generating capacity of the assets. The survival of a company depends directly on the earning power of its assets. Thus, it ensures the long-term survival of the company. A smaller cashflow to total assets ratio of the company is claimed to provide forewarning of financial crisis in the future. A higher cashflow to total assets ratio shows signs of stronger financial health of a company.

(b) EBDT to Total Liabilities – This ratio measures the company's capacity to withstand financial pressure and shows the long-term solvency position of the company. A low ratio value provides insight into the impending sickness of the company. A high ratio value reflects the company's strength to meet its obligation as they mature.

(c) EBDT to Net Sales – The operating efficiency of the company in generating cash flow business can be known by establishing relationship between the cashflow to net sales. This ratio relates the resource inflow to the amount of sales effected. Since the basic aim of business is to generate cash through sales, it can indicate its internal cash generation ability.

(d) EBDT to Net Worth – Cashflow when related to net worth would depict to what extent the company has utilised the owner's fund and this ratio helps to evaluate the financial solvency of a company in terms of its ability to avoid financial risk. A lower value of this ratio would indicate less cash generation and a negative ratio over a period of time would lead to failure of business. A higher trend of this ratio indicates more inflow of cash and contributes to net worth position of the company which is a sign of efficiency.

(e) EBDT to Current Assets – This ratio provides insight into the company's ability to manage the working capital as well as its credit policy on sales. The value of inventories assumes greater significance in prediction of corporate health, especially where a large portion of the current assets of the company are in the form of inventories. In such cases, even the company may fail inspite of the strong liquidity position.

(f) EBDT to Current Liabilities – This ratio indicates the short- term solvency position of a company. It shows the liquidity position in the sense that whether the company is capable enough to meet current obligations when they are due. Greater the EBDT to current liabilities, the more likelihood of the company to be classified as a non-ailing one or vice versa.

(g) EBDT to Total Capital – This ratio provides information about how effectively and efficiently the capital (owners and outsiders) is being utilised to generate cash for operational purposes. This ratio also provides pertinent information on the ability of the company to pay regular interest, dividend etc. A high ratio reveals efficient utilisation of the capital, whereas a low ratio is a sign of sickness. The above ratios do possess both the discriminating as well as predictive power. It can discriminate between sick and non-sick companies and can predict the potential corporate sickness at high degree of accuracy when ratios are used on individual basis. While taking

important decisions, the banks, financial institutions, management, government, investors etc. can utilise the above ratios to study and monitor the health status of the companies.

Illustration 1

Which accounting ratio will be useful in indicating the following symptoms:

(1) Low capacity utilisation.

(2) Falling demand for the product in the market.

(3) Inability to pay interest.

(4) Borrowings for short-term and investing in long-term assets.

(5) Large inventory accumulation in anticipation of price rises in future.

(6) Inefficient collection of debtors.

(7) Inability to pay dues to financial institutions.

(8) Return of shareholders' funds being much higher than the overall return on investment.

(9) Liquidity crisis.

(10) Increase in average credit period to maintain sales in view of falling demand.

Solution:

Symptoms	Accounting Ratio to be used
1. Low capacity utilisation	1. Actual hours/budgeted hours or Fixed Assets Turnover Ratio.
2. Falling demand for the product in the market.	2. Finished Goods Turnover Ratio.
3. Inability to pay interest	3. Interest Coverage Ratio.
4. Borrowing for short-term and investing assets to in long-term	4. Current Ratio or Fixed Long-term Loans Ratio.
5. Large inventory accumulation in anticipation.	5. Inventory Turnover Ratio of price rise in future.

6. Inefficient collection of debtors.	6. Debtors Turnover Ratio.
7. Inability to pay dues to financial institution.	7. Debt service coverage ratio.
8. Return of shareholders' funds being much on higher than the overall return on investment.	8. Debt-Equity Ratio, Return investment and Return on Equity compared.
9. Liquidity crisis.	9. Current Ratio, Quick Assets or Test Ratio
10. Increase in average credit period to maintain falling demand.	10. Average collection period or sales in view of Debentors Turnover Ratio.

2. Univariate Models

Beaver (1966) tested groups of ratios covering cash flow, net income, gearing, liquidity and turnover. His research indicated that 'Cashflow to Total debt' was the best predictor. In a later study Beaver carried out a more detailed analysis of the liquidity ratios and their potential as predictors of business failure. On the basis of his study, he made the following generalisations about failing firms:

- They generate less sales and the sales growth is less than that of non-failed firms.
- They have less current assets but more current debt.
- They have less inventory than non-failed firms.

His data showed that the 'Net working capital and Quick asset ratios' predicted better than the 'Current assets ratio'. The 'Cash ratio' predicted best of all.

FitzPatrik (1974) examined companies that failed in the 1920's and found the best ratio to be 'Net profits to Net worth'. Smith (1974) came up with 'Working capital to Total assets' as the best indicator of failure. Merwin (1974) also found Smith's ratio to be the best.

3. Multiple Discriminant Analysis – Altman Z Score

The computation and analysis of certain ratios based on the information taken from financial statements allow the analyst to predict sickness or business failure. But the ratios are considered independent of each other, will not permit to express the whole situation in a single measure. Therefore, it would be more useful if the important ratios are combined together to measure the probability of sickness or insolvency. To overcome this difficulty multiple discriminant analysis is used.

