Uttar Pradesh Rajarshi Tandon
Open University

Bachelor of Business
Administration

B.B.A-108(N)

Macro Economics

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BLOCK

1

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UNIT 1 : NATIONAL INCOME

Objectives

After going through this unit you must able to understand

- The meaning of –National income
- Measuring different methods of National income in India
- Evaluate the reasons of low income of India
- Suggest how increase the National &per capita income

Structure

1.1 INTRODUCTION

A major task of macroeconomics is the explanations of what determines the economy's aggregate output of goods and services. In any time period that output may be equal to what can be produced with full utilization of the economy's resources or it may be something below this. This unit covers a few essentials of National income accounting. The value of economy's output may change from time to time as a result of change in the amount of goods and services produced the prices of these

good and services are both. This unit also provides what limitations of measurement of National income and give suggestions for improving measurement Techniques:

1.2 CONCEPT OF NATIONAL INCOME

The concept of national income occupies an important place in economic theory. National income is the flow of goods and services which become available to nation during a period. To be more precise national income is the aggregate monetary values of all goods and services produced in a country during one year, account being taken of the deductions made due to wear and tear and depreciation of plant and machinery used in the production of goods and services. It is distributed among the factor of production in the form of rent interest, wages and profits. J. L. Hanson says 'That There are two ways of looking at national income of a country. It can be regarded either as the money value of the total volume of production of goods and services or the total of all incomes desired from economic activity during a specified period generally one year. This National income and volume of production are really alternative terms for something'. Concept or components related to national income there are various concept related with the national income or national product. Some of them are as follows.

1.2.1. GROSS DOMESTIC PRODUCT (GDP)

It refers to the monetary value of all the goods and services produced in a year with in domestic territory of a country. The monetary value of all goods and services produced at current prices is known as gross domestic product at market price (GDPMP) (GDPMP=PxQ +PxS)

1.2.2. GROSS NATIONAL PRODUCT (GNP)

GNP may be defined as the sum of gross domestic product and net factor income from abroad (GNP=GDP+NFIA)

1.2.3. NET DOMESTIC PRODUCT (NDP)

The amount which comes after subtracting the depreciation or consumption of fixed capital from gross domestic product is known as NDP.

1.2.4. NET NATIONAL PRODUCT AT FACTOR COST (NNPFC)

It refers to the value of all the final goods and services produced in a year by country. In other word it is the total of domestic factor income or net factor income from abroad (NNPFC=DFI+NFIA)

1.2.5. NET DOMESTIC PRODUCT AT MARKET PRICES (NDPMP)

When net domestic product value is measured on the basis of the current prices in the market then it is known as net domestic product at market prices. (NDPMP=NNPMP-NFIA)

1.2.6. INCOME FROM DOMESTIC PRODUCT ACCRUING TO PRIVATE SECTOR

In India the creation of domestic income is being made by both the sectors i.e. public sector and private sector. Income from domestic product accruing to private sector refers to that part of the domestic product at factor cost which is accrued by the private sector. It may be calculated by applying the following formula:- income from domestic product accruing to private sector=NDFC- govt income - non departmental and enterprises savings.

1.2.7. PRIVATE INCOME

It refers to the income earned by individuals from whatever sources it also includes the retained income of companies

1.2.8. PERSONAL INCOMES

It is the total of all incomes actually received by all the individuals or households during a given years.

1.2.9. PERSONAL DISPOSABLE INCOME

It refers to that part of the personal income which is actually available to the consumers for the consumption purpose or saving.

Though the concepts of national income are very clear in India there is difficulty is measuring it because there is considerable non monetized section. The central statistical organization (CSO) who estimates the national income has gradually fined the method of estimation and has made estimates more accurate.

1.3 IMPORTANCE OF NATIONAL INCOME

National income is of vital importance for the economy of a country. These days the national income data are regarded as the account of the economy. The following points indicate the importance of national income data:

- Since the national income data represent the monetary measure of the volume of production in a country in a year. They give us an idea of the aggregate production in the country concerned.

- An increasing national income is a symptom of growing economic progress.
- The national income data give an idea of the rate of national income growth in country.
- The economic welfare of a country is closely connected with the magnitude of its national income. An increasing in the National income of a country if other thing remaining the same also implies an increase in the economic welfare of the community.
- The national income data throw light on the contributions of the various sectors of the economy to the gross national product of the country concerned. These data also reveal the comparative importance of the various sectors in the national economy.
- The national income data also show how the national income of a country is distributed among the various sectors of the population.
- The national income data also throw light on the volume of consumption saving and investment in the economy.
- By comparing national income of different countries we can compare their living standard and level of economic welfare achieved by them.
- The national income data are indispensable for the formulation of economic policy of government. No economic plan can indeed be formulated without adequate national income date.

1.4 METHODS OF MEASURING NATIONAL INCOME

The concept of National income involves three interpretations all of which lead to same result.First it represents the monetary value of aggregate annual production in the economy. Second it represents aggregate income of the country. Third it represents the aggregate expenditure in the economy. Whatever interpretation we may accept the result is the same, the reason being that every expenditure is at the same time a receipt and then both expenditure and receipt are equivalent to the value of goods and services exchanged between buyers and the sellers. This threefold interpretations of national income has thus given rise to four methods for measuring it they are.

1.4.1 CENSUS OF PRODUCT METHOD

According to this method the aggregate production of the final goods and services in an economy in any one year is equivalent in terms of money. The entire output of final good and services is multiplied by their respective market prices to find out the gross national product. From the gross national product so estimated we have to deduct the depreciation of equipment and machinery involved in the process of production to arrive

at country's national income. This method is sometimes referred to as the inventory method.

1.4.2 CENSUS OF INCOME METHOD

According to this method the incomes accruing to all the factors of production during the process of production are aggregated together to arrive at the national income of the country. This is known as national income at factor cost. As is well known the various factors of production are paid remuneration for the services rendered by them in production. These payments are known as factor payments. They represent the cost of the producers;thus according to this method the national product is obtained by the adding up the factor incomes accruing to the concerned factors during the process of production.

1.4.3 CENSUS OF EXPENDITURE METHOD

According to this method the national product is obtained by adding up :

- Personal Consumption Expenditure
- Gross domestic Private Investment
- Govts Purchase of goods and services
- Net foreign investment

1.4.4 VALUE ADDED METHOD

The difference between the value of national outputs and inputs at each stage of production is the value added.

1.5 LIMITATION IN THE MEASUREMENT OF NATIONAL INCOME OF INDIA

The calculation of national income of India is a task full of difficulties and complexities. These are mostly due to the non-availability or partial availability of detailed and reliable statistics about the different sectors of the economy. They may also arise due to lack of a clear grasp of the national accounting procedures.

There are some difficulties or limitations as follows:-

- The available statistics in India are not only inadequate but also unreliable for example statistics pertaining to agriculture in India are not complete. We have no reliable estimates of production costs in Indian agriculture. There are no statistics worth the name for small scale and medium enterprises.
- The existence of a large non monetized sector in India also makes the computation of national income difficult. As is well known

quite a substantial part of the agricultural output in our country does not reach the market at all. Either it is consumed at home by themselves or is exchanged for other goods and services in the local level.

- The over whelming majority of the small producers in our country are illiterate and ignorant and are not in a position to keep any account of their productive activities. So they cannot give to the investigator information about the quantity of value of their output. Inevitably an element of guess work enters into assessment of income are output in large sectors of the economy.
- There is little of occupational speculation on the part of the people in our country, many persons take up more than one activity to earn their livelihood. It becomes difficult to collect information about their incomes etc.

1.6 SUGGESTIONS FOR IMPROVEMENT IN THE MEASUREMENT OF NATIONAL INCOME OF INDIA

Following are the main measures which may be suggested in order to increase the national income.

- Full utilization of productive capacity is very essential to reduce the cost of production and to increase the income by raising capital output ratio.
- Development of means of transportation and communication are very essential for fast economic growth.
- Latest improved technology must be adopted for both the sectors. i.e. agriculture and industrial sector. It will increase the production and productivity which in agriculture is generally one third coverage.

1.7 MEASUREMENT OF NATIONAL INCOME IN INDIA

According to the national income committee “a national income estimate measures the volume of commodities and services turned out during a given period counted without duplication. Thus total of national income measures the flow of goods and services in an economy in a given period.

Pre independence period in India several estimates of national income were prepared in the British period. Notable among the estimators were: Dada Bhai Naoroji 1868, William Digby 1899, Findlay Shirras 1911, 1922 and 1932, Shah and khambatta 1921, VKRV Rao 1925, 29 and 1931-32, and RC Desai 1931-40.

In the pre independent estimates the assumptions of most of these estimators were arbitrary and hence devoid of any scientific basis. Most of these estimates were the result of the efforts of individuals and as such they suffered from serious limitations. The arbitrary assumptions of the authors undermined the reliability of the estimates. Besides these estimates were based on statistics from the agriculture sector which were highly undependable.

Soon after independence the govt. of India appointed the national income committees in august 1949. Soas for compile authoritative estimates of national income. The first report of national income committee appeared in 1951 and final report in 1954. The report was land mark in the history of this country because for the first time it provided comprehensive data of national income for the whole of India. The principal features of the national income committee report were as under.

- During 1950-51 agriculture which also included animal husbandry, forestry, and fisheries contributed nearly 50% of national income.
- Manufacturing, hand trade and mining contributed about 17% of the total income.
- Commerce communicator and transport business accounted for little more than 17% of the total national income.
- Professionals, liberal art, administrative service, domestic services; house property accounted about 16% of national income.
- The share of commodity production was about two third of national income.
- Service accounted for about one third of total national income.
- The margin of error in to the calculation of national income estimates worked out at about 10%.

NATIONAL INCOME COMMITTEE AND CENTRAL STATISTICAL ORGANIZATION (CSO) ESTIMATES

For the post-independence period we have five series in national income estimates:

- Conventional series provided national income data at current prices and at 1948-1949 prices for the period 1948-1949 to 1964-1965.
- National income series at 1960-61 prices provided national income data for the period 1960-61 to 1975-76.

- Another series was on national income started with 1970-71 as base year instead of 1960-61.
- The C.S.O brought another series on national income with 1980-1981 as base year in place of the series with 1970-1971 as the base year. The estimates have been projected backwards to provide a total series of national income from 1950-1951 on wards for purpose of comparison.
- The CSO has revised the base year from 1980-81 to 1993-94 and brought out a new series of national account statistics. 1993-94 was chosen as the new base year as it was a good year. Beside this a lot of improvement has been made by extending coverage of the GDP.
- The CSO has again revised the year from 1993-94 to 2004-05 and take decision that the base year change to after every 5 year.

GROWTH RATE IN NATIONAL INCOME AFTER INDEPENDENCE AT A GLANCE

At net national product on 2004-05 prices.

Plans	Growth Rate %
First five year plan (1951-56)	4.2
Second five year plan (1956-61)	4.2
Third Five year plans (1961-66)	2.6
Three annual plan (1966-69)	3.7
Fourth five year plan (1969-74)	3.2
Fifth year plan (1974-79)	4.9
Annual Plan (1979-80)	-5.9
Sixth Five year plan (1980-85)	5.4
Seventh five year plan (1985-90)	5.5
Two annual plans(1990-92)	2.8
Eight five year plans (1992-97)	6.7
Ninth five year plans (1997-2002)	5.5
Tenth five year plans (2002-07)	7.5
Eleventh five year plans (2007)	7.8

1.8 REASONS OF LOW NATIONAL AND PER CAPITA INCOME IN INDIA

The factors responsible for the slow growth of national & per capita income in India may be classified in following parts;

1.8.1 ECONOMIC FACTOR

The following are the main economic factors responsible for the slow growth of national &per capita income in India.

- **Lack of capital**- in India there is lack of capital due to the lack of capital the level of investment in the economy is very low and due to it the level of production and employment is low so the capital formation is low.
- **Lack of efficient manpower:-** In India there is lack of efficient and skilled manpower which is obstacle in economic development and rise in productivity. On one hand there is an increasing demand of efficient and skilled workers in industries and services sector which is not adequate and on the other hand there is manpower surplus which is a paradox.
- **Backward Technology:** - In India traditional methods are used for production and due to it there is low level of productivity when a country uses modern technology in industry and agriculture productivity improves considerably.
- **Lack of Sufficient financial Institutions**- In our country there is lack of financial institutions and this way economic development has been adversely affected because adequate funds not available for development or reasonable terms.

1.8.2. NON ECONOMIC FACTORS

Following are the main non-economic factors which are responsible for the slow growth of national and percapita income in India.

- **Unfavorable social structure** – in our country the present social structure is a hindrance in economic development widespread. Inequality of wealth and income are a obstacle in the utilization of available resources.
- **Caste system**: In India due to cast system suitable opportunities for employment are not available according to their ability and efficiency it adversity affects the mobility of labour. It reduces labour efficiency and due to it the level of production is low.
- **Joint family system:-** In our country people do not get incentive to work hard due to the joint family system and due to it there is an

increase in the consumption tendency or decrease in saving and therefore the rate of capital formation is low.

- **Work ethos-** People do not put their best specially in Govt & public sector which has been one of the causes of poor working to many public sector under taking.

1.9 SUMMARY

This unit has carried out that national income is the aggregate factor income which arises from the current production of goods and services by the nation's economy the nation's economy refers to the factors of production i.e. labour and property supplied by the normal residents of the national territory income is deemed to originate in the territory on which the income generating economic activity takes place. The income originating on the territory of a country is described as its net domestic product but net domestic product is differing from national income. This is to because a part of factor income originating on the territory of given country may accrue to foreigners as payment for the services of factors supplied by them, and part of factor income originating on foreign territories may likewise accrue to the normal residents of the given country. Thus national income is equal net domestic product plus net income from abroad.

1.10 KEY WORD

• Resources	A source of supply support Aid.
• Depreciation	Loss in Book Value
• Magnitude	Size or Bulk.
• Over whelming	too great to resist or over come
• Assumptions	Something taken for granted.
• Measurement	Result of Measuring
• Arbitrary	Not According to rule
• Disposable	Designed to be disposed after use.

1.11. SELF ASSESSMENT TEST

(1) Define national income. Explain the various concepts of national income?

(2) What are the different components of national income?

(3) What are the causes of slow growth of national & per capita income?

1.12 FURTHER READINGS

Edward Shapiro	Macroeconomics analysis Galgotia publication (p) Ltd New Delhi
Data r. Sundhram KPM-	Indian economy S. Chand & Co Ltd. New Delhi
Lall S.N. Lall S. K.	Indian economy Survey and Analysis Shivam Publisher Allahabad.
Seth M. L.	Money Banking & Finance L. N. Agrawal Educational Publications Agra.
Ahuja H. L.	Advance Macro Economic Theory. S. Chand & Co Ltd. New Delhi.
Das HariGopal.	Business Economic - Sharda Pustak Bhawan Alld.

UNIT 2 : BUSINESS CYCLE

Objectives

At the end of this unit you should be able to:

- Define the business cycles.
- Describe the characteristics and types of Business Cycles.
- Explain the Phases of Business Cycles.
- Discuss the view that The Business Cycle is Purely Monetary Phenomenon.

Structure

2.1 MEANING AND DEFINITION OF BUSINESS CYCLES

In Economy, the alternating period of prosperity and depression have been called Business Cycles. . An important feature of the working of a capitalist and mixed economy is the existence of cyclical fluctuations. A business cycle is a very complex economic phenomenon. The Business cycle is associated with sweeping fluctuations in economic activity.

Definitions of Business Cycles :

According to Prof. F. Behnam- "A business cycle may be defined as a period of prosperity followed by a period of depression. It is not

surprising that economic progress should be irregular business being good at some time and bad at others."

In the words of Keynes: "A business cycle is composed of periods of good business characterized by rising prices and low employment percentages. Altering with periods of bad business characterized by falling prices and high unemployment percentages.

According to W.C. Mitchell: "Business cycles area species of fluctuations in the economic activities of organized communities. The 'Adjective Business' restricts the concept to fluctuation in activities which are system atically conducted on the commercial basis. .TheNoun–'Cycles' bars out fluctuations which do not recur with a measure of regularity."

In short the business cycle is an alternate expansion and contraction in overall business activity as evidence by fluctuations in measure of economic activity such as the Gross National Product, Index of Industrial Production and Employment, and income.

2.2 CHARACTERISTICS OF BUSINESS CYCLES

The some features of Business Cycles are as follows:

- The feature of business cycle is like as movement of upwards and downwards.
- Cyclical Fluctuation are recurrent in nature in business cycles.
- A business cycle is a wave like movement
- Business Cycles are all pervading in their impact.
- Contraction and expansion in business cycles are cumulative in effect.
- Business Cycle is prevails all the economic sector of a country.
- Business cycles operate periodically at fairly regular intervals.
- Business cycle and trade cycle are interrelated.

2.3 TYPES OF BUSINESS CYCLES

Prof. James .A. Estay has classified business cycles under the following heads:

2.3.1 MAJOR AND MINOR CYCLES

Major Cycles may be defined as "The Fluctuation of Business activity occurring between successive crises. The major cycles constitutes the intervals between successive major downturn of business activity or between major recessions. It has been established from the records of business fluctuations that each major cycles is made up to two or three

minor cycles. The upswing of business is the major cycles as often interrupted by minor downswings. Likewise the downswings of business in the major cycle may be interrupted by minor upswings. These shorten cycles in major cycles are sometimes referred to as minor cycles. The duration of minor cycles averages close to 40 months.

2.3.2 BUILDING CYCLES

The building industry is also subject to fluctuation of a fairy regular duration. There are upswing and downswing in the building activity. The duration of the building cycles varies between 15 to 20 years. The average of building cycles is 18 years just twice the length of the business cycles.

2.3.3 The long wave of economic activity was discovered by the Russian Economist 'Kondratieff Hence'. These long waves are called Kondratieff's cycles. Kondratieff on the basis of statistical data pertaining to the period 1780-1920 was able to establish 2.5 long cycles in England and France, each full cycle being of duration of 60 years.

2.4 PHASES OF BUSINESS CYCLE

There are the following is the Phases of business cycles:

2.4.1 DEPRESSION

Depression is the first stage of business cycle. It is a period in which business activity in the country is far below the normal, in this position a sharp reduction in production, mass unemployment, falling prices, falling profits, low wages contraction of credit, a high rate of business failures and an atmosphere of all around pessimism and despair. A decline in production is accompanied by a reduction in the volume of employment, all construction activities come to a more or less complete standstill. During a depression the consumer goods industries are not so much affected. In this situation many of these firms have to close down on account of heavy loss.

The two longest depressions in the United States history were those of 1873-1879 and 1929-1933.

2.4.2 RECOVERY

During this phase there is slight improvement in economic activities to start with the Businessman begin to feel that economic situation is better than preceding stage. In recovery phase the production of all sector of economy picks up slowly and gradually. The volume of employment also steadily increases. The prices of goods and services and wages are rise. All economic activities also start rising.

2.4.3 ROSPERITY

The features of this stage is increased production , intensive capital investment in basic industries, expansion of Bank credits, high prices, high profit, high rate of formation of new business enterprises and full employment . There are general feelings of optimism in entrepreneur.

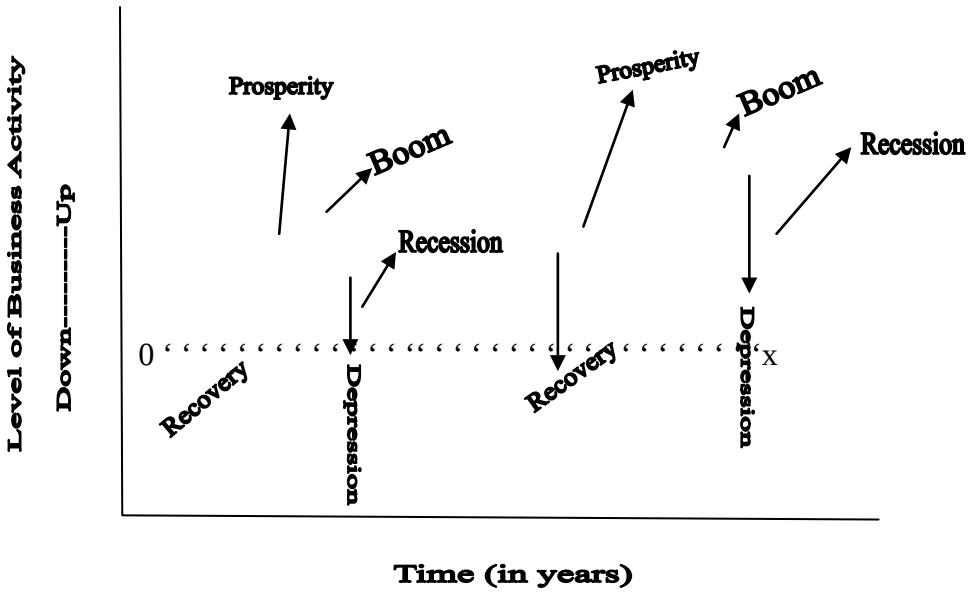
2.3.4 BOOM

It is the stage of rapid expansion in all economic activity to new high marks, resulting in high stock, high prices of goods and services and overfull employment in country. But the developing boom carries with it the seeds of self-destruction and presenting of over optimism atmosphere. The entrepreneurs are upset resulting they now begins to stay away from new projects and even stop the expansion their business concerns. This situation prepares the ground for succeeding stage.

2.4.5 RECESSION

The over optimism of the earlier period in replaced now by over pessimism features by fear and hesitation on the part of entrepreneur. The failure of business units creates panic among entrepreneur. The financial institute also gets paincky and begins to withdraw loan and advances from business concerns. Resultant, more business concerns fail, prices collapse and confidence is ruddily shaken, unemployment appears in maximum industries. Unemployment leads to fall income, expenditure and profit. In the recession it should be remembered that it has cumulative effect. Once a recessions starts it goes on the gathering momentum and finally assume of depression.

The various phase of the business cycle can be illustrated by the following diagram:



2.5 THEORIES OF BUSINESS CYCLE

The theories business cycle can be classified into nonmonetary and monetary theories.

2.5.1 NON MONETARY THEORY OF BUSINESS CYCLE

These are some non-monetary business cycle theory.

A. Sunspot Theory

In 1875 W.S. Jevons laid down the proposition that variation in the atmosphere of the Sun as evidenced in the frequency and magnitude of Sunspots determined the rhythmical fluctuations of business activity. At definite intervals certain dark spots appeared on the face of the sun which affected the transmission of heat to the earth. This affected the agricultural crops which in their turn influenced the level of business activity in the economy. When agricultural crops failed consequent upon the appearance of the sunspots. The entire economy would be engulfed in depression. The reason being that agriculture was an important branch of production. The depression in agriculture sector soon spread to other sectors and the entire economy become depressed. And if the sunspots did not appear then the rainfall was good. There might be excellent harvest in the country giving rise to a period of prosperity for the people.

B. Psychological Theory

According to A. C. Pigous Psychological theory business fluctuations are the result of the wave of optimism and pessimism among businessman and industrialists are prone to optimists. The big among them feel optimistic about the future prospects of business. So they radiate their optimism to other businessman who in their turn pass it on to other. In this way the entire businessman community becomes optimistic minded, and in their mood of optimism they make new investment in all economic sector of economy. This leads to emergence of boom condition in the country. At other times the businessman becomes pessimists with regard to business future business prospects. The big among them communicate their pessimism to others. Ultimately new investment are stopped, even the existing production are curtailed. There is general atmosphere of gloom and despair throughout the economy. This leads to emergence of slump in the country.

C. Overproduction Theory

According to this theory the business cycle is due to over production which is inherent in capitalist economy.In such an economy there are several rival firms producing in an identical commodity and selling it in the same market. As such there is bound to be competition among these firms. Each firm will try to capture as large portion of the market as possible and in doing so it will have produced more stock than it could possibly sell in the market. This means there will be over production and the market will be flooded with large stock of goods. The prices of goods will inevitably fall in such a situation of over production.

D. Under Consumption Theory

This theory is propounded by Douglas and Hobson J.A. the underlying cause of depression according to this theory is the inequality of incomes that prevails in capitalistic society. The propertied classes have too much of wealth more than what they can spend so they save and invest their saving in business. The worker does not have adequate purchasing power to buy the goods. This result in over production fall of prices and a depression in economy.

E. Innovation theory

The innovation theory is mainly the work of J. Schumpeter. He has explained the business cycle in term of innovation that take place in the economic system of a capitalist country from time to time by innovation he means the introduction of something new that changes the exiting method of production.

F. Cobweb Theorem

In 1930 H. Shultz, J. Timbergen and U. Ricci presented the theory of the word. Prof. N. Kalder first suggests the name ‘Cobweb Theorem’ because the Pattern Traced by the price and output movement resembled a cobweb. The Cobweb Theorem attempts to explain the regularly recurring cycle in the outputs and prices of agricultural commodities. Strictly speaking it is not a business cycles theory because it relates only to the agricultural sector of the economy.

2.5.2 MONETARY THEORIES OF THE BUSINESS CYCLE

A. Haw trey's theories of the business cycle - According to Hawtrey’s the business cycle is a purely monetary phenomenon according to this theory an elastic Mooney supply is the cause of the operation of the business cycles being elastic. The supply of money expands and contracts alternately such expansion and contraction of money supply when it occurs leads to fluctuation of

business activity. An increased in supply of money result in increased in consumer outlays and increased in consumer outlays cause upswing of the business cycle on the contrary a decrease in the supply of money accompanied by a decrease in its velocity of circulation initiates the period of depression. A decreased money supply result in decreased consumers outlay's and decreased consumer outlay's cause the downswing of the business cycle. Since the expansion and contraction of money supply is brought about through the expansion and contraction of bank credit. The banking system is in fact responsible for the operation of business cycles.

B. **Dr. Hayek's overinvestment theory-**According to this theory over issue of bank credit at artificially low interest rate is responsible for the operation of business cycle. Hayek has proceeded on the basis of analysis already made by wickshell. He observes the distinction between natural rate of interest and market rate of interest. If there is no difference between then the economy remains in equilibrium. The trouble however arises when there appears a discrepancy between the natural rate and market rate of interest. Suppose the market rate of interest is less than the natural rate of interest the demand of fund for purpose of investment will exceeds the available supply of savings. The gap between the demand and supply of funds will be filled by bank credit increasing in money in circulation the prices level will increased resulting in inflation or boom. On the contrary market rate of interest is more than the natural rate of interest, demand of funds for investment purposes will now be less than the available funds bank credit will contract the supply of money in circulation will be reduced which in its turn will decrease the price level resulting in depression.

C. **Keynes contribution to the theory of business cycle-**According to Keynes the operation of the business cycle is due to the fluctuation in volume of investment and these fluctuation in investment are considered to be due to the fluctuation in the marginal efficiency of capital. The volume of private investment depends upon two factors- rate of interest and marginal efficiency of capital The rate of interest is more less or stable in nature. Hence the marginal efficiency of capital is real strategic variable which determines the volume of private investment and it is the fluctuation in the marginal efficiency of capital which cause fluctuations in investment. The marginal efficiency of capital of a particular capital assets depends upon two factors the prospective yield and the supply price of the capital assets. The latter may be taken to be fixed in the short period so that it is the fluctuations in prospective yield which ultimately determined the marginal

efficiency of capital. A rise in marginal efficiency of capital by leading to an increased investment creates more employment production and income in economy. A decline in marginal efficiency of capital through decreased investment leads to unemployment and consequently to the contraction of income and production.

D. Prof. Hicks Theory of Business Cycle-According to Hicks the multiplier accelerator interactions explain business fluctuation in capitalist economy. The multiplier and the accelerator acting together generate pronounced business fluctuation suppose there is some new investment in economy this will generate an expansion of income several time greater than itself an account of the operation of multiplier. The increase in income in turn will increase the demand of goods an account of the increase in the propensity to consume increase demand of goods induces more investment by a magnified amount on account of the operation of the accelerator this increase in induced investment by increasing income further increasing demand of goods. This additional increasing demand of goods leads to a further spurt of induced investment in accordance with the accelerator. This interaction of the multiplier and accelerator this leads the economy in upswing of business cycle. The upward trend in business activity cannot continue Idefinitely according to this theory the marginal propensity to consume decline as income of the people increase. This brings an end to the expansion of business activity. The reason is obvious a decreased in consumption result in a greater decrease in investment on account of the reverse working of the accelerator a decrease in investment leads to a greater decrease in income on account of the reverse working of the multiplier. This result in a further decrease of consumption which in its turn leads to a further fall in investment. The reverse working of the accelerator and the multiplier now initiates of a downward spiral of deflation that leads to economy in to depression.

2.6 CONTROL OF THE BUSINESS CYCLE

The business cycle by creating cyclical fluctuation in economic activity does a great deal of harm to the smooth and orderly progress of society efforts should therefore be made to check the operation of the business cycle.

2.6.1 MONETARY POLICY

Monetary policy has an important part to play in curbing cyclical business fluctuation and contributing to economic stability. Whatever may be the cause of the business cycle it is always aggravated by monetary

factors. The monetary factors may be not because the business cycle but once the cycle occurs the monetary factors do aggravate it. The govt may evolve a suitable monetary policy to deal with the situation so far as money supply is concerned its under expansion could be checked by insisting upon a popper and adequate cover against note issue. As regards bank credit the central bank of the country could utilized its various weapons of control such as bank rate, statutory liquidity ratio, Cash reserve ratio, open market operation moral suasion etc. In control it on the country whenever there is a tendency towards and undue slackening of business activity the central bank should utilize its weapons to ensure an adequate expansion of credit.

2.6.2 FISCAL POLICY

It is possible that monetary policy taken alone may not suffice to check cyclical business fluctuation it is therefore suggested that monetary policy should be properly integrated with a suitable fiscal policy to achieve desired result. The three main instruments of fiscal policy taxation expending and barrowing can be used by the govt to achieve this purpose.

If there are symptom of a downswing in economy the govt should at once enforce in their investments of fiscal policy to check this down trends and ensure stability in the economy at such a time the govt should not levy any new taxes on people even exiting taxes should be substantially reduced. This would leave more money in the hands of the people at the same time the govt itself should embark on a vast spending programme to stimulates business activity in the economy. At the time to depression the govt initiates public works projects of various kinds. These public work projects by giving employment and provide them purchasing power. The govt should as such time follow the policy of difficult financing which alone will increase the flow of income stream into the economy. Public barrowing can also be employed by the govt as an instrument to fight depression. When economy recovers and a wave of prosperity set in the govt should follow an exactly opposite policy.

2.6.3 AUTOMATIC STABILIZERS

An automatic stabilizer is an economic absorber that helps smooth the cyclical business fluctuation of business its own accrued without requiring deliberate action on the part of the govt. on such device in the United States of America Is the federal progressive income tax. This tax is so devised that people in higher income brackets are taxed at progressively higher rate than those in the lower income brackets. Such a progressive type of income tax trends automatically to offset cyclical fluctuation,

because in an upswing when incomes are rising people would pay more taxes to the govt and this their expenditure would be checked and in a downswing when incomes are declining and tax rate is low people would pay less taxes to the govt. leaving more funds for than to spend.

2.7 SUMMARY

Business cyclical fluctuations are characterized by alternating waves of expansion and contraction. They do not have a fixed rhythm but they are cyclical in that the phase of contraction and expansion recur frequently and in fairly similar patterns. These patterns are most marked in those countries which are built up on business rather than agriculture and have been particularly notable capitalist economy like as U.S.A and England for over hundred years.

An important feature of the working of a capitalist economy is the existence of alternative periods of prosperity and depression. Generally speaking cyclical fluctuation have tendency towards simultaneous appearance in all the branches of the national economy, but some time they may be confined only to individual industries or individual sectors of the economy.

2.8 KEYWORDS

- Accelerator - The demand for the commodity is sometimes derived from another commodity.
- Automatic Stabilizer – It is an automatic shock observer that helps to smoother the fluctuation of income and price in capitalist economy
- Bank Rate – Minimum rate which the central bank acting in its capacity as lenders.
- Business Cycles – An alternate expansion and contraction in overall business activity in capitalist economy.
- Recession – It refers to temporary falling of business activity.

2.9 SELF ASSESSMENT TEST-

Q-1. Discuss the different phase of business cycle.

Q-2. Discuss the different theories of business cycle.

Q-3. Give suitable suggestion to control the business cycle.

2.10 FURTHER READINGS

- James ArtherEstey — Business cycle
- W.C. Mitchel — Business cycle Vol-I
- Keynes — A treatise on money Vol- I
- Prof. Pigou — Industrial fluctuation
- M.L. Seth Agrawal — Advanced economic theory, LN. pub. Agra
- H.L.Ahuja — Advanced macro economic theory S.Chand Co Ltd. New Delhi.

UNIT 3 : FUNCTIONS OF MONEY

Objectives

At the end of this unit you should be able to

- know about money
- How the Evolution of Money
- Describe the Function of Money

Structure

3.1 INTRODUCTION

The English word 'money has been originated from the Latin word 'Moneta'. 'Moneta' was the name of goddess juno of roman country. In ancient time in Rome money was manufactured in the temple of juno assuming money analogous 'Moneta' money was generally accepted as medium of exchange. Money is infact one of the greatest inventions of man. Since money represents generalized purchasing power it has been the objects of man desires to accumulate it throughout the ages.

3.2 DEFINITIONS OF MONEY

Money has defined differently by different economists as there is no unanimity over its definition. Some definitions are too extensive and some are too narrow like.

- According to Rebertsn “Money is anything which is widely acceptable in discharge of obligations”. (This definition unnecessarily narrows down the field of money because it said that only metallic money deserves to called money in the strict sense of the term because it alone is generally acceptable by the people; left to themselves.)
- In words of Francis walker “Money is what Money does”(according to this definition we can include all those things in money which perform the functions of money.)
- According to Marshell “Money includes all those things which are (at any time and place) current without doubt or special enquiry as a means of purchasing commodities and services and defying expenses” (this definition also include those entire thing in money which perform the function of many at any time and place.)
- According to Whitelsey - If a particular unit is a commonly employed to state values exchange, goods and services or perform other money functions then it is money whatever its legal as physical characteristics” (This is too Extensive Definition.)
- In words of Coulborn “Money may be defined as the means of valuation and of payment”.

(This definition unnecessarily narrows down the field of money.)

None of the above definitions is satisfactory since they are either to wide or too narrow. A suitable definition of money should emphasize not only the important function of money but also its basic characteristics namely general acceptability from this point of view ‘Crowthers’ definition appears to be the ideal definition. He defines money as “Any things that is generally acceptable as a means of exchange and that at the same time acts as a measure and as a store of value.

(This definition point out that money should perform all the three important functions of being a medium of exchange, a standard of value and a store of value besides money should be a commodity which is generally acceptable by the people in payment for anything.

In Brief we can say that money is any clearly identifiable object of value that is generally accepted as payment for goods and services and repayments of debts with in a market or legal tender within a country.

3.3 EVOLUTION OF MONEY

Money was not a sudden invention. Like most other social institutions money has under gone a process of historical evolution spread over a long period of time money was evolved during economic development during bartend system people has to faced many problems. To get rid of the difficulties faced during barter system money came into existence and monetary transactions were started. Evolution of money can be divided in to four stages:

3.3.1. HUNTING STAGE

In this stage human needs were very limited. Human beings fulfill his need himself those time people were bound to wander here and there and lead an unsuitable life. Their primary need was fooding. In such of food and shelters they continuously wandered here and there. That time some people were vegetarian while others were non vegetarian. Non vegetarian community used to eat meat and residual skin as cloths white vegetarian community used to eat fruits. Vegetables or other botanical product and leaves of trees as cloths were used. While roaming about vegetarian community came in contact with non vegetarian community they know their habits and edible foods. This created desire in them to receive and consume them. Consequently barter system started.

3.3.2. CATTLE STAGE

We know the next stage of human development is as cattle stage: In this stage man came into contact with such animals which belonged to mammalian species (like buffaloes, goats, sheep's, cows etc). Human being started using their hide, milk and meat to get rid of the hunger. Now their life has become dependent on these pet Animals at this stage their life was self reliant and they were not dependent on others for any things animals and their products are the medium of exchange. Thus, barter system was prevailing at this stage also.

3.3.3. AGRIAN STAGE

In cattle stage the man come in to the contact of animals but they did not know the technique of growing agricultural product that is why they had to change place often. Rest done near grassland was necessary. Now want arises to make a permanent residence instead of unstable residence. In the meantime they came into contact of techniques and seeds of agricultural products. Gradually they learned the technique of growing grain, fruits, flowers, vegetables and fodder etc and started farming. This was the beginning of agricultural stage gradually agriculture become the main occupation of their livelihood. But now the problem was that he could not produce all of them himself alone. Desired commodities were being procured and consumed through barter system but barter system was not very easy; to avoid the problems and difficulties of barter system new system of exchange called monetary exchange came into existence now money had become the medium of exchange some agricultural commodities like, salt, grain, tobacco, almond, sea products, were used as money.

3.3.4. INDUSTRIAL STAGE

Increasing in population necessities also continued increasing production of agricultural products was very short as compared to its demand. Resultly prices of agricultural commodities started rising

consequently agricultural revolution was encouraged. Agricultural revolution encouraged industrial revolution production of was started with the help of modern technology in both agriculture and industries sector. Gradually people dependent on agriculture sector increasing. In modern age forms of money has been changing continuously. At this stage metallic money and paper money have been important. They have been prevailing in various forms. Cheques, Hundi; promissory notes and bills of exchange are being very much used as credit money.

3.4. THEORY OF ORGIN OF MONEY

There are differences of opinion amongst economists regarding orgin of money but two main ideologies are generally found.

3.4.1. THEORY OF SPONTANEOUS GROWTH

Spalding was the main supporters of this theory and in their opinion neither money was invented nor any effort was made by man in this respect money suddenly came in existence and was used spontaneously as medium of exchange and measurement of value. Commodities were suddenly used as money at different places separately. According to availability and its suitability in the form of money material used continued changing.

3.4.2. THEORY OF EVOLUTION OF NECESSITY

Othemarspan, Adom smith, Hanson and G. Crowther are was the main supporters of this theory and in their opinion that money was not born suddenly rather money was invented by some intellectuals for overcoming the difficulties of the barter system and from time to time it is being changed and improved by other peoples continuously according to its need. According to G. Crowther to us this inventions seems very simple it is merely the application to the sphere of value of the same idea which has produced meter to measure length, the gram to measure weight the degree to measure temperature and so forth. But at the same time it was doubtless the invention of money and it undoubtedly was an invention simple. It needed the conscious reasoning power of man to make the step from simple barter to money accountancy".

3.5. FUNCTIONS OF MONEY

The function of money has been divided into the classes by economists as follows:

3.5.1 PRIMARY FUNCTIONS

These are also referred to as main functions of money. These functions are the following.

- **Medium of Exchange -** Money has the quality of general acceptability. As such all exchange take place in terms of money. In the primary stage of economic development money was not the medium of exchange money. Was not in existence commodities used to be exchanged for commodities. Which was known as barter system in due course of time number of problem started in barter system in the mean time money came into existence the modern money exchange system the prices of goods and services are expressed in terms of money. In the modern exchange system money acts as the intermediary in sales and purchases. The difficulty of the lack of double coincidence of wants no longer exists now on account of the invention of money. Now it we want use can save money to be spent in future as it is indeed. Since money is medium of exchange. It gives upon the holder the power to command marketable goods and services at his own option whenever he needs them.

- **Standard of value -** Money is used as standard of value. The prices of all goods and services are expressed in terms of money since all values are expressed in terms of money it its easier to determine the rate of exchange between various types of goods and services in the country. In other words we can say that money is the standard of value or a unit of measuring the value of goods and services in general but the people enjoyed no such facility under the barter system.

  In that system it was difficult to determine the rate of exchange between various type of goods and services, Because there is no single commodity then interms of which all values were measured but this difficulty has now disappeared with the of money now it is easier and simpler now to determine the rate of exchange between various types of goods and services in view of its function as a measure of value also serve as a unit of account all records are kept and maintain in terms of monetary unit like as yen, Rubal, Pound, sterling, Dollar Euro, Rupee etc..

3.5.2. SECONDARY FUNCTIONS

Following are the secondary functions of the money;

- **Storage of Value:** we know that under barter system savings were discouraged the reason was that in the absence of money saving could be done only in terms of commodities since of which happened to be perishable. Thus Saving done in terms of commodities were not permanent but with the invention of money

the difficulty has now disappeared Since saving are now done in terms of money. The invention of money has made possible capital accumulation which is an essential pre requisite of economic growth. Money also serves as an excellent store of wealth as it can be easily converted into other marketable assets. But money can perform this function satisfactory only its own value is fairly stable

- **Transfer of value-** The field of exchange also went on extending with growing economic development the exchange of goods now extended to distant areas. It was therefore felt necessary to transfer purchasing power form one place to another. After the discovery of money it performed this function easily and quickly. Since money possesses the quality of general acceptability a person can dispose of his property at one place and buy new property at another place. Furthermore borrowing and lending also take place in terms of money it is on account of the general acceptability of money that purchasing power can be transferred from one person to another, now physical transfer of commodities or assets are not necessary. Their values are now transferred from one place to another. This function of money has its important in socio economic life of the community it is on account of this function of money That Excess Funds lying with one person can be lent at interest to another person who can put it more productive uses.

- **Means of deferred Payment**: storage of values was not easy before the present form of money invented borrowing and lending were difficult under the Barter System In the Absence of money The borrowed commodities could be returned only in terms of goods and services but the modern money has greatly facilitated the borrowing and lending process. In other words money now acts as the means of deferred payments. Money has proved to be suitable standard of deferred payments for the fowling reasons;

- The value of money is stable compare to the other commodities values

- Money is more durable compared to other commodities

- Money has the quality of general acceptability.

Hence it continues to be always desirable

Above functions of money is very important for the economy. According to English poem the functions of money is described as.

Money is a matter of functions four.

A Medium, a measure, a standard, a store

3.5.3. CONTINGENT FUNCTIONS

Beside the primary and secondary functions various other functions are also performed by money in developed economics. These are known as the contingent functions of money.

- **Basis of Credit**:- In present time in developing countries credit transactions are continuously increasing credit transactions are based on credit of the parties. It should however remembered that money is the basis of credit without money credit instrument cannot circulate.
- **DISTRIBUTION OF SOCIAL INCOME** : In modern age production is made possible by the collective cooperation of the various factors of production. The share of each factor out of total production is determined in terms of money according to their contribution they are paid, wages, salaries interest, rent, and profit which determined and paid in terms of money.
- **HELPFUL IN CAPITAL FORMATION**:- Capital is to be found in several forms but money is the most liquid form of capital. In others words capital in the form of money can be put to any use. It is on account of this liquidity of money that capital can be transferred from the less productive to more productive uses. The mobility of capital has also increased on account of the liquidity of money.
- **Liquidity of Money**: - Money is the most liquid assets in comparison to all the other assets money can be put to any use. Money is very important from this point of view it is essential to keep capital in a liquid form for a income motive, transaction motive, precautionary motive, and speculative motive.
- **REPAYMENT CAPACITY**:- Money has the quality of general accept ability. So to maintain its repayment capacity every person has to keep some amount in liquid form. But so doing the person safeguards its repayment capacity.
- **CARRIES OF THE DESIRE**: whatever is desired by you can fulfill it with the help of money provided that commodity is readily available in the market.

3.6. SUMMARY

In this unit we have discussed that money is infact one of the

greatest invention of man since money represent generalized purchasing power it has been the object of mans desires to accumulate it throughout. The age money was not a sudden discovery. Like most other social and scientific invention money has under gone a process of historical evolution spread over a long period of time. During this process of historical evolution a variety of things had been used as money Things Like hide and skin of Animals. Cattle, and food Grains had been used as money in different stages in economic evolution. In more recent times metallic and paper money have been used. Now in present time money is life blood of any economy. Without money any economy cannot function smoothly. Money occupies an important place in the modern economy. The various functions of money have already clarified in this unit.

According to Marshall "Money is the pivot around which the economic science clusters" from the above study we conclude that money plays a vital and significant role in modern economy of a country.

3.7 KEYWORDS

Evolution	Any process of formation
Obligation	Something by which a person is bound to do certain things and which arise out of a sense of duty
Barter	Exchange Goods for Goods.
Wander	Roam aimlessly
Gradually	Taking place by degree.
Procured	To obtained
Prevail	To win out
Ideology	Manner of Thinking of a person
Spontaneous	Resulting from a natural impulse
Perishable	Subject to decay or destruction.
Deferred	To Put off
Speculative Reasoning.	Characterized by Abstract

3.8. SELF ASSESSMENT TEST

1. Give a Brief Account of Evolution of Money?

2. Define money and Discuss its Functions?

3.9. FURTHER READINGS

Geoffrey Crowther.	An outline of Money.
L. V. Chandler	Economics of money and Banking
Siddique A. A.	Money Banking foreign exchange prayag pustak bhawan Allahabad.
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UNIT 4 : EXCHANGE RATE

Objectives

After going through this unit you will be able to understand

- Meaning of exchange rate
- Understand determination of foreign-exchange rate
- The function of foreign-exchange market

Structure

4.1 MEANING OF FOREIGN EXCHANGE

Foreign exchange is the mechanism by which the currency of one country gets converted into the currency of another country ,the conversion of currency of in to another currency is done by banks who deal in foreign exchange these banks maintain stocks of foreign currencies in the form of balances with bank abroad , according to encyclopedia Britannica "foreign exchange is the system by which commercial nation discharge their debts to each other.

In words of Hartley Withers –"That the foreign exchange is art and sciences of international money changing".

According to S.J. Chapman "the machinery where by payment are effected in international trade is known as foreign exchange".

In other words the term foreign exchange is used to refer to very balance held abroad.used in this sense the term foreign exchange refers to

the stock of foreign currencies and other "foreign assets. the foreign exchange management act 1999 defines foreign exchanged means foreign currency and includes (a) deposits, credits, and balance payables in any foreign currency (b) drafts, travelers cheques, letters of credit of bills of exchange expressed are drawn in Indian currency but payable in any foreign currency (c) draft, travelers cheques letters of credits or bills of exchange drawn by bank institutions or persons outsides India. but payable in Indian currency. thus foreign exchange includes foreign currency, balances kept abroad, instruments payable in foreign currency and instruments drawn abroad but payable in Indian currency.

4.2 NEEDS OF FOREIGN EXCHANGE

As we know that every country has its own currency as a medium of exchange which accepted and use in payment of liabilities and for purchase and sale of goods and services within the country, but for international payment the currency of one country has to be converted in to the currency of another country; because every country wants payments for its exports to be made in terms of its own currency in fact this the problem of foreign exchange. The problem of foreign exchange was not so complicated under the gold standard as it is today under the managed paper standard the reason was that under the gold standard the importers of a country could makes payment for imported goods and services in terms of gold, but these day no country makes the international payments in terms of gold. Therefore every country has to convert its national currency in to foreign currency for international business transactions.

4.3 TYPES OF EXCHANGE RATES

The rate of which one currency is converted in to another currency is the rate of exchange. The following of the type of exchange rate –

4.3.1 FIXED AND FLOATING EXCHANGE RATE

- **Fixed exchange rate:** - fixed exchange rate refers to the system under the gold standard where the rate of exchange trends to stabiles around the mint par value. Any large variation of the rate of exchange from the mint par value would entail flow of good into or from the country. This would have the effect of bringing the exchange rate back to the mint parvalue in present day situation where gold standard no longer exists. Fixed rate of exchange refers to maintenance of external value of the currency at a predetermined level.

- **Floating exchange rate: -**its refer to the system where the exchange rates are determined by the conditions of demand and supply of foreign exchange in the market. The rates are free to fluctuate according to the change in demand and supply forces with no restrictions on buying and selling of foreign currencies in

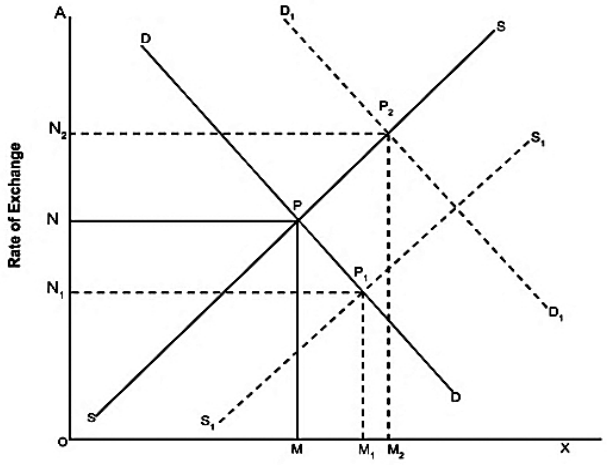
the exchange market. Under floating rates no par value is declared and the central bank does not intervene in the market. Any disparity in the balance of payments is adjusted though the changes in exchange rate that take place automatically in the market, because the central bank does not intervene in the market there is no change in exchange reserves of the country.

4.4 DETERMINATION OF FOREIGN EXCHANGE RATE

Determination of foreign exchange rate is done by following way –

A. Market rate: - The price of any foreign currency (or the rate of exchange) at any time is determined by the demand for and the supply of that currency. When the demand for foreign currency increases supply remaining constant the rate of exchange also increase .as against this when the supply of foreign currency increase demand remaining the same the rate of exchange decreases.

The determination of the rate of exchange can be illustrated with help of the diagram.



Demand and supply of foreign currency.

In the diagram above the demand and supply of foreign currency is represented along O X and the rate of exchange is shown along O Y. D D represents the demand while SS represents the supply of foreign currency. Both these curves intersect each other at the point P. P M or N O represents the Equilibrium rate of exchange at P M rate of exchange. The demand for foreign currency is in equilibrium with the supply of foreign currency. Now let us suppose that the demand for foreign currency increase and this increase in the demand is represented in the diagram by D_1, D_1. The supply of foreign currency however remain constant the rate of exchange under this circumstances is bound to increase. The increase

rate of exchange is shown in diagram by P2 M2 or N2 O. Now let us suppose that the supply of foreign currency increase while its demand remains constant. The increased supply is shown in the diagram by S_1S_1. As clear from the diagram, the rate of exchange falls down to P_1 M_1 or N_1 O.

B. Equilibrium Rate of Exchange : The rate of exchange refers to the rate at which the currency of one country can be converted in to the currency of another country. The rate of exchange thus indicates the exchange ratio between currencies of the two countries. The Equilibrium rate determined by the following way :-

1. Parity of Exchange: - The parity of exchange between countries is determined in different ways according to the monetary system of the countries concerned. We can study the problem of the determination of the rate of exchange under four different type of situations.

a. When both the countries are either on the Gold Standard or on the Silver Standard: - The mint parity is an expression of the ratio between the statutory bullion equivalents of the standard monetary units of two countries on the same metallic standard.

b. When country is on the Gold Standard while the other is on the silver standard:- In such a situation we shall have to find out the quantity of fine gold contained in the standard coin of the country on the gold standard.Along with that we shall find quantity of fine silver contained in the standard coin of the country on the silver standard. After that we shall have to find out the gold value of silver content of the standard coin of that country. Thus by the comparing the gold values of the standard coins of the two countries we can easily arrive at the mint par of exchange between the two countries.

c. When one country is on the Gold Standard while the other is on inconvertible paper currency standard: - in such a situation the mint parity between the two countries is determined by the quantity of gold which will be purchased by currencies of the two countries, taken individually. The gold value of the currency of the country on the gold standard is invariably declared by the govt. But the gold value of the currency of the country on inconvertible paper currency standard is not fixed in terms of goldby the govt of that country. The gold value of its currency keeps on changing from time to time according to the situation prevalent in the market.

d. When both the countries are on inconvertible paper currency standard: -The rate of exchange between the two countries is determined by the demand and supply of foreign exchange. The rate of exchange between the currencies of these countries is greatly influenced by their purchasing power parity. If there are changes in the purchasing power of currencies of the two

countries, such changes do influence the rate of exchange between them. In other words the rate of exchange between two countries on inconvertible paper currency standard is determined by the purchasing power parity of their currencies.

2. **Purchasing Power Parity Theory: -**According to this theory the rate of exchange between two countries on inconvertible paper currency standard was determined by their relative price levels. The rate of exchange determined thus on the basis of the relative price levels was said to be in conformity with the purchasing power parity theory. According to Gustav Cassel "The rate of exchange between two currencies must stand essentially on the quotient of the internal purchasing power of these currencies".

3. **The Balance of Payments Theory of Exchange Rate :-**

   According to this theory the rate of exchange between the two countries is determined by the supply of and thedemand for foreign exchange in the exchange market. The rate of exchange is only a price, the price of the foreign currency in terms of the domestic currency. Like any other price, the rate of exchange is also determined by the market forces of demand and supply. The rate of exchange come to be fixed at the pointwhere there takes place an equilibrium between demand and supply. Hence it is known as the 'Equilibrium rate of Exchange'.

4.4.1 EXCHANGE RATE SYSTEMS PRIOR TO IMF

Prior to the institution of IMF the international monetary system was following the fixed exchange rate system based on international gold standard. Under the gold standard the value of the currency was kept equal to the value of fixed weight of gold over the years the gold standard took three forms.

1. **Gold currency Standard –** Gold currency systemwas the monetary system where gold coins of a definite weight and fineness circulated as the standard unit of currency to small extent paper currencies and coins of other metal like nickel and silver also circulated but they were freely convertible into the gold.

2. **Gold bullion standard:-** under this system the gold bullion standard paper currency replaced gold coins. But the paper currency was replaced gold coins but the paper currency was expressed as definite quantity of gold of certain fineness gold bullions were not converted in coin gold acted as the reserve for the currency in circulation, but the reserve formed only a portion of the total money circulation. Paper currency and other forms of money were redeemable into gold at the fixed rate. But only for relatively large quantities as between countries gold was freely

imported and exported. In brief paper currency was used for internal requirements of country and gold was used for international settlements.

3. **Gold exchange standard**: under this standard currency of the country consisted of paper currency and subsidiary coins. They were not expressed in terms of gold but in forms of foreign currency which was on gold standard. Gold coins did not circulate in the country nor was gold kept as reverse for money in circulation. The monetary authorities undertook to convert in unlimited quantity the currency of the country into that of foreign country which was on gold standard.

4.4.2 EXCHANGE RATE SYSTEM UNDER IMF

The IMF was instituted soon after the II world war with the avowed objective of facilitating smooth running of international trade and betterment of all nation of the members country of IMF it was thought that a system of fixed exchange rate would be necessary for the smooth functioning of international finance the original scheme of the IMF therefore provided that .

- Each member country should declare the external value of its currency in terms of gold and a currency pegged to gold most countries declared values of their currencies in terms of gold and USDollar.
- The value of US dollar was fixed at US Dollar 35 per ounce of fine gold.
- Following the above the monetary reserve of member countries came to consist of gold and US dollar.
- Eachmember country agreed to maintain the market value of its currency within a margin of the par value where the variation in the market is more than permitted level the country should take steps to devaluate the currency to correct the position.
- Members were free to devaluate their currencies but if the devaluation exceeds 10% of the par value approval of IMF should be obtained.
- The IMF granted short form financial assistance to its members to tide over their temporary balance of payment problems.

But present system can be termed as a managed float under which the major currencies are floating by subject to exchange control regulations to keep the rate movements within limits the different methods adopted at present by countries for exchange rates are as follows.

1. The major currencies exchange rates are determined by open market conditions.

2. Some currencies are pegged to SDR their values move with change in the value of SDR
3. Some currencies are pegged to a major currencies
4. For some currencies rates are based on a basket of currencies'
5. For some currencies rates are subject to mutual intervention arrangements.

4.4.3 REASONS OF FLUCTUATION IN EXCHANGE RATE

Fluctuation in the rate of exchange generally occurs in the short period. In the long period the rate of exchange between two countries is generally stable. Following are the cause of instability in the rate of exchange during the short period.

- Change in demand and supply of foreign currencies
- Banking influences
- Currency conditions
- Political conditions

4.5 FUNCTION AND OPERATION OF FOREIGN EXCHANGE MARKET

A foreign exchange market is a market in which currencies are bought and sold.

Function of Foreign Exchange Market:

The Foreign Exchange market is the mechanism by which a person or firm transfer's purchasing power from one country to another, obtain or provides credit for international trade transactions, and minimize exposure to Foreign Exchange risk.

- **Transfer Of Purchasing Power:-** Transfer of purchasing power is necessary because international transaction normally involves parties in countries in different national currencies. Each party usually wants to deal in its own currency but the transaction can be invoiced in only one currency.
- **Provision of Credit :-**Because the movements of goods between country take time, inventory in transists must be financed.
- **Minimizing Foreign Exchange Risk: -**The foreign exchange market provides 'hedging' facilities for transferring foreign exchange risk to someone else.

- **Foreign Exchange Operation:-** The reserve bank undertake transaction in the foreign exchange market as a result of foreign exchange services its provides to its clients management of its portfolio of foreign currency assets and policy operations. Client transaction account for the bulk of this activity by the number of transactions (but not by value). The vast majority of client transaction arises from the provision of foreign exchange services to the Australian Govts. In the normal course of events, the bank covers its sales of foreign currencies to the govts by purchasing foreign currencies in the market. At the time of market stress the bank can draw on its foreign currencies holding to meet demand from the Govt., delaying the impact of these flows on the market management of currency of risk on its portfolio of foreign currency assets also requires the bank to transact in the foreign exchange market. The foreign currency assets on the bank balance sheet are managed to a benchmark. The foreign currency risk of these assets is managed to fixed targets with the actual position rebalanced to these targets daily. These rebalancing transactions involved the Reserve Bank operation in both the foreign exchange spot are swap market. The Reserve Bank is also active in the foreign exchange swap market as a result of its Domestic Liquidity management responsibilities for many years. The bank has supplemented its daily market operations in Repos with foreign exchange swaps. These transactions can be used in the same way as Repos to reshape the profile of Domestic Liquidity flows in to and out of the system.

4.5.1 FEATURE OF FOREIGN EXCHANGE MARKET

- **Location**- Foreign Exchange market is an information at arrangement among the banks and brokers operating in a financial centre purchasing and selling currencies connected to each other by telecommunication like telex, telephone and a satellite communication network society for worldwide interbank financial telecommunication (SWIFT) the term foreign exchange market to issued to refer to the whole sale segments of the market where the dealing take place among the banks the retail segmented refers to the dealing take place between bank and their customers.

- **Size of the market.:** Foreign Exchange market is the largest financial market with a daily huge turnover foreign exchange market were primarily developed facilitate settlement of debts arising out of international trade the business in foreign exchange market in India has shown a steady increase as a consequence of increase in the volume of foreign trade of the country improvement in the communication system and greater access to the international exchange market.

- **Day night market:-** The markets are situated throughout the different time zones of world in such way that where one market

is closing other is beginning its operations. Thus any point of time one market are closed the other is open. Therefore it is stated that foreign market is functioning throughout 24 hours of the day.

- **Efficiency:-** Development in communication have largely contributed to the efficiency of foreign exchange market the participants keep abreast of current happening by access to such services like Dowjones and Reuter. Any significant development in any market at almost instant aneously received by the other market situated at par off place and these has global impact. This makes the foreign exchange market very efficient as if the functioning under one roof.

- **Currencies traded:-**In most foreign exchange market US dollar is the vehicle currency. The currency used to denominate international transactions. This is the despite the fact that with currencies like euro and yen gaining larger share. The share of US Dollar in the total turnover is shrinking.

- **Physical markets:-** In few countries like Brussels and Perris foreign exchange business take place at a fixed place such as the local stock exchange building. At these physical markets these banks meet and in the presence of the representative of central bank and on the basis of bargains, fixed rate for a number of major currencies this practice is called fixing.

4.5.2 PARTICIPANTS IN FOREIGN EXCHANGE MARKET

- **Corporate -** The big business houses, international investors and multinational corporations may operate in the market to meet their genuine investment requirements. They may also buy as sell currencies with a view to speculate or trade in currencies to the extent permitted by exchange control regulations. they operate by placing order with the commercial banks. The deals between banks and their clients from retail segments of foreign exchange market.

- **Commercial banks:-** Commercial banks are major plays of foreign exchange market. They buy and sell currencies for their clients; they may also operate on their own.

- **Exchange brokers.-** Exchange broker facilitate deal between banks. In the absence of exchange brokers banks have to contact each other for quotes. if there are 100 banks at a center for obtaining the best quote for a single currency a dealer may have to contact 99 banks exchange broker ensure that the most favourable quotation is obtained and low cost in terms of time and money. the bank may leave with the broker the limit up to which and the rate at which it wishes to buy or sell the foreign currency concerned

form the intends from other banks the broker will be able to match the requirements of both.

- **Central bank:-** Central bank may intervene in the marked to influences the exchange rate and change it from that would result only form private supplies and demands. the central bank may transact in the market on its own for the above purpose or it may do so on behalf of the govt when it buy or sells bonds and settles other transactions which may involve foreign exchange payments and receipts.

4.5.3 Settlement of Transactions

Foreign Exchange markets make extensive use of the latest development in telecommunication of transmitting as will setting foreign exchange transactions. bank use the exclusive network of society for worldwide interbank financial telecommunications (SWIFT) to communicate messages and settle the transactions at electronic clearing houses such as CHIPS (clearing house interbank payment system) at NewYork.

4.5.4 Transaction in Interbank Markets

Now we discuss how exactly transactions take place in the interbank foreign exchange market. The exchange rate quoted by banks to their customers is based on the rates prevalent in the interbank market. The big banks in the market are known as market makers as they are willing to buy or sell foreign currencies at the rates quoted by them up any extend depending upon its resources a bank may be market makes in one or few major currencies when a banker approaches. The market makes it would not reveal its intention to buy as sell the currency. This is done in order to get a fair price from the market maker.

The quotation in the inter bank market is a two way quotation. It means the rate quoted by the market makers will indicate two prices. One at which it is willing to buy the foreign currency and the other at which it is willing to sell the foreign currency.

Spot and forward transactions the interbank market may place for settlement.

- Where the agreement to buy and sell is agreed upon executed on the same day the transaction is known as cash or ready transaction.
- The transaction where the exchange of currencies takes place two days after the date of the contact is known as the spot transaction.
- The transaction is which the exchange of currencies take place at a specified future date subsequent to the spot date is known as a forward transaction. the forward transaction can be for delivery one or two month etc.

4.6 SUMMARY

In brief the rate at which the currency of any one country is exchanged with the other country is called exchange rate. for example if we pay 72 rupees for getting 1 pound it means that the exchange rate of Indian Rupees and British pound would be 72Rs = 1 Pound like vise exchange rate of currencies prevailing in every country is determined in terms of currencies prevailing in other countries and foreign currencies are exchanged mutually on those rates. Foreign trade refers to trade between two different countries each countries function as sovereign state with its own set of regulation and currency. The difference in the nationality of exporter and importer presents certain peculiar problem in the conduct of foreign trade and settlement among such problems are different monetary units in different countries, foreign trade restriction imposed by countries and differences in legal practices in different countries.

The existence of national monetary units poses a problem in the settlement of foreign transactions every country would like to get the payment in currency of his own country. Foreign exchange is the mechanism by which the currency of one country gets converted in to the currency of another country.

4.7 KEY WORDS

• Impose	To lay a tax or duty.
• Mechanism	Assemblage of moving parts performing a complete functional motion.
• Quotation	Something quoted
• floating assets	Mobile assets
• Mint-	A place where money is coined by Governmental authority.
• Intervene	Between two things
• disparity	Inequality
• SDR	Special drawing right
• convertible	That can be changed
• remittance	Sending to money or cheques
• Instantaneously	Done in immediately.

4.8 SELF ASSESSMENT TEST

- What is the meaning of exchange rate? When and why foreign exchange is needed? Discuss.
- How is the rate of foreign exchange determined?
- What are the characteristics of foreign exchange market?
- Write notes on (1) SWIFT (ii) CHIPS

4.9 FURTHER READINGS

CrowtherG	An outline of money
HaberlerG V	The theory of international trade
Kindleberger CP	International economics
JeevamandamC	Foreign exchange.s.chand and sons Delhi
Seth M.L	Money banking and foreign trade LNP Agra
Das H.G.	Money banking & foreign exchange SPB\Allahabad
SiddiquiA A	Money banking & foreign exchange prayag P.B Allahabad
SundramKPM, Dutt	R. Indian economy, S. Chand co Delhi
Varshney RLB hattachryya	BInternational marketing management S. Chand and Sons Delhi
JeevanandamC	Foreign Exchange and risk management S. Chand and sons new Delhi.

Uttar Pradesh Rajarshi Tandon
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Bachelor of Business
Administration

B.B.A-108(N)
Macro Economics

BLOCK

2

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UNIT 5 : CENTRAL BANK

Objectives

After going through this unit you will able to know about bank

- Identify the difference between central bank and commercial bank.
- Describe the functions of central bank

Structure

5.1 MEANING AND DEFINITION OF BANK

The word bank has been derived from the Italian word 'Banco' which means to sit around the bench in the beginning the researchers told that the banking business was started 2000 years ago. In Babylon Greece Italy, and India were the great centers of ancient civilization and had the banking business at a very early stage. The gold smiths and the money lenders are said to be the ancestors of modern bankers. These gold smith and money lenders used to sit on the benches and used to perform their business money exchange. With the multiplicity of transformations in the economy the forms of banks also changed in the beginning size of the banks and their business was small and limited respectively gradually it developed and now it has taken the shape of a giant in the ancient times there are only two functions of banks accepting the deposits and lending of money but the modern bankers have many other functions to perform. Now the banks have become an important part of the country's trade, industry, and commerce and without proper banking facilities a country cannot progress. In this connection it would be worthwhile to mention that the first bank on modern lines was the bank of Barcelona in Spain which was established in 1401. then came a wave in the establishment of banks

during 17th century. In 1607 bank of Amsterdam in Holland and in 1619 bank of Hamburg in Germany were established. However the real history of modern banking starts from the establishment of bank of England in 1694, with the increase in foreign trade monetary organization came into existence. As the foreign trade gradually became specialize some special banks were also set up such as industrial bank, commercial bank, cooperation banks, agricultural banks foreign exchange bank etc.

Bank has been defined by different authors on different bases. Since modern bank performs a variety of functions is difficult to give an accurate definition on it. It is an account of this reason that different economists have given different definitions of bank. Some definitions are as follows.

In words of kinley "bank is an establishment which makes to individuals such advances of money as may be required and safety made and to which individuals entrust money when not required by them for use".

According to the definition given by kinley bank only transact money. Prof : Hart has defined the bank as "a banker is one who in the ordinary course of his business receives money which he repays by honoring cheques of persons from whom or on whose account he receives it".

According to Kent: "bank is a organization whose principal operations are concerned with the accumulation of the temporarily idle money of the general public for the purpose of advancing to others for expenditure".

According to F. Shirras: "a banker is a person firm or company having a place of business where credits are opened by the deposit or collection of money or currency subject to be paid or remitted upon draft cheque or order where money is advanced or loaned on stock bonds bullion and bill of exchange and promissory Notes or received for discount on sale".

According to Webster Dictionary: bank is an institution which trades in money establishment for deposits, custody and issue of money as also for banking loans and discount and facilitating the transmission or remittance for one place to another"

From the above definitions we find that they lay emphasis on two important functions of the bank. First bank accepts deposits from the public secondly bank give loans to the needy persons such definitions are defective because by accepting deposit and giving loans an institution does not become a bank. The sahukars in our country also perform these two functions but it does not mean that by performing these two functions they become bankers a proper and acceptable definition of a bank should describe all the important functions performed by it from this point of view the following definition may be considered to be the most suit able definition.

"A bank is an institution which deals in money and credit."

5.2 COMMERCIAL BANK

Commercial banks are such banks which earn profit by transactions of money and services in general in India the term commercial banks refers to those bank which have been established under the provisions of indian companies act 1913 sometimes these banks are referred to as joint stock bank according to Indian companies act 1913 commercial banks are joint stock banks which provide short term loans for trade and industry of the country.

Banking had not developed much in India prior to the british rule the banking business was generally carried on by the mahajans and sahukars in the pre british period. The east India Company set up some agency houses for performing banking functions in Bombay and Calcutta by the end of the 18^{th} century but banking rights of east India Company were abolished in 1813. Then three presidency banks were set up in India to carry on the banking business. The bank of Bengal was established in 1806 the bank of Bombay in 1840 and the bank of madras in 1843 these bank were also not able to satisfy the needs of country besides other steps taken by the govt. for banking facilities in the country did not serve the purpose. s

The swadeshi movement prompted Indians to start many new installations; the numbers of joint stock banks increase of remarkably during the boom of 1906-13 and some major bank which are existing today were established during that period.

5.2.1 LEADING COMMERCIAL BANKS IN INDIA

Allahabad Bank: Allahabad bank is one of the oldest banks of India and was established in the year 1865. it was amalgamated in 1922 by chartered bank of India

(A) Punjab National Bank:-PunjabNational Bank was established in 1894.

(B) Bank of India:- Bank of India was established in 1906, the bank is having its head office in Mumbai.

(C) Canara Bank-Canara bank was established in 1906 its head office is in Bangalore.

(D) Indian bank:- Indian bank was established in 1907 and its head office is in Chennai.

(E) Bank of Baroda:- Bank of Baroda was established in 1908 with its head office in Baroda.

(F) Central Bank Of India:– Central bank of India is the biggest commercial bank in India with its head office in Mumbai it was established in the year 1911.

(G) United commercial bank:-United Commercial Bank was established in 1943.its head office in Mumbai.

(H) United bank of India, Union Bank Of India, Indian Overseas Bank etc are the other important commercial bank in India.

5.2.2 CLASSIFICATION OF COMMERCIAL BANKS

The Commercial Bank InIndia are classified under the following heads.

(A) Scheduled Banks- the scheduled banks are those banks which have paid up capital and reserve of Rs 5 lacs and have been included by the reserve bank of India in the second schedule of reserve bank of India act 1934. These bank have to deposits 3% of their demand and time liability with the reserve bank of India in the form of cash reserves and have to send to the reserve bank of India a weekly statement of their financial positions.

(B) Non Scheduled Bank – The nonscheduled banks are those banks which are not included by the reserve bank of India in the II scheduled of R.B.I. act 1934 the paid up capital and reserves of these banks are less than Rs 5 lacs. There banks have to maintain a certain percentages of their deposits with the reserve bank of India in the form of cash reserves.

5.2.3 FUNCTIONS OF COMMERCIAL BANKS

In brief the function of commercial bank is as follows.

- Receiving deposits
- Advancing loans
- Agency or representation functions
- Financing of internal and external trade
- Creation of credit
- Miscellaneous functions

5.3 CENTRAL BANK

According to H.G. Das that the central bank is the apex bank of the country which carries on the functions of issuing money and controlling credit for satisfying the economic and monetary needs of the country not only this central bank also functions as the banker of government as well as the bank of all the banks of the country.

The central bank occupies a pivotal position in the monetary and banking structure of the country. The central bank is the undisputed leader of the money market as such it supervises centrals and regulates the activities of the commercial Banks affiliated with it. The central bank is also the highest monetary institution in the country charged with the duty

and responsibility of carrying out the monetary policy formulated by the government.

Will rogers said that there have been three great inventions since the beginning of time, the fire, the wheel, and central banking every country these days has a central bank which control its entire banking system.Few countries had a central bank in the nineteenth century but the popularity of the central bank as an institution has greatly increased in the 20^{th} century. Today there is hardly any country in the world which does not have a central bank of its own. After the First World War an international monetary conference was held at Brussels in 1929 to find a solution to the problem of recurring economic crises which confronted the world at that time. This conference recommended the setting up a central bank in every country. India's central bank known as the reserve bank of India was set up in 1935.

5.4 FUNCTIONS OF CENTRAL BANK

The functions of central bank differ from country to country in accordance with the prevailing economic situation. But there are certain functions which are commonly performed by the central bank in all countries. The following functions are performed by the central bank.

5.4.1 ISSUE OF CURRENCY

Issue of notes is one of the main important functions of the central bank. Merly central bank of any country issues currency. In the primary days the commercial bank or other institutions of govt had the right of note issue but the notes issued by them suffered from a number of draw backs like as there was lack of uniformity in the notes issued, every commercial bank was required to issue notes according to its reserves which were wound to be of a limited size. As such the noteissued by them were in unlimited quantity; some time commercial banks failed to convert their notes in cash on public demand. Hence it was realized that the note issue system of commercial bank was not satisfactory. After some time the Government took the issue of paper currency in its own hands. But even this system proved unsatisfactory in the long run. The reason was that the system of note issue adopted by the Government suffered from lack of elasticity. The govt was not in a position to estimate accurately the money requirements of the economy. Hence it comes to be realized in course of time that the central bank was the most appropriate institution to undertake the issue of paper currency.

According to M.L. Seth the following advantage is have accured from the system of note issue by the central bank

- Uniformity in the monetary system
- Elasticity in the monetary system
- Greater public confidence

- Stability in the internal and external value of money
- Control on credit creation.
- Profit for the government.

In India the reserve bank of India has been given the sole monopoly of the issue of notes from 1 April 1935.

5.4.2 BANKERS TO THE GOVERNMENT

The central Bank acts as a banker to central and state governments. The central bank keeps the money of Govt. but no interest paid on them the central bank also carries out their exchange remittance, other banking operations and manages public debts. The central bank also transfers the reserve from one place to another and makes payments according to the govt. instructions; and accepts deposits on behalf of the govt. The bank floats loans and treasury bills on behalf of the central and state govt. As financial advisor the central bank tenders useful advice to govt. on important economic issues like those of devaluation of currency. Commercial policy, foreign exchange policy and monetary policy etc. since the central bank possesses full information about the working of economy. It is in a position to offer useful advice to the govt on economic financial problems. The central bank is also the custodian of nation's gold and foreign exchange reserves and in that capacity manages the countries relations with financial institutions.

5.4.3 BANKERS BANK

The central bank acts as the banker's bank just as commercial bank provides services and facilities to general public, in the same way central bank of country provides services and facilities to others Banks.The banks which are member of central bank get loans from the central bank, their bills are rediscounted by it and gives them help at the time of crisis. Central bank also performs the functions of clearing house for the adjustment of mutual transactions of Commercial Banks as banker of the banks. When there are branches of central bank they perform the jobs of clearing houses. Where there is no branch any other important bank perform the job of clearing house as a representative of the central bank.In our country state bank of India acts a clearing house at the representative of the central bank of the country. That is why central bank is called as banker of banks.

5.4.4 CREDIT CONTROL

An important function of the central bank is credit control. Credit control is necessary for stabilizing monetary system of the country. The central bank controls the volume of credit by member bank. Frequent fluctuations in production, employment and price level destabilize the economy which acts as the biggest obstacle in the path of the stable economic development of any country. Therefore the various methods which are employed by the central bank to control the creation of credit by the commercial banks can be divided in two categories as following.

A) Quantitative Methods:-These methods are intended to expand or contract the total volume of credit in the banking system without devoting any thought to the uses to which it is to be put. Main quantitative methods of credit central are as following.

- **Bank Rate:** the bank rate may be defined as the minimum official rate of which the central bank. As a bank of rediscount rediscounts first class bills of exchange brought to it by the discount house and commercial banks. In other words the bank rate may be defined as the varying of the terms and conditions under which the market can have temporary access to the central bank either in the form or rediscounts or through secured advances.

  The central Bank:- tries to control credit by influencing both the cost as well as the availability of credit. The cost of credit is influenced by changing the bank rate by raising the bank rate the central bank raises the cost of credit and by lowering the bank rate it lowers down the cost of credit. The bank rate policy also affects the availability of credit by changing the conditions under which the central bank grants loans to the commercial bank.

- **Open market operations:** Central banks of any country adopt the method of open market operations for controlling the cash reserve of commercial banks under open market operations central bank carries on purchase and sells are govt. securities when volume of credit is to be reduced in the market central bank start selling govt securities in the market commercial bank purchase these securities. Consequently cash reserve of these bank is flown towards central bank and cash reserve available with bank is reduced volume of credit is also reduced contrary to it when central bank desires to increase the volume of credit it start purchasing back the securities commercial bank sell their securities to the central bank and get their cash reserve. This cash reserve is used in credit creation. Open market operations also includes purchases and sales of foreign exchange gold and other approved securities also this in its turn influences the level of business activity, employment and the internal price level of the country.

- **Cash reserve ratio:-** the variable cash reserve ratio is a more direct and powerful method of credit control it products immediate results in the economy cash reserve ratio is that by changing the cash reserve ratio. The cash reserve of the commercial bank can be directly changed effecting there by their ability to create credit in the economy. An important aspect of the variable cash reserve ratio is that by changing the cash reserve ratio the central bank is able to change the size of the credit multipliers in the economy the credit multiplier is the reciprocal of the cash reserve ratio. It has ratio increases by central bank the size of the credit multiplier is the reciprocal of the cash reserve ratio. It this ratio increase by central bank the size of the credit multiplier is lowered down with the result that the commercial bank are able to create a smaller

volume of credit than thought they were doing before a lower cash reserve ratio on the other hand will increase the size of the credit multiplier and result in expanding the volume of credit in the economy.

- **Statutory liquidity ratio:** - According to banking rules each commercial bank is required to maintain a certain proportion of their deposits statutory liquidity ratio is reduced for expanding the credit while it is increased for contracting the volume of credit in the economy. By reduction in this ration the liquid assets available with banks for advancing as loans is increased for credit creation contrary to it if statutory liquidity ratio is increased liquidity of banks are reduced consequently credit creation capacity of the banks are reduced.

  These methods have only a quantitative effect on the supply of credit. They are used for either increasing or decreasing the volume of credit without regard to the uses to which the credit is to be put by the borrowers. But the central bank said above also make use of certain qualitative methods by which the credit sis to be put by the borrowers but the central said above also make use of certain qualitative methods by which they can control and regulate the flow of credit in particular sector.

B) Qualitative Methods : The method of qualitative credit control is discriminatory in character. The objective of qualitative methods is to divert the flow of credit into particular uses or channels in the economy. According to H. C. Das all those methods of credit control which are related to the loans given for certain purposes or objects are adapted to effect or not affect any particular sector area region or group are known as qualitative methods of credit control.

The following are the main types of selective credit controls exercised by the central bank.

- Regulation of consumer credit
- Fixation of margin on loans
- Differential discount rates
- Rationing of credit
- Selective use of cash reserves
- Pre imports deposits
- Direct action
- Moral suasion
- Publicity
- Direction by central government

- Scrutiny and control of debts

Above at the methods of qualitative credit control are more suitable for developing countries.

5.4.5 CUSTODIAN OF FOREIGN RESERVE

An important function of the central bank is to sale and purchase of foreign exchange central bank is responsible for maintaining the stability in the rate of exchange of internal and foreign currencies. Therefore maintenance of sufficient quantity of foreign exchange and gold in reserve is necessary so that the foreign currencies can be supplied according to its demand.

5.4.6 PUBLICATION OF STATISTICS

The central bank collects and publishes statistics about the various aspects of the functioning of the national economy. This provides valuable information on the basis of which the govt can formutate and implements its economic policies.

In addition to the above functions there are certain other minor functions as well which are being performed by the central bank in various countries of the world infact the functions of central bank are expanding these days

5.5. DISTINCTION BETWEEN CENTRAL BANK AND COMMERCIAL BANK

Central bank is the apex banking and monetary institutions whose main function is to control regulate and stabilize the banking and monetary system of the country in the national interest.

A commercial bank is an institution which deals in money and credit according to Indian companies act 1913 commercial banks are joint stock banks which provide short term loans for trade and industry of the country

Following are the distinction between central banking and commercial banking:

- The central bank is the apex bank and it exercises control over the entire banking system of the country while the commercial bank is only a constituent unit of the banking system.
- The central bank acts as the banker to the government commercial bank on the other hand act as bankers to the general public.
- The central bank functions as the banker’s bank. It is topmost institution which controls and regulates the monetary and banking

system of the country. While no such responsibility rests on the commercial banks.

- The central bank is the custodian of the foreign exchange reserves of the country while commercial banks do deal in foreign exchange.
- Central bank possesses the monopoly of note issue. The right is no longer enjoyed by the commercial banks.
- The central bank does not deal directly with the public. As against this the commercial banks deal directly with the general public.
- The central bank is a not profit earning institutions as against this profit earning is the primary objective of the commercial banks.
- The central bank is owned by the government while the commercial are generally privately owned institutions.

5.6 SUMMARY

Here is what you read about in this unit in a net shell that central bank is an institution which is charged with the responsibility of managing the expansion and contraction of the volume of money in the interest of the general public welfare. The central bank is a merely regulatory body in a developed economy. But in a developing economy the central bank is not only a regulatory authority but it is also an agency of economic growth the central bank is in developing countries are taking measures to set up a sound and adequate system of commercial banking to meet the requirements of trade industry and agriculture. They are also taking steps to spread banking facilities in hitherto in accessible areas. They are strengthening capital and money markets in these countries. By providing cheap credit the central bank are also making their contributions to economic development.

5.7. KEY WORDS

- Gold Smith – One who work in Gold.
- Money Lender – One who lends money
- Prompt – Acting with alacrity.
- Nutshell. – Briefest possible way of expressing something
- Hitherto – Till Now

5.8. SELF ASSESSMENT TEST :

(1) What to do you understand by central bank? What are the points of distinction between central bank and commercial banks?

(2) Describe the main functions of central bank.

(3) Central bank is the bank of all banks explains.

(4) State the general banking functions of central bank.

(5) What are the main functions of commercial banks?

5.9 FURTHER READING

- Kock. MH – Central Banking
- Sayers R. S. – MODERN BANKING
- Crowther. G. – Outline of Money
- Smith Vera – Rationale of central Banking
- Sensn – Central banking in underdeveloped money market.
- Seth M. L. – Money Banking international trade and Public Finance
- Kapur S. – Banking and Economics
- Das H. G. – Money Banking and foreign exchange
- Sharma & Sharma – Money and Banking.

UNIT 6 : INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT (IBRD)

Objectives

After going through this unit you must be able to understand.

- Meaning and functions of IBRD
- Organization of IBRD
- Objective of IBRD
- Success of IBRD

Structures

6.1 INTRODUCTION

The International Bank for reconstruction and Development (IBRD) was established in 1945 after Bretton woods conference along with international monetary fund (IMF) to bring other to Second World War shattered economics through mutual cooperation and financial assistance. How it is commonly known as world bank. The IBRD started functioning with effect from25th June 1946.

Quoted in the Macgraw Hill dictionary of modern economies the IBRD known popularly as the World Bank, it operates primarily the making loans in cases in which private capital is not available on

reasonable terms to finance productive in investments in member's countries'

6.2. OBJECTIVE OF IBRD

Following are the various objectives of the IBRD as incorporated in the articles of agreement:

(1) Reconstruction of war affected countries:-To help in the reconstruction and development of member countries by facilitating the investment of capital for the productive purposes including the restoration and reconstruction of economics devastated by war.

(2) Encouraging international capital investment:-To promote private foreign investment through guarantees and participation in loans and other investment made by private investors.

(3) Providing capital to countries:-To encourage the development of productive resources in developing countries by supplying them investment capital.

(4) Growth in international trade- To promote long term balanced growth of international Trade and maintain of equilibrium in the balance of payments of member countries by encouraging long term international investments.

(5) Making peace time conditions:-To bring about an easy transition from a war economy to a peace time economy.

The IBRD advances loans to member countries primarily to help them lay down the foundation of sound economic growth. The loans made by the bank either directly or through guarantees are intended for certain specific projects of reconstruction and development in member countries.

6.3. Functions of the IBRD

IBRD has given speed to economic development and peace in members countries by their functions. The functions of IBRD are as bellow

1. Giving of loans to member countries

2. Giving of guarantee to member countries

3. Giving technical assistance to member countries

4. Providing different types of training

5. Settlement of international disputes

According to Prof. John h Williams the IBRD is even more important than the international monetary fund because there would hardly be any need for the fund if the IBRD were to perform its functions well.