Edward I. Altman (1968) developed Z score model in order to detect the financial health of industrial units with a view to prevent the industrial sickness. The model was developed based on emphirical studies, to predict the sickness of a unit in advance. The model is also called as 'Multiple Discriminant Analysis (MDA)'. It is a linear analysis used to develop with five variables. The MDA computes the discriminant co-efficient while the independent variables are the actual values taken from the financial statements. Altman Z score model is expressed as under:

$Z = 1.2\ X_1 + 1.4\ X_2 + 3.3\ X_3 + 0.6\ X_4 + 1.0\ X_5$

Where,

X_1 = Working capital/Total assets X_2 = Retained earnings/Total assets

X_3 = Earnings before interest and taxes/Total assets X_4 = Market value of equity/ Book value of total debt X_5 = Sales/Total assets

Z score model can be analysed as follows:

- Sickness is predicted basing on value of Z
- If Z score is more than 2.99 – there is no danger of bankruptcy.
- If Z score is below 1.81 – there is a definite failure.
- If Z score is between 1.81 and 2.99 – it shows the grey area. Altman developed a guideline for Z score.
- If score is above 2.675 – firms can be classified as financially sound.
- If score is below 2.675 – the firm is heading towards bankruptcy.

Therefore, the lower the Z score, there is a greater possibility of bankruptcy and vice versa.

Altman's model has established itself as the leading multivative predictor model of corporate failure and it has been the subject of numerous tests around the world. It would be useful to employ the Altman model in evaluating Indian firms and endeavour to establish the reliability of the model. It could be that the cut-off point for the Z score should be altered from that established in the original study.

4. Non-Financial Indicators of Business Failure – Argenti score

The following theories attempt to explain the reasons for failure. Agrenti (1976) after analysing the factors associated with the collapse of Rolls Royce, gave six causes of failure which are as follows:

(a) Bad management structure

(b) Lack of accountancy information

(c) Not responding appropriately to change

(d) Over-trading

(e) Involvement with a big project

(f) High gearing

Argenti has stressed on non-financial indicators for assessment of symptoms of failure. According to him we must have an intimate knowledge of the company and especially its top management. The failure of business organisation is seen as the culmination of sequence starting with management defects that bring mistakes, which in turn produce symptoms and their scores are presented in table given. The various scores presented in Argenti score board must be used in full or not at all. Intermediate or partial scores are not permitted. The philosophy behind the use of the Argenti score is that if a company is in trouble, then that is due to management defects and the consequent mistakes, which will have been there for a number of years and should be noticed by a careful observer long before the signs of financial distress are there. The Argenti score thus attempts to quantify a qualitative judgement. It is, therefore, highly subjective and the observer needs to visit the company and its factories, meet its directors and get to know them well, in order to make objective

analysis. This table presents the weighting given by Argenti to the various aspects of management performance in order to assess a company's viability. Note that the higher score, the worse to the company.

Score		(a) Defects
In Management		
8	-	The Chief executive is an autocrat.
4	-	He is also the chairman.
In Accountancy		
2	-	Passive Board – an autocrat will see to that.
3	-	No budgets or budgetary controls to assess variances.
2	-	Unbalanced Board – too many engineers or too many finance types.
3	-	No cash flow plans or ones that are not updated.
4	-	No casting system, cost and contribution of each product unknown.
2	-	Weak Finance Director
1	-	Poor management depth.
15	-	Poor response to change, old fashion products, obsolete factory, old directors, out of data marketing.
43		Total Defects (Pass 10)
		(b) Mistakes
15	-	High leverage, firm could get into trouble by a stroke of bad luck.
15	-	Over trading, Company expanding faster than its funding. Capital base too small or unbalanced for the size and type of business.
15	-	Big project gone wrong or any obligation which they cannot meet if something goes wrong.
45		Total Mistakes (Pass 15)

(c) Symptoms

5	-	Financial signs, such as Z-score, appears near failure time.
16	-	Creative accounting Chief executive is the first to see signs to failure and in an attempt to hide it from creditors and the banks, accounts are 'glassed over' by, for instance, over valuing stocks, using lower depreciation etc. Skilled observers can spot these things.
3	-	Non-financial signs, such as untidy offices, frozen salaries. Chief executive ill, high staff turnover, low morale, rumors.
1	-	Terminal signs
12		Total symptoms
100		Total Possible Score (Pass 25)

After an extensive analysis of a large number of American companies, both successful and unsuccessful, Ross and Kami (1973) up with a list of ten basic principles of management which, if followed, should avoid failure. The ten principles are as follows:

- Develop and communicate a strategy.
- A unified sense of direction to which all members of the organisation relate.
- If you want to achieve plans, programmes and policies, then overall controls and costs controls must be established.
- Exercise care in the selection of a Board of Directors and require that they actively participate in management.
- Avoid one-man rule.
- Provide management depth.
- Keep informed of change and react to change.
- Don't overlook the customer and the customer's new power.
- Use but don't misuse computers.

- Do not engage in accounting manipulations.
- Provide for an organisational structure that meets the needs of people.

19.9 DIAGNOSTIC STUDY IN REVIVAL OF SICK UNIT

Any successful scheme for revival will start with a diagnostic study or preparation of revival scheme. This involves identifying four 'Rs'

– Reasons, Rationale, Risks and Requirements. These are briefly discussed as under:

(a) Reasons for sickness – The real reasons should be identified first. Very often, one may be guided by apparent reasons than real reasons. Just as a wrong diagnosis does not help during disease of a man, it may not serve any purpose in reviving the industrial health. Thus, misdirected efforts and resources arising from wrong diagnosis should be avoided.

(b) Rationale for revival – What is the rationale for revival? Establishing justification for revival is very important. This will help identification of viable and non-viable units. In reality, the number of viable units would be very low (5% to 10% of the sick units).

(c) Risks – The risks inherent in the revival should be evaluated. It may be emphasised that reviving a sick unit is more risky than launching a new project. Revival operation of a sick unit, even if found to be potentially viable, is an onerous task.

(d) Requirements – The requirements in terms of resources, technology, government help, management efficiency, productivity etc. should be listed down. In spite of potential viability, a revival scheme may fail if there is any mismatch between requirements and their availability.