6.4. Organization of IBRD

The organization of the IBRD consists of the board of governors, the board of executive directors, the advisory committee, the loan committee the president and the others member of the staff. All the power of the institute are vested in the board of governors which is the supreme policy making body of the institute. The board consists of one governor and one alternate governor appointed for five year by each member country. Each member has the voting power which is related to the financial contribution of government which he represents. The board of governors meets annual to chalk out the general policy of the institute. The board of executive directors consists 21 members, 6 of them are appointed by the longest shareholders, namely USA, UK., Germany, France, Japan and India. The rest of 15 members are elected by the remaining countries. Each executive directors holds voting power in proportion to the shares held by his country. The board of executive directors meets regularly once in a month to carry on the routine working of the institute.

The president of the institute is appointed by the board of executive directors. He is the chief executive of the institute and is responsible for the conduct of the day today business of the institute.

The advisory committees is appointed by the board of directors it consists of 7 members who are the expertsis in different fields of monetary system. There is also another body known as the loan committee. This compiles is consulted by institute before any loan is extended to a member country.

The members of international monetary fund is automatically became the members of the institute those 44 country which became members of IMF on 1945 are known as the founder members of the institute. There were 194 members of institute in 2012. If any country reigns its membership of the fund, it can No longer remain the member of the bank. If any member country violates the institute's rules it cannot continue to be a member of the institute.

6.5 Lending Operation of the Bank

The IBRD gives loans to member's country in following ways:

6.5.1. Loans Out its Own fund

In this unit earlier pointed out that the bank collects funds from member country. This results in the creation of sizeable fund out of which the bank advances loan to the needly member countries. It the loan is to be given a member country in terms of the national currency of another country it is obligatory on the part of bank to secure the prior consent of the latter member country. The bank also insists upon the fulfillment of certain conditions before advancing loans to member countries.

6.5.2 Loan out of barrowed Capital

When IBRD does not grant loans out of its own funds, it borrows funds from another member country for the purpose of giving loans to the needy Members. The bank pays interest to the member country from which it has borrowed funds for a specified period of time.

6.5.3 Loans through Banks Guarantee

Sometimes the bank encourages the private investors of country to lend their funds to another country by guaranteeing the repayment of loans and interest there on but before the bank gives guarantee. It has to secure the prior consent of both the countries involved in the transaction of the country lending the funds gives its consent to the bank. The loan money can be converted into the national currency of any other member country. Ordinarily the bank does not lend to the member countries out of its own funds.

On the contrary the bank prefers the private investors of member countries to lend to the needy countries by extending to them its own guarantee. The bank lends out of its own funds only when private investors in member countries are not. Forth coming to make loans to the concerned country. Before the bank extends its guarantee it lays emphasis on the fulfillment of certain conditions which are as follows.

- When the bank guaranties a loan made by a member's country, it satisfies itself about the equities nature of the loan transaction.
- The bank looks into the feasibility of the project for which the loan is sought by the borrowing country. The final decision about the feasibility of the project is that of the bank.
- The bank also satisfies itself about the repaying capacity of the borrowing member country
- The bank also insists upon a guarantee from the government of the country to which the loan is being extended.

  Before sanctioning a loan the IBRD insists upon the enforcement of the following regulations:

- Generally The IBRD dealseither with the govt of the member country or with its central Bank. It does not deal with the private person or institution of the borrowing country. The IBRD is prepared to lend to private institutions as well provided govt or central bank of the country agrees to guarantee the repayment of the principal and the interest there on involved in the trams action.
- The IBRD has the right to determine the amount of loan along with the conditions of its guarantee.

- The Amount of the loan is deposited by the IBRD with the central bank of the country and borrowing institution can with draw the amount according to its requirements.
- The borrowing country is under strict obligation to spend the proceeds of the loan on the project for which has been granted by the IBRD.
- The borrowing country has to repay the loan either in gold or in that currency in which the loan was taken by it.

The IBRD has been lending to the member countries for specific development projects in the fields of agriculture, power irrigation industry transport education, etc. The majority of the loan made by the IBRD was intended to lay the foundation of infrastructure in the underdeveloped and developing countries. The IBRD extends long and medium term loan to member country. Its keep itself informed about the progress of the projects which it helps to finance by asking for periodic reports from the borrowing countries and also sending its experts for on the spot inspection.

6.6 IBRD and Indian Economy

India is one of the founder member of the IBRD it has been allotted permanent place in the board of executive directors of the IBRD the IBRD has sent several missions to India for assessing the country's development projects and also for conducting field surveys in various sectors of its economy. Several official of the IBRD have visited India for investigation into specific projects considered suitable for loan assistance the IBRD has also appointed resident representatives in New Delhi to maintain close liaison with the govt of India in regard to the development plans and projects of the country.

India has been a a fairly large borrower of the IBRD from 2008 to 2011 the IBRD approved for Indian loans equal to 1064.34 USDollar for improvement of transport, electricity agriculture health & education etc. The IBRD charged interest on these loans at very nominal rates.

The main projects for which the loans were given to India were as follows till 31st march 2012.

- For importing agricultural machinery for the reclamation of forest lands.
- For importing necessary materials and equipment form the railways.
- For the financing the power projects of Damodar Valley corporation
- For the development of the Kolkata and Chennai port trust.
- For purchasing aircraft for the air India corporation.

- For the financing of the konkan project in Maharashtra.
- For financing the expansion of the Tea Iron and Steel company.
- For setting up a power house of Trombay.
- For importing necessary material and equipment for the manufacture of electric cables.
- For the expansion of the power house of kathgodam in A.P.
- For the development of the private sector in the coal industry.
- For giving financial help to the ICICI.
- The IBRD has also extended technical assistance to India it has lent to India the service of tis technical experts from time to time. These exports have given valuable suggestions to the govt. for the formulation and effective implementation of its development plans.
- The IBRD has also rendered useful service in setting the indo pak canal water dispute.
- The IBRD has also extended loan assistance to the indo-pak for the development of their irrigation canal system.
- In recent years the IBRD has also organized the meetings of the aid India consortium with a view to providing more economic aid to India as a result of this initiative by the IBRD the five big creditor countries like the USA, UK, FRANCE, GERMANY and Japan have agreed to extend more financial assistance to India. Thus the IBRD has rendered valuable service to India by accelerating the rate of its economic growth. In fact the IBRD has proved to be a very useful international lending agency for India.

In May 1978 the IBRD decided to discontinue programme aid to India. The IBRD extendprogramme aid to member countries when they were conformed with foreign exchange difficulties. This credit was extended to meet the foreign exchange requirements of the member countries. Therefore, India had enjoyed this facility because of her adverse balance of payments position. But with her mounting foreign exchange reserves the IBRD thought that India did not need this facility any longer the IBRD however held out an assurance that it at any time in the future, India had any problem in her balance of payments the IBRD would not hesitate to resume programme aid.

Despite the above services the IBRD has come in for criticism with regard to its loan assistance to India.

1. Inadequate granted loans

2. Charging high interest rate
3. Limited activities
4. The rules are loaded against underdeveloped countries.
5. The quota has not been scientifically evolved
6. India failed utilize loan in scheduled time.

6.7. Summary

IBRD has given speed to economic development of developing countries. It has got success in providing loans of various objectives. It has constituted some aid clubs for developing countries. IBRD has also provided technical assistance for reconstruction and economic development. It has established international finance cooperation and international development association for providing loan in large amount for member countries. Another achievement of IBRD is settlement of several disputes among member countries. The IBRD has also got success in inter agency cooperation economic researches and studies etc. According to Eugene black "The IBRD work is not to be assessed in terms of the buildings of old monuments of stone steel and cement. It has a deeper purpose viz to enlarge the riches of the earth to lift them out of drudgery and despair to interest them mints the stirring of ideas, in the grasp of organization and techniques towards the realization of a day in which plenty will be real possibility and not just a dream".

6.8 Key words

- Shattered:- to split or to destroy
- Devastated:- Desolation
- Violate- To Break
- Obligatory One who binds himself to another
- Drudgery –hard labor
- Stirring -rousing or animating

6.9 Self assessment Test

(1) Discuss the functions of the international bank for reconstruction and development.

(2) Explain the objects of the IBRD and show how far it has succeeded in them?

(3) What India has gained from the member ship of IBRD?

6.10 Further Readings.

1. World Bank Annual Reports

2. World Bank and IMF Finance and development

3. Report on currency & finance 2005-10

4. Seth M. L – Money Banking & international Trade

5. Siddiqui A.A. – Money Banking & foreign exchange

6. Sharma &Sharma – Money and Banking

7. Shukla V. K. – Business Environment.

UNIT 7 : INTERNATIONAL MONETARY FUND(IMF)

Objectives

At the end of this unit you should be able to

- Explain the nature and objectives of IMF
- Explain the organization and structure of IMF
- Describe how IMF operate their work
- Evaluate the impact of IMF on India

Structure

7.1 NATURE AND OBJECTIVE OF I.M.F

In the beginning of 20^{th} century there was complete lack of monetary cooperation amongst the countries of the world. At that time there was an acute commercial rivalry amongst the majority of the countries of the world. Every country was trying to maximize its exports and to minimize its imports to achieve this objective several countries resorted to competitive currency devaluation. Thus there was a sort of economic war going on amongst the majority of the countries of the world. This had also resulted in staining their political relations with one another. The Second World War broke out primarily on account of these economic causes as well known there was widespread devastation and destruction in several countries during the Second World War. During the closing years of the war several countries got perturbed over the

possibility of the repetition of another war in the years to come hence they started thinking of ways and means to establish durable peace often end of the war in 1944 an international monetary conferences was held at Bretton Woods. This conference prepared a plan to root out the economic causes leading to the outbreak of war. The Bretton Woods plan was divided into two parts first the establishment of international monetary fund and second the setting up of the international bank for reconstruction and development. The international monetary fund was established on 27th December 1945 and its started function with effect from 1st march 1947. The IMF started with the initial membership of 30 countries on June 2011 its membership rose to 194. in the words of G. Crowther "The International monetary fund is thus an ingenious attempt to Meet the requirements of an International currency system" the main objectives of IMF are as follows:-

- **International Monetary Cooperation**:- The most important objective of the IMF was to establish monetary cooperation amongst the various member countries.
- **Removing Exchange Control:-** Before the establishment of IMF almost every country had resorted to exchange control as a device to fix its exchange rate at a particular level. This produced adverse effect on international Trade. Hence it was now considered necessary to remove these exchange control with a view to giving encouragement to the flow of international Trade.
- **Stability in Exchange Rate:-** There used to be a good deal of instability in foreign exchange rates before second world war this instability of foreign exchange rate had produced adverse repercussions on international Trade. Hence the IMF was established to eliminate the instability in foreign exchange rates.
- **Promote International Trade:-** Another objective of the IMF was to promote international trade by removing all barriers and obstacles which had the effect of restricting it.
- **Promotion of Multilateral Trade and Payments System:-** The another objective of the IMF was to establish a multilateral trade and payment system in place of the old bilateral trade agreements because the latter obstructed the free flow of international Trade.
- **Economic Help to Member Countries**: - The IMF helps the member countries especially underdeveloped and developing country to achieve balanced economic growth. To attain this objective it helps the member country to secure a rising level of employment.
- **Removing imbalance of balances of payments of the countries:-** The IMF helps the member nation to eliminate or reduce the disequilibrium in their balance of payments. To achieve this objective it sells or lends foreign currencies to the member's countries.

- **Balanced economic development of countries:** The IMF helps promote the export of capital from the richer to the poorer countries. So that latter could develop their economic resources for achieving higher living standards.

7.2 Organization and STRUCTURE OF IMF

Management of IMF is composed of the following:

- **Board of governors**: Every member country appoints one governor to participate in the meeting of the board of governors. Every member country has the right to appoint an alternative governor who participates in the meeting of the board in the absence of the governor. The board of governors is the apex body in the management structure of the IMF Generally meeting of the board of governors is convened once in year in any member country. The board of governors formulates the general policy of the IMF.

- **Board of executive Directors:-** To carry on the day to day business of the IMF there is another body known as the board of directors in the present there are 24 member in the board of directors. Of these 24 executive directors 5 directors are appointed by the member country having the largest quotas viz America, Britain, Germany, France and Japan. One executive directors is appointed by Saudi Arabia by virtue of its being one of the largest contributors to the IMF and 18 executive directors are elected for two year terms by the remaining members according to the constituencies in a roughly geographical basis.

- **Managing Director:** There is a managing director of the IMF who is elected by the executive directors. He is usually a politician or international official managing director is the chairman of the board of executive directors besides being the chairman of the board of executive directors the managing director is the head of the IMF staff also and is responsible for its appointment dismissal and organization.The board of directors of the IMF holds its meeting at its office located in Washington.

- **The Interim Committee:-** There is an interim committee which was established in 1974 to advise the board of governors on supervising and controlling management and adaptation of the international monetary system in ordered to avoid disturbances that might threaten it. It currently has 22 members.

- **The Development Committee:-** Besides the above there is also a development committee which was also established in 1974 and consists of 22 members at present. Its main function is to prepare reports advice the board of governors regarding all the aspects of the transfer of resources to the developing countries as required by them and to make important suggestion for its implementations.

7.3 Operations of the IMF

The important functions of the international monetary fund (IMF) are as follows :

- The IMF helps member countries to eliminate or at least to minimize the short period disequilibrium in their balance of payments. The IMF does this either by selling or lending foreign currencies to the members concerned.
- The IMF also helps the member countries to remove the long period disequilibrium in their balance of payments. If there are fundamental changes in the economics of the member countries the IMF can advise them to effect change in the par values of their currencies.
- The IMF tenders advice to the member countries on monetary and economic matters, because it is in a position to do so in view of its special status thus the IMF helps the member counties to stabilize their economic.
- The IMF also provides technical assistance to the member countries. It's given in two ways first the IMF grants to member countries the services of its specialists and experts. These experts of IMF have helped the developing countries in the formulation of their monetary fiscal and exchange policies. Secondly. The IMF also sometimes sends to the member countries outside experts.
- The IMF has recently set up two new departments first the central banking services department gives to the member countries the services of its specialists to run and manage their central bank. The second department tenders useful service to the member countries on fiscal's affairs. The IMF has also initiated several schemes to give practical training to the officers of the member countries in such objects as monetary and economic management.
- The IMF helps to the member countries by their publications. Its publish many important figures relating to international trade liquidity reserve, credit and development etc. from time to time which have proved very important for the economists, researchers, professionals and students of different countries.

7.4 The IMF and Gold Tranche

Generally it is said that the establishment of the IMF constitutes a return of the gold standard. Prof J.H. Williams considers the IMF as essentially a gold standard plan or a modified version of the traditional gold standard. But according to Lord Keynes "The IMF is the exact opposite of the gold standard."

The above definitions are adverse in natural. So we can say there is

no doubt that the IMF does possess certain characteristics of the gold standard. But at the same time the IMF has also certain dissimilarities with gold standard it has certain similarities with the paper standard.

The IMF has certain similarities with the gold standard they are as follows

- **Joint with gold:** Under the gold standard the currency of country has direct link with gold. Its value is expressed in term of a fixed quantity of gold. IMF also every member country has to define the par value of its currency in terms of gold.
- **Significance of gold:-** Gold occupies a position of importance the economies of the member countries under. This provisions of IMF every member country has to express the par value of its currency in terms of gold and every member country has to deposits with the IMF in gold 25% of its quota or 10% of its total holding of gold and USDollars whichever is less, also every member country has to buy and sell gold at prices fixed by the IMF.
- **Multilateral trade and payments system:-** The country on the gold standard instead of balancing its accounts individually with every other country balanced them jointly with other countries on the gold standard. The same manner the IMF also encourages multilateral trade and payment system amongst its different member countries
- **Exchange rate stability:-**The main objective of the gold standard was that of maintaining stable exchange rates among different countries. The IMF also aims at maintaining stable exchange rate in the same manner as the gold standard did
- **Mechanism of expansion and contraction of currency:-** The gold standard has still another similarities with the IMF with regard to the reciprocal contraction and expansion of the currency which take place due to change in the balance of payments.
- **Non imposition of exchange control:** Under the gold standard no country could resort to exchange control of any type for as payments for international trade transactions were concerned the IMF also forbids the member countries to practice exchange control on trade Transactions. The member countries have however been allowed to resort to exchange control during the transitional period. All the member countries will have to eliminate all exchange controls on international trade.

There are some dissimilarities between the gold Standard and the I.M.F they are as follows :

- The per value of national currencies are not rigidly fixed in terms of gold under the IMF as it happened under the gold standard the par value of national currencies under the Gold standard were held

equivalent to fixed quantities of gold. No change was allowed in them.

- Under the gold standard gold was the basis of the expansion and contraction of currency in the country if there were fluctuation in gold production they had their repercussions on currency expansion. But under the IMF dispensation the contraction of currency is not based upon gold.
- Under the gold standard there was complete rigidity in exchange rate at against this there is no such rigidity in the exchange rates under the IMF dispensation.
- The gold standard was automatic in its functioning while the IMF on the contrary represents a conscious international monetary management by an international institution.
- The internal economic situation of a country was affected by foreign influences in gold standard. This does not happen under the IMF.

7.5 SPECIAL DRAWING RIGHTS (SDR)

Special drawing right is the unit of international payments and accounts it is utilized as a medium of international exchange as means of payment of liabilities and store of value in the same way as Pounds and Dollars are utilized.

Special drawing right was started by international monetary fund on 1st January 1970 creation of SDR is like fiduciary system of money where no reserve is required for the creation and issue of currency. It is the money of accounts and international payments can be made through it is a new international assets which is the complimentary to other reserves like gold and foreign currencies of the IMF due to regular fluctuations in the values of Dollars and its supply in the international market dollar was abandoned by IMF and SDR was adopted in accordance with its objectives. It is utilized as gold in international payments. SDR is simple easy and important means and measure of increasing international liquidity of the member countries.

When the SDR was established in 1970 its money of account was determined as dollar at that time the value of one in terms of gold was 0.888671 grams and the value of one SDR in terms of gold was also determined at 0.888671 grams on 15th Aug. 1971 gold standard was abandoned in America also and the convertibility of dollar into gold discontinued. There after dollar was devaluing according to decision in 1974 SDR relation with gold was broken. As a result gold standard adopted by IMF was also discontinued. SDR was established as international monetary standard. It is also known as international exchange standard because its value has been ascertained in terms of five key currencies of the world. Later on the value of SDR was determined on the

basis of the combination of the value of currencies of 16 countries on July 1974. According to this scheme value of unit of SDR was determined in terms of certain units of 16 currencies in 1978 currencies of Iran and Saudi Arabia were induced in it in place of the currencies of Denmark and south Africa according to a decision taken in 1980 now value of SDR is being determined on the basis of currencies of five countries only. These currencies are American dollar, frank of France; yen of Japan, germane mark and British pound have been included. The value of SDR is now based on the five strongest currencies of the worlds on June 1981 the value of one unit of SDR was equal to 1.14460 Dollars.

SDR scheme is a progressive step in international monetary system. International liquidity has increased to a great extent by it.

7.6 IMF and India

India is a founder member of IMF and has been until recently one of the fifth largest subscribers. India's original subscription quota was S.D.R 400 million and presently it stands of SDR 2207 million consists of which SDR 550 million consists of gold and Dollar. The initial par value of the rupee was Rs 3.3 per US Dollar but subsequently the rupee was devalued number of times till to stood at Rs. 27 to a dollar in 1991. Since then the external value of the rupee is not fixed but it is allowed to fluctuate according to market conditions of demand and supply it was around Rs. 57.65 to a dollar in may 2013.

India has been able to borrow from the IMF from time to time to overcome her balance of payments difficulties. India borrowed $100 million from IMF during 1948 to 1949 In 1957 India entered into an agreement with the IMF of $ 200 Million to meet its temporary balance of payments difficulties arising out of development programmers. India arranged for another drawing time to time details can be studied by the table shown below.

Economic Assistance Received From IMF

Year	Amount (in million Dollar)
1947	100
1957	200
1961	250
1965	200
1966	225
1974	573

Source : RBI Bulletin

In July 1974 SDR was disassociated with gold there after the value of SDR was based on the combination of the currencies of 16 countries. By another decision of September 1981.now the value of SDR is based on the combination of currencies of 5 countries only after the adoption of SDR as the currency of account of IMF economic assistance received by India has been shown by the table given below

Year	(in million SDR)
1975	201
1979	318
1980	266
1981	300
1993	305
2011	6108

Source CAACA

India has been advantageous position after joining the membership of IMF. Generally member countries can borrow from IMF up to 50-60% of their quota but India has succeeded in borrowing more them the amount of her quota this shows the interest and faith of IMF in Indian economy.

In recent years the IMF has provided India with technical assistance in a number of areas including the development of the govt. securities markets foreign exchange market reform public expenditure management, tax and custom administration and strengthening statistical. System connection with the special data dissemination standards since 1981 the IMF institute has provided training to Indian official in national accounts, tax administration, balance of payments compilation, monetary policy, and other arrears.

7.7 SUMMARY

International Monetary Fund is an International monetary institution it was established by 44 nations according to an agreement reached upon in an international monetary conference held at bretton woods in USA decision to establish it was taken on July 1944 I.M.F was established and provided a constitutional status with signing of charter by 30 countries on September 1945. It started functioning on March 1947. The main objects of establishing were encouraging international monetary assistance establishing equilibrium in international Trade providing

stability in foreign exchange rates creating an international system of payment protecting the interest of the member countries, providing assistance in reducing the volume of balance of payments deficits and its duration etc.

7.8 KEY WORDS

- Rivalry – Competition
- Resorted – Sorted again
- Devastation – Waste
- Destruction – Slaughter or cause of ruin
- Perturbed – Agitated
- Multilateral trade: This takes place here country is perfectly free to trade with one another.
- Price mechanism: a system of price determination in which the equilibrium price equalizes supply and demand
- Recession. It refers to temporary falling off in business activities

7.9 SELF-ASSESSMENT TEST

1. Describe in brief the objects organization and working of international monetary fund?

2. Point out the benefits which India has derived from international monetary fund?

3. Explain the main characteristics of special drawing right scheme?

7.10 FURTHER READINGS

- Jacobson per – International monetary problems
- Tuw brain – International monetary cooperation
- Fleming Marcus – The IMF its forms and functioned
- IMF annual – Reports and staff papers.
- Seth M.L. – Money banking & International Trends
- Das H.G. – Money banking & foreign exchange
- Siddiqui AA – Money banking & foreign exchange
- Sharma & Sharma – Money banking
- Sharma & Kapoor – Banking & economics

UNIT 8 : CANONS AND CLASSIFICATION OF TAXATION

Objectives

After going through this unit you should be able to

- Clarify the objectives of taxation
- Describe the canons of principles of taxation
- Explain the types of tax.
- Examine the influence of tax on society and country

Structure

8.1 INTRODUCTION

Taxes are compulsory payments to the government without any obligation on the part on the govt. to repay the money taxation constitute the most important source of revenue for govt. similarly the tax pair also does not accept anything in return EAR Seligman defines “a tax is a compulsory contribution from the persons to the government to defray the expenses incurred in the common interests of all without reference to special benefits conferred”. Tax can be imposed at various stages in the circular flow of income the various kinds of taxes can be classified as follows.

- Taxes imposed on the product or the buyers or in the factor market
- Taxes imposed on the sellers or the buyers in the goods market.
- Taxes imposed on the use or the sources of the Tax payers its account.
- Taxes imposed on the households or individuals the firm.

CHARACTERISTICS OF THE TAX ARE AS FOLLOWS

- Tax is a compulsory contribution to the government made by the citizens and also aliens. In some cases it is compulsory payment for which there is quid pro quo.
- Tax imposes a personal obligation of the person on whom it is levid for instance while paying income tax in India, the tax payers has to show all the sources of his income without concealing any income.
- Revenue received from tax contribution need not necessarily be used for the benefit of the individual who made the contribution but can be used for general welfare of the society and economy.

8.2 OBJECTIVES OF TAXATION

Taxation is main source of public revenue. The main objectives of taxation are as follows:

- **Receipts of revenue**: Amount of plans and budgets are increasing continuously. Requirement of money regarding various object are increasing continuously. So more and more receipts of revenues by taxes are necessary.
- **Reducing the inequality of income:-** There is a great difference in the income of rich and poor people, so govt. makes efforts to reduce the gap by imposing tax on rich people at higher rate of tax and on poor people at lower rate of Tax.
- **Stability of prices: -** Imposing the purchasing power of the country men is automatically reduced. It helps in controlling inflationary condition. It strengthens the trends of price stability.
- **Restriction on the centralization of wealth**:- Wealth is not centralized in favour of any person. Hence efforts are made to restrict the centralization of wealth by imposing taxes on income or wealth.
- **Maintaining balance of payments:** For achieving this objective tariffs are imposed on import and export. For reducing the imports, imports duties are enhanced and contrary to it import duties are

reduced for increasing the import. Likewise for reducing or increasing the export necessary changes are made in export duties.

- **Protection To Indigenous Industries:-** For protecting indigenous industries from the competition of foreign industries import duty is imposed on foreign goods at higher rates.
- **Regulation and Control:-**Regulation and control of import–export, production, sale and consumption of goods and services becomes very simple and easy through taxation.

8.3. CANONS OR PRINCIPLES OF TAXATION

Taxation is a major source of revenue of the government in a welfare state.The functions of the government are increasing and hence there is a need to identify the best sources of the government revenue. AdamSmith was the first economists who gave the general principles of taxation. He had propounded the following four canons of taxation:

- **Canon Of Equity :** According to the equity principle a person should be taxed on the proportional rate of taxations.In words of AdamSmith the every state ought to contribute towards the support of the government as much as possible. In proportion of their respective abilities that is in proportion to the revenue which they enjoy under the protection of the state, they are supposed to pay the taxes, which called the equality of taxation. The subjects of every state means people of every state ought indicates the duty of citizen towards the support of the govt. indicates political objective of taxation in proportion to respective abilities indicated proportional taxation and under the protection of the state indicates the benefit received. AdamSmith thought that proportional taxation would satisfy justice in distributions of burdens. The reason is that theSmith was not acquainted with the more recently developed principle of diminishing marginal utility. Therefore contribution in proportion to respective abilities may be interpreted as progressive taxation which suggests that broader shoulders must bear heavier Burdens. This would employ proportional taxation but the modern economists interpret the equality principle in terms of progressive taxation, where in higher the income greater the percentage of tax that is to be paid.
- **Canon of certainty :** According to Adam smith the tax, which an individual has to pay should be certain not arbitrary. The tax payer should know in advance how much tax has to pay, at what time he has to pay the tax and in what form the tax is to be paid to the govt. In other words every tax should satisfy the canon of certainty. Adam smith gave greater importance to the canon of certainty than to the canon of equity. The reason is that a tax which is certain does not pinch the tax payer “An old tax is no tax” is well known proverb the reason is that the tax payer get accustomed to an old

tax. Hencethey do not feel its pinch.Thecanon of certainty is also fully reflected in the Indian tax system.

- **Canon of convenience:** According to this canon every tax should be levied in such a manner and at such a time that it affords the maximum of convenience to the tax payer. The reason is that the tax payer makes a sacrifice at the time of the payment of the tax. Hence the govt. should see to it that the tax payer suffers no convenience on account of payment of the tax. That is reason why, the modern govt. pay special attention to the convenience of the tax payers while collecting taxes from them.

- **Canon of economy :** According to this canon every tax ought to be so contributed as both to take out and keep out of the pockets of the people as little as possible over and above what it bring into the public treasury of the state. It has two meanings: firstly cost of collection of tax should be minimum, secondly it should not produce deleterious effects on production.

  Any system of taxation that involves as wasteful expenditure, need lessly large staff, possibility for evasion, annoyance to the tax payer and time consuming process in uneconomical tax. This refers to the cost of collecting taxes that is the administrative cost which should be minimized. Adam smith opined that the higher administrative cost would mean that the burden of taxation has to be increased to realize more revenue to meet the increased cost of collection.

  Apart from the above some economists have propounded other cannons of taxation.

- **Canon of Elasticity :** The principle of elasticity stress on the ability of the govt. to increase or decrease the revenue from the taxes according to its need by varying the tax rate. Tax yield can be varied only when the tax structure is flexible enough that is elastic. In brief the tax system permits modifications of existing taxes, so as to adjust the revenue to meet the increase expenditure also.Theyield of tax should automatically increase with increase in wealth and population.Furtherthere should be a fresh margin for new taxes.

- **Canon of Productivity :** according to this canon productivity principle refer to two aspects with respect to the imposition of taxes on one hand taxes should yield enough revenue to the govt. and on the other seemed they should not discourage production in the short run and long run.

- **Canon of Diversity :** The physiocrates advocate the imposition of one single tax as a tax on land. But some economists do not agree with this view of the physiocrates. According to them the tax system should contain a large variety of taxes on persons as well as commodities. Thereason is that if the govt. levies a single tax it

will become easier for the tax payer to evade it. But if the Govt. impose a large variety of taxes. It will be difficult for the people to evade or to avoid them. Henceevery tax payer will pay the tax to the Govt. according to his ability to pay.

- **Canon of Simplicity :** This canon implies that the tax system should be simple enough to be easily understood by the tax payer. This would imply that the tax structure is not complex interms of accounting and administrative aspects.
- **Canon of Coordination :** In a federal form of govt. taxes are imposed at the various levels of government, that is central, state and local. There is a need to have coordination between the governments at various levels so as to avoid over burdening the taxpayer.
- **Canon of Expediency :** The tax payer should have no doubt about its desirability from this point of view the old taxes are considered to be better than new taxes. Because the people have already got accustomed to the old taxes hence the government should not impose any new unless there is a sufficient basis for it. The Govt. should as for as possible increase its revenue by increasing the rates of existing taxes.

8.4. DIRECT AND INDIRECT TAXES

Taxes are classified into direct and indirect taxes based on the principles of shifting the incidence:

8.4.1 DIRECT TAX

A direct tax is that tax whose burden is borne by the person on whom it is levied. He cannot transfer the burden of the tax to some other person. Income tax, wealth tax, capital gains tax, capital levy, property tax and death duties are some direct taxes

Merits of direct taxes : following are the merits of direct taxes

- Direct taxes are equitable
- Direct taxes are economical
- Direct taxes create civic consciousness
- Direct taxes are certain
- Direct taxes are elastic
- Direct taxes are Anti-inflationary

Demerits of direct taxes : the demerits of direct taxes are as follows:

- Direct taxes are unpopular

- Direct taxes are inconvenient
- Direct taxes may be uneconomical
- Possibility of evasion
- Possibility of injustice
- Difficulty of reaching lowers income groups.
- Adverse effect on willingness to work and save
- Direct taxes are arbitrary.

8.4.2. INDIRECT TAX

An indirect tax is that tax which is paid by one individual but the Burden of which is borne by another individual. The person who pays the tax in the first instance transfers it burden to the shoulder of another person. So we can say that an in: direct tax is that tax which impact and the incidence are on different persons. The impact of the tax is on the person who pays it to the govt. the first instance. But the incidence of the tax is on the persons who finally bear the burden of the tax Sales tax. Customs duties and excise duties are indirect taxes.

Merits of indirect taxes : following are the merits of indirect taxes:-

- Indirect taxes are convenient
- No possibility for evasion
- They are productive and elastic
- Indirect taxes are equitable
- Wide coverage
- Progressive in nature

Demerits o indirect taxes:- following are the demerits of indirect taxes:-

- Indirect taxes promote economic inequalities
- Indirect taxes are uneconomical.
- Indirect are uncertain
- Discourage savings
- Indirect taxes do not create consciousness.

Keeping in view the merits and demerits of both direct and indirect taxes proper balance has to be maintained them. The both types of taxes are complementary to each other.

8.5. DIFFERENCE BETWEEN DIRECT TAX AND INDIRECT TAX

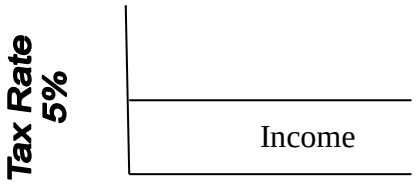
According to Dalton "a direct tax is really paid by a person on whom it is legally imposed while an indirect tax is imposed on one person but paid partly or wholly by another owing to a consequential change in the terms of some contract or bargaining between them" Another economists J.S. Mill distinguishes between the direct taxes and indirect taxes in terms of the intention of the legislature. When the legislature intends that the tax collected from the individual should not be passed on the others. It can be called as direct tax. In case of indirect Taxes the government intends that the tax be passed on to the others by taking into consideration different views. G.F. Shirras arrived at a more satisfactory distinction between direct and indirect taxes. According to him direct taxes are those that are levied immediately on property and income of persons and paid directly to the government by the consumer. Examples of direct taxes are income tax, corporate tax wealth tax and so on. The tax that affects the income and property of individuals through consumption are called indirect tax. Example of indirect taxes are customs duties, excise duty. Sales tax, etc.

8.6. PROPORTIONAL PROGRESSIVE, REGRESSIVE AND DIGRESSIVE TAXES

Taxes have been classified under the following ways-

8.6.1. PROPORTIONAL TAX RATES

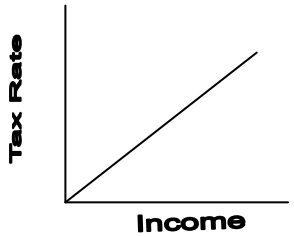
In the case of proportional taxes irrespective of the level of income a fixed percentage has to be paid as tax a proportion of income.Hencethe rate of taxation remains constant even the tax base varies there is no change in the rate of Tax with the increase or decrease in income as it happens under a progressive tax.



8.6.2. PROGRESSIVE TAX RATES

In case of progressive taxes the rate of taxation increases as income increases. Hence the tax paid is higher than that under the proportional tax system as income increases the percentage of tax also

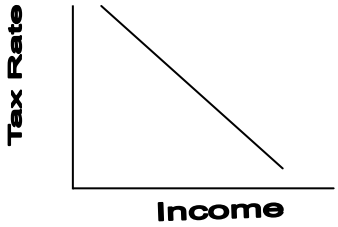
increases. The incomes are divided into different tax slabs for each slab there is a different rate of the tax and



this rate of tax goes on increasing with the increase in income. The progressive tax is also sometimes referred to as graduated tax.

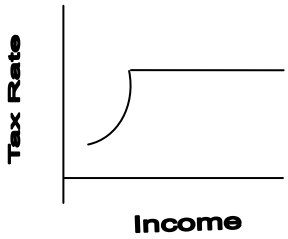
8.6.3. The Regressive Tax Is Just Opposite Of the Progressive Tax

Under the regressing taxes the rate of taxation decrease as the tax base increases hence higher rate of tax is imposed on lower income and lower tax rates on higher incomes. Since this system of taxation is not just or equitable, very rarely is this practiced in reality.



8.6.4. DIGRESSIVE TAX

Digressive tax is mildly progressive up to a certain limit. But beyond that limit it becomes a proportional tax in other word the rate of tax goes on increasing with the increase in income up to a certain limit. But after that limit the rate of the tax becomes uniform or flat for all slabs of income.



8.7 SINGLE V/S MULTIPLE TAX SYSTEM

A single tax refers to a situation where only one kind of tax is collected from the people. In other word tax is imposed on one class of

goods or one class of people. Single tax is collected at regular intervals that are once a month or a year. The tax is imposed on a particular class of goods or income of the people of a particular class. The reason for advocating such a tax that it will be simple and easy for the people to understand. Multiple tax system must contain both direct and indirect and all the individuals must contribute. Towards the revenue of the state but the multiple tax has certain disadvantages. In the case when the number of Taxes is more it would go against the canon of productivity. Therefore Dalton suggested having few taxes rather than a large number of taxes.

8.8. CHARACTERISTCS OF A GOOD TAX SYSTEM

- The distribution of the tax burden should be equitable. Everyone should be made to pay his or her fair share.
- Taxes should be chosen so as to minimize the interference with economic decision.
- A tax policy should be used to achieve other objectives such as to grant investment incentives and to minimize interference with the equity of the system.
- The tax structure should facilitate the use of fiscal policy for stabilization and growth objectives.
- The tax should permit fair and non arbitrary administration and it should be understandable to the tax payers.
- Administration and compliance cost should be as low as is compatible with other objectives.

8.9. SUMMARY

In the book Arthashastra, kautilya emphasizes significance of a sound taxation system for the state craft and this found resonance independent India, which has been dealing with numerous social and economic problem. Besides mounting challenges of widespread poverty, inequality and infrastructure developments the constitutional goals of justice and equality and federal framework of governance have profound influences on taxation system in India. In this unit the various types of taxes are discussed along with their relative merits and demerits.

8.10. KEY WORD

Automatic stabilizers: Changes in Govt. Expenditure and that revenge which occur without any change in govt. policy as G.D.P increases or decrease.

Budget deficit:- When govt. expenditure exceeds Govt. income

Canon of taxation: A set of criteria developed by Adam smith that could be used to judge whether or not a tax was a good tax

Dead weight:- Un productive debt.

Direct taxes: - The initial and the ultimate burden of Tax fall on the same persons.

Fiscal policy: - The stance taken by govt. with regard to it spending or Taxation with a view of influencing the level of economic activity.

Slump- It is the downward phase of the trade cycle.

8.11. SELF ASSESSMENT TEST

1. What are the principal canons of taxation?
2. Compare merits and demerits of direct and indirect taxes.
3. Describe the single and multiple taxation.

8.12. FURTHER READINGS

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Uttar Pradesh Rajarshi Tandon
Open University

Bachelor of Business
Administration

B.B.A-108(N)

Macro Economics

BLOCK

3

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UNIT 9 : BREAK EVEN ANALYSIS

Objectives

After studying this unit you must be able to:

- Explain how the Break-Even Point is calculated
- Describe how p/v Ratio and Margin of safety are useful for business
- Understand the uses, assumption & limitation of Break-Even Analysis

Structure

9.1 MEANING

The Break-Even Analysis is a specific way of presenting and studying the inter relationship between costs, volumes and profits. It is an effective and efficient reporting system, which provides information to management in the most lucid and precise manner. The Break- Even Analysis indicates the level of sales at which costs and revenues are in equilibrium which is known as Break- Even point. The break- even point is a point on the total revenue and total cost curves that reveal the levels of sales volume at which total revenue equals the total cost. Thus, it is a no profit and no loss volumes of sales. Break- even point is just one point indicating the volume at which sales revenues and total cost are equals.

According to Frank, “A Break-Even analysis indicates at what level cost and revenue are in equilibrium.” Thus, it refers to a system of determination of that level of activity where sales just equal to total costs total.

According to Keller, “The Break-Even point of a company or unit of a company is the level of sales income which will equal to the sum of its direct costs (variable costs) and its period expenses (Fixed Expenses)”.

Since at Break-Even-Point, total sales and total costs are equals resulting into no profit or no loss, the following equations hold true at Break-Even-Point.

Sales =Variable Costs + Fixed Costs

Or $S = VC + F$

Or $S - VC = F$

$C = F$

Hence S = Selling price per unit

VC= Variable Cost per unit

F = Total Fixed Cost

C = Contribution per unit

If sales exceed Break-Even-Point, profit arises and if sales fall down below Break-Even-Point, loss emerges. Thus, Break-Even-Point is also known as point at which loss ceases and above which profits begins.

Calculation of Break-Even Point (B.E.P.)

Following are the methods of calculation of Break-Even Point.

a) Break-Even-Point in Unit

This is calculated only when per unit selling price and per unit variable cost or per unit contributions are known to us. The formula is

$$\text{B.E.P. in Units} = \frac{F}{P - V} \text{ or } \frac{F}{C \text{ per unit}}$$

Where F = Fixed Cost

P = Selling price per unit

V = Variable price per unit

C = Contribution per unit

Illustration 1: If fixed cost is Rs. 2800, Selling price per unit is Rs. 12.60 and variable cost per unit is Rs. 7.00.Calculate the Break-Even-Point.

Solution :

B.E.P in Unit = $\frac{F}{S-V}$ or $\frac{2800}{12.60-7.00}$ = 500 units

b) Break-Even-Point in Rupees:

It is also known as Sales Break-Even-Point and calculated in following methods:

1. B.E.P. in Rs. = B.E.P. in unit x Selling price per unit

$\frac{F}{P-V}$ x P Or $\frac{F}{1-V/P}$

Or

$\frac{FxP}{Cperunit-V}$

Where F = Fixed Cost

V = Variable Cost per unit

P = Selling Price per unit

2 B.E.P. in Rs:

B.E.P. in Rs = $\frac{F}{\frac{P}{V}ratio}$

3. B.E.P. in Rs. = Actual Sales − Margin of Safety

Illustration 2: The following data relate Nomit Ltd. for the year 1995.

	Cost per unit (Rs)
Material	15.00
Labour	7.50
Variable Overhead	3.00
Selling price per unit	30.00
Fixed costs Rs	1350
Units Sold during the year	1500

Find Out B.E.P.

Solution : P= 30.00

V= 15+7.50+3= 25.50

Actual Sales= 1500 x 30=Rs.45, 000

B.E.P. in Rs = $\frac{F}{1-V/P}$

$$\frac{1350}{1-25.50/30} = \text{Rs. } 9000$$

9.2 ASSUMPTION

Break-Even Analysis is based on certain assumption and these assumption must hold for the profitable use of this analysis. These assumptions are:

1. The principle of Cost variability is valid meaning thereby that some expenses are fixed up to Break-Even-Point and some expenses use to vary according to the unit of production.

2. Total cost of production can easily be segregated into "fixed and variable" components.

3. At each level of production fixed expenses remain constant.

4. Variable Cost vary in proportion to volume of production

5. Change in production or sales quantities does not bring any change in selling price per unit.

6. There is no change in general price level.

7. Normally, there is no change in productivity per worker.

8. Suitable co-ordination is made possible in production and sales.

9. Cost and revenue are compared on the basis of sale proceeds of production.

10. Only one product is produced or in the case of a number of products, the sale- mix ratio remains constant.

9.3 LIMITATION

The Break-Even Analysis suffers from certain limitation because of its assumptions and applications.

1. Break-Even Analysis proceeds on assumption of constant factor prices, plant scale, technology and efficiency, profit-mix and soling price but these factors are always variable and never constant in real world and therefore, they reduce its utility and applicability.

2. Since the Break-Even Analysis is based on accounting data, it suffers from the various limitations of such data like neglect of imputed cost, arbitrary depreciation estimates and inappropriate allocation of overhead costs .Break-Even-Analysis, therefore may be sound and useful only when there is a good accounting system providing adequate and sound accounting data after due adjustment of past data in view of changes in wages and prices of raw materials.