After the diagnostic study, one should prioritise the thrust areas, as well as, management skills and approaches needed for successful revival operations.

19.10 REVIVAL STRATEGIES N FOR SICK INDUSTRIAL COMPANIES

Previously the sick industrial companies were under the regulation of 'Board for Industrial and Financial Reconstruction' (BIFR) established under 'The Sick

Industrial Companies (special provisions) Act, 1985, which is now repealed. Now the Companies Act, 1956, through an amendment made in the year 2002, inserted Sections 424A to 424L regarding revival and rehabilitation of sick industrial companies. Brief provisions of the Act are discussed below:

1. Reference to Tribunal - When an industrial company becomes sick, the Board of Directors of the company is required make a reference to the National Company Law Tribunal. The Board of Directors of the company is required to prepare and submit a 'scheme of revival and rehabilitation' to the Tribunal along with application. If there is sufficient reason exists, Central Government, State Government, RBI, Public Financial Institutions or Scheduled Bank are empowered to make reference to the Tribunal. A certificate from an auditor, from a panel of auditors, is to submit along with the application explaining the reasons for erosion of net worth of the company being 50% or less. The auditor certificate is also required to give details about default in repayment of debts, making such company a sick industrial company. In case of Government companies, before making any such reference prior approval of the concerned Central or State Government is required. On receipt of reference, the Tribunal will pass an order whether the company become sick or not and such order shall be final for further proceedings.

2. Inquiry into Working of Sick Industrial Company – On receipt of reference, the Tribunal makes inquiry into industrial company, for determining whether it becomes a sick industrial company. Tribunal may also require by order any operating agency to enquire into the scheme for revival and to make a report to it on such matter as may be specified in the order. Operating agency means any group of experts consisting of persons having special knowledge of business or industry in which the sick industrial company is engaged. The operating agency also includes public financial institution, state level institution, scheduled bank or any other person as may be specified as operating agency by the Tribunal. The Tribunal may appoint one or more persons who possess knowledge, experience and expertise in management and control of the affairs of any other company to be a Special Directors on the board of industrial company for the purpose of enquiry.

3. Power to Make Suitable Order – After making an inquiry and after taking into consideration all the relevant facts and circumstances of the case, the Tribunal

will decide in writing whether it is practicable for the company to make its net worth exceed the accumulated losses or make the repayment of its debts within a reasonable time. If it is practicable to revive within reasonable time, Tribunal will pass an order in writing with such restrictions or conditions as it may deem fit for revival.

4. Preparation and Sanction of Scheme – As specified in the Tribunal's order, operating agency is required to prepare and submit the scheme within 60 days from the date of Tribunal's order which may be extended upto 90 days after taking into consideration the guidelines framed by the RBI in this regard. The scheme may contain any one or more of the following measures:

(a) Financial reconstruction.

(b) Proper management by change in management or by takeover of management.

(c) Amalgamation with any other company.

(d) Amalgamation of any other company with the sick industrial company.

(e) Sale or lease of a part or whole of any industrial undertaking of sick industrial company.

(f) Rationalisation of managerial personnel, supervisory staff and workmen in accordance with law.

(g) Such other preventive, ameliorative and remedial measures as may be appropriate.

(h) Repayment of debt.

(i) Such incidental, consequential or supplemental measures to give effect to the above measures.

The scheme may provide any one or more of the following:

- The constitution, name and registered office, the capital, assets, powers, rights, interests, authorities and privileges, duties and obligations of sick industrial company and the transferee company.
- The business, properties, assets and liabilities to be transferred by sick industrial

company to the transferee company and terms and conditions of transfer.

- Any change in the Board of directors, appointment of new Board of directors, their authority, period of appointment etc.
- Alteration of Memorandum of Association of sick industrial company and the transferee company for the purpose of altering capital structure, and to carryout the reconstruction or amalgamation.
- Continuation of any action or other legal proceedings.
- Reduction of interest or rights of shareholders.
- Allotment of shares and in case of dissentient shareholders, payment of cash in full satisfaction of their claims.
- Any other terms and conditions for the reconstruction or amalgamation.
- Sale of undertaking free from all encumbrances and all liabilities of the company.
- Sale of undertaking with such other encumbrances and liabilities as may be specified.
- Sale or lease to any person including a co-operative society formed by the employees of such undertaking.
- Fixing of reserve price for sale.
- Method of sale of assets of the industrial undertaking such as by public auction, by inviting tenders or in any other manner.
- The manner of publicity for sale of assets.
- Issue of shares at face value or at intrinsic value which may be at discount value or such other specified value to any industrial company or any person including the executives and employees of such sick industrial company.
- Such other measures for carrying out the scheme fully and effectively.

5. Arrangement for Continuing Operations During Inquiry - Any person providing or intending to provide any financial assistance may make an application to the Tribunal, at any time before completion of the inquiry, for continuing the operations.

6. Winding up of Sick Industrial Company – If the Tribunal is of the opinion that sick industrial company is not likely to make its networth exceed the accumulated losses within a reasonable time, while meeting all its financial obligations, and is not likely to become viable in future, the Tribunal may order for winding up of the company.

7. Direction not to Dispose of Assets – The Tribunal may pass an order not to dispose of any of the assets during the period of inquiry or during the period of preparation or consideration of the scheme. Such order may be passed in the interest of sick industrial company or creditors or shareholders or public interest.

19.11 THEME OF ACTION OF THE SCHEMES SANCTIONED BY BIFR

The gist of actions taken by BIF R under the provisions of SICA, in the previous regime, are given in brief as follows:

- Close-down the unviable sections of the company.
- Rationalisation of the work force involving voluntary retirement schemes.
- Settlement of the bank's outstanding.
- Leasing out of surplus land for development by private builders.
- Carry out essential repairs.
- Sale of liquid assets.
- Change to set up of machinery to make it compatible to the requirement of the company.
- Entering into agreement with workers to accept voluntary retirement schemes and productivity norms as applicable to industry.
- No additional demands to be made by labour which shall be detrimental to operate the scheme.
- Banks to accept charging concessional interest rates and defer the overdue interest.

- Conversion of overdue interest into funded interest and concession rates on additional working capital limits.
- To urge the Government and statutory bodies to accept payment of overdue statutory liabilities over a period of time, say five years.
- The company could also provide a scheme to repay the liabilities which could be beneficial to the creditors.
- Modernisation of the unit where necessary.
- Additional investment to be made to make the unit financially viable.
- Control working capital and follow aggressive sales policies.
- Increase in cash credit limit.
- Improve realisation from the customers.
- Economise in all directions.
- To provide for escalation formula in future contracts to take care of the increase in prices.

Firm agreement with customers to have price settlements. BIFR has carried out commendable jobs in the form of:

- Providing a single platform to discuss and finalise turn around plans.
- Assessing independently the viability of the sick companies.
- Directing financial institutions, banks and governments etc. to expand need based reliefs and concessions.
- Mitigate problems of litigations against sick companies and relieving sick units of suicidal contracts.
- Trying unscrupulous promoters and protecting employment while trying down labour or reasonable terms during implementation of turn-around plan.

19.12 INDICATIVE LIST OF CONCESSIONS AND SACRIFICES BY DIFFERENT AGENCIES

The list of concessions and sacrifices extended by the Central Government, State Governments, management and employees to a Sick Industrial Company under the direction of BIFR were as follows:

Central Government

(a) Exemption from Central excise, wholly or partly, for a period of time/ deferment of collection or treating the dues as a loan repayable on the lines of sales tax loans by the State Governments.

(b) Income-tax relief to banks in respect of amount placed in Interest Suspense Account.

(c) Preferential allotment of canalised items to sick industrial units.

(d) Deferment of provident fund/waiver of penalties, income-tax and Employees' State Insurance dues and collection after suitable rephasing and ensuring at the same time that there is no deprivation of benefits to the retiring or sick employees.

(e) Exemption from payment of minimum bonus under the Payment of Bonus Act for a limited period, through the amount may continue to form a contingent liability to be discharged when the sick industrial unit is in a position to do so.

(f) Banks and Financial Institutions should not be asked to issue guarantee cover to the Central Government in respect of their dues, e.g., Provident fund, Income-tax, Excise duty and Import duty.

(g) In respect of sick public sector undertakings, or defence oriented/export oriented sick industrial units which, in spite of their non-viability, Government wants to be assisted on considerations of public interest budgetary support through equity or interest-free loans should be provided.

(h) Adequate marketing support should be given to sick industrial units, if necessary, by reserving a certain quota for a certain period for purchase by Government/

Semi- Government Organisations. The sick industrial units should also be given price preference in the same way as public sector industrial units, as a measure of package.

State Governments

(a) Sales tax loans should be provided at nil or very low rate of interest.

(b) State Government guarantee should be made available where needed for fresh advances.

(c) Power supply should not be cut unilaterally to sick industrial units when they are under a process of rehabilitation, if the electricity dues are not paid in time. A realistic rescheduling of such dues should be worked out.

(d) Exemption of certain concessions in the rate of sales tax/octroi duty and other duties/levies of the state/quasi government bodies should be given.

(e) Adequate market support for the products by strengthening the infrastructure should be provided.

(f) Speedier disposal of industrial disputes should be ensured. Where the rehabilitation schemes envisages rationalisation of labour, State Governments should use their good office in the matter.

(g) Banks and Financial Institutions should not be asked to stand guarantees for the payment of dues of the sick industrial units to the state/quasi government bodies.

(h) In respect of sick industrial units taken over by the State Governments, adequate budgetary support should be made to strengthen their equity base. Alternatively, State Industrial Development Corporations and State Industrial Investment Corporations might provide the requisite support.

(i) Penal levies in respect of sick industrial units should be waived as a part of the package.

(j) Declaration of sick industrial units as 'Relief Undertakings' under the various States' Relief Undertakings Acts may be made as a matter of course. Banks and Term Lending Institutions should be exempted from the applicability of

the Relief Undertaking Order.

(k) Price preference in the matter of purchases as given to public sector industrial units should be given.

(l) Expeditious permission under the Urban Land Ceiling Act, not only for creation of mortgage but also for the sale of the mortgage assets or excess vacant land to meet a part of the rehabilitation should be given.

(m) Equity contribution should be provided wherever necessary, even where the units are not taken over by the State Government.

Management

(a) Waiver or reduction of remuneration.

(b) Foregoing interest on any unsecured loans/deposits by self or friends and relatives.

(c) Write-off of loans.

(d) Bringing in fresh funds as may be decided under the package.

(d) Agreeing to reconstitution of management at the Board or Operational level.

(e) Agreeing to appointment of finance/commercial directors/controllers and concurrent auditors.

(f) Agreeing to provide personal guarantees/pledge of shares.

(g) Agreeing to discipline envisaged as a part of the package.

Employees

(a) Voluntarily agreeing to schemes of rationalization /retrenchment of surplus staff.

(b) Deferring or phasing out retrenchment compensation.

(c) Wage stabilisation, if not reduction, without agreeing on increases.

(d) Agreeing not to make any fresh demands for the specified period.

(e) Agreeing to increase productivity and productivity linked incentives.