3. The assumption that total fixed costs remain constant over the entire range of production in not valid.

4. The Break-Even-Analysis is a short term technique of profit planning. It cannot be used for long range profit planning as it may lead to wrong decision. Decision regarding increasing the scale of operation may not yield enough revenue in the beginning .The Break-Even Analysis, in such a situation, may brand it unprofitable and advise to drop the idea of increasing the scale of operation. The proportion of increasing the scale of operation may be quite profitable in the long run. Thus, the break-even analysis should be supplemented through long-run techniques such as the project evaluation techniques.

5. Break-Even Analysis assumes that profit is a function of output ignoring the patent fact that it is also caused by other factors such as technological change, improved management, economic environment etc.

6. Break-Even-Analysis is static in character. It is based on the assumption of given relationships between costs and revenues and inputs. Cost and revenue, however, may change over time making the projection based on past data wrong. As such, Break-Even Analysis may be more useful in situations which are relatively stable or slow moving rather than extremely volatile, erratic and wildly changing ones.

The foregoing limitations raise doubt about the utility of Break-Even Analysis. The truth, however, remains that the break-even analysis is a simple device which is easy to understand and, therefore quite useful to management whose primary concern is to cut through the complexity of the real world and focus attention on basic relationships. It is worth noting that the utility of Break-Even Analysis varies from industry to industry.

9.5 PROFIT VOLUME RATIO (P/V Ratio)

Profit is the function of a variety of factors like sales volumes, costs and prices. It is based on the relationship of profit to sales volume. It is a ratio of contribution to sales. P/V ratio seems to be a misleading term because profit here does not indicate profit but represent contribution. Similarly, volume does not signify the volume of sales but denotes value of sales. This ratio can be expressed in the following ways:

1. $\text{P/V Ratio} = \frac{S-VC}{S} \times 100$

Or

$\frac{C}{S} \times 100$

Where S= Sales Revenue

VC=Total Variable Cost

C= Total Contribution

2. $\text{P/V Ratio} = \frac{\text{Change in profit(Rs)}}{\text{Change in Sales (Rs)}} \times 100$

3. P/V Ratio = $\frac{\text{P–V}}{\text{P}} \times 100$ *or* $\frac{\text{C}}{\text{P}} \times 100$

Where P = Selling price per unit

V= Variable cost per unit

C= Contribution per unit

4 P/V Ratio = $\frac{\text{Profit}}{\text{Margin of Safety}} \times 100$

Profit = Sales − Total Costs

Margin of Safety = Total Sale − B.E.P. Sale

5. $\text{P/V Ratio} = \frac{\text{F}}{\text{B.E.P. in Rs.}}$

Where F = Fixed Cost

B.E.P.= Break –Even-Point

6. P/V Ratio = $1 - \frac{\text{VC}}{\text{S}}$

Where VC = Variable Cost

S = Sales

Illustration 3 : From the following data, calculate P/V Ratio.

Sales 10,000 units @ Rs 20 per unit Rs.2,00,000

Variable costs @ Rs 15 per unit Rs. 1,50,000

Fixed Costs Rs. 40,000

Solution

1. P/V Ratio = $\frac{\text{S–VC}}{\text{S}} \times 100$

$\frac{2,00,000-1,50,000}{2,00,000} \times 100 = 25\%$

2. P/V Ratio = $\frac{\text{C}}{\text{S}} \times 100$

$\frac{50,000}{2,00,000} \times 100 = 25\%$

3. P/V Ratio = $\frac{\text{P–V}}{\text{P}} \times 100$

$\frac{20-15}{20} \times 100 = 25\%$

4. P/V Ratio $= 1 - \frac{VC}{S}$

$1 - \frac{1,50,000}{2,00,000} = 1/4$

Illustration 4: From the following data calculate P/V Ratio.

Year	Sales	Profit
I	50,00,000	5,00,000
II	75,00,000	10,00,000

Solution : P/V Ratio $= \frac{\text{Change in Profit}}{\text{Change in Sales}} \times 100$

$\frac{5,00,000}{25,00,000} \times 100 = 20\%$

P/V Ratio is very useful in Break-Even- Analysis. This ratio also helps us in determining sales, net profit, variable costs etc. For all these purpose, many equations may be derived from the P/V Ratio.

a) For determining variable costs for a given sales volume:

Variable costs = S − (S × P/V Ratio)

b) For ascertaining contribution

C= S × P/V Ratio

c) For finding out sales:

$S = \frac{C}{\text{P/V Ratio}}$

d) For calculating Fixed Costs

F= S × P/V Ratio-profit

e) For calculating profits on given sales
Profit = S × P/V Ratio – F

f) For determining Break− Even-Point

B.E.P. in Rs.= $\frac{F}{\text{P/V Ratio}}$

Illustration 5: You are given the following Information.

Period	Sales	Profit/Loss
August 2012	90,000	- 10,000

	September 2012	1,30,000	+10,000

Calculate: 1) P/V Ratio

2) Fixed Overhead

3) Level of activity if Rs 25,000 is to be earned as profit

4) Expected profit if sales are budgeted at Rs.1,80,000

Solution :

1) P/V Ratio = $\frac{\text{Change in profit}}{\text{Change in Sales}} \times 100$

$\frac{(+10,000)—(-10,000)}{1,30,000—90,000} \times 100$

$\frac{20,000}{40,000} \times 100 = 50\%$

2) Fixed Overheads:

F= S × P/V Ratio – Profit

F= (1,30,000 × 50/100) – 10,000

= 55,000

3) Level of Activity Sales when profit is Rs 25,000

C= 55,000=25,000= Rs 80,000

$$S = \frac{\text{C}}{\text{P/V Ratio}}$$

$S = \frac{80,000}{50/100}$ = 80,000 x 100 / 50 = Rs 1,60,000

4) Profits when sales will be Rs. 1,80,000

Profit= S x P/V Ratio – F

(1,80,000 x 50 / 100) – 55,000

90,000-55,000

Rs. 35,000

9.6 MARGIN OF SAFETY : (M.O.S.)

The margin of Safety refers to the extent to which the firm can afford to reduce sales before it starts incurring losses. It is the difference between actual total sales and B.E.P. sales .It indicate the volume of sales, which directly contributes to profit, as fixed costs have already been covered by B.E.P. It can be calculated in the following way:

Margin of Safety = Actual Sale – B.E.P. Sale

or $\frac{\text{Profit}}{\text{P/V Ratio}}$

Margin of safety is an important indicator of the strength of the business. If the margin of safety is high, the position of the business will be sound and it can withstand any storm of depression, rather it will have more opportunities to earn profit. If the margin of safety is low, a profitable position may be converted into loss- position within short time, the business will succumb to the storm of business without any sort of resistance.

Illustration 6 : From the following information find out the margin of safety.

Year	Units	Total Cost	Sales
1988	10,000	80,000	1,00,000
1989	12,000	90,000	1,20,000

Solution :

Profit in 1988 = 1, 00,000 – 80,000 = 20,000

Profit in 1989 = 1, 20,000 – 90,000 = 30,000

Change in profit = 30,000 – 20,000 = 10,000

P/V Ratio = $\frac{\text{Change in profit}}{\text{Change in Sale}} \times 100$

$$\frac{10,000}{20,000} \times 100 = 50\%$$

Fixed Costs = (S × P/V Ratio) – Profit

Taking 1988's data

F = (1,00,000 × 50 /100) – 20,000 = Rs 30,000

B.E.P. in Rs. = $\frac{F}{P/V \text{ Ratio}}$

$\frac{30,000}{50/100}$ = Rs 60,000

B.E.P. in units= 60,000 / 10 = 6000 units

Margin of safety for 1988:

	Units	Rs
Actual Sales	10,000	1, 00,000
B.E.P. Sales	6,000	60,000

Margin of safety is = 1, 00,000 – 60,000 = 40,000

Alternative Method:

Margin of Safety = $\frac{\text{Profit}}{\text{P/V Ratio}}$

$$\frac{20{,}000}{50/100} = Rs.\ 40{,}000$$

Margin of safety for 1989:

	Units	Rs
Actual Sales	12,000	1,20,000
B.E.P. Sales	6,000	60,000

Margin of safety is = 1 20,000 – 60,000 = 60,000

Alternative Margin of Safety = $\frac{\text{Profit}}{\text{P/V Ratio}}$

$$\frac{30{,}000}{50/100} = Rs.\ 60{,}000$$

9.7 USES OF BREAK-EVEN ANALYSIS

Break even analysis is also known as cost volume profit analysis. It is an important tool of profit planning and control. It is a simple device to understand and interpret the complicated financial statements and reports because the accounting data presented through break even charts become very easy to grasp and interpret.

Break even analysis is useful diagnostic tool in following ways:

1. Sales volume can be determined to earn a given amount of return on capital.

2. Profit can be forecast if estimates of revenue and cost are available'.

3. Effect of change in the volume of sales, sale price, and cost of production can be appraised.

4. Choice of products can be made from the alternatives available, product mix can also be determined.

5. Impact of increase or decrease in fixed and variable costs can be highlighted

6. Effect of high fixed costs and low variable costs to the total cost can be studies.

7. Valid inter firm comparison of profitability can made.

8. Cash Break-Even chart helps proper planning of cash requirements.

9. Break –Even Analysis emphasizes the importance of capacity utilization for achieving economies.

10. Further help in provided by margin of safety and angle of incidence.

9.8 SUMMARY

This unit focuses upon the utility of Break-Even Analysis. The various formula discussed in this unit for P/V Ratio, Margin of safety which is helpful for student.

This unit present a microspic picture of the profit structure of a business enterprise to its managements. It not only highlights the strength & weakness of the firm but is also sharpens the focus on certain measurement which can be operated upon to enhance its profitability. Management also uses the Break-Even analysis to examine the profit vulnerability of a business concern to the possible le changes in the business conditions like possible changes in the business conditions like changes in sales, costs, price, profits etc. Break-Even-Analysis also helps the management in devising managerial action to maintain the profitability of a firm. Further, it assists in gauging the impact of changes in selling price, volume of sales, variable costs, fixed costs upon the profits of the business.

9.9 QUESTIONS

1. What is Break- Even Analysis? Discuss its assumption and uses.

2. Define the limitation of Break-Even Analysis.

3. What do you understand by P/V Ratio? For what purposes this can be used?

4. **Explain Theory of contribution & Margin of safety.**

5. From the following data calculate P/V Ratio.

Years	**Sales (in Rs.)**	**Total Costs (in Rs.)**
1993	1 5, 00,000	4, 50,000
1994	7, 50,000	6, 50,000

6. From the following data calculate

   a) P/V Ratio

   b) Fixed Overheads

c) Level of activity if Rs 50,000 is to be earned as profit

d) Expected profit if sales are budgeted at Rs 3,60,000

Period	**Sales (in Rs)**	**Profit**
1995	1,80,000	10,000
1996	3,60,000	15,00

7. Calculate B.E.P. in Rs. and in Units:

Sales 10,000 units @ Rs 20	Rs. 2, 00,000
Variable Cost @ Rs 10	Rs. 1, 00,000
Contribution	1, 00,000
Fixed costs	60,000
Profit	40,000

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UNIT 10 : COST OF CAPITAL

Objectives

From this unit you must be able to :

- Understand the importance and classification of the cost of capital
- Understand how the cost of capital is measured
- Know about the average cost of capital
- Discuss the uses of cost of capital for firm and how to develop

Structure

10.1 MEANING

Cost of capital is a concept having manifold meanings. Some theorist define it of a measurement of the sacrifice made by an investor in a order to generate capital formation as investor hopes to get a suitable return on his investment in any business firm since be postponed his present consumption, thus cost of capital for an investor, is the measurement of disutility of funds in present times of compared to the future rate of return on the other hand a firm is a used of the those funds supplied by investors from firms point of view cost of capital is the cost in the cost obtaining funds , the price which a firm pays for the use of funds obtained or borrowed by it is that minimum rate which must be earned or invested funds so of to cover the price and other related cost payables of view it is the measurement of profitability of investments and yardstick to decide whether to invest or not in this way. It becomes a largest rate of return cut-off rate or hurdle rate of projects.

According to Hampton John J, “Cost of capital is the rate of return the firm requires from investment in order to increase the value of the firm in the market rate”.

A similar view has been expressed by Milton H. Spencer, “cost of capital is the minimum rate of return which a firm requires as a condition for understanding an investment”.

The concept of cost of capital can also be explained in terms of opportunity cost. In this sense, cost of capital is the rate of return of the best alternative investment opportunities available to a business concern. In other words, a rate of return, which a company can earn by investing its surplus funds outside the business, will be called its cost of capital. In fact, it is scarified alternative return. Another approach to explain the cost of capital may be pure in economic terms. According to this, cost of capital is the cost of acquiring the funds required to finance the proposed investment project. In other words, cost of capital is the borrowing rate, which is just consideration paid for obtaining and using the capital, of course, expressed in terms of percentage of capital obtained and used.

10.2 IMPORTANCE

The cost of capital comprises an important element in capital investment decisions. It is important not only from the view point of capital budgeting decision but it also constitutes an internal part of capital structure decision the concept of cost of capital is quite relevant in the following managerial decisions:

- Helpful in capital budgeting decisions
- Helpful in planning of capital structure
- Evaluation of expansion projects
- Evaluation of financial performance of the top management.

In other words, the cost of capital is also important in several points of view:

a) In the field of Capital Structure Decisions

The cost of capital plays an important role in designing the balanced and appropriate capital structure .Each source of capital involves different cost and risk. The objective should be to raise the capital from different source in such a way that it optimises the risk and cost factors. For this purpose, the cost of each source of capital should carefully be considered and compared with the risk involved in it. Since the cost of capital has effect on the objective of maximisation of wealth, it is contended that a concern should try to design capital structure which will ensure minimum cost of capital.

b) Other Importance

It is also important in many other areas of decision making such as:

- Comparative study of alternative financial measures,
- Optimum allocation of financial resources
- Dividend policy decision
- Working capital management policies
- Capitalisation of profits

c) In the field of Capital Expenditure Decisions

It is basic input information in capital expenditure decisions. In the case of discounted cash flows method, the cost of capital is used to discount the future cash inflows. N.P.V & A.R.R. (Net Present Value & Average rate of return) is compared with the cost of capital. According to this method, the cost of capital constitutes an integral part of investment decisions and provides a good yardstick to measure the relative worth of investment proposal. In fact, it provides a rational mechanism for making optimum investment decision. Thus, cost of capital forms the basis of financial appraisal of all capital expenditure purpose.

10.3 CLASSIFICATION AND MEASUREMENT

Cost of capital can be classified in following ways:

1. Historical Cost & Future Cost:

Historical costs are book costs which are related to the past. Future costs are estimated cost for the future. In financial decisions future costs are more relevant than the historical costs. However, historical cost act as guide for the estimation of future cost.

2. Explicit Cost and Implicit Cost :

An explicit cost is the discount rate which equates the present value of cash inflows with the present value of cash outflows. In other words, it is the interest rate of return. The explicit cost of a specific source of finance may be determined with the help of following formula:

$$I0 = \frac{0_1}{(1+k)} + \frac{0_2}{(1+k)^2} + - - - - - - \frac{0_n}{(1+k)^n}$$

$$= \frac{(0_t)}{(1+k)^t}$$

Where Io is the net cash inflow at zero point of time

ot is the outflow of cash in period 1, 2, and h

k is the explicit cost of capital

According to Porterfield James, T.S., "The explicit cost of any source of capital is the discount rate that equates the present value of cash inflows that are incremental to the taking of the financial opportunity with the present value of its incremental cash outflow".

Thus, the explicit cost of capital is the internal rate of return, which a company pays for procuring the finances. It can easily be seen that explicit cost of capital will be only in the case of interest bearing loan. If the loan is interest free, its explicit cost will be zero percent, as no cash outflows of interest are involved, of course, the principal will be returned but its discounting rate will be zero. Similarly, the explicit cost of a gift or windfall will be negative hundred per cent, because no kind of cash outflows will take place in future.

Implicit cost also known as the opportunity cost, is the cost of the opportunity foregone in order to take up a particular.

According to Porterfield James T. S., "As the rate of return associated with the best investment opportunity for the firm and its shareholders that would be foregone, if the project presenting under consideration by the firm were accepted".

In this sense, the cost of retained earnings is an implicit cost of capital in the sense that it is the rate of return at which shareholders could have invested these funds, had these been discounted to them as dividends. However, other forms of capital also have implicit costs because implicit cost arises when capital is used.

3. Specific Cost and Composite Cost

Specific cost refers to the cost of a specific source of capital while composite cost is combines cost of various sources of capital. It is the weighted average cost of capital. In case more than one form of capital is used in the business, it is composite cost which should be considered for decision making and not the specific cost. But where only one type of capital is employed the specific cost of that type of capital may be considered. In capital structure decision, it is the weighted average cost of capital which should be given consideration.

As finance theory suggest, the various sources of capital are inter-related and greatly influence the cost of capital and a concern also desires to have a target and capital structure in the long run, it is generally contended that the cost of capital should be used in composite sense. The composite cost of capital is an inclusive cost of capital from all sources, I.e. equity share, preference shares, cost of debt and cost of retained earnings:

- **Equity Cost of Capital:**

The cost of equity capital is the maximum rate of return that the company use earn on equity financial portion of its investments in order to

leave unchanged the market price of its stock. The cost of equity capital is a function of the expected return by its investors. The cost of equity share capital can be computed in the following ways:

(a) Dividend Yield Method:

According to this method, the cost of equity capital is the discount rate that equates the present value of expected future dividends per share with the net proceeds of a share. Symbolically

$$Ke = \frac{D}{NP}$$

Where Ke = cost of equity capital

D= Expected of Dividend per Share

NP= Net Proceeds per Share

The basic assumption underlying this method is that the investors give prime importance to dividends and the risk in the firm remains unchanged.

Illustration 1. A company issues 1000 equity share of Rs 100 each at a premium of 10 %. The company has been paying 20% dividend to equity shareholders for the past five years and expects to maintain the same in the future also .Compute the cost of equity share capital.

Solution :

$$Ke = \frac{D}{NP}$$

$$\frac{20}{100 + 10} \times 100$$

= 18.18 %

B) Dividend yield plus growth rate Method:

When the dividends of the firm are expected to grow at a constant rate and the dividend pay- out ratio is constant, this method may be used to computes the cost of Equity Capital:

$$Ke = \frac{D}{NP + G}$$

Where Ke= Cost of Equity Capital

D= Expected Dividend per Share

NP= Net Proceeds per Share

G= Growth rate in Dividend

Illustration 2. A company plans to issue 1000 new shares of Rs 100 each at par. The floatation costs are expected to be 5% of the share price. The company pays dividends to Rs 10 per share initially and the growth in dividend is expected to be 5%, Compute the cost of Equity Share Capital.

Solution:

$$Ke = \frac{D}{NP + G}$$

$$\frac{10}{(100-5)} + 5\%$$

$$= 15.53\ \%$$

2) Cost of Preference Share

The cost of preference share capital may be defined as the dividend expected by preference shareholders. A fixed rate of dividend is payable on preference share. Though dividend is payable at the discretion of the board of directors and there is no legal binding to pay dividends, yet it does not mean that preference capital is cost free. The cost of preference share capital is a function of dividend expected by its investors.

The cost of preference share capital can be calculated as:

Kp = D / P

Kp = Cost of Preference Share

D= annual Preference Dividend

P= Preference Share Capital (Proceeds).

Illustration 3: A company issues 10,000 10% preference share of Rs 100 each. Cost of issue is Rs 2 per share. Calculate cost of preference capital if these are issued (a) at par (b) at a premium of 10% and (c) at a discount of 5%.

Solution

Cost of preference share capital Kp = D / NP

(A) Kp = 1,00,000 /10,00,000 – 20,000 x 100 = 10.2%

(B) Kp = 1,00,000 / 10,00,000 + 1,00,000 – 20,000 x 100 = 9.26 %

(C) Kp = 1,00,000 / 10,00,000 – 50,000 – 20,000 x 100 = 10.75 %

C) Cost of Debt Capital

Such capital is generally obtained through the issue of debentures. The issue of debentures may involve a number of floatation charges such a printing of prospectus, advertisement, underwriting, brokerage etc. Again debentures can be issued at par or at sometimes below par and at sometimes above par.

The usual formula will be:

$$Id = \frac{P}{C} \times 100 \ (without\ tax\ factor)$$

Where Id = Cost of Debt Capital

P = Interest payable

C = Capital Received

Illustration 4. A Company is willing to issue 1000, 7% debentures of Rs. 100 each and for which the company will have to incur the following expenses:

Underwriting commission 1.5%, Brokerage 0.5%, and other expenses Rs 500. Find out cost of Debt Capital.

Solution:

Floatation Charges will be (per Rs. 100)	
Underwriting Expenses	1.5
Brokerage	0.5
Printing	0.5

	2.5

C = 100 – 2.5 = 97.5

P = 7

$$I = \frac{P}{C} \times 100$$

$$\frac{7}{97.5} \times 100$$

= 7.18 %

D) Cost of Retained Earnings

The retained earnings is one of the major sources of finance available for the established companies to finance its expansion and diversification programmes. These are the funds accumulated over years of the company by keeping part of the funds generated without distribution. The cost of retained earnings to the shareholders is basically an opportunity cost of such funds to equity share holders.

Cost of Retained Earnings is calculated as follows:

$$Tr = \frac{(1 - Td)\ AD}{RE} \times 100$$

Where Td = Tax on dividends

RE = Retained Earnings

AD = Actual Dividend

Illustration 5 : Mr. X holds 110 shares of Rs 100 each in Y Ltd. The company has earned Rs 10 per share and distributed Rs 6 per share as dividend among the shareholders and the balance is retained. The market price of the shares in Y Ltd, is Rs 110.If the personal income tax applicable to Mr. X is 40 %, find out the cost of retained Earnings.

Solution:

RE= 110 Shares x Rs 4 = Rs 440

Alternative Investment out of RE 4 share (440 /110) can be purchased

Hence, AD= 4 shares x Rs 10 = Rs 40

Td = 40% or 0.40

$$Tr = \frac{(1 - Td)}{RE} \times 100$$

$$\frac{(1-0.40)\ 40}{440} \times 100$$

= 5.45 %

10.4 AVERAGE COST OF CAPITAL

Cost of capital is the overall composite cost of capital and may be defined as the average of the cost of each specific fund. In case a project is to be financed by funds raised from a single source, its expected rate of return should be compared with the anticipated future cost of capital. The acceptance of a project with internal rate of return higher than the cost or a positive net present value would tend to maximise the stock prices.

Often the projects are financed by funds raised from a package of sources which requires computation of a single consolidated cost figure to have cost benefit comparison. For this, the weighted cost of capital raised from different sources is computed where the proposed ratio of capital to be raised from each source to the capital requirement will be taken as weights. Once the costs of the individual components of the capital structure have been computed, these costs may be weighted according to some standard and a weighted average cost of capital may be computed.

The CIMA defines the weighted average cost of capital, as the average cost of the company's finance weighted according to the proportion each elements bears to the total pool of capital, weighting is usually based on market valuations current yields and costs after tax.

The average cost of capital is useful to financial managers as it provides a degree of flexibility in planning their financing programmes but this concept will be of little relevance when company effects significant

change in its debt policy, dividend policy, growth objectives and debt-equity mix.

Modigliani, F and Miller, M.H have opined that the average cost of capital to any firm is completely independent of its capital structure and is equal to capitalisation rate of pure equity stream of its class. The cost of capital is measured by earning- price ratio, which will be applicable to all debt-equity mix situations.

The second stage in the calculation of cost of capital is to find out the composite or combined cost on the basis of cost of individual sources and this is doing using weighted average method.

- **Assignment of Weights:**

Assignment of weight actually involves the determination of share of each source of capital in the total capital structure of the company. This is done in any of the following two ways:

a) Historical Weights Methods :

According to this method, the relative proportions of various sources of capital to the existing capital structure are used to assign weights.

In the case of historical weights method, one problem arises relating to the choice of book value or market value weights. Each sources of capital may have market value which may differ from book value. While book value weights are operationally convenient, market value weights appear more appealing at least in theory.

Merit of Book Value :

1. Book value weights are readily available from the published statements of the company.
2. Companies set their capital structure targets in terms of book-values rather than market values.
3. Capital structure analysis in terms of debt equity ratio is carried out on the basis of book values.
4. Book value weights are more convenient to be used.

Merit of Market Value :

1. Market values of securities are closely approximate to the actual amount to be raised from the sale of such securities.
2. The costs of specific source of capital constituting the capital structure are normally calculated using prevailing market prices.

b) Marginal weights Method:

According to this method, specific costs are assigned weights in the proportion of funds to be raised from each source to the total funds to be raised.

Illustration 6. The following is the capital structure of X Ltd.

Items	Book Value (Rs)	Market Value (Rs)
Debentures	3, 00,000	3, 00,000
Pref. sh. capital	2, 00,000	2, 00,000
Eq. Sh. capital	4, 00,000	7, 00,000
Retained Earnings	1, 00,000	-----

The after tax cost of capital of specific source is as under:

Cost of Debentures	4.77 %
Cost of Pref. Shares	10.53 %
Cost of Equity Shares	14.59 %
Cost of Retained Earnings	14.00 %

Calculate weighted average cost of capital using

(a) Book Value

(b) Market Value weights

Solution:

a) Calculation of Weighted Average Cost of Capital

(Book Value Weights)

Sources of capital	Amount (Book Value)	Weights	Cost of Capital (%)	W.A. Cost (%)
1. Debentures	3,00,000	0.3	4.77	1.431
2. Pref. share	2,00,000	0.2	10.53	2.106
3. Equity share	4,00,000	0.4	14.59	5.836
4. Retained-Earnings	1,00,000	0 .1	14.00	1.400
Total	10, 00,000		1.00	10.773

Calculation of Weighted Average Cost of Capital

(Market Value Weights)

Sources of Capitals	Amount (Market Value)	Weights	Cost of Capital (%)	W.A. Cost (%)
1. Debenture	3,00,000	0.25	4.77	1.19
2. Preference Share	2,00,000	0.17	10.53	1.79
3. Equity share	7,00,000	0.58	14.59	8.46
Total	12, 00,000			11.44

Market Value of Equity Shares = $\frac{7,00,000 \times 4,00,000}{5,00,000} = Rs.\ 5,60,000$

Market Value of Retained Earnings =

$$= \frac{7,00,000 \times 1,00,000}{5,00,000} = Rs.\ 1,40,000$$

Weighted Average Cost of Capital

Source of Capital		Amount (Market Value)	Weights	Cost of capital (%)	W.A. Cost (%)
1.	Debentures	3,00,000	0.25	4.77	1.19
2.	Pref. Share	2,00,000	0.17	10.53	1.99
3.	Equity Share	5,60,000	0.47	14.59	6.86
4	Retained-Earnings	1,40,000	0 .11	14.00	1.54
	Total	12, 00,000			11.38

10.5 SUMMARY

This unit describe about the details concept of cost of capital. The concept of cost of capital is very important in the financial management. Hence, to achieve the objectives of wealth maximisation, a firm must earn a rate of return more than its cost of capital. Further, in this unit we have said that the cost of capital of a firm has a direct relation with the risk involved in the firm.

This unit also focuses upon the different measurement methods of cost of capital. This unit concludes with detail analysis of average cost of capital.

10.6 QUESTIONS

1. What is cost of capital? What is meant by explicit cost and real cost of capital?

2. Describe the importance and measurement of cost of capital.

3. How is the firms weighted average cost of capital computed?

4. A company has issued 6% debentures of Rs 100 each at a discount of 10% repayable after 10 years. Find out the cost of Debenture capital.

5. A company issues 10 % preference share of Rs 10 each for Rs 1, 00,000. Calculate the cost of preference share capital when these shares are issued

(1) at 10% premium and (2) at 10 % discount.

6. The current market price of an equity share of a company is Rs 180. The current dividend per share is Rs 9.Dividends are expected to grow at the rate of 7%. Calculate the cost of Equity share capital.

7. The capital structure of X Ltd is as under:

Equity share capital (400 shares)	40,000
8% Preference share	30,000
6% Debentures	20,000
Retained Earnings	10,000

The company has earned Rs 15 per share on equity share capital. Its tax rate is 50% and its shareholders personal tax liability is 25 %. Find out the weighted average cost of capital.

10.7 SUGGESTED READING

1. Pandey, I.M., "Financial Management"

2. Pandey. K.M., "Managerial Economics", Novelty & Co., Patna

3. Rustogi, R.P., "Elements of Financial Management," Tax Mann Publication, New Delhi.

4. Gupta, S.P., "Financial Management," Sahitya Bhawan Publication, Agra

UNIT 11 : CAPITAL BUDGETING

Objective

From this unit you must be able to:

- Evaluate long term expenditure decision which involves current outlays and the benefits accrue in the future year
- Make financial analysis of various proposals regarding capital investment so as to choose the best out of many alternative proposals
- Evaluate Long term effect on profitability

Structure

11.1 CONCEPT OF CAPITAL BUDGETING

The term capital budgeting refers to long term planning for making and financing proposed capital outlays. Capital budgeting thus, includes both raising of long term funds and optimum utilisation in other words, it is the process of deciding whether or not to commit resources to a particular long-term project whose benefits are to be realised over a period of time longer than one year. Thus, the system of capital budgeting is employed to evaluate long term expenditure decision which involves long term expenditure decision which involves current outlays and the benefits accrue in the future year,

Charles T Horngreen has defined capital budgeting as, “capital budgeting is long term planning for making and financing proposed capital outlays.”

According to R.M. Lynch, "Capital Budgeting consists in planning the development of available capital for the purpose of maximising the long term profitability of the firm".

From the above description, it may be concluded that the important features which distinguish capital budgeting decision from the ordinary day to day business decisions are:

- Capital budgeting decisions involves the exchange of current funds for the benefits to be achieved in future.
- The future benefits are expected to be realised over a series of years
- The funds are invested in non-flexible and long-term activities
- They have a long term and significant effect on the profitability of the concern
- They involve generally huge funds
- They are irreversible decisions

Thus, capital budgeting is essentially a process of concerning, analyzing, evaluating and selecting the most profitable project for investment. Capital budgeting is of great significance for at least two reasons:

- Capital expenditure is generally irreversible once an investment is made in some specialized kind of machinery, plant or equipment, it cannot be converted into cash without a loss because resale value of machinery and equipment is often much lower than their original price.
- The very survival of the firm depends on how well planned is its capital expenditure. It is, therefore, essential that investment projects are well conceived and evaluated and only gainful projects are selected, given the objective of the firm

11.2 IMPORTANCE OF CAPITAL BUDGETING

The importance of capital budgeting can be well understood from the fact that an unsound investment decision may prove to be fatal to the very existence of the concern. The need or importance of capital budgeting arises mainly due to the following:

1. Large Investment

Capital budgeting decision, generally involve large investment of funds. But the funds available with a firm are always limited and the demand for funds far exceeds the resources. Hence, it is very important for a firm to plan and control its capital expenditure.

2. Long term Commitment of Fund :

Capital expenditure involves not only large amount of funds but also funds for long term. The long term commitment of funds increases the financial risk involved in the investment decision.

3. Irreversible Nature :

The capital expenditure decisions are of irreversible nature. Once the decision for acquiring a permanent asset is taken, it becomes very difficult to reverse that decision for the reason that it is very difficult to dispose of these assets without incurring heavy losses.

4. Long term Effect on Profitability

Capital budgeting decision has a long term and significant effect on the profitability of a concern. Not only the present earnings of the firm are affected by the investments in capital assets but also the future growth and profitability of the firm depends upon the investment decision taken today.

5. Difficulties of Investment Decision

The long term investment decisions are more difficult to take because:

(1) Decision extends to a series of years beyond the current accounting period

(2) Uncertainties of future and

(3) Higher degree of risk.

6. National Importance :

Investment decision though taken by individual concerns is of national importance because it determines employment, economic activities and economic growth.

11.3 LIMITATION OF CAPITAL BUDGETING

There are some limitations of capital budgeting:

- All the techniques of capital budgeting pressure that various investment proposals under consideration are mutually exclusive which may not practically be true in some particular circumstances.
- The techniques of capital budgeting require estimation of future cash inflows and outflows. The future is always uncertain and the data collected for future may not exact. Obviously, the results based upon wrong data cannot be good.

- There are certain factors like morale of the employees, goodwill of the firm etc. which cannot be correctly qualified but which otherwise substantially influence the capital decision.
- Urgency is another limitation in the evaluation of capital investment decisions
- Uncertainty and risk pose the biggest limitation to the techniques of capital budgeting.

11.4 CAPITAL BUDGETING PROCESS

Capital budgeting is a complex process which may be divided into following phases:

1. Identification of potential investment opportunities

2. Assembling of investment proposal

3. Decision making

4. Preparation of capital budget and appropriations

5. Implementation

6. Performance review

1. Identification of potential investment opportunities

The capital budgeting process begins with the identification of potential investment opportunities. Usually, the planning body develops estimates of future sales which serve as the basis of setting production targets. This information, in turn, helps one to identify required investments in plant and equipment.

For imaginative identification of investment ideas, it is helpful to (a) monitor external environment regularly to scount for investment opportunities, (b) formulate a well defined corporate strategy based on a through analysis of strengths, weakness, opportunities and threats, (c) share corporate strategy and perspectives with persons who are involved in the process of capital budgeting and (d) motivate employees to make suggestion.

2. Assembling of investment proposal

Investment proposals identified by the production department are usually submitted on a standardised capital investment proposal form. It helps in creating a climate for the co-ordination of interrelated activities .Investment proposals are usually classified into various categories for facilitating decision making, budgeting and control. An illustrative classification is given below:

- Replacement investment
- Expansion investments

- New product investments
- Obligatory and welfare investments

3. Decision Making :

A system of rupee gateways usually characterises the capital investment decision making in practice under this system, executives are vested with the power to okay investment proposals up to certain limits.

4. Preparation of capital budget and appropriation :

Projects involving smaller outlays and those that can be decided by executive at lower levels are often covered by a blanket appropriation for expeditious action. Projects which need larger outlays are included in the capital budget after necessary approvals. Before undertaking such projects, an appropriation order is usually required. The purpose of this check is mainly to ensure that the position of funds of a firm is satisfactory at the time of implementation of the project.

5. Implementation :

Translating an investment proposal into a concrete project is a complex, risky and time consuming task. Delays in implementation, which are common, may led to substantial cost overruns. For expeditious implementation at reasonable cost, the following are the helpful:

- Adequate formulation of project
- Use of the principle of responsibility accounting
- Use of the network techniques

6. Performance Review :

Performance review is a feedback device. It is a means of comparing actual performance with projected performance. It is conducted most appropriately when the operations of a project have established and is useful in several ways:

- It throws light on how realistic were the assumption underlying the project
- It provides a documented log of experience that is highly valuable for decision making
- It helps in uncovering judgemental biases.
- It includes a much need caution amongst project sponsors.

11.5 METHODS OF CAPITAL BUDGETING

At each point of time a business firm has a number of proposals regarding various projects in which it can invest funds. But the funds available with the firm are always limited and it is not possible to invest funds in all the proposals at a time. Hence, it is very essential to select from amongst the various competing proposals, those which give the highest benefits. The crux of the capital budgeting is the allocation of available resources to various proposals. There are many considerations, economic as well as non-economic, which influence the capital budgeting decisions. The crucial factor that influences the capital budgeting decision is the profitability of the prospective investment. Yet the risk involved in the proposal cannot be ignored because profitability and risk are directly related, i.e., higher the profitability, the greater the risk and vice-versa.

There are many methods of evaluating profitability of capital budgeting proposals. These are:

(A) Traditional Method:

1) Urgency Method

2) Payback period Method

3) Rate of Return Method

4) Equivalent Annual Cost Method

(B) Time- adjusted Method

1) Net Present Value Method

2) Internal Rate of Return Method

3) Terminal Value Method

4) Benefit Cost Ratio Method

(A) Traditional Method:

Traditional methods help the management in taking decision objectively but they should also exercise their commonsense and judgement in taking such decisions.

These methods are:

1. Urgency Method :

Under this method the project are selected on the basis of degree of their urgency. There are many situations in the life of a business concern when an adhoc decision is needed in respect of a capital expenditure. A decision as a part of well-conceived plan any bring a lot of economic hardship under such a situation. Any decision on capital expenditure on the basis of urgency should be taken only if it is fully warranted and justified by the particular situation arisen in the operating life of the concern.

2. Pay Back Period Method:

This is a widely used traditional method of capital budgeting. The payback period is the length of time required to recover the initial cost of the project. It indicates the period within which the total cash inflows are equal to the total, cash outflows.

When the payback period calculated is less than same maximum acceptable period then a proposal is accepted otherwise not, for two or more mutually exclusive projects the ranking would be done on the basis of their Payback period.

$$Pay\ Back\ Period = \frac{\text{Cash outlay of the project or original cost of the Asset}}{\text{Annual Cash Inflows}}$$

Illustration 1 :

A project costs Rs.5, 00,000 and yields annually a profit of Rs 80,000 after depreciation @ 12%, but before tax of 50%, Calculate Pay Back Period.

Solution:

Profit before tax	80,000
Less: tax @ 50 %	40,000

Profit after tax	40,000
Add: depreciation @ 12%	60,000
On 5, 00,000	----------
Profit	1, 00,000
(Before dep. But after tax)	----------
So that Annual Cash Flow is	1, 00,000

$$\text{Pay Back Period} = \frac{\text{Cost of the Project}}{\text{Annual Cash Flow}}$$

$$= \frac{5,\ 00,000}{1,\ 00,000}$$

$$= 5 \text{ years.}$$

Advantage of Pay Back Method:

1. The main advantage of this method is that it is simple to understand and easy to calculate.
2. It saves in cost; it requires lesser time and labour as compared to other methods.
3. It is certainly an improvement over urgency method.

Dis-advantage of Pay Back Method

1. This method is not an exact measurement of productivity of capital expenditure plan, because it does not attempt to measure the return on investment.

2. This method does not highlight upon the quantum of income which could be earned during the whole economic life of the investment

3. This method also fails to assign proper weightage to the unevenness of rate of profit of various projects.

4. This method also fails to consider the period of time over which an investment is likely to fetch income.

5. The most significant limiting factor of this method is that it ignores the time factor.

4. Rate of Return Method:

This method takes into account the earning expected from the investment over their whole life. According to this method, various projects are ranked in order of the rate of earnings or rate of return. This method can also be used to make decision as to accepting or rejecting a proposal. The expected rate of return is determined and the project which has a higher rate of return than the minimum rate specified by the firm called the cut off rate is accepted and the one which gives a lower expected rate of return than the minimum rate is rejected.

$$\text{Average Rate of Return} = \frac{Average\ Annual\ Profit}{Net\ Investment\ in\ the\ project} \times 100$$

Net Investment in the project.

Illustration 2 :

A project requires an investment of Rs 5, 00,000 and has a scrap value of Rs. 20,000 after five years. It is expected to yield profits after depreciation and taxes during the five years amounting to Rs 40,000, Rs. 60,000, Rs70,000, Rs 50,000 and Rs 20,000.Calculate the average rate of return on the investment;

Solution :

Total Profit = 40,000+60,000+70,000+50,000+20,000 = 2 40,000

Average profit = 2 40,000 /5 = Rs 48,000

Net Investment in the Project = 5, 00,000

Less-scrap value = 20,000

4, 80,000

$$\text{Average Rate of Return} = \frac{Average\ Annual\ Profit}{Net\ Investment\ in\ the\ project} \times 100$$

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

= 10%

Advantage of Rate of Return Method:

1. It is very simple to understand and easy to operate
2. It uses the entire earnings of a project.
3. It can be readily calculated from the financial data.

Disadvantage of Rate of Return Method:

1. This method ignores the time of value money.
2. It does not take into consideration the cash flow.
3. It ignores the period in which the profit are earned.

4) Equivalent Annual Cost Method:

This method has a very limited use and cannot be applied in all cases. In this Method capital budgeting is calculated by the following formula:

$$\text{Equivalent Annual Method} = \frac{Total\ Discounted\ Cost}{Cumulative\ Present\ Value}$$

(B) Time-adjusted Method:

The traditional method of capital budgeting, i.e., pay back method as well as accounting rate of return method, suffer from the serious limitations that give equal weight to present and future flow of incomes. These methods do not take into consideration the time value of money, the fact that a rupee earned today has more value than a rupee earned after

five years. The time adjusted method takes into account the profitability and also the time value of money. Following are the Time adjusted methods:

1) Net Present Value Method :

The net present value method is based on the fact that the cash flow arising at different periods of time differs in value and is not comparable unless their equipment present values are found. The net present values of all inflows and outflows of cash occurring during the entire life of the project is determined separately for each year by discounting these flows by the firm's cost of capital or pre-determined rate.

The present value of Re 1 due in any number of years can be found with the use of the following mathematical formula:

$$\text{PV} = \frac{1}{(1+r)^n}$$

Where PV =Present Value

r = rate of interest / discount rate

n = number of years

Advantage of Net Present Value Method:

1. It recognises the time value of money and is suitable to be applied in a situation with uniform cash outflows and uneven cash inflows at different periods of time.

2. It takes into account the earnings over the entire life of the projects and the true profitability of the investment proposal can be evaluated.

3. It takes into consideration the objective of maximum profitability.

Dis-advantage of Net Present Value Method:

1. As compared to the traditional methods, the net present value method is more difficult to understand and operate.

2. It is not easy to determine an appropriate discount rate.

3. In the same way as above, it may not give good results with comparing projects with unequal investment of funds.

2 Internal Rate of Return Method : (I. R .R.)

The IRR of a proposal is defined as the discount rate which produces a zero NPV. The IRR is the discount rate which will equate the present value of cash inflows with the present value of cash outflows. In the IRR techniques, the future cash inflows are discounted in such a way that their total present value in just equal to the present value of total cash out flows. It can be determined with the help of the following

mathematical formula:

$$\frac{A^1}{(1+r)} + \frac{A^2}{(1+r)^2} + \frac{A^3}{(1+r)^3} + - - - \frac{A^n}{(1+r)^n}$$

Where C = Initial outlays at time zero

A^1, A^2- - - - A^n = Future Net Cash flows at different periods

r = rate of discount of internal rate of return

Advantage of I.R.R. Method :

1. It takes into account the time value of money.
2. It considers the profitability of the project for its entire economic life.
3. It is better that NPV method where cost of capital cannot be determined easily.

Disadvantage of I.R.R. Method:

1. It is difficult to understand and is the most difficult method of
2. This method is based upon the assumption which is not true in real life.

3. Terminal Value Method :

This method is based on the assumption that operating saving of each year is reinvested in another outlet at a certain rate of return from the moment of its receipt till the end of the economic life of the project.

Advantage of Terminal Value Method:

1. This method incorporates the assumption about how the cash inflow is reinvested once they are received and thus avoids any influence of the cost of capital on cash inflows.
2. It is more suitable where cash budget is in operation.
3. It is mathematically easier and makes the evaluation procedure simple.

Dis-advantage of Terminal Value Method:

1. The most limiting aspect of this method is related to the projection of rates of return at which cash inflows of different years may be reinvested.
2. It fails to make comparative evaluation of two or more mutually exclusive proposals.

4. Benefit Cost Ratio Method:

This ratio is expressed either in per rupee or in percentage. This ratio may be between present values of cash inflows and present values of cash outflows. Since it is the ratio, therefore, it happens to be a relative measure and may be used in evaluating the proposals requiring different initial investment. This ratio may be calculated as:

$$Benefit\ Cost\ Ratio = \frac{P.V.of\ Cash\ Inflows}{P.V.of\ Cash\ Outflows}$$

Where P.V. = Present Value

Advantage of Benefit Cost Ratio Method:

1. It is superior to N.P.V. (Net Present Value) method.

2. It gives due consideration to the time value of money and cost involved in each project.

Dis-advantage of Benefit Cost Ratio Method:

1. It is more difficult to understand.

2. In some cases of mutually exclusive nature, other methods would be superior to this method.

11.6 SUMMARY

Capital budgeting involve current outlays in return for a stream of benefits in the future years. It is the most important part of corporate financial management. The capital budgeting decisions are not only critical and analytical in nature, but also involve various difficulties which a finance manager may come across.

Capital budgeting, a complex process may be divided into the following phases:

- Identification of potential investment opportunities
- Preparation of capital budget and appropriations
- Assembling of investment proposals
- Implementation and
- Performance review

11.7 SELF ASSESSMENT QUESTIONS

1. What is capital budgeting? Give various methods of capital budgeting.

2. Give merits and demerits of Net Present Value Method.

3. Describe briefly Pay Back period method.

4. Describe the scope of capital budgeting.
5. What is the process of capital budgeting?
6. Throw light on the IRR method.
7. Explain the limitation of capital budgeting method.

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UNIT 12 : FISCAL POLICY

Objectives

Fiscal Policy in India always had two major objectives, namely, improving the growth performance of the economy and ensuring social justice to the people.

The objectives of fiscal policy in India are

- To achieve a high rate of economic growth
- To provide employment
- To reduce disparities of income and wealth
- To achieve stability in the economy

Structure

12.1 MEANING

Fiscal policy is one of the most important instruments of government intervention in the economy. Fiscal policy refers to the policy relating to taxation, expenditure and public debt. It has gained importance because of its immense potential in dealing with trade cycle and accelerating economic growth. Fiscal policy is of two kinds: Discretionary and Non- Discretionary. By discretionary policy we mean deliberate change in the government expenditure and taxes influence the level of national output and prices. Fiscal policy generally aims at managing aggregate demand for goods and services. On the other hand, non-discretionary fiscal policy of automatic stabilisers is a built in tax or expenditure mechanism that automatically increases aggregate demand when recession occurs and reduces aggregate demand when there is inflation in the economy without any special deliberate action on the part of the government.

According to Ursula Hicks, “Fiscal policy is concerned with the manner in which the different elements of public finance, while still primarily concerned with carrying out their own duties, may collectively be geared to forward the aim of the economic policy”.

According to Otto, “Fiscal policy is nothing but changes in taxes and expenditure which aim at shot run goals of full employment and pr5ice level stability”.

The importance of fiscal policy as an instrument of economic development was first envisaged by Keynes in his general theory wherein he showed that the total national income was an index of economic activity and brought out the relation between economic activity and total spending. The direct and indirect effects of fiscal policy on aggregate spending in the community were clearly established and as a result and development came into prominence. But the Keynesian analysis fiscal policy is, applicable to the advanced and industrialized countries and it has little relevance to underdeveloped countries. Thus, we define fiscal policy to encompass any decision to change the level, composition or timing of government expenditure or to vary the burden, structure or frequency of the tax payments. A skilful management of fiscal policy instruments can go long way in maintaining economic stability and ensuring higher rate of economic growth.

Thus, fiscal policy has multi-dimensional role. It particularly aims at improving the growth performance of the economy and ensuring social justice to the people.

The various tools of fiscal policy are:

- Taxation Policy
- Public Expenditure
- Public Revenue
- Public Debt
- Deficit Financing

Taxation Policy

One of the most important sources of revenue for the government of India is the tax revenue. Both the direct and indirect taxes are being levied by the government of India. Direct taxes are progressive by nature and most of the indirect taxes are regressive in nature. Taxation plays an important role in mobilising the resources for a plan. The total tax revenue collected by the government of India stands 72.13 per cent of the total revenue of the government. Mobilisation of taxes by the government stands around 15 per cent to 16 per cent of the national income of the country during the recent years. The main objectives of taxation policy in India include:

1. Mobilisation of resources for financing economic development
2. Formation of capital by promoting saving and investment through time deposite, investment in government bonds, in units, insurance, and so on.
3. Attainment of quality in the distribution of income and wealth through the imposition of progressive direct taxes and
4. Attainment of price stability by adopting anti-inflationary taxation policy.

Public Expenditure:

Public expenditure refers to the expenses, which the government incurs maintaining itself as well as the economy as a whole. Now public expenditure is gaining much importance and public expenditure is increasing rapidly because of changing role of the government from that of maintenance of law and order to welfare state.

The public expenditure is playing an important role in economic development of a country like India. With the increase in the responsibilities of the government & with the increasing participation of government in economic activities of the country, the volume of public expenditure is a highly populated country like India is increasing at a galloping rate. Public expenditure is an expenditure of the government and is mostly related to the development activities, viz, development of infra-structure, industry, health facilities, educational institutions, and so on. The non-development expenditure is mostly a maintenance type of expenditure and is related to maintenance of law and order, defence administration services, and so on. The public expenditures incurred by the government of India have been creating a serious impact on the production and distribution pattern of the economy.

The following are some of the important features of the policy of public expenditure formulated by the government of India.

Development of Infrastructure:

The development of infrastructure facilities including development of power projects, railways, roads, transportation system, bridges, dam, irrigation projects,, hospitals, educational institutions and so on, involves huge expenditure by the government as private investors are very much reluctant to invest in these areas, considering the low rate of profitability and high risk involved in it.

Development of Public Enterprises :

The development of heavy and basic industries is very important for the development of an underdeveloped country. But the establishment of these industries involves huge investment and a considerable proportion

of risk. Naturally, private sector cannot take the responsibility to develop these industries. Therefore, the development of these industries has become a responsibility of the government of India, particularly since the introduction of the Industrial policy, 1956. A significant portion of public expenditure has been utilised for the establishment and improvement of these public enterprises.

Support to Private Sector:

Providing the necessary support to the private sector for the establishment of industry and other projects is another important objective of public expenditure policy formulated by the government of India.

Social welfare and Employment Programmes:

Another important feature of public expenditure policy pursued by the government of India is its growing involvement in attaining various social welfare programmes and also on employment-generation programmes.

Public Revenue:

In order to meet public expenditure, a state needs funds. Such funds called public revenue are raised from various sources. The common sources of public revenue are taxes, borrowing from public and banks, profits of public undertakings. Deficit financing and foreign aid generally taxes are the most important source of public revenue.

Public revenue is considered that part of a government receipts which is raised out of its current income. The government may also get some revenue in the form of aid or assistance from other government or public but such types of revenue are very limited. The main sources of public revenues are taxation, fee, price, special assessment, fines & penalties, gifts & grants, excise duty, government properties and borrowings.

Public Debt:

Public debt is a debt or loan taken by the government from its own people as well as from foreign countries. It is a term used for short term and long term borrowings of the government / state. The government may borrow from banks, business organisation, business houses, individuals and also from foreign countries. Thus, the borrowings of the government may be within the country or outside the country or both. The public debt is generally in the form of bonds or treasury bills if the loans are required for a short period which carries with them the promises of the government to pay interests to the holders of these bonds at stipulated rate of interest at regular intervals or lump sum at the end of the stipulated period, in addition to the price ball amount which has to be repaid at the stated time.

According to J.K. Mehta, “Public debt is a comparatively modern phenomenon and has come into existence with the development of democratic form of government in the world”.

When the state finds it difficult to match its inflows without

outflows, it resorts to public debt. Public debt may also be resorted to I the event of a sudden spurt in the state expenditure may be cause of war natural calamity etc. public debt takes Two forms:

- Market Loans
- Small Savings

In the case of market loans, the government sells to the public negotiable government securities of varying denominations and duration and treasury bills. For financing capital projects, long- term capital bonds are floated and for meeting short-term government expenditure, treasury bills are issued.

While the small savings represents public borrowings, which are not negotiable and are not bought and sold in the market. In India, for mobilizing small savings various types of schemes are introduced e.g. National Savings Certificates, National Development Certificates etc. As the taxation has got its own limit in a poor country like India due to poor taxable capacity of the people, the government is taking recourse, to public debt for financing its developmental expenditure. In the post-independence period, the central government has been raising a good amount of public debt regularly, in order to mobilise a huge amount of resources for meeting its developmental expenditure. The total public debt of the central government includes internal and external debts.

Internal Debt:

The internal debt indicates the amount of loan raised by the government from within the country. The government raises internal public debt from the open market by issuing bonds n and cash certificates and 15 years annuity certificates. The government also borrows for a temporary period from RBI and also from commercial banks.

External Debt:

As the internal debt abroad, in the form of foreign capital technical know how and capital goods. Accordingly, the central government is also borrowing from international financing agencies for financing various development projects. These agencies include World Bank, IMF, IFC, and so on. Moreover, the government is also collecting inter-governmental loans from various developed countries of the world for financing its various infrastructural projecrs.

Deficit Financing:

The deficit financing in India indicates loan taking by the government from the RBI in the form of issuing fresh dose of currency. Considering the low level of income, low rate of savings, and capital formation, the government is taking recourse to deficit financing in increasing proportion. Deficit financing is a kind of forced savings. Deficit

financing is the name of volume of those savings which are the result of increase in prices during the period of the government investment. Thus deficit financing helps the country by providing necessary funds for meeting the requirements of economic growth but, at the same time, it also create the problem of inflationary rise in prices. Thus the deficit financing must be kept within the manageable limit.

According to Prof. B.R. Shinoy, "The financial activity of the government to fulfil the deficit of income and expenditure is called Deficit Financing".

Thus, Deficit financing is referred with the direct increase in the total national expenditure whether the deficit is related with the general revenue or is related with the capital accounts. In this way the main part of the policy is that government does expenditure more than taxation, income from the public sources, internal debt and revenue received from other sources. This deficit of the government could be resolved by reducing the contingency reserve and receiving loan from then central government.

The deficit financing depends on the following things:

1. If the government avoids the inflationary factors then the limit of deficit financing is reduced, otherwise it increases.
2. When the public expenditure is for more productive works then the deficit financing increase, but it is for the unproductive works it reduces.
3. Government arranges deficit financing only when it had to reduce the purchasing power.
4. The limit of deficit financing also depends on the fact that which methods are adopted by the government to neutralise surplus purchasing power.

12.2 OBJECTIVES

The following are the main objectives of fiscal policy:

Economic Growth:

"Economic growth is nothing but an increase in the economic activities or economic variables over a period of time". In simple means, by reducing:

- Direct taxes- A state can induce the investor or entrepreneurs to increase the rate of investment, which will automatically increase production, employment and income generation etc.
- Indirect taxes- Tax which will motivate the buyers to demand more goods which will automatically increase the economic activities

On the other hand by bringing about an increase in public

expenditure on infrastructure etc., the government can accelerate the rate of economic growth. The economic growth concept is more of use in the developed countries.

Harrod and Domar, initiated a new growth rate model: Let us explain the concept of gradual growth put by Harrod, which could be achieving by equating:

Ga = Gw = Gn

Where Ga = Actual Growth Rate

Gw = Warranted Growth Rate

Gn = Natural Growth Rate

According to Harrod "Economic growth must increase with a gradual or steady rate, economic growth must increase without the sudden up-swings (prosperity) and downswings (Depression)".

"Sg" is the steady growth rate, which is increasing slowly over a period of time without the upswings and downswings. Hence the aim of fiscal policy is to help achieve:

Ga = Gw = Gn

Full Employment:

The Keynesian functional finance approach came to the help of President Roosevelt to rescue the American economy from "the great depression". President Hoover failed to stabilise the economy though many different measures were taken. It was the "deficit finance" measures which helped the economy to revive. The theory of "pump- priming" was of intense success for full employment.

Price Stability:

Through the fiscal policy we can follow the below mentioned policy measures to bring about demand stabilisation.

Social Justice:

The government can achieve social justice by imposing higher rate, progressive taxes on rich and giving subsidies and concession to lower income and middle income groups.

The following will be main objectives in developing countries like India:

- To accelerate the rate of economic growth
- To help build- up basic and heavy industries
- To achieve regional but once development

- To help develop infrastructure
- To bring about decentralisation of the economy
- To reduce the concentration of economics power in the hands of few

In India, the fiscal policy is gaining its importance in recent years with the growing involvement of the government in developmental activities of the country. The following are some of the important objectives of fiscal policy adopted by the government of India:

1. To mobilise adequate resources for financing various programmes and projects adopted for economic development.
2. To raise the rate of savings and investment for increasing the rate of the capital formation.
3. To promote necessary development in the private sector fiscal incentives
4. To arrange an optimum utilisation of resources
5. To control the inflationary pressures in economy in order to attain economic stability
6. To remove poverty and unemployment
7. To attain the growth of public sector for attaining the objective of socialistic pattern of society
8. To reduce regional disparities and;
9. To reduce the degree of inequality in the distribution of income and wealth

In order to attain all these aforesaid objectives, the government of India has been formulating its fiscal policy by incorporating the revenue, expenditure, and public debt components in a comprehensive manner.

12.3 ROLE OF FISCAL POLICY IN ECONOMIC DEVELOPMENT

Economic development is a process, whereby the real per capital income of country increases our along period of time. Thus, economic development mat be defined as a sustained secular, improvement is well-being, which may be considered to be reflected in an increasing flow of goods and services.

K.K. Kurihan regards fiscal policy as a desiderate for underdeveloped countries lacking in private initiative, private voluntary saving and private innovation. He discusses the fiscal policy of government as an additional saver, an investor and an income re distributor. He observes as par as underdeveloped economy is concerned, budgetary surplus is the relevant

position to be achieved and maintained.

As an additional investor, government can increase the productive capacity of the economy and secure an accelerated rate of economic growth by changing the pattern of investment and laying emphasis on capacity creating rather than on income–generating aspects. As an investor, the government should spend on research and experimentation and stimulate innovations and new techniques of production. As an income re distributor and for that fiscal measures can go a long way in reducing economic inequalities.

In the words of Nurkse, fiscal policy assumes new significance in the face of the problem of capital formation in underdeveloped countries. The fiscal policy should be construed as to secure full employment conditions and economic growth at rapid rate. The integration of the government budgets with the nation's economy budgets can go a long way for the attainment of the objectives of rapid economic development and creation of full employment opportunities.

We now proceed to analyse the role of fiscal policy instruments role in economic development.

Taxation:

The most important source of public revenue is taxation. Through taxation, governments are collecting from 10-30 percent levels to the national income in developed countries. Shortage financial resources are the main obstacle in the way of economic development of the underdeveloped countries. There are certain forces operating in these countries, which increases consumption and reduce savings. The first among them is the population pressure. Besides, the high incomes groups spend much of their incomes on conspicuous consumption and their propensity to consume is further reinforced by the demonstration effect still worse, a large part of the meagre savings is dissipated in unproductive channels like real estate, hoarding, gold jewellery, speculation etc.

The taxation measures can be employed effectively to divert savings of the people into productive channels. In this connecting, report of the Taxation Enquiry Commission, Govt. of India, observes, "A tax system which on the whole, promotes capital formation in its two aspects of saving and investment fulfils as essential desideratum".

Public Borrowing:

There is a limit to which taxation can be resorted for resource mobilization. If the taxes are excessive, they will adversely affect people's desire and ability to work save and invest. This will obviously retard the paced of economic development. To avoid such a situation, public borrowing may cover the gap in resources required. It will not adversely affect people's desire to work, save and invest as lending involuntary in

the lenders not only get back the amount lent but also earn interest on it. Further, public borrowing may add to the incentives of the people to save and invest more as he lure of earning more interest on leading is there.

Public borrowing has its own limitations. The general masses are poor and their propensity to consume is high and hence they have no lending capacity. The rich generally do not like to lend to the government but instead direct their invasive resources into speculative channels as they can more from there. Absence of organized money and capital markets are some of the other obstacles in the way of public borrowing program.

Government has to do efforts to compulsory borrowing for economic development. But it may be noted that no democratic government can rely on forced loans except for a short period and for certain specified projects. Ultimately, it is the voluntary lending by the people that matters and the government must be prepared to increase as a result of economic and make public borrowing and important tool of resources mobilization.

Public Expenditure:

Public expenditure is one of the important weapons in the hands of the state to secure economic development of underdeveloped economies. Initially for economic development, infrastructure facilities have to be provided. For which, government initiation is essential condition. Therefore, government has to spent huge amount on its development to pave the way to private entrepreneur to start key industries and also agro-based industries. Thus a carefully and wisely planned public expenditure by creating social and economic overheads can go a long way in creating necessary environment for growth. But public expenditure can achieve its wider objectives of development only if it confirm to certain well-defined principles of public expenditure.

Further, share should be taken that public expenditure does not adversely affect people's desire to work, save and invest and for that people should not be provided with direct money help by with goods and services in the form of free education, free medical facilities. Thus, the fiscal policy can affects the rate of economic development in a variety of ways such as by increasing of ways such as by increasing the rate of saving and investment affecting the allocation of resources, controlling inflation, promoting economic stability, securing equitable distribution of income and wealth and creating full employment policy in advance countries.

12.4 SUMMARY

Fiscal policy is an important to stabilise the economy, that is, to overcome recession and control inflation in the economy. At the time of recession the government increases its expenditure or cuts down taxes or adopts a combination of both. On the other hand, to control inflation the

government cuts down its expenditure or raises taxes. In other words, to cure recession expansionary fiscal policy and to control inflation contractionary fiscal policy is adopted. Thus, the fiscal policy is mainly a policy of demand management.

The fiscal policy formulated by government of India has been creating a considerable impact on the economy of country. Taxation, public expenditure and public debt have been increasing at a considerable face. The public sector of the country has also been expanded considerable. The country has been able to attain a significant development of this industrial infrastructural sector, but the burden of taxation in our country in comparatively heavily and thereby it has been affecting the saving capacity of the people.

Moreover with the failure of fiscal policy of the country to check the extent of the inadequacy in the distribution of income and wealth, and also the failure to solve the problem of unemployment and poverty even after fifty years of planning is highly alarming. The fiscal policy has always failed to maintain the stability in the price level of the country. It would now be batter to study advantages and shortcomings of the fiscal policy of the country in a brief manner.

12.5 SELF ASSESSMENT QUESTIONS

- Define Fiscal Policy.
- Analyse the objectives of Fiscal Policy.
- Evaluate Fiscal Policy in India in Detail.
- Describe in detail the role of Fiscal policy in Economic Development.

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BLOCK

4

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UNIT - 13 : LINEAR PROGRAMMING

Unit Outline

13.1 INTRODUCTION

A large number of decision problems faced by business managers involve allocation of resources to various activities, with the object of increasing profits or decreasing cost. Normally, the resources are scarce and performance of number of activities within the constraints of limited resources is challenging. Therefore, it is required to decide as to how best to allocate resources among the various activities.

The linear programming method is a technique of choosing the best alternative from a set of feasible alternatives in situations in which the objective function as well as constraints can be expressed as linear mathematical function.

Linear programming is a technique of optimization that is useful not only in industry and business but also in other (non-profit) organizations. It can be applied to solve a variety of business related problems such as production, refinery operations, advertising, transportation, distribution and investment analysis.

13.2 REQUIREMENTS FOR APPLICATION OF LINEAR PROGRAMMING

- The aim or object should be clearly identifiable and definable in mathematical terms. For example, it would be optimization of either cost or profits or time etc.
- The activities involved should be distinct and measurable in quantitative terms such as products involved in a production planning problem.
- The resources to be allocated also should be measurable quantitatively.
- The relationships representing the objective function as also the resource limitation consideration must be linear in nature.
- There should be a series of feasible alternative courses of action available to the decision-maker, which are determined by the resources constraints.

13.3 FORMULATION OF LINEAR PROGRAMMING PROBLEMS

There are three basic steps in formulation of linear programming model :

1. Identify the decision variables to be determined. These should be brought into algebraic relation form for utilisation.
2. Clearly define all the limitations for a given situation. These limitations or constraints also need to be expressed in algebraic form either as linear equations or inequalities in terms of the decision variables so identified in the step 1.
3. Identify the objective to be optimised and it should be expressed in terms of linear function of decision variables.

The formation of the problem now can be achieved in a very structured form by bringing in all related combinations.

13.4 STANDARD FORM OF LINEAR PROGRAMMING PROBLEM

In order to develop a general procedure for solving any linear programming (LP) problem, we first introduce the standard form. Let us assume the decision variables as X1, X2, X3…..Xn such that the objective function (Linear) of these variables assumes an optimum value, when operated under the given constraint of resources. Thus, the standard form of LLP can be written as follows.

Objective Function

Maximise or Minimise $Z = C_1X_1+C_2X_2+....C_nX_n$,

where C_j (j=1,2,……..n) are called profit coefficients.

Constraints (linear)

Subject to:

$A_{11} X_1 + A_{12} X_2 +……..A_{1n} X_n = B_1$

$A_{21} X_1 + A_{22} X_2 +……..A_{2n}X_n = B_2$

……..

……..

$A_{m1} X_1 + A_{m2} X_2 +…….A_{mn} X_n = B_m$

Where B_i (i= 1, 2, ……..m; j = 1,2,……..n)

Also,

$X_1, X_2, …… X_n \geq 0$ (non-negative constraint)

The decision variables are required to be non-negative so that they can contribute towards the optimum objective function, which is either maximisation or minimisation type.

13.5 ASSUMPTIONS OF LINEAR PROGRAMMING

A linear programming model is based on certain assumptions like any other programming model. The following are some of the main assumptions that are made in the construction of linear programming models:

- Proportionality
- Additivity
- Divisibility
- Certainty

Proportionality

The objective function (Z) is a linear function of the decision variables (x_i). In simple words, the value of Z increases by C_i times whenever the value of x_i increases by unity. If the variable x_j represents the number of units of product j produced and C_j is the quantity of material consumed to produce a unit of the product j, then producing three units of product j consumes three times the raw material quantity C_j that is, the material consumption per unit product remains fixed.

Additivity

A typical linear programming problem has an objective function and several constraints, each with a set of decision variables. The aggregate value of the objective function and each constraint is generally obtained as the sum of individual contributions from each decision variable.

Divisibility

The decision variables in linear programming models are continuous in nature. It can take any non-negative, real, numeric value. The model assumes that these decision variables are divisible and solves the problems that involve fractional values for the variables in the same way in which the problems without any fractional values are solved. The solutions thus obtained are finally rounded off, without making any important loss of quality in the solution.

Certainty

The linear programming models assume that all the constants (C_j, A_{ij}, and B_j) have certain values. It is assumed that the optimal solution exists for the problem, only when the values attributed to the coefficients of variables are fixed and constant.

13.6 BASIC FEASIBLE SOLUTION

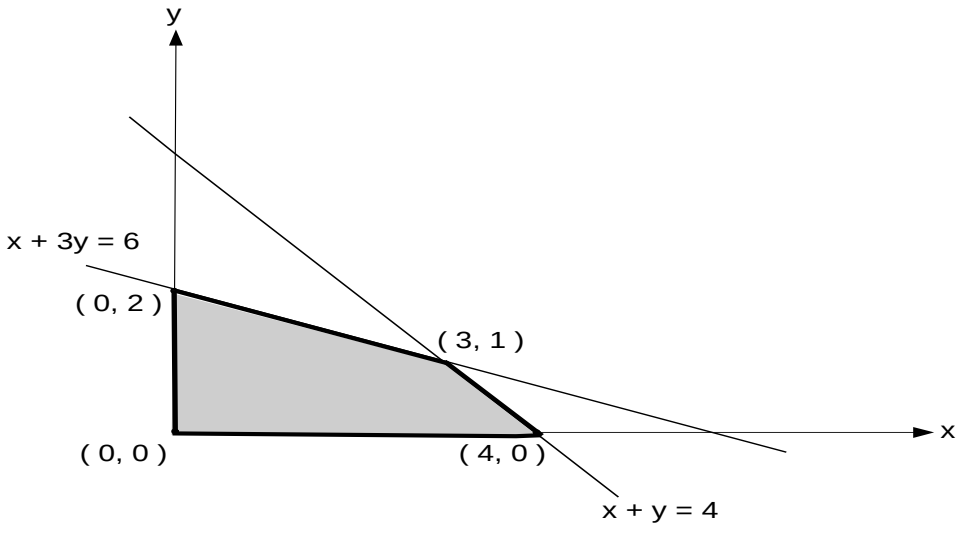
Example 13.1:

Objective function: Maximize $Z = 3x + 5y$

subject to Constraints: $x + y \leq 4$ (1)

$x + 3y \leq 6$ (2)

non negativity condition: $x \geq 0,\ y \geq 0$



Feasible region **is the set of points defined by the constraints**

13.7 GRAPHICAL METHOD TO SOLVE LINEAR PROGRAMMING PROBLEM

Linear programming problems with two variables can be represented and solved graphically very easily. Though in real-life, the two variable problems are practiced very little. This method involves a simple procedure and is free from complex mathematical calculations. However, the method is not applicable for solving many business problems owing to its inherent disadvantages. Graphs cannot be used to represent a situation with more than two variables. Moreover, the greater the number of constraints, the more complex is the graph, and harder is the process of identifying the feasible region. However, the interpretation of this method will help to understand the simplex (algebraic) method.

The solution method of solving the problem through graphical method is discussed with an example given below.

Example 13.2 Max $Z = 40x_1 + 35x_2$

Subject to:

$2x_1 + 3x_2 \leq 60$ -----A

$4x_1 + 3x_2 \leq 96$ -----B

$x_1, x_2 \geq 0$

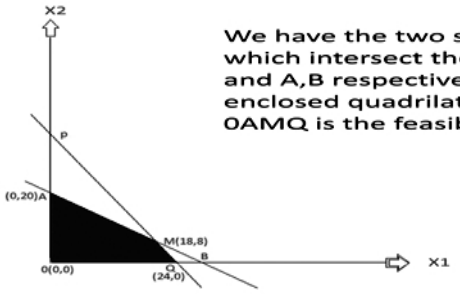
Solution

Step1. In equation A successively estimate valves of x_1 and x_2 to obtain intersection points A(0,20) and B(30,0) on X_2 and X_1 axis respectively.

Step2. In equation B successively estimate valves of x_1 and x_2 to obtain intersection points P(0,32) and Q(24,0) on X_2 and X_1 axis respectively.

Step3. The equations are of less than inequality type, henceforth we take the feasible region which is towards the origin, for both the equations

Step4. The common region for both the equations is selected as feasible region and all the corners of this region are evaluated substituting in the Objective equation.



We have, Max $Z = 40x_1 + 35x_2$

Putting values of x_1 and x_2,

We obtain,

Z_0 (0, 0) = 0

Z_M (18, 8) = 1000

Z_A (0, 20) = 700

Z_Q (24, 0) = 960

Hence we have Max Z =1000 at the intersection point (18,8)

13.7.1 SUMMARY OF GRAPHICAL METHOD

Step 1: Convert the inequality constraint as equations and find co-ordinates of the line.

Step 2: Plot the lines on the graph.

(***Note:*** If the constraint is > type, then the solution zone lies away from the centre. If the constraint is < type, then solution zone is towards the centre.)

Step 3: Obtain the feasible zone.

Step 4: Find the co-ordinates of the objectives function (profit line) and plot it on the graph representing it with a dotted line.

Step 5: Locate the solution point.

(***Note:*** If the given problem is maximization, zmax then locate the solution point at the far most point of the feasible zone from the origin and if minimization, Zmin then locate the solution at the shortest point of the solution zone from the origin).

Step 6: Solution type

i. If the solution point is a single point on the line, take the corresponding values of x1 and x2.

ii. If the solution point lies at the intersection of two equations, then solve for x1 and x2 using the two equations.

iii. If the solution appears as a small line, then a multiple solution exists.

iv. If the solution has no confined boundary, the solution is said to be an unbound solution.

13.8 SIMPLEX METHOD TO SOLVE LINEAR PROGRAMMING PROBLEM

- When a large number of variables are involved in a problem, the solution by graphical method is not possible.

- The simplex method provides an efficient technique which can be applied for solving LLPs of any magnitude, involving two or more decision variables.
- The objective function is used to control the development and evaluation of each feasible solution of the problem.
- This method was formulated by G.B. Dantzig in 1947.

For application of simplex method, following conditions must be satisfied

- Right Hand Side (RHS) of each constraint should be non-negative. In case of negative RHS, the whole solution (inequality) to be multiplied by -1.

13.8.1 STEPS IN SIMPLEX METHOD

- *Step1: Standardizing the linear programming model*

  This is the first step of converting a real world problem into the standard form of linear programming. The procedure is the same as explained in the previous section.

- *Step 2: Setting up the initial solution*

To initiate the solution procedure from the origin the initial basic feasible solution is set by assigning zeroes to all the decision variables.

The solution obtained is summarized and tabulated in the initial simplex table.

- *Step 3: Testing the solution for optimality*

The solution thus obtained has to be tested for optimality. This is done by examining the elements in the index row of the simplex table. The solution is optimum if no element in the index row is positive. The presence of a positive element in the index row indicates that the solution can be further improved by removing one basic variable from the basis and replacing it by a non-basic one. The procedure terminates here if the solution is found to be optimal.

- *Step 4: (a) Determine the variable that has to enter next*

  Identify the column (and hence the variable) in the index row of the table with the largest positive number as pivot (or key) column.

The value of (C_j -Z_j) represents the amount by which the value of the objective function will increase if a unit of x_j is introduced into the solution.

- *(b) Determine the variable to be replaced*

  Calculate the minimum ratio by dividing each number in the quantity (X_B) column by the corresponding number in the key column selected in step 4(a). The row corresponding to the minimum (positive values only) of these ratios is called the pivotal (or key) row and will leave the basis.

- *Step 5: Identifying the key element*

  The number that lies at the intersection of the key (or pivotal) column and the key(or pivotal) row of the table is called key or pivot element.

- *Step 6: Evaluating the revised solution*

  The revised solution, i.e. the improved version of the old solution is obtained by first evaluating the new values for the elements in the key row. This is done by simply dividing every number in the key row by the key element.

  Once the new values for the elements in the key row are calculated, we compute the new values for each of the remaining rows. This can be accomplished by using the following formula:

  New row numbers = (Number in old rows) - (Number above or below the key number) $\times$(number in the row replaced in step 4(a))

  = (Old row number) - (Corresponding number in the key row $\times$ corresponding new value in the key row in the same column)

  The new entries in the C_b and X_b columns are then entered in the new table.

Step 7 Testing the solution

Test this solution for optimality in the same way as we did in step (2). We repeat the process until an optimum solution is obtained.

Example of Simplex Table

C_j			C_1 C_2 …… C_n 0 0 ……0	
C_B	Basic variables	Solution variables	Coefficient Identity matrix matrix x_1 x_2 …… x_n s_1 s_2 ….. s_m	Minimum ratio(b_i)
0	s_1	b_1	A_{11} A_{12}….A_{1n} 1 0 ……..0	
0	s_2	b_2	A_{11} A_{12}….A_{1n} 0 1……..0	
0	s_3	b_3	…… …… …….	
..	…	…	…… …… …….	
0	s_m	b_m	A_{n1} A_{n2}….A_{nn} 0 0 ….1	
Contribution loss per unit $Z_j = \sum C_{bi} A_{ij}$			0 0 ……. 0 0 0 ……. 0	$Z=\sum C_B X_B$
Net contribution per unit, C_j-Z_j			C_1 C_2 …….C_3 0 0 ……..0	← Index row

Slack and Artificial Variables

Normally constraints are in the form of inequality or equalities.

When constraints are in the inequality form, we use imaginary variables to remove these inequalities and convert the constraint to equation form to bring in deterministic nature of resources.

When the constraints are of the type $\leq$ bi, then convert it into equality, we need adding some variable (not constant). This is normally done by adding such as S_1, S_2……S_n, which are called slack variables. In physical sense, these slack variables contribute nothing towards the objective function and hence their coefficients in the objective function are to be zeros.

Thus, to illustrate the above concept,

Constraints $A_{i1} X_1 + A_{i2} X_2 + \ldots\ldots\ldots + A_{in} X_n \leq Bi$, i= 1,2,….m (Canonical form)

Can be written as $A_{i1} X_1 \ldots\ldots\ldots + A_{in} X_n + Si = Bi$, i=1,2,…..m

And the objective function can be written as

Max. or Min. $Z = C_1 X_1 + C_2 X_2 + \ldots\ldots C_n X_n + 0.S_1 + 0.S_2 + \ldots$.

Similarly for the constraints of the type $\geq$ the addition of slack variables has to be in the form of subtraction. Thus, equation of constraints can be written as

$A_{i1} X_1 + A_{i2} X_2 + \ldots\ldots\ldots + A_{in} X_n - S_i = B_i$, i=1,2,……m

To bring it to the standard form, we add another variable called artificial variable (Ai), as follows:

$A_{i1} X_1 + A_{i2} X_2 + \ldots\ldots\ldots A_{in} X_n - S_i + A_i = B_i$, i=1,2,3….m.

This is done to achieve unit matrix for the constraints. But artificial variables cannot figure in the solution as there are artificially added variables and have no significance for the objective function.

These slack and artificial variables, therefore, are to be removed from the solution.

Example:

A firm is engaged in producing two products A and B. Each unit of the product A requires 2 kg of raw material and 4 labour hours for processing. When each unit of product B requires 3 kg of raw material and 3 hour of labour. Every week the firm has an availability of 60 kg of raw material and 96 labour hours. One unit of product A gives a profit of Rs 40, whereas one of product B gives Rs 35 as profit.

Solve this problem using Simple Method to determine how many units of each product be produced per week. So that firm can earn the maximum profit.

Solution :

Max Z= 40 X_1 + 35 X_2

Subject to condition

2 X_1 + 3 X_2 $\leq$ 60

4 X_1 + 3 X_2 $\leq$ 96

Non-Negativity condition

$X_1, X_2 \geq 0$

The above problem is first converted into the standard form by introducing slack/surplus variables S_1, S_2, S_3,…..as shown below:

Maximize Z= $C_1x_1 + C_2x_2 +.....+ C_nx_n + 0.S_1 + 0.S_2 +....+ 0.S_m$

Subject to the constraints

$A_{11}x_1 + A_{12}x_2 +.....+ A_{1n}x_n + s_1 = b_1$

$A_{21}x_1 + A_{22}x_2 +.....+ A_{2n}x_n + s_2 = b_2$

.....

$A_{m1}x_1 + A_{m2}x_2 +.....+ A_{mn}x_n + s_m = b_m$

And x_1, x_2, x_3 ....., x_n; s_1, s_2 ....., $S_m \geq 0$

Note : to get an identity matrix slack variables are required to be introduced to solve the problem which are denoted by symbol S1, S2 etc.

Now, the above problem in standardized form will be written as follows:

Max Z= 40 X_1 + 35 X_2 + 0 S_1 + 0 S_2

Subject to conditions:

2 X_1 + 3 X_2 + 1 S_1 + 0 S_2 = 60

4 X_1 + 3 X_2 + 0 S_1 + 1 S_2 = 96

Where $X_1, X_2, S_1, S_2 \geq 0$

Now we prepare Initial Simplex Table.

Initial Simplex Table

cj	**40**	**35**	**0**	**0**	
Basis	X1	X2	S1	S2	
S1 0	2	3	1	0	60
S2 0		3	0	1	96
Zj	0	0	0	0	
Solution	0	0	60	96	
Δj	40	35	0	0	

Second (Revised) Simplex Table

Cj	**40**	**35**	**0**	**0**	
Basis	X_1	X_2	S_1	S_2	
S_1 0	0	3/2	1	-1/2	12
X_1 40	1	3/4	0	1/4	24
Z_j	40	30	0	10	
Solution	24	0	12	0	
Δ_j	0	5	0	-10	

Third (Revised) Simplex Table

Cj	**40**	**35**	**0**	**0**	
Basis	X_1	X_2	S_1	S_2	
X_2 35	0	1	2/3	-1/3	18
X_1 40	1	0	-1/2	½	8
Z_j	40	35	10/3	25/3	
Solution	18	8	12	0	
Δ_j	0	5	0	-10	

Number of units must be produced to maximize profit X_1 18 units and X_2 8 units.

Maximum profit = 40×18 + 35×8 = **Rs.1000**.

13.9 ADVANTAGES AND LIMITATIONS OF LPP

Advantages

- Linear Programming (LP) helps in making the optimum utilization of scare resources.
- LP provides practically applicable solution.
- LP provides flexibility in the analysis of multi-dimensional problems.
- It is used as an adjusting tool to meet the varying conditions of business.
- LP identifies the hurdles in the production process.
- It makes decision maker more objective and less subjective.
- LP suggests the managers how to employ productive factors in the most efficient way by opting and allocating resources.

Limitations

- In many business problem, objective function and constraints are not necessarily linear in nature.
- The effect of time and uncertainty is not considered in LP.
- It usually deals with only single objective.
- In any given problem, parameters are assumed to be constant, however, in real business situations, these are neither constant nor completely deterministic.
- In large scale problems, due to many variables, computation becomes a real challenge.
- Many times, the decision maker gets integer valued solutions in the case of discrete variables.

13.10 APPLICATIONS AND USES OF LINEAR PROGRAMMING

Transportation Problem

Suppose that m sources (manufacturing units) supply n destinations (warehouses) with a certain type of product. Source S_i

(i=1,2,3…m) produces a_i units and destination D_j (j=1,2,3,…n) requires b_j units. Assume that cost of shipping from S_i to D_j is c_{ij} (per unit cost). Let the decision variables, x_{ij}, be the amount shipped from S_i to D_j. The objective is to determine the number of units transported from source S_i to Destination D_j so that the total transportation cost is minimized by fulfilling supply and demand exactly.

Assignment Problem

Agricultural Planning

In the field of agricultural planning, Linear Programming is applied for the allocation of limited resources such as labour, water, acreage, working capital etc., so as to maximize the revenue.

Production Management

Linear Programming can be applied in production management for determining product mix; scheduling and sequencing the production run; selection, location and design of the sites for the production plant; product smoothing and assembly time balancing.

Marketing Management

LPP can help in product selection, competitive actions; advertising media selection with respect to cost and time; getting right number of salesmen; and to measure the effectiveness of market research etc.

Linear Programming helps in the analysis of the impact of advertising.

Manpower Management

LPP is applied to forecast the manpower requirement; selection of suitable personnel in reference to age and skill etc; determining optimum number of personnel for each service centre etc.

Physical Distribution

With the aid of LPP, right distribution policy may be framed. Decisions relating to location and size of warehouse, retail outlets and distribution points etc. may be done

13.11 SUMMARY

In a nut shell, we can say that LP is a method of planning whereby objective function is maximized or minimised while at the same time satisfying the various restrictions placed on the potential solution. In technical words, linear programming is defined as a methodology whereby a linear function in optimized (minimised or maximised) subject to a set of linear constraints in the form of equalities or inequalities. Thus LP is a planning technique of selecting the best possible (optimal) strategy among number of alternatives.

13.12 KEYWORDS

Linear Programming

Graphical Method

Maximisation

Minimisation

Constraints

Profit

Optimality

13.13 QUESTIONS

(1) A firm manufacturer produces two different models, X and Y of the same product. The raw material r_1 and r_2 are required for production. At least 18 kg of r_1 and 12 kg of r_2 must be used daily. Also at most 34 hours of labour are to be utilized. 2 kg of r_1 are needed for each model X and 1kg or r_1 for each model Y. For each model of X and Y 1 kg of r_2 is required. It takes 3 hours to manufacture a model X and 2 hours to manufacture a model Y. The profit is Rs. 50 for each model X and Rs. 30 for each model Y. Formulate this as linear programming problem to maximize the profit and solve by graphical method.

(2) Solve graphically the following LPP:

Maximize $Z = 5x1 + 3x2$

Subject to the constraints:

$x_1 + x_2 \leq 6$

$2x_1 + 3x_2 \geq 3$

$0 \leq x_1 \geq 3$

$0 \leq x_2 \geq 3$

(3) Using Simplex method to solve the following linear programming problem:

Maximize $Z = 4x_1 = 10x_2$

Subject to:

$2x_1 + x_2 \leq 10;$

$2x_1 + 5x_2 \leq 20;$

$2x_1 + 3x_2 \leq 18$

$x_1, x_2 \geq 0$

UNIT 14 : PERT AND CPM

Unit Outline

14.1 INTRODUCTION

Project is a part of an overall programme. It is broken down into well defined set of activities or jobs or tasks, subtasks and further if needed. All of these tasks and subtasks must be accomplished within a specified time by utilizing optimum resources. Construction of dams, bridges, power plants, highways, ships, air planes, design and development of a new product, marketing of a new product, research and development activities are some of the examples of project.