19.13 SUMMARY

The survival and growth of an enterprise is one of the basic objectives, which cannot be ignored. To survive, a firm need to be profitable and sound. A sick unit incurs cash losses and fails to generate internal surplus on a continuing basis. The causes for sickness of an industrial unit may arise in planning stage implementation sage or commercial production stage. Some causes arises internally within the organisation due to poor management of production, finance, marketing, human resources and lack of administrative skills. The external causes generally relate to infrastructural bottlenecks, financial constraints, government control, market constraints and factors extraneous to business. The reasons for industrial sickness is due to cashflow problems. The analyst should monitor the financial position by looking the earnings before depreciation and tax with total assets, net sales, total liabilities, net worth, total capital, current assets and current liabilities. The planning and control of working capital in sick industries needs special attention and need based finance should be sought from banks and financial institutions. Previously Board for Industrial and Financial Reconstruction undertook the rehabilitation of sick units under Sick Industrial Companies (Special Provisions) Act, 1985 which is now repeated. Revival and rehabilitation of sick units are regulated under newly inserted Sections 424A to 424L in the Companies Act, 1956. The regulatory authority is the National Company Law Tribunal.

19.14 GLOSSARY

- **Sick Industrial Company:** It means an industrial company (being a company registered for not less than five years) which has at the end of any financial year accumulated losses equal to or exceeding its entire net worth.
- **Net Worth:** It means the sum total of the paid up capital and free reserves after deducting the provisions or expenses.
- **Z Score:** Z score is a model to detect the financial health of industrial units with a view to prevent the industrial sickness.
- **Weak Unit:** An industrial unit is defined as weak if its accumulated losses as at the end of any financial year resulted in the erosion of 50% or more of its peak net worth in the immediate preceding four accounting years.

19.15 SELF ASSESSMENT QUESTIONS

Q.1 What do you understand by Sick Industrial Company? Explain the factors causing industrial sickness.

Q.2 Describe the symptoms which might indicate that industrial sickness lies ahead.

Q.3 What are the ratios used for prediction of sickness?

Q.4 Give a list of actions taken by BIFR in rehabilitation of sick companies.

Q.5. Discuss the various concessions and sacrifices by different agencies under the direction of BIFR.

19.16 LESSON END EXERCISE

Q.1 Discuss the legal provisions incorporated in Companies Act, 1956 for revival and rehabilitation of sick industrial companies.

Q.2 Explain the Altman's Z score model in order to detect the financial health of industrial units with a view to prevent industrial sickness.

19.17 SUGGESTED READINGS

1. Rastogi, R.P., Financial Management, Galgotia Publishing Company, New Delhi.
2. Maheshwari, S.N., Financial Management, Sultan Chand & Sons, New Delhi.
3. Khanka, S.S., Entrepreneurship Development, S. Chand & Sons, New Delhi.
4. Sundaram, K.P.S; and Dutt, Rudar, Indian Economy, S.Chand & Sons, New Delhi.

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Semester-IV **Lesson No. 20**

Course No. FE-414 **Unit - IV**

CONCEPT AND COMPONENTS OF EVA AND MVA

STRUCTURE

20.1 INTRODUCTION

A financial information system is an organized approach to collecting and interpreting information, which is usually computerized. A well-run financial information system is essential to a business, since managers need the resulting information to make decisions about how to run the organization. This system can be used in many ways, including the following:

- Ensure that there are sufficient funds on hand to pay for obligations as they come due for payment.
- Put excess funds to use in appropriate and reasonably liquid investments.
- Determine which customers, products, product lines and subsidiaries are the most and least profitable.
- Locate the bottleneck areas within the business.
- Determine the maximum amount of funds that can safely be distributed to investors in the form of dividends.
- Determine the maximum debt load that the organization can sustain.

There are a number of ways in which to extract information from a financial information system, including structured reports that are run on a regular basis, ratio analyses, cash forecasts, and what-if analyses. A report writer module is used to construct the more commonly-used reports, while less frequently used data is downloaded through a query system.

20.2 OBJECTIVES

After reading this lesson, you should be able to:

- Define Financial Information System;
- Benefits of financial information system;
- Meaning of value based management sustem;

- Benefits of value based management; and
- Impact of demonitisation on business concerns.

20.3 CONCEPT OF FINANCIAL INFORMATION SYSTEM

The financial management system is also known as the financial information system and exists to fulfill a very unique objective within the business: it is there to meet the financial obligations of the business as those obligations fall due. It seeks to do so while using the least possible amount of financial resources within the limits of some predetermined margin of safety.

The financial management system will produce certain outputs, including operating and capital budgets, accounting reports, working capital reports, forecasts of the cash flows, and analyses based on the considerations of various scenarios. The financial data itself may be analyzed in various ways, including trend evaluation, ratio analysis, and financial modeling. The twin processes of financial planning and forecasting, in turn, are made possible by combining the FMIS with a Decision Support System, or DSS. Alternatively, they can all exist within the same system in the case of an IFMIS.

20.4 FUNCTIONS OF FINANCIAL MANAGEMENT INFORMATION SYSTEM

Essentially, a financial management information system exists to accumulate financial data and then analyze that data in order to allow the decision makers in the business to make better decisions. While each system will have certain strengths and unique features, there are certain functions of a financial information system common to most systems:

- **Collect information**

The ideal FMIS is expected to collect information in a manner that is accurate, timely, complete, reliable, and consistent. The information that passes through the system should ultimately lead to results that can be trusted. Without sanitizing the collection process, that won't be possible.

- **Reports**

The ideal financial management information system is expected to provide management reporting to accurate levels. These reports can then assist the

management of the business to make high-level decisions for the direction of the business.

- **Support policy decisions**

The ideal financial management information system is expected to support policy decisions in the organization. When policies are made, they should be backed up by accurate and reliable data, which should ultimately come from the FMIS.