A project comprises of more than one interrelated activities, which are to be completed over a period of time. Networks assist project mangers in defining the activities of a project. Network scheduling is an effective tool for the business managers to understand, monitor and control projects in a better way. Network analysis, network planning or network scheduling is one of the popular techniques of operations

research, which is applied for planning, scheduling and controlling large and complex projects. It is the general name given to certain specific techniques which can be used for the planning, management and control of projects.

There are two basic planning and control techniques that utilize a network to accomplish a pre-determined project. These are viz. PERT (Project/Programme Evaluation & Review Technique); and CPM (Critical Path Method).

PERT (Project Evaluation & Review Technique) was developed in 1956-58 by a research team of the US navy's Polaris Nuclear Submarine Missile Project involving numerous interdependent activities.

CPM (Critical Path Method) was developed by DuPont Company and Remington Rand Corporation. The objective behind its development was to obtain a technique for the control the chemical plants of the company.

14.2 PHASES OF PROJECT MANAGEMENT

The Project management generally consists of three phases.

(a) Planning Phase: Planning is nothing but the setting the aims and objectives of the project. It also identifies various activities or jobs to be performed and determining the requirement of resources such as men, materials, machines, money etc. The time and cost for all the activities are estimated. A network diagram is developed which shows sequential interrelationships (predecessor and successor) between various activities during this planning phase.

(b) Scheduling Phase: Based on the different time estimates, the start and finish times for each activity are worked out. The forward and backward pass calculations are done for this. The critical path is also identified, along with the slack and float for the non-critical activities.

(c) Controlling Phase: Controlling means to measure, analyze and evaluate the actual progress against the yardsticks defined in the planning phase. Reallocation of resources, crashing and review of projects with periodic feedback are done in the controlling phase.

14.3 NETWORK AND BASIC COMPONENTS

A network is a graphical portrayal of activities and events. It shows dependent relationships among tasks/activities in a project. It clearly displays task that must precede (precedence) or follow (succeeding) other tasks in a logical manner. It is a vivid representation of plan of action and a powerful tool for planning and controlling projects.

The different basic components of a network are as follows:

(a) Activity : An activity is a task, which must be completed in order to finish the project. Activities consume resources and time, and have a definite starting and ending point. It is shown by an arrow. Figure 14.1 demonstrates an activity. It lies between two events, known as *'predecessor'* and *'successor'* events. Activities are recognized by the numbers of their starting (tail / initial) event and ending (terminal / head) event. An arrow (i-j) between two events, the tail/ start event i representing the start of the activity and the head /end event j represents the completion of the activity.

Three categories of the activities are as follows:

(i) Predecessor Activity: An activity which must be completed before one or other activities start is called as predecessor activity.

(ii) Successor Activity: An activity which must be started immediately one or other activities finish is called as successor activity.

(**iii) Dummy Activity**: An activity which does not consume any time or resource is known as dummy activity. It is incorporated in the network diagram only to maintain the sequential relationship among the activities of the project. It is depicted with the help of dotted lines in the network diagram (see figure 14.2).

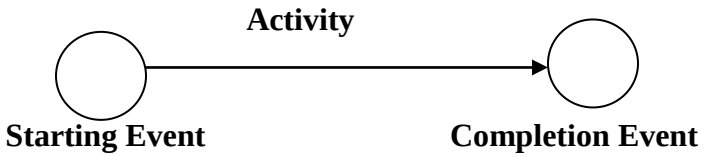


Figure 14.1: An Activity

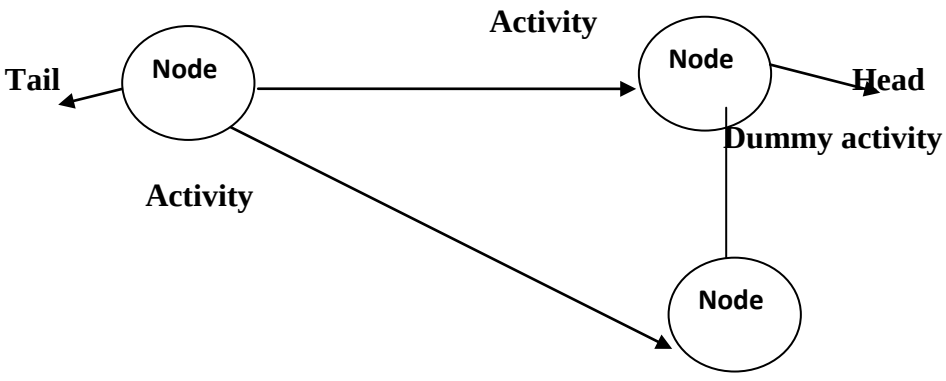


Figure 14.2: Activity- Node Relationship

(b) Event: An event represents the completion of some activities and the beginning of some new activities in the network. In other words, it is the outcome of an activity or group of activities. It does not consume any resource and it has no time duration. An event is also referred to as a node or connector and is generally depicted by a circle in a network diagram. When two or more activities terminate or end at a node, it is known as merge event. On the contrary, when two or more activities emanate from an event, it is to be named as burst event. The merge and burst events are shown in figure 14.3 1nd figure 14.4 clearly.

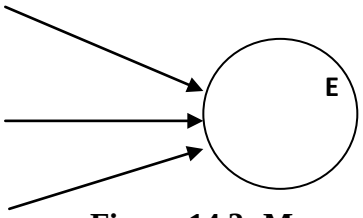


Figure 14.3: Merge events

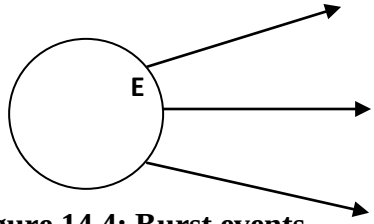


Figure 14.4: Burst events

(c) Critical path

The longest path in the entire network, of interrelated activities with zero slack or float time is termed as the critical path. The critical path consists of all those activities, which if delayed by any reason, would result in the delay in project completion.

(d) Optimistic time estimate (t_o)

Optimistic time is the minimum amount of time in which an activity can be performed to be completed. It is possible to complete a project within optimistic time, only when all the project conditions are satisfactory.

(e) Pessimistic time estimate (t_p)

Pessimistic time for an activity is the maximum amount of time required to complete the activity under unfavorable circumstances.

(f) Most likely time estimate (t_m)

It is the modal activity time and indicates the most usual time for activity completion. Managers arrive at this time estimate on the basis of their past experience or by analysizing past records.

(g) Expected time (t_e)

This is the amount of time that an activity is expected to consume. It represents the mean activity time of the optimistic, pessimistic, and most likely times. Expected time is achieved by using the following formula:

$$t_e = \frac{(to+4tm+tp)}{6} \qquad (eq^n\ 14.1)$$

(h) Expected start time

The Expected Start Time is the minimum amount of time that should be consumed before beginning an activity. This is also the maximum of the set of expected beginning times of an activity. The Expected Start Time for a node is the sum of the expected times of all the activities preceding it on a path, and indicates the time expected to be consumed before an activity can start.

(i) Expected finish time

The Expected Finish Time is the sum of the expected times for all the activities succeeding the event. It is that amount of time which is expected to be taken once an activity starts.

(j) Latest start time

It is the maximum amount of time that can elapse before an activity starts, if the project is to be finished by its scheduled time. In other words, it is the difference between the time allowed for the project and the maximum expected completion time.

(k) Slack time

It is the amount of time that an activity can be delayed beyond its earliest start time without delaying the project duration, if that activity and other activities take their estimated duration of time. It is also known as *float*. It is used for determining whether an activity is critical or not. An activity with more float is less critical and can be postponed when the resources are limited.

14.4 SEQUENCING IN A LOGICAL WAY

A project may be considered as a series of activities which may begin only after another activity or activities are completed. In a given network, these type of relation is represented by inequalities. For example, P < R indicates that the activity P must be completed before the start of the activity R. In making logical sequencing, the following two types are errors are the most common.

14.4.1 Looping: Closed looping must be avoided in network construction. A closed loop will lead to an endless cycle as depicted in the Figure 14.5.

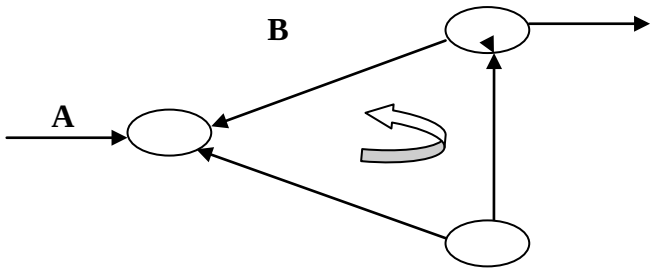


Figure 14.5: Looping

14.4.2 Dangling: An activity cannot end without being joined to the end event. A dummy may be introduced to maintain the continuity of the schedule. Such end events other than the end of the project are known as '*dangling*' events. (see Figure 14.6)

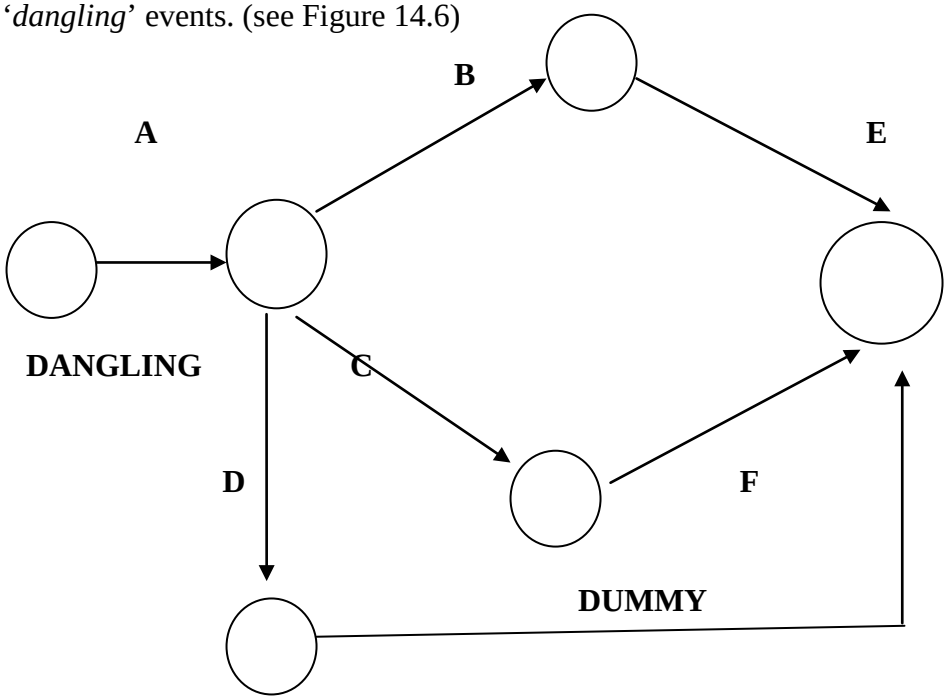


Figure 14.6: Dangling

14.5 RULES OF NETWORK CONSTRUCTION

Certain rules for network construction are as follows:

1. No single activity can be represented more than once in the network diagram. There is no significance of the length of an arrow in the network diagram.
2. A network should have only one starting event and one ending event.
3. The event numbered 1 or 10 is the start event. An event with the highest number is the end event. Before an activity can be undertaken, all activities preceding this activity must be completed. That is, the activities must be in a logical sequence.
4. There should not be any duplication of event numbers in a network while assigning numbers to events,
5. Dummy activities must be used only if it is necessary to reduce the complexity of a network.

14.6 RULES FOR NUMBERING THE EVENTS (FULKERSON RULE)

There is a certain rule for numbering the events is a network diagram. This rule is popularly known as Fulkerson rule. The steps of the rule are as follows:

***Step1*:** Number the start or initial event as 10.

***Step2*:** From this starting event 10, strike off all outgoing activities. This would have made one or more events as initial events (event which do not have incoming activities).

Number that event as 20.

***Step3*:** Repeat step 2 for event 20, event 30 and till the end event. The end event must have the highest number.

14.7 PROJECT PLANNING METHODS

PERT and CPM are the two most popular and widely used project planning methods. PERT and CPM methods provide information about:

(i) Estimated completion time of the project

(ii) Status of the project whether it is lagging behind, ahead of, or on scheduled time.

(iii) Expenditure incurred during the project and its comparative analysis with the planned or budgeted amount.

(iv) Availability of resources to complete the project on scheduled time.

(v) Critical and non-critical activities of the project, which are accountable for delaying the project or timely completion of the project.

14.8 FORWARD AND BACKWARD PASS CALCULATIONS

Before the critical path in a network is determined, it is necessary to find the earliest and latest time of each event to know the earliest expected time (T_E) at which the activities originating from the event can be started and to know the latest allowable time (T_L) at which activities terminating at the event can be completed.

14.8.1 FORWARD PASS COMPUTATIONS (to calculate Earliest Time T_E)

Procedure

***Step 1*:** Begin from the start event and move towards the end event.

***Step 2*:** Put $T_E = 0$ for the start event.

Step 3: Go to the next event (i.e. event/node 2) if there is an incoming activity for event 2, add T_E of previous event (i.e. event/node 1) and calculate activity time. If there are more than one incoming activities, calculate T_E for all incoming activities and take the maximum value. This value is the T_E for event 2 **(merge event)**.

***Step 4*:** Repeat the same procedure from step 3 till the end event.

14.8.2 Backward Pass Computations (to calculate Latest Time T_L)

Procedure

***Step 1*:** Begin from the end event and move towards the start event. Assume that the direction of arrows is reversed.

***Step 2*:** Latest Time T_L for the last event is the earliest time T_E of the last event.

***Step 3*:** Go to the preceding event, if there is an incoming activity, subtract the value of T_L of previous event from the activity duration time. The arrived value is T_L for that preceding event. If there is more than one activity, take the minimum T_E value (**burst event)**.

***Step 4*:** Repeat the same procedure from step 2 till the start event.

14.9 CALCULATION OF FLOAT

As we know that the non–critical activities have some slack or float. The ***float*** of an activity is that amount of time available by which it is possible to delay its completion time without extending or disturbing the overall project completion time. We compute three types of floats which are as follows:

(i) Total Float

(ii) Free Float

(iii) Independent Float

14.9.1 Total Float (TF_{ij}):

The total float of an activity represents the amount of time by which an activity can be delayed without any delay in the completion time

of the project. Total float is the positive difference between the earliest start time and the latest start time. Alternatively, total float of an activity is the difference between the latest finish time and the earliest finish time of that activity.

For an activity i - j, let

t_{ij} = duration of activity

T_E = earliest expected time

T_L = latest allowable time

EST_{ij} = earliest start time of the activity

EFT_{ij} = earliest finish time of the activity

LST_{ij} = latest start time of the activity

LFT_{ij} = latest finish time of the activity

Total Float $TFij = LST_{ij} - EST_{ij} = LFT_{ij} - EFT_{ij}$ (eq^n 14.2)

or, alternatively

$TF_{ij} = (T_L - T_E) - t_{ij}$ (eq^n 14.3)

14.9.2 FREE FLOAT (FFij):

The time by which the completion of an activity can be delayed from its earliest finish time without affecting the earliest start time of the succeeding activity is called free float.

Free Float $FF_{ij} = (E_j - E_i) - t_{ij}$ (eq^n 14.4)

or, alternatively

FF_{ij} = Total float of the i-j activity – Head event slack (eq^n 14.5)

14.9.3 Independent Float (IFij)

The amount of time by which the start of an activity can be delayed without affecting the earliest start time of any immediately following activities, assuming that the preceding activity has finished at its latest finish time.

Independent Float $IF_{ij} = (Ej - Li) - t_{ij}$ (eq^n 14.6)

or, alternatively

IF_{ij} = Free float – Tail event slack

Where tail event slack = Li – Ei (eq^n 14.7)

Note: The negative value of the float is considered to be zero.

Critical Path: After determining the earliest and the latest scheduled times for various activities, the minimum time required to complete the project is calculated. In a network, among various paths, the longest path which determines the total time duration of the project is called the ***critical path*****.** The following conditions must be satisfied in locating the critical path of a network.

An activity is said to be critical only if both the conditions are satisfied.

Condition 1: $T_L - T_E = 0$

Condition 2: $T_{Lj} - t_{ij} - T_{Ej} = 0$

14.10 CRITICAL PATH ANALYSIS/ METHOD (CPM)

Critical Path Method is a networking technique, which is employed to find the minimum time and cost required to complete the project and simultaneously to identify the sequence of activities (tasks) to be performed. CPM is used in preparing the precedence relationship among various activities (tasks) of the project. CPM focuses on identifying the critical path and critical activities of the project so that the given project may be attained in the given time duration.

The critical path for any network is the longest path through starting event to ending event in the entire network. Since all activities must be completed to accomplish the entire project, the length of the critical path is also the minimum shortest time allowable for completion of the project. Thus we can say, if the project is to be finished in the shortest time, all activities lying on the critical path must be started at their earliest time. The activities falling on the critical path are known as **critical activities**. If the project has to be completed ahead of the schedule, then the time required for at least one of the critical activity must be reduced. Any delay in completing the critical activities will increase the project completion time.

The activity, which does not lie on the critical path, is called **non-critical activity.** These non-critical activities may have some slack time. The slack is the amount of time by which the start of an activity may be delayed or postponed without affecting the overall completion time of the project. However, a critical activity does not have any slack time. To reduce the overall project time, it would require more resources (at extra cost) to reduce the time taken by the critical activities to complete.

To identify the critical path, we have to calculate the earliest and latest times estimates of the different activities.

Computation of earliest time (Forward Pass Calculations)

Forward pass computation is done to find the total project time.

Using forward pass computation, the earliest start and earliest finish time for each activity is identified.

The earliest start time for an activity (*i,j*) is given by the earliest expected occurrence time of the event *i*. For instance, earliest start time for the activity 1-2 would be earliest expected occurrence time for event 1.

The earliest event time for the starting event is taken as zero. The earliest start time for an event is given by the earliest starting time plus activity duration of the preceding activity.

Thus, the earliest event time for event 1 in the network be 0 or $E_1 = 0$

$$E_2 = E_1+D_{1-2} = 0+2 = 2$$

$$E_3 = E_1+D_{1-3}= 0+2 = 2$$

$$E_4 = E_1+D_{1-4}= 0+2 = 2$$

$$E_5 = E_2+D_{2-5}= 2+4 = 6$$

Now, two activities converge at node 6 i.e., activity 6 can begin only when both 3-6 and 4-6 activities are completed. In this case, the earliest event time of 6 is given by

$$E_6 = \max [E_3+D_{3-6}, E_4+D_{4-6}] = 10$$

Similarly,

$$E_7 = \max [E_5+D_{5-7}, E_6+D_{6-7}] = 15$$

$$E_8 = E_7+D_{7-8} = 15+4 = 19$$

Next, we have to compute the Earliest Finish Time (EFT). It is calculated by adding activity duration and EST. These computations are presented in tabular manner in the Table 14.2.

Table 14.2: Calculation of Earliest and Latest Time for Activities

Activities	Duration (Days) (D)	Earliest Starting Time (E)	Earliest Finish Time (E+D)	Latest Finish Time (L)	Latest Starting Time (L-D)	Float (L-D)-E
1-2	2	0	2	9	7	7
1-3	2	0	2	2	0	0

1-4	2	0	2	13	4	4
2-5	4	2	6	19	9	7
3-6	8	2	10	10	2	0
4-6	4	2	6	10	6	4
5-7	2	6	8	15	13	7
6-7	5	10	15	15	10	0
7-8	4	15	19	19	15	0

Computation of Latest times: (Backward pass calculations)

We begin from the end node and proceeds towards the first node for Backward pass computations. The latest finish time for the last activity is equal to the earliest finish time of the last activity. With forward pass, we find the duration of the project whereas backward pass helps to find the float for an activity.

Thus,

$L_8 = E_8 = 19;$

$L_7 = L_8 – D_{7-8} = 19-4 = 15;$

$L_5 = L_7 – D_{5-7} = 15-2 = 13;$

$L_6 = L_7 – D_{6-7} = 15-5 = 10;$

$L_4 = L_6 – D_{4-6} = 10-4 = 6;$

$L_3 = L_6 – D_{3-6} = 10-8 = 2;$

$L_2 = L_5 – D_{2-5} = 13-4 = 9;$

As three activities are emanating from A, LFT is the minimum of previous LSTs.

$L_1 = \min [L_2 – D_{1-2}, L_3 – D_{1-3}, L_4 – D_{1-4}]$

$= \min [7, 0, 4] = 0$

We should note that if the L_1 value is not equal to 0, then there is an error in the forward or backward pass calculation.

Critical paths can be identified by calculating the float or slack values, as shown in Table 14.2. The float value of each activity can be calculated by using either starting time or finishing time. **The activities which are having no float or with zero float are part of the critical path**.

Thus, in the given network:

The critical activities are 1 - 3, 3 - 6, 6 - 7, and 7 - 8.

The critical path is 1 – 3 – 6 – 7 - 8.

The total duration of the project is 19 days.

14.11 PROJECT EVALUATION & REVIEW TECHNIQUE (PERT)

PERT (Project Evaluation & Review Technique) was developed in 1956-58 by a research team of the US navy's Polaris Nuclear Submarine Missile Project involving numerous interdependent activities.

Like CPM, PERT is also a graphical representation of project activities. The PERT network always begins and ends with a single node and there is at least one continuous path between first and last node.

In CPM, we had assumed that the time estimates of different activities are well known. These time estimates or values were fixed and certain. However, for projects where time values are affected by chance variations, we need to consider a probabilistic approach. Program Evaluation and Review Technique (PERT) is applied for planning, and scheduling projects so that all activities are completed in the shortest possible time.

There are certain conditions that must be fulfilled for applying the PERT method:

a. An activity should be clearly distinguishable from other activities.

b. Activities should have identifiable start and finish time.

c. There should not be too many interrelated or overlapping activities.

d. The project should be flexible enough to accommodate different sequences and timings.

The various **steps involved in the process of scheduling a project** using PERT are as follows:

1. Identify the list of activities that are involved in the project. Then, identify the sequence of the activities, based on the priorities and constraints. Once the tasks and sequences are identified, a precedence table is prepared which tabulates preceding activities for each activity.

2. In the second step, the expected times and respective variances are calculated using the following formula:

Expected Activity Time = $\frac{(t_o + 4t_m + t_p)}{6}$

Activity Time Variances = $\left\{\frac{t_p - t_o}{6}\right\}^2$ (eq^n 14.8)

Where t_o = Optimistic time estimate,

t_p = Pessimistic time estimate, and

t_m = Most likely time estimate.

3. Develop the PERT network by using the data obtained through step 1 i.e. using expected time.

4. Calculate the earliest start times and the earliest finish times for each of the activities in the network.

5. Compute the latest start times and latest finish times for each activity in the PERT network.

6. Determine the slack activity times and identify the critical path and critical activities. The slack time for an activity is the time by which that activity can be postponed without delaying the total project time. It is the difference of the latest start time and the earliest start time. Alternatively it may be obtained by taking the difference of the latest finish time and the earliest finish time.

7. Find the probability of completing the project within the desired completion period (Z). This may be computed with the help of the following formula:

$$Z = \frac{Desired\ project\ period - Expected\ Project\ period}{standard\ deviation\ of\ the\ critical\ path\ activities} \quad \text{(eq}^n\text{ 14.9)}$$

Example 14.2

Different time estimates (optimistic, pessimistic and most likely times) are given in Table 14.3 for a project. Develop a network diagram for the project activities. Calculate the probability of get the project be finished in 30 days.

Table 14.3

Activity	**Optimistic time (t_o)**	**Most likely time (t_m)**	**Pessimistic time (t_p)**
1-2	3	6	9
1-3	7	10	19

2-4	5	8	11
3-5	10	13	22
4-5	4	6	14
4-6	4	5	6
5-6	6	6	18

Solution

Figure 14.8 depicts the network of a project for which the optimistic, pessimistic and expected times of activities are tabulated in Table 14.3.

Now, we have to calculate the expected time (t_e) shown in Table 14.4. It is computed with the help of the following equation:

$$\frac{(t_o + 4t_m + t_p)}{6}$$

and activity variance is given by the equation

$$\left\{\frac{t_p - t_o}{6}\right\}^2$$

Table 14.4: Computation of Expected time and Variance

Activities	Optimistic time t_o	Most likely time t_m	Pessimistic time t_p	Expected mean time t_e $\frac{(t_o + t_p + 4t_m)}{6}$	Variance $\left\{\frac{t_p - t_o}{6}\right\}^2$
1-2	3	6	9	6	1
1-3	7	10	19	11	4
2-4	5	8	11	8	1
3-5	10	13	22	14	4
4-5	4	6	14	4	2.77
4-6	4	5	6	5	0.11
5-6	6	6	18	8	4

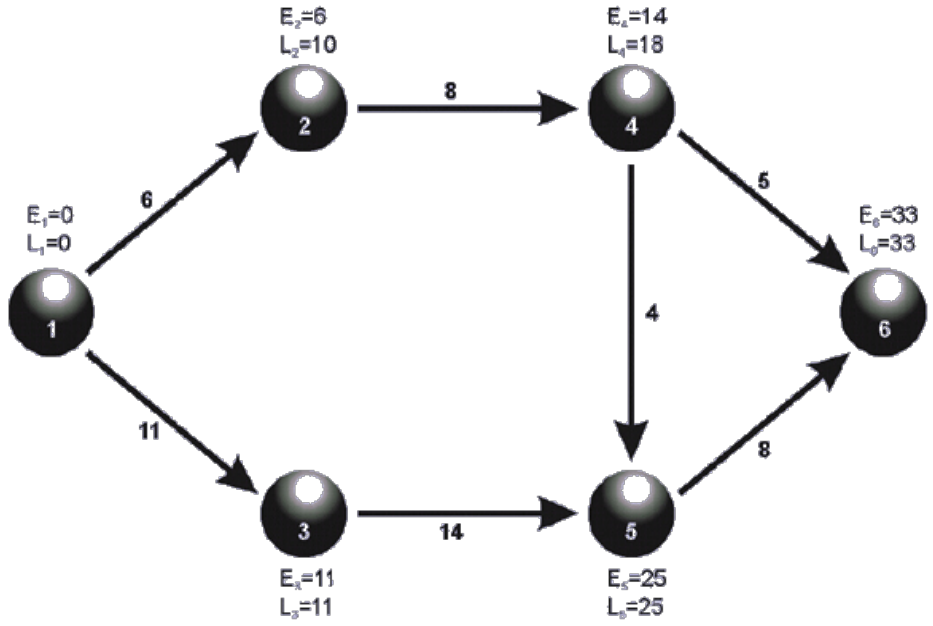


Figure 14.8: Network Diagram for the Activities in Table 14.3

After the computation of expected time for each activity, we identify the critical path and the duration of the project. From Figure 14.8, we can see that the critical path includes the activity 1-3-5-6 and the total duration of the project with the expected activity time is equal to 33 days.

Next, we determine the probability of completing the project within the desired completion period. This step makes use of the eq^{n}. 14.9:

$$Z = \frac{Desired\ project\ period - Expected\ Project\ period}{standard\ deviation\ of\ the\ critical\ path\ activities}$$

or, alternatively $Z = \frac{D - E}{\sqrt{\sigma^2_{cp}}}$ (eq^{n} 14.10)

Where,

D = desired project completion date = 30

E = earliest expected project completion time = 33

σ^2_{cp} = Sum of variance of critical path activities = 12 = (4 + 4)

The probability of completing the project in 30 days is

$$Z = \frac{30 - 33}{\sqrt{12}}$$

$$= \frac{-3}{3.46} = 0.86$$

So there is a very high probability of completing the project in 30 days. The probability is 0.86 i.e. 86%.

14.12 Advantages and disadvantages of PERT and CPM

The networking techniques PERT and CPM offer many benefits in planning for projects. The following are the advantages of PERT and CPM:

1. The network diagram is a graphical display of the project activities. It helps us to understand the relationships among the different activities.
2. It is the ideal technique for tactical level (middle level of management) planning and operational level (supervisory level of management) control of projects.
3. It is very effective in planning single project activities in certain type of industry.
4. It permits project managers to do 'what if' analysis on project activities.

Though PERT/CPM offer many benefits, yet it has few limitations too. The disadvantages that limit the use of PERT/CPM are as follows:

1. It fails when there is a change in the precedence and sequential relationships of project activities.
2. It cannot effectively handle situations in which two or more projects share available resources.
3. It needs a lot of information as input to generate an effective plan. It may prove too expensive.

14.13 Distinction between PERT and CPM

PERT and CPM both are managerial techniques for planning and controlling of large complex projects. These network analysis techniques analyze interrelationship among different activities of a project. There are many commonalities between them; however, certain differences between these two are as follows:

i. PERT is probabilistic in nature with uncertainty in activity duration. Three time estimates are there to calculate the probability of completing the project within scheduled time. On the other hand, CPM is deterministic in nature with well known single time estimate of the activity.

ii. PERT is event-oriented so in PERT analysis is expressed in terms of events. On the contrary, CPM is activity-oriented so the results of calculations are considered in terms of activities.

iii. PERT is used for research and development purposes whereas CPM is applied mainly for construction and business problems.

iv. PERT is applied for non-repetitive jobs, however, CPM is used for jobs which are having repetitive nature.

v. PERT is having statistical analysis, therefore it enables the determination of probabilities related to activity time and the entire project. On the other hand, there is no statistical analysis in CPM, as time estimates of activities are precise and known.

14.14 SUMMARY

A project may be defined as a group of activities with a definite starting and ending point. The purpose of a project is to achieve a well defined and specific objective. Project management assists organizations in coordinating and planning the usage and employment of resources required for achieving project objectives. With the multiple increase in number of activities in a project, the task of scheduling and assigning resources to all these activities has necessitated the use specialized techniques. PERT and CPM are two modern techniques of network or project handling. CPM is used to find out the total duration of the project. It also identifies the critical path and the activities falling on the critical path i.e. critical activities. PERT employs a more probabilistic approach to compute the project duration. Both PERT and CPM are based on networks and define the interrelationships between different activities of a project. The two networking conventions used to illustrate the relationship between different activities are the Activity-on-node and Activity-on-arrow. The ultimate objective of the project management is to accomplish project objectives within the time and cost constraints.

14.15 QUESTIONS

(1) Explain the following terms in PERT/ CPM:

(a) Earliest time;

(b) Event Slack;

(c) Total Activity time;

(d) Total Float;

(e) Pessimistic time;

(f) Most likely time;

(g) Independent Float;

(h) Activity Variance

(2) What is a critical path? Why is so important in scheduling and controlling large projects?

(3) Explain various basic steps involved in PERT/ CPM techniques.

(4) Compare PERT and CPM explaining similarities and mentioning where they mainly differ.

(5) Following are the activities which are to be performed for a building site preparation. Determine the precedence relationship and draw the network.

(i) Clear the site;

(ii) Survey and layout;

(iii) Rough grade;

(iv) Excavate the sewer;

(v) Excavate the electricity manholes;

(vi) Install sewer and baskfill;

(vii) Install electrical manholes;

(viii) Construct the boundary walls.

(6) For a project, the optimistic, pessimistic, and most likely times are given as under. Prepare the network diagram and find the probability of completion of the project within 20 weeks.

Activities	**Optimistic time (days)**	**Pessimistic time (days)**	**Most likely time (days)**
1-2	4	8	6
1-4	4	6	5
2-3	2	5	4
3-5	5	7	6
3-6	3	6	4
3-7	5	9	6
4-6	4	9	6
5-7	2	5	4
6-7	6	9	7
7-8	3	6	5

UNIT 15 : GAME THEORY

Learning Objectives

After studying this unit, you should be able to:

- Understand how optimal strategies are formulated in competitive and conflicting situations.
- Understand the principle of zero-sum, two person game.
- Apply minimax and maximin principle to compute the value of the game (when saddle point).
- Use dominance rules to reduce the size of a game and compute the value of the game with mixed strategies.
- Applications and limitations of game theory.

Unit Outline

15.1 INTRODUCTION

Game theory is the study of decision making in situations where two or more rational rivals or opponents are involved under the conditions of conflicting and competitive interest. In today's business world, decisions about many practical problems are made in a competitive situation, where two or more opponents compete, conflict and strive for the optimal. The outcome does not depend on the decision alone but also the interaction between the decision-maker and the competitor.

A game refers to a situation in which two or more players are competing. A player may be an individual, a group or an organization. The objective in theory of games is to determine the rules of rational behaviour in game situations, in which the outcomes are dependent on the actions of the interdependent players. Game Theory has formulated mathematical models that can be useful in decision-making in competitive situations. To get a better insight of the concept, we consider an example of a simple game.

Game theory is a branch of applied mathematics that is used in the social sciences, most notably in Economics. Game theory attempts to mathematically capture behavior in strategic situations, or games, in which an individual's success in making choices depends on the choices of others. While initially developed to analyze competitions in which one individual does better at another's expense (zero sum games).

Traditional applications of game theory attempt to find equilibrium in these games. In equilibrium, each player of the game has adopted a strategy that they are unlikely to change (most famous the Nash equilibrium).

A game consists of a set of players, a set of moves (or strategies) available to those players, and a specification of payoffs for each combination of strategies. Most cooperative games are presented in the characteristic function form, while the extensive and the normal forms are used to define non-cooperative games.

15.2 TWO PERSON ZERO - SUM GAME

Zero-sum games are a special case of constant-sum games, in which choices by players can neither increase nor decrease the available resources. In zero-sum games the total benefit to all players in the game, for every combination of strategies, always adds to zero (more informally, a player benefits only at the equal expense of others).

A game in a competitive situation possesses the following properties:

i. The number of players is finite.

ii. Each player has finite list of courses of action or strategy.

iii. A game is played when each player chooses a course of action (strategy) out of the available strategies. No player is aware of his opponent’s choice until he decides his own.

iv. The outcome of the play depends on every combination of courses of action. Each outcome determines the gain or loss of each player.

Example:

Suppose there are two mega stores, *X* and *Y*, in an area, for a long period of time have been selling competing product and are now engaged in struggle for a larger market shares. Let us assume that both these two firms are considering the same two strategies in a bid to gain the share of the market: advertising through radio and advertising newspaper.

There are a total of 2 x 2 = 4 combinations of the moves possible. Each pair of the moves shall affect the sharing of the market in a particular way. Meaning thereby, advertisement through radio both by firm X and firm Y will lead to 2 points in favour of firm A while advertisement through newspaper both by firm X and firm Y will lead to 4 points in favour of firm .B The *payoff table* below shows the potential affects on market share if both stores begin to advertise.

Store X Strategies	Store Y Strategies 1 (radio)	2 (newspaper)
1 (radio)	2	7
2 (newspaper)	6	-4

(Store X is trying to maximise game outcome is on left. Store Y is trying to minimise game outcome is on top.)

In the above example, if Store *X* selects strategy 2 & Store *Y* selects strategy 1, the outcome is a 6% gain in market share for Store *X* and a 6% loss for Store *Y*.

Value of the game: The offensive player's gain and the defensive player's loss (in a zero-sum game)

Purpose of the Game: To select the strategy resulting in the best possible outcome regardless of what the opponent does (i.e., *the optimal strategy*)

15.3 Pure Strategies: Game with Saddle Point

The aim of the game is to determine how the players must select their respective strategies such that the pay-off is optimized. This decision-making is referred to as the **minimax-maximin principle** to obtain the best possible selection of a strategy for the players.

In a pay-off matrix, the minimum value in each row represents the minimum gain for player A. Player A will select the strategy that gives him the maximum gain among the row minium values. The selection of strategy by player A is based on maximin principle.

Similarly, the same pay-off is a loss for player B. The maximum value in each column represents the maximum loss for Player B. Player B will select the strategy that gives him the minimum loss among the column maximum values. The selection of strategy by player B is based on minimax principle. If the maximin value is equal to minimax value, the game has a saddle point (i.e., equilibrium point). Thus the strategy selected by player A and player B are optimal.

15.3.1 SADDLE POINT

It is a point of equilibrium between strategy of Player A and Player B. It is obtained by – Maximin strategy and Minimax strategy.

15.3.2 MAXIMIN PRINCIPLE

For player A, the minimum value in each row depicts the least gain (profit), if he chooses his particular strategy. These are shown in the given payoff matrix by row minima. The player A selects the strategy which gives the maximum gain amongst the row minimum values. This choice of the player A is known as the Maximin Principle.

15.3.3 MINIMAX PRINCIPLE

For Player B the maximum value in each column depicts the maximum loss, if he chooses his particular strategy. These are shown in the given payoff matrix by column maxima. The player B selects the strategy which gives the minimum loss amongst the column maximum values. This choice of the player B is known as the Minimax Principle.

Example-

		Player B				
					Row	
		b_1	b_2	b_3	minimum	maximum
Player A	a_1	-1	2	-2	-2	-2
	a_2	6	4	-6	-6	
Column maximum		6	4	-2		

minimum -2

So, both players, in the long term, will be applying the strategy a_1 and b_3.

In long run Player A will be loosing the game by 2 points.

The Value of the game is (-2).

15.3.4 ASSUMPTIONS

- Each player has available to him/her a finite number of possible strategies. The list may not be same for each player.
- Players act rationally and intelligently.
- List of strategies of each player and the amount of gain or loss on an individual choice of strategy is known to each player in advance.
- One player attempts to maximize gains and other attempts to minimize losses.
- Both players make their decisions individually, without direct communication between them.
- Both players select announce their strategies simultaneously, so that neither player has an advantage resulting from direct knowledge of others decision.
- The payoff is fixed and determined in advance.

15.4 GAMES WITHOUT SADDLE POINT (Mixed Strategies)

It is possible that there is no saddle point of a Game. In this case, it is not possible to find its solution in terms of pure strategies (the maximin and the minimax). When no saddle point exists in the solution, the game is solved with the help of Mixed Strategy. A mixed strategy is a combination of two or more strategies that are selected one at a time by the opponent players, according to some pre-determined probabilities.

Suppose Player A uses 1st strategy with probability p_1 and 2nd strategy with probability p_2; and suppose Player B uses 1st strategy with probability q_1 and 2nd with probability q_2. The given 2 x 2 game is represented in the following manner:

	PLAYER B	
PLAYER A	a	b
	c	d

(a, b, c, and d are different outcomes of the game)

Then, Expected gains of Player A are,

$p_1a + p_2c$ (when Player B uses only 1st strategy);

and, $p_1b + p_2d$ (when Player B uses only 2nd strategy)

Expected losses of Player B are,

$q_1a + q_2b$ (when Player A uses only 1st strategy);

and, $q_1c + q_2d$ (when Player A uses only 2nd strategy).

Then, the problem is to find out the values of p_1, p_2, q_1, q_2

Which give,

$$p_1a + p_2c = V \quad \text{---- (1)}$$

$$p_1b + p_2d = V \quad \text{---- (2)}$$

$$q_1a + q_2b = V \quad \text{---- (3)}$$

$$q_1c + q_2d = V \quad \text{---- (4)}$$

Where V = value of the game

And we know that,

$$p_1 + p_2 = 1$$

and, $q_1 + q_2 = 1$

Finding out the values of p_1, p_2, q_1, q_2

$$p_1.a + (1 - p_1).c = p_1.b + (1 - p_1).d$$

or, $p_1.(a - c) + c = p_1 .(b - d) + d$

or, $$\mathbf{p_1} = \frac{(\boldsymbol{d-c})}{(\boldsymbol{a+d})-(\boldsymbol{b+c})} \qquad \textbf{(eq}^{\textbf{n}}\textbf{ 15.5)}$$

As, $p_1 + p_2 = 1$

Therefore, $p_2 = (1- p_1)$

Putting the value of p_1 from equation

We get, $$\mathbf{p_2} = \frac{(\boldsymbol{a-b})}{(\boldsymbol{a+d})-(\boldsymbol{b+c})} \qquad \textbf{(eq}^{\textbf{n}}\textbf{ 15.6)}$$

Similarly we can obtain;

$$\mathbf{q_1} = \frac{(\boldsymbol{d-b})}{(\boldsymbol{a+d})-(\boldsymbol{b+c})} \qquad \textbf{(eq}^{\textbf{n}}\textbf{ 15.7)}$$

And,

$$\mathbf{q_2} = \frac{(\boldsymbol{a-c})}{(\boldsymbol{a+d})-(\boldsymbol{b+c})} \qquad \textbf{(eq}^{\textbf{n}}\textbf{ 15.8)}$$

And,

$$\boldsymbol{V} = \frac{(\boldsymbol{ad-bc})}{(\boldsymbol{a+d})-(\boldsymbol{b+c})} \qquad \textbf{(eq}^{\textbf{n}}\textbf{ 15.9)}$$

Example: Solve the following game:

		PLAYER B	
		1	2
PLAYER A	1	5	2
	2	3	4

There is no Saddle point in the above game. Hence it is a Mixed Strategy game.

By applying equation (15.5) and equation (15.7), we get the value of p_1 and q_1.

$p_1 = ¼$

Therefore, $p_2 = (1 – p_1) = (1 – ¼) = ¾$

It means that the probability of applying strategy 1 by Player A is ¼ whereas Player A will apply strategy 2 with the probability ¾.

Similarly, we compute $q_1 = ½$ and $q_2 = ½$.

Meaning thereby, that the probability of applying strategy 1 by Player B is ½ whereas Player B will apply strategy 2 with the probability ½.

With the help of equation (9) we compute the **Value of the Game is 3.5.**

15.5 DOMINANCE RULE

If no pure strategies exist, the next step is to eliminate certain strategies (row and / or columns) by rule of dominance. Row and / or columns of the payoff matrix that are inferior to at least one of the remaining rows and / or columns are deleted for further consideration. The resulting game matrix can be solved for some mixed strategy.

		Player Q		
		W	B	R
Player P	W	0	-2	7
	B	2	5	6
	R	3	-3	8

This above matrix has no saddle point. Evidently, player Q will not play strategy R since this will result in the heaviest losses to him and the highest gains to player P. He can do better by playing columns W or B.

Thus column R is to be deleted and strategy R is called dominated strategy.

15.5.1 DOMINANCE RULE FOR COLUMNS

Every value in the dominating columns (s) must be less than or equal to the corresponding value of the dominated column. It is clear that player P will not play row W since it will give him returns lower than given by row B. Hence row W is dominated by row B and can be deleted.