- **Preparation and execution of budgets**

The ideal financial management information system should support the preparation and execution of budgets within the business. The preparation of budgets should be based on financial reports emanating from the FMIS. Meanwhile, real-time data from the FMIS should inform the management about their execution of the budgets so they know whether they are within limits or exceeding them.

- **Financial statements**

The ideal financial management information system should facilitate the preparation of financial statements. Financial statements are prepared for both internal use and for external stakeholders. They should be prepared using accurate and reliable information, which can be obtained from the financial management information system.

- **Information for budgeting, analysis and reporting**

The ideal financial management information system should provide information for budgeting, analysis and reporting. These are three important high-level functions within any business and can only be effectively carried out if the data produced is accurate and reliable, as would be expected from a properly functioning financial management information system.

- **Audit trail**

The ideal financial management information system should be able to provide an audit trail to facilitate the audit process. One of the uses of a financial information system is to record transactions. By maintaining records of every

single transaction that occurs within a business, a financial management information system makes it possible to carry out an audit effectively.

20.5 BUILDING BLOCKS OF FMIS?

There are many elements that make up an FMIS, each with its own function. Some of them have to do with the accounting functions of the organization; others are concerned with planning, others analysis, and others reporting. The following are the main elements you will find in most financial management information systems:

The general ledger.

The accounts payable.

The accounts receivable.

A budgetary accounting module.

A payroll system.

A procurement module.

A project ledger module.

An asset module.

A proper integrated financial management information system may have a lot more elements. However, these core elements are common to most such systems.

20.6 BENEFITS OF FINANCIAL MANAGEMENT INFORMATION SYSTEM

By its very nature, a financial management information system has numerous advantages that make operations easier for a business. Here are some of the most important benefits of an integrated financial management information system:

- **It makes the decision-making process faster**

The information provided by the financial management information system has some important qualities: It is timely, reliable, accurate, and verifiable. That makes it much easier and faster to make decisions because the process of curating the information used to arrive at the decisions has been outsourced to the system.

Because of the financial reporting capabilities of the financial management information system, it helps the management of the business to evaluate the economic advantages and disadvantages of various business strategies they are trying out. This brings about more certainty to the implementation of business strategies and decisions.

- **It helps in planning**

Having an FMIS system implemented increases your capacity to schedule and forecast. With that capability, the process of allocating financial resources become much more effective, and the targets set become more realistic. You should always allow your financial capabilities to inform the scope of your plans and limit it accordingly. This capacity to plan realistically allows you to achieve your goals much faster.

- **It makes the business more efficient**

With a financial management information system, your business stands a chance to become much more efficient. The system gives you all the information and control you need to prevent the misuse of the business's financial resources while giving you the ability to mitigate potential risks that you cannot foresee. Because of its reporting capabilities, a financial management information system also allows you to use past performance to inform your current as well as future strategies.

- **It gives you a competitive advantage**

With a financial management information system, your business will have a competitive advantage over other businesses that do not have it. An FMIS is simply another way to leverage the immense power of information technology and bring more productivity to the business and more satisfaction to the customer. The business will be able to see everything that is going on in a financial sense and respond in a timely manner to remain a step ahead of its competitors at all times.

- **It allows for integration**

With a financial management information system, the process of integration

becomes much easier. The functions and resources of the business can all be controlled within a single system. This makes it easier and faster to process transactions and convey financial information. Redundant activities are eliminated, and shared services are centralized to save on operational costs. The end result is a more efficient business with a more robust bottom line.

Actually, this is the whole idea behind an integrated financial management information system. By integrating all of the financial functions of the business, everything moves along more smoothly, and the business enjoys massive benefits as a result.

20.7 CONCEPT OF CORPORATE VALUE BASED MANAGEMENT

Value Based Management (VBM) is the management philosophy and approach that enables and supports maximum value creation in organizations, typically the maximization of shareholder value. VBM encompasses the processes for creating, managing, and measuring value.

The value creation process requires an understanding of the attractiveness of the market or industry where one competes, coupled with one's competitive position relative to other players. Once this understanding is established and is linked with key value chain drivers for cash flow and profitability, competitive strategy can be established or modified to maximize future returns.

Lucintel assists clients in understanding the dynamics and underlying forces in the materials and manufacturing industries, including specific product, application or geographic markets, as well as their company's strengths and weaknesses compared to others.

Building on our industry and market knowledge, extensive industry database,

and familiarity with key industry players, we employ rigorous analytical techniques, such as Porter's five forces and GE/McKinsey matrix models, to provide business intelligence that allows clients to accurately assess their competitive position and formulate strategic options that will create increased value.

Based on our specialization in the materials and manufacturing industry, we are able to uniquely offer benchmarked analysis that provides clients with clear insights and support in the development of their value maximizing strategy for this industry.

Value Based Management aligns a company's overall aspirations, analytical techniques, and management processes with the key drivers of value.

20.8 FEATURES OF VALUE BASED MANAGEMENT

- Creating Value. How the company can increase or generate maximum future value. More or less equal to strategy.
- Managing for Value. Governance, change management, organizational culture, communication, leadership.
- Measuring Value. **Value Based Management** is dependent on the corporate purpose and the corporate values. The corporate purpose can either be economic (Shareholder Value) or can also aim at other constituents directly (Stakeholder Value).

20.9 BENEFITS OF CORPORATE VALUE BASED MANAGEMENT IMPORTANT

- Can maximize value creation consistently.
- It increases corporate transparency.
- It helps organizations to deal with globalized and deregulated capital markets.
- Aligns the interests of (top) managers with the interests of shareholders and stakeholders.
- Facilitates communication with investors, analysts and communication with stakeholders.
- Improves internal communication about the strategy.