Reduced Matrix

Player Q

		W	B
Player P	W	0	-2
	B	2	5
	R	3	-3

15.5.2 DOMINANCE RULE FOR ROWS

Every value in the dominated row(s) must be greater than or equal to corresponding value of the dominated row. The resulting matrix is this 2 x 2 matrix can be easily solved.

Reduced Matrix

Player Q

		W	B
Player P	B	2	5
	R	3	-3

Other method –

	b_1	b_2
a_1	a_{11}	a_{12}
a_2	a_{21}	a_{22}

x = proportion of applying a_1 for player A is given by:

$$\frac{(a_{22} - a_{21})}{(a_{11} + a_{22}) - (a_{12} + a_{21})}$$

y = proportion of applying a_2 against player B is given by:

$$\frac{(a_{22} - a_{12})}{(a_{11} + a_{22}) - (a_{12} + a_{21})}$$

Value of the game V is given by:

$$\frac{(a_{11} \times a_{22}) - (a_{12} \times a_{21})}{(a_{11} + a_{22}) - (a_{12} + a_{21})}$$

15.6 APPLICATIONS OF GAME THEORY

Many of the interactions in the business world may be modeled using game theory methodology. A famous example is that of the similarity of the price-setting of oligopolies to the Prisoner's Dilemma. If there is an oligopoly situation, the competing companies would be able to set prices if they choose to cooperate with each other. In this case they are able to set higher prices, leading to higher profits.

However, if one company decides to defect by lowering its price, it will get higher sales, and, consequently, bigger profits than its competitor(s), who will receive lower profits. If both companies decide to defect, i.e. lower prices, a price war will ensue. In this situation, neither company will earn profit, since it will try to retain its market share and experience lower revenues at the same time.

15.7 LIMITATIONS

- Fixed number of competitors- The theory assumes that there are a fixed number of competitors. In real life situations, there can be more than the expected number of players.
- Knowledge about the strategies available to the opponent player- The theory assumes that each player has knowledge about the strategies available to the other players. This may not always be the case. In real world, complete information may not generally be available and so this assumption proves to be wrong.
- Zero sum game is not realistic- The assumption that the gain of one player is equal to the loss of the other player is again not a realistic assumption.
- Knowledge of pay-off in advance- It is not always possible to know about the pay-off of a particular course of action. It can easily be understood that in real world, it is only but hardly that each of the persons would have complete knowledge about all the strategies available to its opponent, as also of the exact pay-off values associated with various combinations of strategies.

15.8 KEY WORDS

Two Person Game: A game that only has two players.

Zero Sum Game: A game in which one player wins and other player loses.

Dominance: A process by which the size of the game will be reduced.

Strategy: A plan of action followed by a player. The strategy of a player is the list of all possible actions that he takes for every pay-off. The strategy is classified into pure strategy and mixed strategy.

Pure Strategy: It is the only course of action that is always chosen by a player. Pure strategy is always selecting a particular course of action with the probability of 1. For example, in case of two strategies, probability of selecting the strategies for players A is p1 = 0 and p2 = 1.

Mixed Strategy: These are courses of action that are to be selected by a player with some fixed probability. Mixed strategy is to choose at least two courses of action. The probability of selecting an individual strategy will be less than 1, but the sum of the strategies will be 1. For example, if player A plays a mixed strategy, then the probability of selection of mixed strategy is p1 = 0.45 and p2 = 0.55. But the sum of the strategies is 0.45 + 0.55 = 1.

Saddle Point: Saddle point is a situation where both the players are facing pure strategies. When there is no saddle point, it indicates the players will play both the strategies.

Minimax Criterion Minimax criterion is selecting the strategies that minimize the loss for each player. In other words, the player always anticipates worst possible outcome and chooses the strategy to get maximum for profit and minimum for loss.

Value of the Game: The Value of the game is the expected gain of player A if both players use their best strategies. The best strategy is arrived at using minimax criterion.

15.9 QUESTIONS

1. Discuss two-person zero-sum game.

2. What is minimax-minimin principle?

3. Describe the dominance rule.

4. Explain the saddle point.

UNIT 16 : DEFICIT FINANCING

Unit Outline

16.1 MEANING

Deficit financing has become an important tool of financing the Government expenditure. In simple words, it is the way to finance the gap between excess of the Government expenditure over its receipts.

'Deficit financing' or 'Deficit Spending' can be defined as "the financing of deliberately created gap between public revenue and public expenditure or a budgetary deficit, the method of financing resorted to being borrowing that results in a net addition to national outlay or

aggregate expenditure". Therefore, one can say deliberate unbalancing of the budget in such a way that the government expenditure exceeds the government revenue.

However the concept of deficit financing is interpreted in different ways in India and in the western countries

In the Indian context, deficit financing is the financial scheme of the government expenditure in which the deficit is met by utilizing the cash balances with Central Bank (Reserve Bank) or by taking loan from the Reserve Bank. In India great reliance has been placed on deficit financing for mobilizing resources for the plans.

In the Western context, it is referred to excess of expenditure over revenue financed through public loans and the creation of new money. In other words, financing of all public expenditure in excess of public revenue in current account is called as deficit financing.

The Planning Commission in India defines deficit financing as "the direct addition to gross national expenditure through budget deficits whether the deficits are on revenue or capital accounts".

16.2 TYPES OF DEFICIT

The deficit in the Government budget can be of following types:

- ❖ Revenue Deficit
- ❖ Fiscal Deficit
- ❖ Primary Deficit
- ❖ Budget Deficit

16.2.1 REVENUE DEFICIT

The excess of revenue expenditure over revenue receipts is known as revenue deficit. i.e.

Revenue Deficit = Revenue Expenditure - Revenue Receipts

The ***revenue expenditure*** of the government includes plan and non-plan expenditure. Plan expenditures are those expenditures which the government incurs on current five year plans. It includes expenditure incurred on projects, infrastructural developments, irrigation, energy, minerals, science and technology etc.

Non-plan expenditures include all other expenditure of the government other than current five year plans.

Revenue receipts come from two sources. Tax revenue and Non-tax revenue.

Tax revenue consists mainly of:

(i) Income tax

(ii) Corporation tax

(iii) Wealth tax

(iv) Excise duty

(v) Service tax

The sources of **non-tax revenue** are:

(i) Interest receipts

(ii) Dividend and profits

(iii) Revenue by the services provided by the Government

(iv) Grants-in-aid

16.2.1.1 IMPLICATION OF REVENUE DEFICIT

High Revenue Deficit is bad for the economy as it shows that the government is incurring expenses more than its receipts. This implies that the government has to resort to borrowing to meet its regular expenses. Increased borrowings will create more interest liabilities for the government which would mean lower growth and welfare. A high revenue deficit is thus a warning to the government to either reduce its current expenditure or increase its current income.

16.2.2 FISCAL DEFICIT

Fiscal deficit is budgetary deficit plus market borrowings and other liabilities of the Government of India. It also refers to as difference between the total expenditure and the government's total non - debt receipts.

In other words the fiscal deficit is the difference between total expenditure and the sum of revenue receipts and capital receipts excluding borrowing.

Fiscal Deficit = Total Budgetary Expenditure – (Revenue Receipts + Capital Receipts excluding Borrowings)

Revenue receipts are those receipts which are in the nature of assets. They create no liability for the government. Revenue receipts consists of two sources; Tax revenue and Non-tax revenue.

Tax revenue consists mainly of Income tax, Corporation tax, Wealth tax, Excise duty, and Service tax.

The sources of non-tax revenue are interest receipts, Dividend and profits, revenue by the services provided by the government, and grants-in-aid.

Capital Receipts:

When the government raises funds either by incurring a liability or by reducing assets, it is called capital receipts. It includes following items:

- Recovery of loans and advances
- External loans
- Disinvestment proceeds
- Borrowing from the public
- Provident fund
- Small savings (NSC, recurring deposits of post office etc.)

16.2.2.1 IMPLICATION OF FISCAL DEFICIT

Fiscal Deficit leads the economy into a vicious circle of borrowings. It indicates how far the government is living beyond its means. To overcome this Fiscal deficit the government will have to borrow funds either from within the country or from abroad. If the government borrows from external sources (World Bank, IMF), it will increase the economy dependence on foreign lenders and they might dictate terms and condition not conducive for the interest of the country. Borrowings by the government internally will create future liabilities of the government because the government will have to pay interest on these loans. This will lead to a situation of debt-trap. It ultimately hampers the smooth functioning of the economy.

16.2.3 PRIMARY DEFICIT

Primary deficit is the difference between fiscal deficit and interest payments.

Primary Deficit = Fiscal Deficit – Interest Payments

Primary Deficit indicates the growing interest burden of the government due to higher borrowings. Therefore, the primary deficit is the deficit of the current year and it is accordingly triggered by an expansionary fiscal policy during the year.

16.2.3.1 IMPLICATION OF PRIMARY DEFICIT

Primary Deficit portrays the real picture of the financial position of the G. it indicates how much the government is borrowing to meet its expenditure other than payment of interest. Higher the primary deficit,

more is the irresponsibility of the government as it shows that the government is using the funds to finance its present expenditure.

16.2.4 BUDGET DEFICIT

When the total expenditure of the government exceeds its total receipts, it is called the budget deficit.

Budget Deficit = Total Expenditure - Total Receipts

Total expenditure is the sum total of revenue expenditure and capital expenditure and total receipts is the sum total of revenue receipts and capital receipts. The excess amount of the total expenditure over the total revenue is called budget deficit. It is also defined as the fiscal deficit minus government borrowing and other liabilities (public debt receipts).

16.2.4.1 IMPLICATION OF PRIMARY DEFICIT

Budget deficit is always financed by printing of new currency. however, if the printing of new currency is not at par with production of an equal amount of goods and services, it paves the path for demand pull inflation. An uncontrolled inflation will adversely affect savings and investments.

This traditional classification of deficits has lost relevance as it does not suit in global practice. Hence, this concept of budget deficit has been dropped by the government in 1997-98. Now, the concept of fiscal deficit is being followed.

16.3 TECHNIQUES OF DEFICIT FINANCING

There are mainly three techniques of deficit financing and the impact of each technique is different in each case. These are as:

- Borrowing from the Central Bank
- Withdrawal of its cash balances from the Central Bank
- Printing of more notes and making circulation of it i.e. issuing of new currency

In the ***first technique***, the Government can borrow from non-bank investors or commercial banks. This is considered to be non-inflationary in nature as it replaces private expenditure. e.g. when government borrows from commercial banks, their liquidity is reduced so that it reduces loans to the public. Thus the government borrowing from commercial banks replaces private expenditure and hence it is non-inflationary. If the non-bank investors get loans from the commercial banks against their fixed deposits and use it to lend to government it would be inflationary.

In the ***second technique***, the government draws from its cash balances with the central bank. It does not create inflation.

However, in the ***third technique*** when the government borrows from the central bank against its securities, the central bank creates new money through its printing press. This results in a secondary reaction of expansion of bank credit. This type of deficit financing by loans from central bank tends to be highly inflationary in nature.

16.4 OBJECTIVES OF DEFICIT FINANCING

Deficit financing has been given an important role in the government's policy of excessive expenditure and deficit revenue. The different objectives of deficit financing make this point clearer.

16.4.1 TO FINANCE CRISIS EXPENDITURES

Deficit financing has been the simplest and the quickest way to finance crisis (like war or depression) expenditures which are not small in nature. Emergency during crisis makes it difficult for the government to raise emergent resources through taxation or public borrowing. The funds obtained through deficit financing are used by the government to purchase goods and services to overcome crisis expenditures. However, the aggregate demand is raised in this way. The government is using resources not for any productive purpose but to handle only crisis which is non-productive. Due to rise in demand and unavailability of sufficient quantity of goods, ultimately, it results in an inflationary price rise. Here the example of Germany during the world wars is very much relevant to quote. During First World War, the German paper Mark depreciated so much that one gold Mark could not be purchased by even one billion papers Mark. Similarly during Second World War, the ratio of gold to paper currency became as low as 0.01 percent. However, one cannot deny deficit financing because crisis-driven situations always need a quick way of financing.

16.4.2 TO PROMOTE ECONOMIC DEVELOPMENT

Economic development implies increase in the per capita income of the economy alongwith reduction in poverty and unemployment. The role of deficit financing in under developed and developing economy is many fold. There are many areas of production in developing economy where private entrepreneurs are hesitant to take investment due to low profitability and high gestation period. Hence, the Government has to undertake various infrastructural projects to accelerate the development of the country.

Deficit financing enhances incomes and thus savings too. It results indirectly in forced saving because when the government purchases goods and services for its projects, people do not get them. So the reduced private spending results in larger saving.

If the government uses deficit financing to undertake productive projects then output would increase and it may not be inflationary. But there are certain rigidities in the developing countries which do not result in complementary factors for investment.

If deficit financing used for development schemes results in inflationary price rise, the government should carefully raise taxation to siphon off the excess purchasing power in the hands of the people.

Another way in which deficit financing can promote development is when it increases the incomes of the entrepreneurs whose propensity to save is high. But it leads to greater inequality of income.

Deficit financing is a very useful instrument of development in developing countries. It should be carefully used in the initial stages to lay a good foundation for necessary infrastructure for development of the country.

16.4.3 TO COMBAT UNEMPLOYMENT

Deficit financing is an important tool for solving the problem of involuntary unemployment during recession. The unemployment during depression occurs-due to lack of effective demand since private spending is low. Therefore, the only way to reduce unemployment is by increasing the aggregate demand. The government should increase its expenditure and undertake various developmental projects to generate employment.

This measure raises the purchasing power in the hands of the public, thereby, leading to increased demand. To meet out this increased demand, the government will have to undertake the large scale production by employing unemployed resources. Thus deficit financing increases output and employment in the economy and hence pulls out the economy from recession.

16.4.4 TO MOBILIZE SURPLUS AND UNUTILIZED RESOURCES

The developing economies are caught in the grip of vicious circle of poverty. This circle can be broken by increasing the rate of savings and investments. The rate of savings can be increased through forced savings by increasing the rate of taxes, imposing new taxes and by adopting the policy of deficit financing.

Deficit financing is recommended for its ability to create new resources in these countries. When deficit financing raises prices in these countries, it reduces consumption and increases forced savings. Thus deficit financing is recommended in developing countries for the mobilization of forced savings or for the creation of new resources which again can be utilized for further stage of development.

16.4.5 TO FINANCE THE DEVELOPMENT PLANS

The developing countries which have adopted planned economic development need huge resources for implementation of the government's investment policies. The government takes greater interest to create infrastructure, industrial development, irrigation, energy, electricity, atomic power in vital areas besides transport and communication. Deficit financing is a significant tool to finance these development plans.

16.4.6 TO RAISE ADDITIONAL INCOME

Underdeveloped countries suffer from low income and low savings. Hence the government's ability to raise additional resources gets constrained. For meeting out its expenditure the scarcity of funds can be balanced by resorting to deficit financing. By issuing new currency the government can generate more resources besides taxation and public borrowing.

16.5 USEFULNESS OF DEFICIT FINANCING

Deficit Financing has certain advantages as compared to other sources of raising revenue.

- Deficit Financing is relatively an easier way of raising money. When given rebates and incentives households voluntarily subscribe to the government bonds. Commercial banks are also under statutory obligations to subscribe to the Government bond. The government can easily approach RBI from time to time to borrow the required amount. Hence RBI becomes an all time ATM for the government.
- Raising loans through deficit financing for the government is never a difficulty as the Government has never defaulted on repayment. Hence the government is rated as the best borrower.
- Deficit financing can be used in accelerating economic growth. The Govt. can use deficit spending for shifting productive resources of the economy into capital goods sector, developing basic and key industries and providing necessary infrastructure.
- A small amount of deficit financing helps to increase the money supply in the economy which in turn increases the purchasing power of the public. The higher purchasing power leads to higher demand of goods which ultimately ends with increased production in the economy.

16.6 EVILS OF DEFICIT FINANCING

- ✓ The most serious evil or disadvantage of deficit financing is inflationary rise of price. Deficit financing increases the total supply of money in country and raises the aggregate demand for

goods and services. In the absence of corresponding increase in supply of goods and services, deficit financing leads to rise in level of price.

- ✓ Government of India adopted the deficit financing to obtain necessary resources for the Fiscal Policy development but deficit financing may beget many problems as it increases the public debt which increases the interest burden of the Government.
- ✓ Inflation works as a forced saving or indirect taxation on people because of increased price now they have to pay extra to maintain same living standard.
- ✓ One way for the Government to finance a budget deficit is simply to print money – a policy that again leads to higher inflation. Some economists have suggested that a high level of debt might also encourage the government to create inflation. A high level of debt might encourage Government to print money, thereby raising the price level and reducing the real value of its debts.

16.7 DEFICIT FINANCING AND ECONOMIC GROWTH

Deficit financing is a very potent tool in the hands of the govt. for increasing effective demand. If deficit is financed through creation of additional currency or borrowings from the central bank of the country, even if govt. borrows from the market and spends the borrowed sums, the aggregate expenditure is the most likely to increase because during depression the investment opportunities are not much and savings of the market get spent through the government. Though the government's expenditure policy more effective when the extra purchasing power goes into the hands of those people who have a high marginal propensity to consume. That is why various security measures like unemployment relief, old-age pensions, and so on are, therefore, very helpful in raising the total demand in the market. There are two ways of deficit financing which can be resorted to in combination :

(a) The government may borrow from the market. This procedure is equivalent to transferring of resources straight from the hands of individuals into those of the govt. The market borrowings therefore, generally amount to loans from various - institutions and this generally means diversion of investable funds from the private sector to the public sector.

(b) The deficit financing namely, resorting to the printing press amounts to taking away a portion of the private sector's resources and leaving it with extra money. This technique can be used for re-

allocation of the economy's resources and thus accelerating the pace of economic growth.

16.8 SUMMARY

By deficit financing we mean the ways through which the government tries to abridge the gap between excessive expenditure and scarce revenue receipts. Deficit financing has become a compulsion for Indian economy due to ever mounting huge public expenditure. This large public expenditure is due to heavy interest payments on internal and external debts, subsidies, anti-poverty programmer and to maintain high level of economic development. There are three methods of deficit financing viz. borrowing from RBI, withdrawal of its own cash balances by the government from the Central Bank, and issuing of new currency. Deficit financing has favorable and unfavorable effects on the economy. It is useful as it mobilizes additional funs for the government to bring growth and development, reducing unemployment and inequality. On the other hand, uncontrolled deficit financing brings misery to the economy in the form of hyper inflation, unequal distribution of income and wealth and social evils. Hence the government should resort to deficit financing in a balanced way to achieve higher levels of growth and development.

16.9 QUESTIONS

(1) What do you understand by the term deficit financing? Give its uses to the Indian economy.

(2) Explain the concept of ‘why’ and ‘how’ in deficit financing.

(3) Is deficit financing always inflationary? Give reasons for your answer.

(4) What role does deficit financing play in promoting economic development?

Uttar Pradesh Rajarshi Tandon
Open University

Bachelor of Business
Administration

B.B.A-108(N)

Macro Economics

BLOCK

5

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BLOCK V - INTERNATIONAL ASPECTS

There are four units under this Block (V). The first unit of this block is related with International trade, meaning and importance of trade in Economic development, effects of foreign trade in Economic Development, Problem faced by Developing Countries. Unit 18 Deals with Balance of Payment, meaning and features of balance of payment, meaning & features of balance of trade.

Difference between BOT & BOP and disequilibrium in balance of payment and it effects. The next unit of this block is concerned with public revenue, meaning, classification & sourves of public revenue. The last unit of this block presents an overview on public expenditure meaning, causes of increasing public expenditure, cannons of public expenditure & effects of public expenditure.

UNIT 17 : INTERNATIONAL TRADE

Objectives

After going through this unit you will be able to know about :

- Importance of International trade
- Problems of International trade
- Disadvantages of International trade

Structure

17.1 INTRODUCTION

"When buyers and sellers of two or more countries are separately involved in buying and selling of goods and services, and such buying and selling cross the geographical boundaries of any two countries, then it is called Foreign Trade or International Trade or External Trade."

17.2 CHARACTERISTICS OF INTERNATIONAL TRADE

Characteristics of international trade or can be described as following :

(i) When purchaser and seller are the resident of two separate countries, viz., A is the resident of America and B is the resident of India. If purchase and sale is performed between these persons i.e. A and B, it will be called as international trade.

(ii) Goods and services are delivered in the purchaser's country.

This is to be remembered the purchaser and the seller are not the residents of the same country.

(iii) Purchaser has to pay the value of goods or services purchased in the monetary units of the seller's country. For this purpose assistance of the banks providing foreign exchanges is sought.

(iv) Under international trading, such purchases are termed as **'imports'** for the purchasing country and such sales are termed as **'exports'** for selling country.

17.3 IMPORTANCE OF INTERNATIONAL TRADE

"Necessity is the mother of all inventions". After Industrial Revolution in Britain, as rapidly industrial production was increased, their total consumption in Britain was not possible at all and export was full of obstacles and difficulties. Neither cheaper and faster means of transportation was available nor their safe transportation was possible but their sale in foreign countries was indispensable for increasing the momentum of economic development. As a result of Commercial Revolution in Great Britain, not only means of transportation but also routes of transportation developed very fastly. Other facilities also developed simultaneously. Countries like France, Portugal, Germany and Britain attempted to establish their colonies in underdeveloped countries but Britain only could succeed in achieving her objective. For many reasons necessity of International trade was felt. Some of the important reasons can be described as following :

(1) Consumption of surplus productions

Surplus production, remaining after fulfilling the necessities of the country could be sold in other countries, mainly in underdeveloped countries. Hence, international trade was necessary for taking the advantages the opportunities of selling the surplus production in the markets available in other country.

(2) Accumulation of precious metals

Most of the countries wanted to earn and accumulate more and more money in the form of precious metals (gold and silver). For achieving their objectives. Britain did not hesitate or had no hitch in adapting the policy of state intervention and later on the free trade policy under mercantilism. Britain did not feel and hitch in looting precious metals and exploiting maximum the colonial countries under colonial policy for achieving their objectives.

(3) Maintenance of the momentum of development

Industrial development was necessary for maintaining the momentum of the economic development of the country and for industrial

development, consumption of production was indispensable. International trade was necessary specially for the developed countries.

(4) Evolution of mutual harmony

Mutual relationship, love, affection and harmony is increased when any one comes into contact with others. New people come into contact, mutual love and harmony between them is evolved. International trade is a very important reason for the evolution and increasing cordial relationship between two countries.

(5) Increasing mutual help

Through international trade two countries come into contact with one-another and one nation can help the other nation in need and can avail the help from other country whenever necessary. In the absence of international trade, it is not possible. At present, each and every country attempts to help the countries suffering from natural disasters and calamities like flood, draught earthquake etc. by sending relief materials immediately and that too, before the country makes any demand for such help. This could be possible only through international trade.

(6) Increase in national income

National income is directly increased by export of the productions on the one hand and on the other hand income is also increased by increasing revenues from duties on export and import of goods.

(7) Earning foreign currencies

Each and every country endeavours to earn more and more foreign currencies by exporting maximum to the other countries and importing minimum from the other countries and that too if it is very necessary. This is also necessary so that such commodities and materials could be imported easily which are not available in the country or could not be produced in the country because production in country is very costly or they are indispensable for the protection and development of the country. It is only possible through international trade only.

(8) Possibility of consumption of goods available in other countries

Through international trade consumption of such commodities or services may be possible which are available in other countries or produced by other countries while they are not available or produced in the country. We can import such goods which are cheaply available in other countries. Possibility of improvement in the standard of living is increased throught international trade also.

(9) Large scale production

Opportunities for the sale of products in foreign markets are available through international trade. Therefore, increasing consumption

of goods or products is not any problem. Production can be carried on large scale and advantages of large scale productions also can be availed.

(10) Use of modern machines

Modern machines can be imported from any part of the world through international trade and quality and quantity of the products can be improved as desired. By using them in production, cost can be reduced and profit can be increased also.

(11) Proper utilisation of natural resources

Nature has not bestowed all the resources to all the countries in desired quantity as required by them. In some countries petrol and petroleum goods ae available in abundance while other countries lack it heavily. Some countries produce gold while other countries produce silver. In some countries there is excess of iron and steel, while in some countries there is excess of copper. But all the resources are needed more or less equally by all the countries. Through international trade these resources can be sold by the countries having excess supply to the countries where there is no supply or dearth of supply and the proper utilisation of all the natural resources can be ascertained jointly by all the countries concerned. All the countries may avail the advantages of redistribution of all the natural resources as required by them.

(12) Encouragement to industrialization

International trade encourages the process of industrialisation. One country comes in contact of the other through international trade and mutual competition amongst products is started. Consequently, process of industrialisation is started automatically in the countries concerned and the path of progress is opened itself.

(13) Rapid economic development

Every country has desire to control the international market so that she can sell their products maximum and may be able to create a huge reserve of the foreign currencies and it is possible only if exporting country is developed enough to compete the products of the other countries in the market. For these purposes such countries are continuously engaged in the faster economic development. Developed countries too, endeavour regularly to increase the rate of their economic development.

(14) Increase in employment and income

Due to increasing international market industrialisation is preferred by every country. Not only this, regular increase in the rate of development is also attempted so that more than one member of the family could get employment and income of the family is increased.

(15) Improvement in the standard of living

Income of the family is ever increasing. Simultaneously, latest means and modern equipment's of making the life better and comfortable are available in the markets very easily. Distance of the foreign market is not any problem. Consequently, they are used by the consumers. Due to continuous improvement in their living standard, they are able to enjoy higher standard of living.

(16) Use of cheaper, better and diversified commodities

Through international trade cheaper, better and diversified goods produced in foreign countries are also available in the indigenous markets of every country which can be used or consumed by the natives of that country. In the absence of international trade, this was not possible.

(17) Encouragement to technological development

Import of technological know how and assistance of technical expert can be availed through international trade and it can be utilised in increasing the momentum of the economic development of the country.

(18) Balanced economic development

Balanced economic development is possible through international trade only in the present context opportunities of cordial relation and mutual help amongst various countries is increased. Each country can endeavour to achieve higher rate of economic development with the help of other countries. Each country has some specialties or peculiarities of its own. All the natural resources are not gifted to all the countries equally or abundantly but through international trade they can be used and redistributed jointly as required whereby balanced economic development is encouraged.

17.4 PROBLEMS OF INTERNATIONAL TRADE

International trade, as appears, it was not so easy and necessary in the past. International trade had to face many problems or difficulties in the past which have been described as following :

(1) Distance Problem

(2) Insecurity Problem in Transportation of Goods

(3) Restricted Boundaries

(4) Problems Related to Payments

(5) Protection Policy

(6) Exploitation Problem

(7) Increasing Political Influence

(8) Increasing Groupism

(9) Cause of International Rivalries

(1) Distance problem

Distance from one country to another country had been a very great problems in the past in the path of the international trade but after the transport revolution, distance problem is not any problem. Due to availability of cheaper and faster means of transportation, good and services can be transported from one country to another countries very easily, quickly and cheaply.

(2) Insecurity problems in transportation of goods

Fear of losses caused by the destruction of goods in transit during transportation from one country to another countries is always present. Now, there is no fear of losses caused by the sinking of ships in the sea, burning of the goods, theft or breakage of goods due to the beginning of the compensatory provisions of insurance and the services rendered by insurance companies. Services of the insurance companies can be availed by entering into agreement with them for the said purposes and paying the premium amount as ascertained by the concerned insurance company.

(3) Restricted boundaries

Each and every country prefers maximum export and minimum import. For achieving the said objective, she imposes restrictions on the import of goods and services from other countries. This restriction can be imposed directly by banning the import of certain commodities from certain countries during certain periods. Import can be restricted or reduced by levying heavy duties on the import of goods. Thus, many problems are created in international trade by restrictions imposed by various countries on their imports.

(4) Problems related to payments

Various problems are created in payments in international trade due to prevalence of separate currencies in different countries. Importers of the goods and services want to pay in their own currency while exporters want to take payment in the currency prevailing in their own country. Foreign Exchange Reserve is controlled by the governments. Therefore, neither goods and services can be imported or exported nor payments can be materialised without the prior permission of the government. Rate of Exchange of foreign currencies also changes in the international market from time to time which create many problems relating to foreign exchanges whose solution is not very easy and simple in present situations. Due to delay in payments parties may suffer many problems.

(5) Protection policy

Government of each and every country, whether developed or developing, adopt protection policy for protecting their industries and productions from competitions with foreign industries and their

productions. Direct restrictions are imposed on imports of goods and services or restriction is imposed through levying heavy duties on import of goods and services. It creates serious problems and difficulties in the path of international trade.

(6) Exploitation problem

Many colonial countries were established under the imperialistic policy of the developed countries and they were exploited most by the policy of exporting manufactured goods on higher prices and importing raw materials and agricultural goods at cheaper prices. Britain dominated the maximum number of colonies. Various industries of these colonial countries were destroyed and precious metals and stones were looted by so called developed countries. Therefore, import-export policy or international trade policy is prepared only after careful study of situations and mostly attempts are made to avoid imports.

(7) Increasing political influence

Presently, international trade has been used as a means of increasing political influence on the developing countries by the developed countries. These developed countries try to impose their terms and conditions utilising their political influence on the importing countries. Not only this much, they try to make two countries fight together so that they can sell and experiment their arms and ammunitions, and other war equipments in their war-fields. Now, dependence on any developed country has become very risky and dangerous. These developed countries support and propagate free trade or global trade policy in satisfying their self-interest i.e. selfishness. It can be felt very easily and clearly by the prevailing conditions of international trade today.

(8) Increasing groupism

International trade has become a means of groupism amongst countries today. Countries belonging to certain or specific group (block) provide each other various facilities for import and export while import from and export to any other countries are restricted. These groups or blocks of various countries try to influence or threaten other countries who do not belong to their group or block.

(9) Cause of international rivalries

International trade has been a very important reason for international rivalries. The main cause of the first and second world wars, occurred during 1914-1919 and 1939-1945 respectively, was the international rivalries created by international trade itself and perhaps the same international rivalry would be the cause of World War again sometimes in future.

17.5 ADVANTAGES OF INTERNATIONAL TRADE

Although international trade has many problems, even then we cannot forego the various merits or advantages of the international trade. Merits or advantages of international trade can be described as following :

(1) Proper Distribution and Utilisation of Natural Resources.

(2) Production on Large Scale.

(3) Availability of Raw Materials

(4) Encouragement to Division of Labour and Specialisation

(5) Import of Latest Machines and Technology

(6) Industrial Revolution

(7) Improvement in Employment, Income and Standard of Living

(8) Availability of Foreign Consumer Goods

(9) Check on Monopoly

(10) Stability in Price Level

(11) Earning of Foreign Exchanges

(12) Growing Mutual Cooperation and Harmony

(13) Cultural Exchanges

(14) Educational and Technological Exchanges

(15) International Peace and Harmony

(16) Creation of International Institutions

(1) Proper distribution and utilisation of natural resources

All the countries of the world have not been gifted with natural resources equally .Nature has bestowed each country with separate kind of natural resources and in separate quantities. If any country is enjoying the copius of any resources, she is suffering from dearth of the other resources i.e. nature has not distributed resources according to the requirement of the economies. There are few countries where some kinds of natural resources are not available at all. In other cases, there are some countries which are so rich in a particular kind of natural resources that they can purchase anything and any quantity from any part of the world viz. oil producing countries. These natural resources can be redistributed jointly by the countries of the world according to their requirements and every country can take its advantage by utilising them.

(2) Production on large scale

Through international trade supply of goods and services is possible on international level. It has proved a permanent solution of the

sales problem. Economies of large scale is automatically achieved by large scale production. Thereby cost of production is reduced and profit ratio is increased itself.

(3) Availability of raw materials

Such raw material are easily available through international trade in foreign market and that too at cheaper prices which are not available in the indigeneous market or which cannot be produced at cheaper or feasible prices. In this field, international trade has played very important role.

(4) Encouragement to division of labour and specialisation

Present age is the age of specialisation. Staying in competition in international market is only possible when the goods and services are cheaper in comparison to others and better from quality point of view. These objects can be achieved only by adapting the policy of division of labour and specialisation in the industry. International trade has encouraged division of labour and specialisation in industries very much.

(5) Import of latest machines and technology

International trade has opened the door for the import of latest machines and technology from developed countries. Import of modern machines and technology are very necessary for the rapid economic development of the economies. It is only possible if various facilities for imports and exports are available.

(6) Industrial revolution

For the rapid economic development of any country, industrial revolution is indispensable. Production of goods and services are increased very rapidly during the periods of Industrial Revolution and consuming them only within the country become impossible. For keeping the wheels of industrial revolution moving and the country moving ahead and ahead on the path of progress continuously, supply and consumption of those commodities in international market is indispensable. Achieving this objective is only possible if facilities for international trade are available.

(7) Improvement in employment, income and standard of living

Due to industrial revolution, production on large scale, division of labour and specialisation, employment level and income level increases regularly. Latest household equipment level and income level increases regularly. Latest household equipments are available in the market which initiate the people to lead a comfortable or luxurious life. Consequently, standard of living of the countrymen is also improved. In the absence of international trade, the rate of improvement in the standard of living of the people would be certainly slower.

(8) Availability of foreign consumer goods

Due to availability of facilities of international trade, such consumer goods also can be consumed which are not produced in our own

country but they are available in the international markets. They are produced by only few countries. Such commodities are also easily available which are cheaper and better than the goods produced in our own country.

(9) Check on monopoly

For emancipating the consumers from exploitation of monopolism, restriction on the activities of such industrialists is necessary. For controlling the attitude of monopolists creating artificial shortage of goods and services to raise the prices and earn more profit, increase in supply of such commodities is necessary. Supply can be increased easily through imports of such commodities from the international markets which is possible only under international trade.

(10) Stability in price level

For stability in the price level, maintaining equilibrium in demand and supply of goods and services is very necessary. Generally, prices of such commodities start rising in the consumers market where short supply is estimated in near future. For maintaining the stability in price level, government has to import those commodities from other countries whose supply is reduced in the market for one reason or the other or lesser supply is expected sometimes in near future. Sometimes due to increased production of any commodity, problem of excess supply is created in the market. Consequently, prices of such commodities start declining in the markets and producers have to suffer losses due to reduction in prices. In this situation, export of such goods can be increased in foreign markets with the object of reducing the supply in indigenous market. Thus, attempts can be made for maintaining equilibrium between demand and supply of such goods and have a check on the declining prices. International trade has become a very important tool for maintaining price stability in the internal markets.

(11) Earning of foreign exchanges

There are so many commodities which are not produced in the country but they are very important for the safety of country and countrymen as well as for the economic development of the country viz., (i) materials, equipments, and armouries relating to war for the protection of the boundaries of the nation, (ii) latest machines, equipment and technology related to agriculture and industries etc. They are to be paid in foreign currencies or gold. Gold is scarcely available. Therefore, earning more and more foreign exchange is very necessary and this is only possible by exporting more and more commodities to other countries or in international markets.

(12) Growing mutual cooperation and harmony

International trade is a very important reason for the increasing mutual cooperation and harmony amongst various countries of the world.

Countries are coming closer and closer by increasing contacts due to trading relations. It has created the feeling of helping each other in emergency or on happening of any natural calamity. We have seen the countries struggling against the natural calamities like flood, draught and earthquakes. Simultaneously, we have seen the countries helping and donating them generously with all kinds of goods and services (like food, medicines, cloths, rugs etc.) in abundance selflessly and that too without any demand. Sometimes these assistance had exceeded the requirements of the country suffering from natural calamity.

(13) Cultural exchanges

When distant countries come into contact with one another through international trade, cultural exchange also starts automatically. They come to know eating and drinking habits, languages and dresses, customs and traditions, manners, thoughts and ways of living etc. These eating and drinking habits, custom and traditions, dresses, languages, manners and thoughts and ways of living are also exchanged with one another sometimes, two nations are culturally mingled very closely with one another and a new culture is born.

(14) Educational and technological exchanges

When two countries come into contact with one another, educational and technological exchanges also take place. Role of educational environment and publicity of knowledge, technology etc. is very important in the progress of any country. International trade encourages educational and technological exchanges also.

(15) International peace

Due to international trade mutual contacts are increased. This encourages mutual love, cooperation, intimacy and harmony amongst them. Relations come closer. Many countries are united as a family. Enmity and jealousy between countries may prove fatal for them. Therefore, living together peacefully is always advantageous for all. That is why, as and when dispute between two or more countries arise, other countries come forward and endeavour to remove these disputes as early as possible and try to create friendship between or amongst them again. Thus, peace is maintained.

(16) Creation of international institutions

Where mutual love, cooperation and harmony is increased due to international trade on the one hand, on the other hand dispute, enmity and non-cooperation is also encouraged. Simultaneously, for removing these disputes, enmity, hatred and feeling of non-cooperation various international institutions are born. These institution try to encourage mutual love, cooperation and harmony also. Birth of United Nation, International Court, International Monetary Fund, International Labour Organisation, World Bank, World Health Organisation etc. are the shining example of it.

17.6 DISADVANTAGES OF INTERNATIONAL TRADE

International trade has many demerits or disadvantages also with merits or advantages which raise fingers against the utility of international trade. We can describe the disadvantages of international trade as following :

(1) Misuse of Natural Resources

(2) Evolution of International Enmity

(3) Exploitation of Underdeveloped Countries

(4) Maximum Losses to Agricultural Countries

(5) Increasing Dependency on Foreign Countries

(6) Unbalanced Growth

(7) Political Pressure

(8) Shortage of Better Quality Goods in Internal Markets

(9) Artificial Shortage of Necessary Goods

(10) Cultural Pollution

(11) Use of Harmful Foreign Goods

(12) Beginning of Hooliganism on Global Level

(1) Misuse of natural resources

For earning more foreign currencies natural resources are exported on large scale to other countries whereby danger of early consummation of natural resources is created. We can easily imagine the terrific situation when the resource is consummated before any other alternative resource or resources are discovered. Take the example of petrol and diesel. If they are consummated without discovery of any other alternative, wheel of the development and transportation will be stopped. We can imagine that situation if so happens any time in future.

(2) Evolution of international enmity

With the beginning of international trade mutual clash amongst developed countries had also started to establish control over the international market. First and second world wars have been the result of this enmity and clash amongst developed countries.

(3) Exploitation of underdeveloped countries

Developed countries aim at underdeveloped and developing countries for the export of goods and services. In the beginning, they create competition by supplying goods at cheaper prices. They try to smash the demand of their indigenous productions and thus, indigenous industries of the developing or underdeveloped countries are destroyed by

the so called developed countries. Sometimes, they adapt dumping policy also. Later on, they try to exploit these countries by increasing prices of their products. In both ways, these underdeveloped and developing countries are bound to be shattered. Colonisation has been the outcome of international trade itself.

(4) Maximum losses to agricultural countries

Agriculturally dominated countries have to suffer maximum losses due to international trade. They have to export agricultural products and raw materials at cheaper prices and have to import manufactured goods at higher prices. Balance of Payment and Balance of Trade is always unfavourable and precious metals flow out of the country. Poor countries are bound to become poorer and poorer.

(5) Increasing dependency on foreign countries

In developing and underdeveloped countries foreign commodities are easily available due to existence of international trade and once they are made available in the market, indigenous production is discouraged because these indigenous product are not capable of competing the foreign commodities available in the markets. Foreign goods are cheaper and better in quality. Thus, dependence on foreign goods as well as on foreign countries go on increasing and indigenous industries do not develop. Countries lagging behind, go back further.

(6) Unbalanced growth

Unbalanced economic growth is encouraged due to international trade. That sector is developed which produces export commodities and other sector remain underdeveloped or undeveloped. Arabian countries are the shining example of it. Except oil industry, none of the industries have developed there. In agricultural field also, she is not developed even today.

(7) Political pressure

In the beginning, developed countries export goods and services on easy and liberal terms but when these underdeveloped countries become dependent on developed countries, they start exploiting them. Political pressure is also increased. Their intervention increases not only in day to day economic activities but also they start intervening in the foreign policy of those underdeveloped and developing countries.

(8) Shortage of better quality goods in internal markets

For earning more and more foreign currency, high quality goods produced in the country are usually exported in the international markets and remaining goods of average or low quality are available for sale in the indigenous market. High Quality goods are scarcely available or not available for the consumption of the countrymen.

(9) Artificial shortage of necessary goods

Sometimes shortage of necessary goods is also created in the internal market due to export of those commodities in the international markets. Prices of those commodities when start rising, go on rising and reach beyond the pockets of the public. This has happened twice in the past when prices of onion and garlic had touched the rocketing heights and caused the fall of the then government.

(10) Cultural pollution

When two countries are continuously in touch of one another, they cannot remain unaffected by the culture of other country. Fascinated by external shining and attraction, developing countries start running behind developed countries and forger their own culture. Instead of being proud of their culture, they start hating it. They treat their own culture as the symbol of backwardness. "Distant drums sound well". This proverb is fitted well (befitting) for them. They are 'Neither fish nor fowl'.

(11) Use of harmful foreign goods

Due to pomp and show, attraction and easy availability of foreign goods, we start using or consuming many such commodities which are harmful from the health point of view. This may be harmful due to difference in the geographical environment of the country also. We believe that it enhances the prestige in the society i.e. it is prestigeous to use them in their society, Later on, it is developed into habits, Whilst we are used to be alert, health and money both are lost. Wines and Cigarettes are the best example of such commodities.

(12) Beginning of hooliganism on global level

Internation trade has become now the basis of hooliganism at global level. Developed countries do not refrain from taking the advantages by making two developing countries to fight against one other and selling them consumer goods as well as war materials. Encouraging division of countries is a part of their foreign policy. It is well known to the world. That was a time when United States of America (U.S.A.) and Union of Soviet Socialist Republics (U.S.S.R.) were well known for healthy competition between them. They were presenting severe competition in the field of nuclear and space research and it is now the time today that America invaded Iraq and dethroned Saddam Hussain, the President of Iraq to establish it supremacy by force. Other developed and developing countries alongwith international institutions like had been looking only at each other.