- Prevents undervaluation of the stock.
- It sets clear management priorities.
- Facilitates to improve decision making.
- It helps to balance short-term, middle-term and long-term trade-offs.
- Encourages value-creating investments.
- Improves the allocation of resources.
- Streamlines planning and budgeting.
- It sets effective targets for compensation.
- Facilitates the use of stocks for mergers or acquisitions.
- Prevents takeovers.
- It helps to better manage increased complexity and greater uncertainty and risk.

20.10 IMPACT OF DEMONITIZATION ON VARIOUS KINDS OF BUSINESS CONCERNS

Demonetization is the act of stripping a currency unit of its status as legal tender. **Demonetization** is necessary whenever there is a change in national currency. The old unit of currency must be retired and replaced with a new currency unit.

The banning of higher currency notes and introducing new currency notes might have a significant and long term impact on the economy. However, sectors like Real estate, unorganized trade, commodities, agricultural sector & services might have a negative impact. With Liquidity crippling, both NPA & working capital needs are most likely to go up.

Small Businesses both in urban & rural areas will feel the heat as these are mostly run via cash transactions. Also with the rise in NPA banks will be averse to fund these businesses even for a short period of time. Businesses with cash transactions will now have to rely on funding from other sources and might end up paying a lot more.

Business Impact Analysis

1. **Liquidity** – The immediate impact will be on liquidity. Businesses dealing with

a large amount of cash can no longer use the currency to drive business.

2. **Loan Demand** – To fill up the gap and run the business smoothly the demand for loans or funding from the bank and other financial institutions will increase.

3. **Loan Dis-approval** – Businesses dealing with cash will have difficulty in getting funding as the Balance sheet will give a different story, making them unqualified for loans. Moreover, Banks will be reluctant and extremely cautious as they would want to avoid NPA's.

4. **High Cost** – Even if one can avail funding through other institutions, the cost of

20.11 CONCEPT OF EVA

Economic Value Added [EVA] is a measure of a company's financial performance based on the residual wealth calculated by deducting its cost of capital from its operating profit, adjusted for taxes on a cash basis. EVA can also be referred to as economic profit, and it attempts to capture the true economic profit of a company. This measure was devised by Stern Stewart and Co. EVA is an internal management performance measure that compares Net Operating Profit to Total Cost of Capital. It is used as an indicator of how profitable company projects are and it therefore serves as a reflection of management performance. Businesses are only truly profitable when they create wealth for their

shareholders, and the measure of this goes beyond calculating Net Income. EVA is the incremental difference in the rate of return over a company's cost of capital. Essentially, it is used to measure the value a company generates from funds invested into it. If a company's EVA is negative, it means the company is not generating value from the funds invested into the business. Conversely, a positive EVA shows a company is producing value from the funds invested in it. Modern investors are demanding shareholder value more strongly than ever. The financial theory suggested that every company's ultimate aim is to maximise the wealth of its shareholders. This is quite natural since shareholders own the company and as rational investors expect good long term return on their investment. EVA aims to tell what has happened to the wealth of the shareholders. EVA is based on the concept that earning a return greater than the cost of capital increases value of a company, and earning less destroys value. Calculating EVA The formula for calculating EVA is: EVA = Net Operating Profit after Taxes (NOPAT).

Invested Capital X Weighted Average Cost of Capital (WACC) The equation above shows there are three key components to a company's EVA: NOPAT, the amount of capital invested and the WACC. NOPAT can be calculated manually but is normally listed in a public company's financials. Capital invested is the amount of money used to fund a specific project. WACC is the average rate of return a company expects to pay its investors; the weights are derived as a fraction of each financial source in a company's capital structure. WACC can also be calculated but is normally provided as public record.

It is calculated as WACC = [Cost of Equity x proportion of equity fromcapital + Cost of debt x proportion of debt from capital x [1-tax rate] Or

EVA = NOPAT – CAPITAL COST NOPAT = PBIT [1-T] = PAT + INT [1-T] OR EVA = [RATE OF RETURN – COST OF CAPITAL] X CAPITAL The goal of EVA is to quantify the charge, or cost, for investing capital into a certain project, and then assess whether it is generating enough cash to be considered a good investment. The charge represents the minimum return that investors require to make their investment worthwhile. A positive EVA shows a project is generating returns in excess of the required minimum return. The Benefits of EVA The purpose of EVA is to assess company and management performance. EVA champions the idea a business is only profitable when it creates wealth and returns for shareholders, and requires

performance above a company's cost of capital. EVA as a performance indicator is very useful. The calculation shows how and where a company created wealth, through the inclusion of balance sheet items. This forces managers to be aware of assets and expenses when making managerial decisions. However, the EVA calculation relies heavily on the amount of invested capital, and is best used for asset-rich companies that arestable or mature. Companies with intangible assets, such as technology businesses, may not be good candidates for an EVA evaluation. The idea behind EVA is that shareholders must earn a return that compensates the risk taken. The equity capital has to earn at least same return as similarly risky investments at equity markets. If that is not the case, then there is no real profit and actually the company operates at a loss from the view point of shareholders. On the other hand if EVA is zero, this should be treated as a sufficient achievement because the shareholders have earned a return that compensates the risk.

20.12 COMPONENTS OF EVA

These three components of EVA are described below:

(i) NOPAT:

NOPAT is defined as follows:

(Profits before interest and taxes) (1- tax rate)

(ii) Cost of capital:

Providers of capital (shareholders and lenders) want to be suitably compensated for investing capital in the firm. The cost of capital reflects what they expect.

The formula employed for estimating cost of capital is:

Cost of capital = (Cost of equity) (Proportion of equity in the capital employed) + (Cost of preference) (Proportion of preference in the capital employed) + (Pre-tax cost of debt) (1- tax rate) (Proportion of debt in the capital employed).

(iii) Capital employed:

To obtain capital employed, we have to make adjustments to the 'accounting' balance sheet to derive the 'economic book value' balance sheet. These adjustments are meant to reflect the economic value of asset

20.13 CONCEPT OF MARKET VALUE ADDED (MVA)

(MVA) Market Value Added (MVA) is a calculation that shows the difference between the market value of a company and the capital contributed by investors, both bondholders and shareholders. In other words, it is the sum of all capital claims held against the company plus the market value of debt and equity. It is calculated as: When investors want to see how a company performs for its shareholders, they first look at MVA. A company's MVA is an indication of its capacity to increase shareholder value over time. A high MVA is evidence of effective management and strong operational capabilities. A low MVA can mean the value of management's actions and investments is less than the value of the capital contributed by shareholders. MVA Reflects Commitment to Shareholder Value Companies with a high MVA are attractive to investors not only because of the greater likelihood they will produce positive returns but also because it is a good indication they have strong leadership and sound governance. MVA can be interpreted as the amount of wealth that management has created for investors over and above their investment in the company. Companies that are able to sustain or increase MVA over time typically attract more investment, which continues to enhance MVA. The MVA may actually understate the performance of a company because it does not account for cash payouts, such as dividends and stock buybacks, made to shareholders. MVA may not be a reliable indicator of management performance during strong bull markets when stock prices rise in general. Companies with high MVA can be found across the investment spectrum. Alphabet Inc., the parent of Google, is among the most valuable companies in the world with high growth potential. Its stock returned 1,293% in its first 10 years of operation. While much of its MVA in the early years can be attributed to market exuberance over its shares, the company has managed to nearly triple it over thelast five years. Alphabet's MVA has grown from $128.4 billion in 2011 to $354.25 billion in December 2015. According to Stewart Market value added tells us how much value company has added to, or subtracted from its shareholders investment. Successful companies add their MVA and thus increase the value of capital invested in the company. Unsuccessful companies decrease the value of the capital originally invested in the company. Whether a company succeeds in creating MVA or not, depends on its rate of return. If a company's rate of return exceeds its cost of capital, the company will sell on the stock markets with premium compared to the original capital. On the other hand, companies that have rate of return

smaller than their cost of capital with discount compared to the original capital invested in company. Whether a company has positive or negative MVA depends on the level of rate of return compared to the cost of capital. All this applies to EVA. Thus positive EVA means also positive MVA and vice versa. Market value added = Present value of all future EVA MARKET TO BOOK VALUE MARKET TO BOOK VALUE or MB measures the ratio of market value of a share to its book value. Book value of a share is the net worth divided by number of outstanding shares. It represents the money which the company has received from its shareholders and includes investments made by the company on their behalf by retaining profits (internal accruals). MB Ratio = [Market price per share/ Book Value Per share] It shows how the company is worth for every one rupee of shareholders money employed as capital in the company. An MB ratio of more than one means the company has added more value to shareholders than the capital contributed by them and vice versa. The price-to-book ratio is a financial ratio used to compare a company's current market price to its book value. The calculation can be performed in two ways, but the result should be the same either way. In the first way, the company's market capitalization can be divided by the company's total book value from its balance sheet. · Market Capitalization / Total Book Value.

The second way, using per-share values, is to divide the company's current share price by the book value per share (i.e. its book value divided by the number of outstanding shares). · Share price / Book value per share As with most ratios, it varies a fair amount by industry. Industries that require more infrastructure capital (for each dollar of profit) will usually trade at P/B ratios much lower than, for example, consulting firms. P/B ratios are commonly used to compare banks, because most assets and liabilities of banks are constantly valued at market values. A higher P/B ratio implies that investors expect management to create more value from a given set of assets, all else equal (and/or that the market value of the firm's assets is significantly higher than their accounting value). P/B ratios do not, however, directly provide any information on the ability of the firm to generate profits or cash for shareholders. This ratio also gives some idea of whether an investor is paying too much for what would be left if the company went bankrupt immediately. It is also known as the market-to-book ratio and the price-to-equity ratio (which should not be confused with the price-to-earnings ratio), and its inverse is called the book-to-market ratio.

20.14 SUMMARY

The financial accounting information system provides managers the financial accounting information on which policy formulation is based on, the development of business plans and the control of activities within the organization and has the purpose of answering legal external requirements and accounting standards. To satisfy the necessary conditions in order to benefit from a reliable financial accounting information system, the conditions that ensure the equity and viability of information must be observed (reality, versatility, concision, synthesis ability, opportunity, operability, precision and safety, efficiency, security, etc.) and eliminates the major deficiencies of the system in exploitation (distortion, filtering and redundancy of the information).

20.15 GLOSSARY

- **Financial information system:** A financial information system is an organized approach to collecting and interpreting information, which is usually computerized.
- **Demonetization:** is the act of stripping a currency unit of its status as legal tender.
- **Value Based Management (VBM):** is the management philosophy and approach that enables and supports maximum value creation in organizations, typically the maximization of shareholder value

20.16 SELF ASSESSMENT QUESTIONS

Q.1 Explain in detail financial information management system?

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Q.2 Explain in detail the corporate value based management system?

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Q.3 What is the impact of demonetization on business concerns?

20.17 LESSON END EXERCISE

Q.1 Explain in detail the corporate value based management.

Q.2 Explain in detail the corporate value based management.

20.18 SUGGESTED READINGS

1. Rastogi, R.P., Financial Management, Galgotia Publishing Company, New Delhi.
2. Maheshwari, S.N., Financial Management, Sultan Chand & Sons, New Delhi.
3. Khanka, S.S., Entrepreneurship Development, S. Chand & Sons, New Delhi.
4. Sundaram, K.P.S; and Dutt, Rudar, Indian Economy, S.Chand & Sons, New Delhi.

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