17.7 HOW FOR INTERNATIONAL TRADE AND FREE TRADE POLICY ARE USEFUL/EFFECTIVE FOR DEVELOPING COUNTRIES?

Slogan of International Trade and Free Trade or Globalisation of Trade are the slogans of the developed countries, for the developed countries and by the developed countries. Till the date, they were not established as developed countries, they followed and supported protection policy themselves and after being classified as developed countries, they are advocating and propagating for the 'Globalisation of Trade'. Developed countries are always benefitted by international trade and free trade policy as well while developing countries are benefitted only occasionally and temporarily.

Developed countries have to sell their commodities in international markets which consists of mostly developing and underdeveloped countries. Besides it, they aim at spreading cultural pollution by propagating and publicising their own culture in other countries, smashing their national feelings, creating disregard for values, weakening the character, destroying the industries and creating distaste for indigenous products etc. Some of the politicians and statemen surrender before these developed countries. Who do not surrender, they may have to face the situation like Saddam Hussain and Iraq. Invasion by America on Iraq gives us the same message. There are such people also in the world who think that this drawma of invasion on Iraq and dethroning of Saddam Hussain in the wake of searching chemical weapons were performed to establish control on oil reserves of Iraq by America.

India was never supporter of the material development. India has been always honoured as 'Spiritual Guru' in the past. 'Simple Living and High Thinking' and 'Eat Less, Have Patience' have been her slogans. While western countries believe in 'Eating. Drinking and Merry Making'. Our slogan initiates and opens the path of rising morale and character while slogan of western countries open the path of downfall of the morale and character. For satisfying the physical needs, material development is not so necessary as spiritual development. Creation development of the feeling like self-satisfaction is necessary not the creation and consumption of commodities. Wants are innumerable. After satisfying one want, another comes in toexistence and it continues as an unending process. Inspite of being ahead of all, these developed countries are dissatisfied and remain dissatisfied always from their development. Those who are satisfied even in the absence of physical goods, they will remain satisfied always.

International trade and free trade policy harm developing countries not only from spiritual point of view but materialistic point of view also, Non-economic losses with physical or economic loses, which are like chopping own feet by an axe, can be enumerated as following viz., (i) Indigenous products face competition with foreign products in their own country while the superiority of the foreign goods are self evident. (ii)

Developing countries face dumping problems. (iii) Indigenous industries face the closure problem due to absence of any protection. (iv) Unemployment increases due to import and use of foriegn automatic and computerised machines. (v) It is an invitation to retrenchment problem. (vi) It causes economic loss due to export of agricultural products and raw materials at cheaper price. (vii) Trade Imbalance is created. (viii) Outflow of foreign currencies and precious metals is caused due to unfavourable Balance of Payments. (ix) Political Pressure of Developed Countries increases. (x) Economic dependency is increased. (xi) Cultural Pollution is started. (xii) Increasing dependency on foreign goods. (xiii) Declining National Feeling. (xiv) Foreign influence on media increased. (xv) Conspiracy takes place against value, morality and character.

SUMMARY

The unit deals with International trade in which the characteristics and importance of International trade was discussed. How the International trade is essential to enhance the economy of Nation. Later on the problems of the International trade were also explained. The advantages and disadvantages of International trade are discussed to provide the clear picture of the International trade. At the last unit explains the effectiveness of the International trade for developing Countries. International trade plays a vital role in the economy of the developing Nations.

UNIT 18 : BALANCE OF PAYMENT

Objectives

After going through this unit you should be able to know about :

- Meaning of Balance of Payment & Balance of Trade.
- Differences between Balance of Trade & Balance of Payments.
- Causes of Disequilibrium.
- Measures for correcting Disequilibrium.

Structure

18.1 INTRODUCTION

The balance of payments of a country is a systematic record of all international economic transactions of that country during a given period, usually a year. Balance of payments accounting of any country uses a double-entry system of recording accounts with the rest of the world. Thus, the balance of payments account is divided into transactions giving rise to payments (or debit) and receipts (or credit) in the accounting sense, thus, balance of payments of a country must always balance. In other words, the balance of payments as a whole must necessarily balance. This means the total receipts of a country are necessarily equal to its total payments, if recipts include not only the volume of goods exported but also the volume of gold or other monetary reserves exported in order to obtain purchasing power over that part of imports which is not covered by normal commercial exports. In other words, debit or payment side of the balance of payments account of a country represents the total of all the

uses made out of the total foreign exchange acquired by the country during a given period, while the credit or receipts side represents the sources from which this foreign exchange was acquired by this country in the same period. The two sides as such necessarily balance. If in the actual balance of payments accounts the credits and debits do not balance, the balance is usually achieved by adding an item called errors and omissions.

18.2 STRUCTURE OF BALANCE OF PAYMENTS

A balance of payments statement is tabulated to summarise a nation's total economic transactions undertaken on international trade account. It is usually composed of two sections : (i) the current account, and (ii) the capital account. Current account mainly consists of two sub-groups : (i) merchandise or the trade account, and (ii) invisible account. In the trade or merchandise account, only the transactions relating goods are entered. That is, all goods exported and imported are recorded in the trade account.

The invisible account usually comprises the services account and the gifts or charities account. The services account records all the services rendered and received by residents of the interest on loans, tourist expenditure, transport charges etc. Similarly, the gifts or charities account consists of all those items which are received or given away free by residents of the nation. It may be in kind or in cash. It goes without saying that these are all referred to as invisible transactions in the balance of payments theory and therefore recorded in the invisible account. It is interesting to note here that the International Monetary Fund (IMF) includes the following items as invisible transactions :

(i) International transportation of goods, including warehousing while in transit, and other transit expenses.

(ii) Travel for reasons of business, education, health, international conventions or pleasure.

(iii) Insurance premiums and payments of claims.

(iv) Investment income, including interest, rents, dividends, profits.

(v) Miscellaneous service items such as advertising, commissions, film rental, pensions, patent fees, royalties, subscriptions to periodicals and membership fees.

(vi) Donations, migrant remittances, legacies.

(vii) Repayment of commercial credits.

(viii) Contractual amortization and depreciation of direct investment.

Capital account, on the other hand, deals with payments of debts and calims. It consists of all such items as may be employed in financing both imports and exports, namely, private balances, assistance by the international institutional agencies and specie flow, and balance held on

government account. Accordingly, we shall have private capital account, international institutional capitalaccount, specie account, and government capital account. Balances in these accounts may rise or fall from year to year, depending upon the movements or fluctuations in other items on capital account. Items of balance of payments account may thus be summarised in given table.

It should be noted that the two account- current and capital- in the balance of payments should necessarily balance. The surplus in the trade or current account must by equal to the deficit in the capital account or the deficit in the current account.

Table 1

Balance of Payments

Current Account	Capital Account
1. Merchandise-Exports and Imports	**1.** Private (non-banking) loans
(a) Private	(a) Long-term
(b) Government	(b) Short-term
2. Non-Monetary gold movement	**2.** Banking (excluding Central Bank)
3. Foreign travel	**3.** Official (including
4. Transportation	Central Bank)
5. Insurance	(a) Loans
6. Government, not included elsewhere.	(b) Amortisation
7. Investment income	(c) Miscellaneous
8. Miscellaneous	(d) Reserves (including changes in the foreign exchange assets of the Central Bank)
(a) Official	
(b) Private	
Total Current Transactions	Total Capital and Monetary
Errors and Omissions	Gold

For instance, if India is importing more goods than its exports of goods and services to the foreigners, it will have a deficit in its current balance of payments. This they will have to pay either by gold and other assets or by borrowing from other countries. These are credit items in the capital

account of the balance of payments. Therefore, the current and capital accounts together will balance each other.

18.3 DISTINCTION BETWEEN BALANCE OF TRADE AND BALANCE OF PAYMENTS

There is a marked distinction between the concepts of balance of trade and balance of payments. Balance of payments is a wider concept than the balance of trade. In fact, balance of payments includes in its structure the nation of balance of trade. As we know, a country may export and import many items, both visible and invisible, Balance of trade refers only the value of imports and exports of goods, i.e, visible items only. Import or export of goods is a visible item because it is an open trade between the countries and can be easily certified by the customs officials. On the other hand, balance of payments is more comprehensive in scope and covers the total debits and credits of all items, visible as well as invisible. Thus, balance of trade is only a partial study of the balance of payments. It simply refers to the difference between the value of exports and visible imports.

This is what is represented in the trade or merchandise account section of the current account in the balance of payments statement. Thus, balance of trade is nothing but a major component of the balance of payments. However, balance of payments includes, apart from balance of trade or merchandise account, the invisible account which is again composed of services sector and gifts and charities account comprising varieties of invisible items, plus the record of capital account.

18.4 BALANCE OF PAYMENTS ALWAYS BALANCE

Since the balance of payments statement is drawn up in terms of debits and credits based on a system of double-entry book-keeping, if all the entries are made correctly, total debits must equal total credits. This is because two aspects (debits and credits) of each transation recorded are equal in amount but appear on the opposite sides of the balance of payments account. In this accounting sense, balance of payments of a country must always balance. In other words, debit or payment side of the balance of payments account of a country represents the total of all the uses made out of the total foreign exchange acquired by the country during a given period, while the credit or receipts side represents the sources from which this foreign exchange was acquired by the country in the same period. The sides as such necessarily balance.

Country's Balance of Payments Account

Credit (Receipts)			**Debit (Payments)**		
	I. Current Transations				
Item		**Rs. crores**	**Item**		**Rs. crores**
1.	Merchandise Trade (goods exported)	200	**8.**	Merchandise trade (goods imported)	300
2.	Services exported	100	**9.**	Services imported	200
3.	Income from foreign Investment	200	**10.**	Foreign income from Investment at home	200
4.	Unilateral receipts	200	**11.**	Unilateral payments	100
	Sub-total	600		Sub-total	800
	II. Capital Transactions				
12.	Long-term borrowings	200	**12.**	Long-term lendings	80
13.	Short-term borrowings	100	**13.**	Short-term lendings	60
14.	Sale of gold/assets	100	**14.**	Purchase of gold/assets	50
	Sub-total	400		Sub-total	190
			15.	Errors and Omissions	10
Grand Total		1000			1000

To illustrate the point, a simple hypothetical account of a country's balance of payments is represented in Table 2

Table 2 rows 1 and 8 show the country's visible exports and imports. Row 2 and 9 refer to items of invisible trade. Rows 3 and 10 pertain to investment income. Rows 4 and 11 denote unilateral transfers like donations and gifts (private as well as official). Rows 5, 6, 12 and 13 show capital movement. Rows 7 and 14 reveal gold outflow and gold inflow. Further, items 1 to 7 enumerate receipts and items 8 to 14 show payments. Items 15 refers to the act of errors and omissions as a balancing factor. Thus, total value of both credit and debit sides is the same (Rs.1000 in our example).

It should be noted that the two accounts-current and capital- in the balance of payments should necessarily balance. The surplus of the trade or current account must be equal to the deficit in the capital account or the deficit in the current account must be equal to the surplus in the capital account. Thus, the balance of current account need not be equal but can show a surplus or a deficit. In our example, the balance of current account shows a deficit (-) of Rs. 200 crores. There is, however, a corresponding surplus of Rs. 200 crores in the balance of capital account. As a result, the credit and debit sides of the balance of payments are exactly balanced.

18.5 DISEQUILIBRIUM IN THE BALANCE OF PAYMENTS

Before the second world war, Economists use the term favourable and adverse with the balance of payments of a country. Scince then, the term disequilibrium is commonly used. Disequilibrium in balance of payments is not a precise concept. It only means that the balance of payments of country has not balanced. This may be mean that a country has either a favourable balance or unfavourable balance.

The balance of payments, in the accounting sense, must always balance. Debit must always equal credits if the entries are consistently made. Thus, there can be no disequilibrium in the balance of payments as a whole.

However, while a nations's international accounts must aways balance, its accounts need not be in equilibrium. Say, if a country's balance of payments shows a debit balance in merchandise and services accounts (on current account side), its credit balance in the other accounts (on capital account side) must be sufficiently large so that total debits equal total credits. That is to say, when a country has a debit balance on current account, it is either importing capital on long or short term, or it is exporting gold, or it is reveiving donations from foreigners and thereby its credit in the current account is extended to the extent of debit in the current account.

Hence, the usual analytical approach to the balance of payments is to consider it as the difference between receipts from and payments to foreigners by the residents of the country. Symbolically, thus, the balance of payments may be defined as :

$$B = R–P$$

where,

B stands for balance of payments,

R denotes receipts from foreigners, and

P stands for payments made to foreigners.

Clearly, thus, when B is zero, the balance of payments can be regarded as equilibrium balance of payments. That is to say, a country's balance of payments may be said to be in equilibrium when its receipts are equal to its payments on account of its transactions with other countries of the world. Such a country with equilibrium balance of payments is often called a country in "external balance". However, a country's balance of payments is said to be "favourable" or "in surplus" when the total receipts from the rest of the world exceed the total payments to the rest of the world. Symbolically, when B is positive, it is called favourable balance of payments. On the other hand, if a country's receipts from foreigners fall short of its payments to foreigners, its balance of payments is said to be

"unfavourable" or "in deficit". Symbolically, when B is negative it is called an "unfavourable" or "adverse" balance of payments. A country whose balance of payments is in surplus is often referred to as a "surplus" country. Similarly, when its balance of payments is in deficit or adverse, it is called a "deficit" country.

Briefly, thus, the phenomenon of disequilibrium (a deficit or a surplus) in the balance of payments is viewed from the balance of transactions on current account as such. A disequilibrium - a surplus or a deficit- in this sense shows a strengthening or weakening of a country's external capital position which is measured by the balance of its external assets to liabilities.

18.6 CAUSES OF DISEQUILIBRIUM

A disequilibrium in a country's balance of payments position may arise either for a short period or along period. Any disequilibrium in the balance of payments arises owing to a large number of causes or factors operating simultaneously. The kinds andcases of disequilibrium differ from country to country, While the different kinds of disequilibrium and their causes in the same country will differ at different times. However, following are the importantcauses producing a disequilibrium in the balance of payments of a country.

(1) Cyclical fluctuations, their phases and amplitudes, differences in different countries, generally produce cyclical disequilibrium.

(2) Huge development and investment programmes in the developing economies are the root cause of the disequilibrium in the balance of payments of these countries. Their propensity to import goes on increasing for want of capital for rapid industrialisation, while exports may not be boosted up to that extent as these are the primary producing countries. Moreover, their export quantum of primary commmodities may decline as newly-created domestic industries may require them. Thus, there will be structural changes in the balance of payments and structural disequilibrium will result.

(3) A vast increase in the domestic production of foodstuffs, raw materials, substitute goods etc. in advanced countries has decreased their need for import from the agrarian underdeveloped countries. Thus, export demand has considerably changed, resulting in structuraldisequilibrium in these countries. Similarly, advanced countries also have suffered in their exports as a result of loss of their colonial markets, the tendency of the poor nations for self-reliance and their ways and means of curtailing their imports. But disequilibrium (deficit) in balance of payments seems to be more persistent in the underdeveloped or developing nations than in the advanced rich nations.

(4) High population growth in poor countries also has adversely affected their balance of payments position. It is easy to see that increase in population increases the needs of these countries for imports and decreases the capacity to export.

(5) Another reason for a surplus or deficit in the balance of payments arise out of international borrowing and investment. A country may tend to have an adverse balance when it borrows heavily from another country, while the lending country will tend to have a favourable balance and a deficity balance of payments.

18.7 MEASURES FOR CORRECTING THE DISEQUILIBRIUM

The various measures that are used for correcting an adverse balance of payments may be categorised as : (a) monetary measures and (b) non-monetary measures.

Monetary measures include : (1) deflation, (2) exchange depreciation,

(3) devaluation, and (4) exchange control.

Non-monetary measures include : (1) tariffs-import duties, (2) exchange depreciation,

(3) export promotion policies and programmes.

Deflation :

A traditionally suggested method of correcting disequilibrium is to deflate the home currency. Deflation means contraction of the home currency through dear money and credit policy, and fall in the cost and prices of domestic goods. Naturally, domestic goods and so also the exporting items of the country in the foreign market become relatively cheaper and demand for them will rise so that exports will increase. Moreover, deflation attempts to restrict home consumption through reduction of incomes; demand for goods at home will be reduced and more surplus may become available for export purpose. With the fall in domestic income of the people, their propensity to import will also decline and imports will be curtailed. Thus, imports are checked, exports are stimulated and a deficity balance is corrected by the use of a deflationary policy adopted by the monetary authorities in the country.

However, deflation is fruitfully employed when countries are on gold standard or on fixed exchange rates, because its workability assumes that exchange rates are unchanged during its course. Secondly, the degree of deflation necessary to correct a deficit balance of payments depends on the elasticity of demand for imports and exports. If demand for imports is fairly elastic, then a moderate deflation may be sufficient to check imports. But when the demand for imports is inelastic, a severe deflation will be necessitated which will harm the employment and income levels of the country.

By exchange depreciation is meant a decline in the rate of exchange of one country in terms of another. Suppose, the Indian rupee exchanges for 30 cents of the American currency. If India experiences an adverse balance of payments with regard to America, the Indian demand for American currency (dollar) will rise. Consequently, the price of dollar in terms of the rupee will appreciate in its external value. Thus, the rate of exchange of Indian rupee in terms of American dollar may be changed from Re. 1 = 30 cents to Re. 1 = 20 cents. Such a depreciation in the value of currency is what is called exchange depreciation.

Exchange depreciation of a country will tend to cheapen its domestic goods for the foreigners so that its exports will be boosted up, while its imports will be costlier so that they will tend to decline. Thus, imports will be checked and exports will be stimulated by a fall in exchange rate or the external value of the currency of a country. The country may thus achieve a favourable balance to pay off an earlier deficit.

Exchange depreciation is automatic and can easily correct a mild adverse balance of payments if the country's demand for imports and its foreign demand for exports are fairly elastic. However, the success of this method depends to a very large extent upon the co-operation of the foreigners who should be prepared to adjust themselves to such a policy. Otherwise, if the foreign countries also start depreciating their exchange rates, then the technique may not prove useful to any country as had happened during the depreciation period in the thirties. Moreover, the device of exchange depreciation does not suit a country desiring a fixed exchange rate in any circumstances. Furthermore, experience of certain countries indicates that exchange depreciation may result in an inflationary spiral, as it may be followed by an increase in money incomes and a rise in domestic price levels.

DEVALUATION

A most commonly adopted method consists in devaluation of the currency of a country faced with an adverse balance of payments. Devaluation simply means the lowering of the external value (i.e. exchange rate) of a country's currency by an official edict. This may be either in relation to the currencies of all the countries or in terms of gold or it might be done in relation to the currencies of only a few selected countries. Indian has devalued its currency for the First time in 1949 then on June 6, 1966 the Indian rupee again devalued by 36% in terms of gold and by 57.5% in terms of the American dollar and English pound sterling. Thus, in relation to the U.S. currency, the official exchange rate of rupee which was Re, I = 22 cents, has been fixed at Re. 1 = 13.3 cents after devaluation. In July, 1991 India has again devalued its currency. It may benoted that the difference between devaluation and depreciation of exchange is that while devaluation is reduction of the external value of a currency as arbitrarily decided upon the Government, depreciation stands

for automatic reduction in the external value of a country's currency by market forces.

Generally, a measure like devaluation of a currency is resorted to by a country in order to correct a serious and fundamental disequilibrium (deficit) in the balance of payments.

The immediate effect of a devaluation of a currency will be reflected in the expansion of exports and contraction of imports, thereby tending to produce a favourable balance of payments for the country. However, the success of devaluation depends upon the following conditions :

(i) **A fairly elastic demand.** A fairly elastic demand for imports and exports will ease the way for the successful functioning of devaluation to achieve its desired goal. But if the country's demand for imports and exports is inelastic, devaluation will worsen the balance of payments position by increasing the total value of imports while, at the same time, reducing the total value of exports.

(ii) **Constant cost-price structure.** Successful operation of devaluation also requires that there will be no change in the cost-price structure in the devaluing country. That is to say, when the external value of a currency is changed due to devaluation, its internal value should remain unchanged.

(iii) **Co-operation of foreign countries.** The efficacy of devaluation will also depend upon the co-opration of the foreign country or countries whose currencies have appreciated as a result of devaluation by one country. These countries must be prepared to co-operate fully with the country devaluing its currency by not raising import duties or giving export bounties or devaluing their own currency which also may tend to nullify the neneficial effects of devaluation to the country under consideration.

Exchange Control :

Another most commonly adhered to method of correcting disequilibrium of the balance of payments is exchange control. It is a surer method usually adopted by government of a country to correct disequilibrium. Under this method, all the exporters are directed by the exchange control authority, usually the central bank, to surrender their foreign exchange earnings to it, and the foreign exchange is rationed out among the licensed importers. Thus, under exchange control, none but the licence-holders are allowed to import goods. A quota for different items of imports is also fixed time to time by the authority. The balance of payments is thus rectified by keeping imports well within the limits of export earnings and the foreign exchange balances.

In general, however, exchange control deals with balance of payments disequilibrium by suppressing the deficit that is only a symptom

and not the basic trouble. Exchange control deals only with the deficit, not its causes, and it may irritate those causes tending to create a more basic disequilibrium. In other words, exchange control can prevent a complete breakdown, but it cannot eliminate a condition of disequilibrium. Thus, exchange control offers no permanent solution to the problem of persistent disequilibrium. It can, at best, be justified only as a temporary measure, to gain time while other more fundamental adjustments are made to restore equilibrium in the balance of payments.

Import Duties and Quotas :

As a restrictive measure, import duties are commonly imposed. When such duties are levied on selected imported items, their price would rise so that contraction in import demand would occur. If exports quantum remaining the same or being increased, when the volume of imports declines, the adversity in the balance of payments is reduced or eliminated.

Fixing of import quotas is another and perhaps a better device used for correcting an adverse balance of payments. Under the quota system, the Government may fix and permit the maximum quantity or value of a commodity to be imported during a given period. By restricting imports through the quota system, deficit is reduced or eliminated and thereby the balance of payments position is improved.

As a direct method of correcting disequilibrium in the balance of payments, import quotas are assumed to be better than import duties. Quotas have the immediate effect of restricting imports as the marginal propensity to import becomes zero once the quota limit is reached. Thus, the effect of quotas on quantitative restriction of imports is explicit. But the balance of payments effects of import duties are not so certain.

Tariffs will not be very effective in reducing imports when the demand for imports is inelastic. Further, tariffs are rigid and less flexible as tariff is a budgetary phenomenon subject to parliamentary control. Quotas, on the other hand, can be more easily changed without resorting to legislation. Quota system, particularly bilateral quota, is more suitable for negotiation of trade concessions and mutual agreements with other nations. But in other respects, tariffs have their own merits, such as they bring revenue to the state and preserve competitive market conditions as against quotas which bring no revenue and breed monopolistic position among importers. Besides, the distribution of quotas may involve corruption and discrimination. A prudent government, thus, adopts both the measures simultaneously to achieve its goal.

Export Promotion :

Along with the above measures, the government of a deficit country has to formulate and implement export promotion policies and programmes. Export duties may be reduced, export bounties may be provided and subsidies to exporting industries may be given as incentives for exports. Industries producing import substitutes may be indusced and

encouraged by the state to be more self-sufficient and less reliant on imports.

SUMMARY

To conclude equilibrium in balance of payments is a desirable objective particularly, when a country has achieved full employment. Any tendency towards adverse balance of payments should be corrected with least amount of delay.

CONCLUSION

1. The balance of payments of a country is an annual record of the country's economic transactions with the rest of the world.

2. The balance of payments is composed of current account and capital account. Current account represents short-term transactions. Capital account represents long-term transactions.

3. Balance of trade refers to visible items of imports and exports.

4. Balance of payments always balances.

5. There are two major types of disequilibrium in the balance of payments :

(i) Short-term and (ii) long-term of fundamental disequilibrium.

6. Following are the main methods of correcting disequilibrium in the balance of payments : (i) Deflation, (ii) Exchange depreciation, (iii) Devaluation, (iv) Exchange Control, (v) Import duties and quotas, and (vi) Export promotion.

FURTHER STUDY

1. BU Sodersten : International Economics.

2. Singh, Sadam & Agrawal, Barla : International Economics.

3. Elseworth, P.T. : International Economics.

4. Sinha, V.C. : International Economics.

UNIT 19 : PUBLIC REVENUE

Objectives

After going through this unit you should be able to know about :

- Public Revenue
- Sources of public revenue
- Cannons of taxation
- Classification of taxes.

Structures

19.1 INTRODUCTION

The income of the government through all sources is called public income or **public revenue**. According to Dalton, however, the term "public income" has two senses -- wide and narrow. In its wider sense, it includes all the incomes or receipts which a public authority may secure during any period of time. In its narrow sense, however, it includes only those sources of income of the public authority which are ordinarily known as 'revenue resources'. To avoid ambiguity thus the former is termed 'public receipts' and the latter 'public revenue'. As such, the receipts from public borrowings (or public debt) and from the sale of public assets are chiefly excluded from public revenue. For instance, the budget of the Government of India is classified into 'revenue' and 'capital'. 'Heads of Revenue' include the heads of income under revenue budget, whereas the heads of income under capital budget are termed as

'receipts'. Thus, the term 'receipts' includes sources of public income which are excluded from 'revenue'.

19.2 SOURCES OF PUBLIC REVENUE

The Government derives revenue in different ways from the public. The most common methods of raising the resources are : (i) Taxes, (ii) Fees, (iii) Price, (iv) Fines and Penalties, (v) Special assessments and (vi) Gifts and Grants.

Taxes :

Taxation is the major source of public revenue. Usually, taxation constitutes the largest share in the total revenue of the government. Taxes are compulsory contributions imposed by the government on its citizens to meet its general expenses incurred for the common good, without any corresponding benefits to the tax-payer. As Taussing puts it,"the essence of a tax, as distinguished from other charges by government, is the absence of a direct quid pro quo between the tax-payer and the public authority".

In recent times, with increasing public expenditure, the volume and range of taxation have increased. Various types of progressive and regressive taxes have been instituted.

Fees :

A fee is a charge levied by the Government to defray the cost of dministrative services rendered primarily in the public interest, but conferring special benefits to the individuals. The fees are to be paid by those who reveive some special advantages. Generally, the amout of the fee is based in relation to the cost of services rendered. Fees are a bye-product of the administrative activities of the governement and not a payment for a business. Thus, fees are distimct from prices. Prices are always voluntary payments, but fees may be compulsory contributions though both are made for special services. Sometimes, a fee contains an element of tax when it is charged high in order to bring net revenue to the exchequer, e.g. a licence fee. Further, the object of a fee sometimes be regulation or control, e.g. registration fees, licence fees etc.

Prices :

A price is the form of revenue derived by the government byselling goods and services of public enterprises. Thus, price is the revenue obtained from business activity by the public authorities. Many public enterprises like postal services run on a cost-to-cost basis. The prices are charged just to cover the cost of rendering such services. However, in certain cases, there is state monopoly and the prices charged by the government may contain a high profit element. Such monopoly profits of a state enterprise are in the nature of a tax. The price differs from a fee in one important respect : the former usually can never be less than the cost of service, while the latter may not necessarily cover the cost of service.

Fines &Penalties :

These are generally meant for administration of justice and maintenance of law and order rather than as sources of revenue. Fines and penalties are payments made for disobeying the laws.

Special Assessments :

"A special assessment" , as Seligman defines, "is a compulsory contribution, levied in proportion to the social benefits derived, to defray the cost of a specific improvement to property undertaken in the public interest". That is to say, some times when the government performs certain services of public improvements like construction of road, provision of drainage, street lighting etc., it may confer a special benefit to those having properties nearby. As a result, the values or rents of these propeties may rise. The government, therefore, may impose some special levy to recover a part of the expenses incurred. Such special assessment is levied, generally, in proportion to increase in the value of property. In this respect, it differs from a tax.

Gifts and Grants :

These provide generally a very small portion of the public revenue. Many times, patriotic people of institutions may make gifts to the state. These are purely voluntary contributions. Gifts have some significance, specially during wartime, or emergency periods. In modern times, however, grants from one government to another has a greater importance. Local governments reveive grants from State Governments and the State Governments from the Centre. The Central Government gives grants-in-aid to State Governments in order to enable them to fulfil their functions. A state sometimes reveives grants from another state called functions. A state sometimes receives grants from another state called 'foreign aid'. It may be military aid, economic aid, technical aid and so on.

Tax :

Dalton defines tax as "a compulsory contribution imposed by a public authority, irrespective of the exact amount of service rendered to the tax-payer in return, and not imposed as a penalty for any legal offence." Similarly, Seligman also defines tax as a "a compulsory contribution from a person to the state to defray the expenses incurred in the common interest of all, without reference to special benefit conferred." Both these definitions are exhaustive and illuminatively represent the modern economic viewpoint on taxes.

19.3 CHARACTERISTICS OF TAX

We may enumerate the following characteristics which illustrate the modern conception of a tax :

1. A tax is a compulsory contribution to the state from the citizens or even from aliens, subject to its jurisdiction for reasons of residence or property.

2. It is a contribution for the general or common use and not for any specific purpose or individual benefit. Thus, the tax-payer cannot claim any quid pro quo against his payment. The payment of taxes does not entitle the tax-payer for any special benefit or return of services from the government.

3. Thus, tax is not the cost of the benefit received. Sometimes, a beneficiary of state services pays no tax at all.

4. A tax involves legal compulsion. The state uses its coercive power in imposing a tax.

5. Non-payment of a tax is a punishable offence.

6. In modern era, taxation is a product of growing solidarity and a sense of common social obligation. Taxation thus implies the element of sacrifice involved on the part of the payer. People do not resist taxation because of this notion of sacrifice and consider tax-payments as a part of civic duty. Thus, taxed have a moral sanction, too.

19.4 CANNONS OF TAXATION

Cannons of taxation refer to the administrative aspects of a tax. They relate to the rate, amount method of levy and collection of a tax. In other words, the characteristics or qualities which a good tax should possess are described as canons of taxation. It must be noted that canons refer to qualities of an isolated tax and not to the tax system as a whole. Qualities of a good tax system are described as the characteristics of a good tax system, which entails a proper combination of all kinds of taxes having different canons.

Adam Smith has stated four cannons or maxims of taxation on the administrative side of public finance which are still recognised as classic. To him, a good tax is one which contains :

(1) the cannon of equality, (2) the cannon of certainty, (3) the cannon of convenience,

and (4) the cannon of economy.

The Cannon of Equality :

A good tax should embody the rationale of equity or justice. The term equality thus signifies equality of sacrifice involved and not the amount of tax paid. Thus, a good tax must ensure equity of relative sacrifice. The tax has to be such that it is paid in accordance with one's ability to pay. The taxation should be in proportion to means. The burden of tax on different tax-payers has to be distributed according to their ability to pay. It means, the rich should pay more and the poor less, as the former has more ability to pay than the latter. Adam Smith, therefore, stressed that the subjects of every state ought to contribute towards the

support of the government, as nearly as possible, in proportion to their respective abilities so that equality of sacrifice is achieved.

In order to observe the canon of equality, progressive taxation is advocated. It is held that equity requires taxation to be progressive in relation to means or ability to pay.

This canon is however, difficult to apply in practice as the measurement of ability to pay is not an easy matter. Being a subjective phenomenon this cannot be easily ascertained. This canon is more ethical in nature than economic. Nevertheless, it serves as a principal guideline in devising a good tax in a welfare state. It stresses the point that in order to be just and fair, taxation should be broadbased.

The Cannon of Certainty :

This cannon implies that the tax which each individual is bound to pay ought to be certain and not arbitrary. The time of payment, the manner of payment, the amount to be paid etc. should be clear and certain to the tax-payer in advance so that he may adjust his expenditure accordingly. Further, when taxes are certain, the exchequer can also estimate the exact revenue yields and prepare a sound budget.

The Cannon of Convenience :

According to this cannon, there should be an appropriate timing of tax collection and its, mode of receiving payments should be such which is easy and convenient to the tax-payers. Such taxes are least felt by the tax-payers as they are collected at a time when they have sufficient money or income; otherwise they may be put to difficulties. Thus, for instance, taxes on land should be collected after the harvest. Similarly, income tax of salaried people may better be deducted at source at the time of receiving salaries.In this respect, commodity taxes are very convienient as they are to be paid in small amounts, usually included in prices, at the time of purchases.

The Cannon of Economy :

It implies that there should not be any extravagance or unnecessary expenditure in the collection and administration of taxes. The cost of tax collection should be the minimum. A tax should be such which does not involve a complex and large machinery for its collection. A tax serves no purpose if a large part of it is absorbed as collection costs. An expenditure tax, for instance, does not satisfy the cannon of economy. Perhaps that is why it was obilished from the Indian tax structure.

Adam Smith argued that lack of economy would result when:

(i) Tax administration is costly on account of complicated taxes.

(ii) Taxes are unduly heavy which would discourage investment, so that the general level of income reduces, hence the relative tax yields.

(iii) Taxes are so devised that their collection entails elaborate and complicated administrative supervision, with the result that the enterpreneur finds it difficult to conduct his business smoothly.

(iv) Tax are unproductive in yielding sufficient revenue.

Apart from economy in the cost of collection, the canon of economy may also signify that there should be economy in sacrifice involved in the payment of tax by the tax-payer. This canon thus supports the principle of minimum aggregate sacrifice in taxation.

In short, Adam Smith regards a good tax as one which is just and fiar, certain convenient and economical. Modern economists have, however, a few more canons complementary to the fundamental Smithian canons of a good tax.We have thus: (i) The canon of productivity, (ii) The canon of elasticity and (iii) The canon of simplicity.

The Cannon of Productivity :

It connoted two things. Firsty, it may mean that taxes should be productive, i.e. they should bring sufficient revenue to the state.A tax which does not bring any sizable revenue is meaningless. The exhequer judges the merits of tax by the amount of its yield. Secondly, the canon of productivity may infer that taxation should stimulate the productive efforts of the community and should not obstruct or discourage production.A tax should act as an incentive to production. For example, import duties protect and stimulate the country's infant industries and domestic output.

The Cannon of Elasticity :

It suggests that taxation should be flexible or elastic inb character so that total revenue collected varies according to the prosperity of the country. The tax revenues of the state should correspondingly expand or contract with the national income.

Modern economists attach great importance to this cannon of elasticity.It is regarded as an index of the efficiency and stability of the state. Under the goal of economic stability of modern public policy, the built in flexibility of a tax is very essential.

The Cannon of Simplicity :

It signifies that the levy and structure of a tax should be simple and intelligible to the common man. A tax should be simple in nature so that the tax-payer is able to calculate it and pay it conveniently. The process of administration of a tax also should not be unduly elaborate. This is very essential to substantiate the canon of economy. In India, the income-tax, for instance, as has been complained, is a very comples and complicated affair, beyound the comprehension of average peiople, uneducated and educated alike.

The merit of tax has to be judged from the above-stated canons. The exchequer must pay due attention to these canons while levying a tax. Sometimes, however, when there is a conflict, the right course would be to

choose the more important cannon in preference to the comparatively less important one in administering a tax.The cannon of productivity for a modern government which is aspiring for a huge public expenditure, for instance, is of greater importance than equity and convenience. Similarly, a greater economy in the tax administrationn may outweigh a leasser equality, and a greater equality supersedes a lesser economy of taxation. Thus, in the case of conflict, relatively less important canons have to sacrifieced as against the more important ones.

19.5 CLASSIFICAITON OF TAXES

Taxes have been classfied in various ways on different bases such as the form, nature, aim and method of taxation. The most important classifications are:

1. Direct and Indirect Taxes;
2. Progressive, Proportional, Regressive, and Degressive Taxes.
3. Specific and Ad valorem Taxes.

19.6 DIRCT AND INDIRECT TAXES

Conventionally, on the basis of the nature of impact and incidence, taxes have been classified into *direct* and *indirect.*

A tax which is paid by the person on whom it is legally imposed and the burden of which cannot be shifted to any other person is called a direct tax. J.S. Mill defines a direct tax as "one which is demanded from the very persons who, it is intended or desired, whould pay it." Thus, the impact, i.e., the initial or first burden and the incidence--the ultimate burden of a direct tax, is on the same person. The tax-payer is the tax-bearer. For example, income tax is a direct tax.

An indirect tax, on the other hand, is a tax the burden of which can be shifted to others. Thus, the impact and incidence of indirect taxes are on different persons. An indirect tax is levied on and collected from a person who manages to pass it on to some other person or persons on whom the real burden of the tax falls. Hence, in the case of indirect taxes, the tax-payer is not the tax-bearer. Commodity taxes are generally indirect taxes, as they are imposed on the producers or sellers, but their incidence falls upon the consumers as such taxes are wrapped up in the prices.

Many modern writers, however, distinguish between direct and indirect taxes on the bais of assessment, rather that on the point of assessment. Taxes are generally assessed on the basis of income received or expenditure incurred. Hence taxes which are based on income are called direct, and those which are levied on outlays are called indirect taxes.

In the group of direct taxes, thus, income tax, wealth tax, property tax, estate duties, capital gains tax, capital levy may be included, while

commodity taxes or sales tax, excise duties, customs duties etc. may be grouped as indirect taxes.

Merits of Direct Taxes :

Following are the merits of direct taxes :

1. Direct taxes like income tax, wealth tax etc. are based on the principle of ability to pay k so the equity or justice in the allocation of tax burden is well secured by these taxes.

2. Usually, direct taxation are progressive in effect. Since direct taxes can be designed with fine gradation and progressiveness they can serve as an important fiscal weapon of reducing the gap of inequalities in income and wealth.

3. Direct taxes are elastic and productive. Revenue from direct taxes increases or decreases automatically with the change in the national income or wealth of the country.

4. The canon of certainty is perfectly embodied in direct taxation. Compared to indirect taxes direct taxes are more exact and

   precise in estimating the revenue. Further, in direct taxes, the tax-payer knows how much he has to pay and the state can estimate the yields correctly.

5. The canon of economy is also well maintained under direct taxation. Direct taxes like income tax etc. being collected annually in lumpsum, the administrative costs of collection will be the minimum.

6. Direct taxes have an educative valuew, as they create a civic sense among the tax-payers. Citizens realise their duty to pay tax and because of the direct burden of taxes they become conscious and keep vigil on how the public income is spent by the government in a democratic country.

7. Direct taxation can sere as a good instrument of anti-inflationary fiscal policy designed to maintain prices at a stable level. The excessive purchasing power during inflation can be seized away from the community through increased direct taxes.

Demerits of Direct Taxes :

Direct taxes, however, have the following disadvantages:

1. Since direct taxes are to be paid in lumpsum, they pinch the tax-payers more. Thus the announcement effect of a direct tax always tends to cause resentment among the tax-payers.

2. Direct taxes do not conform to the canon of convenience as returns of income-tax, wealth-tax etc. are to be filed in time and complete records are to be maintained up-to-date by each individual tax-

payerr. Moreover, it is very inconvenient to pay these taxes as they are collected in lumpsum.

3. Since the assessment of direct taxes depend upon the voluntary declaration of the tax-payer about his income, wealth etc., there is great scope for tax evasion by concealing real income. Thus, in fact, under direct taxation, honesty is taxed while dishonesty is rewarded. Tax evasion in effect leads to corruption also.

4. Direct taxes are not so economical as they are claimed to be. An elaborate machinery is requird for their collection as each and every assessee has to be contacted individually and properly checked to prevent tax evasion.

5. Direct taxes are generally narrow based; therefore, alarge section of massess remain untouched and to that extent they fail to achieve their objective of promoting civic sense among the citizens. Especially, the poor section of the community remains untouched under direct taxes.

6. The nature and base of direct taxes are arbitrarily decided by the exhequer. There is no scientific formula or base for evolving the mode of gradation and progression in direct taxation.

7. Direct taxes being based on income and wealth, if they are excessive, they may discourage savings and kill the incentive to work hard.

Merits of Indirect Taxes :

Following are the relative merits of indirect taxes, as compared to the direct taxes :

1. Indirect taxes are more convenient to pay. These taxes, generally being on commodities, ar wrapped up in prices, hence the tax-payer does not feel the burden directly.

2. The announcement efffect of indirect taxes does not provoke wild resentment, because they cause less annoyance to the public as they are not felt directly. The main merit of an indirect tax is that it is always disguised and it pinches the tax-payer less as he is kept in the dark about how much commodity taxation he has paid in his total spendings.

3. Indirect taxes are difficult to evade, as they are usually merged with prices.

4. Indirect taxes usually being commodity taxes have a broader scope than direct taxation.

5. Indirect taxes have a high social value. They can serve to improve ocial morale and public healthy discouraging the consumption of such harmful commodities as intoxicants, tobacco etc.

6. Indirect taxes are an effective means of moppin up consumers' surplus and thereby diverting the saving potential of the community at large into the hands of the government, which can be utilised fruitfully in expediting the process of caital formation in the country.

7. Additional revenue can be easily obtained by introducing an indirect tax rather than a direct tax, without dislosing its real sacrifice to the public. Indirect taxes in fact can serve as complementary to the direct taxes. If a person escapes from direct taxation, he will be caught in the net of indirect taxes.

8. Indirect taxes on luxuries and semi-luxuries are progressive in effect, as they fall on the rich peopl's consumption outlays.

Demerits of Indirect Taxes :

Following are the major drawbacks of indirect taxes:

1. Indirect taxes are *unjust* and *inequitable* as they are regressive in effect. Since they are charged at a proportional rate on commodities of general consumption, theri burden falls more heavily upon the poor sections of th people. The are not levied according to the priniciple of ability to pay.

2. Indirect taxes do not conform to the canons of economy and productivity. As these taxes involve many stages, the cost of collection is usually high in relation to the revenue yielded. Further, an indirect tax is not as productive as direct tax.

3. Indirect taxes prove to be *inflationary* when excessively relied upon.

4. Indirect taxes being invisible, as they are collected through middlemen like traders, have no direct ling between the tax-payers and the government; hence, they do not promote any civic sense.

19.7 PROPORTIONAL PROGRESSIVE, REGRESSIVE AND DEGRESSIVE TAXES

Considering the relation between the tax rate and the tax base (income), there can be four types of taxation; viz: (i) Proportional taxes, (ii) Progressive taxes, (iii) Regressive taxes and (iv) Degressive taxes.

Proportional Taxes :

Taxes in which the rate op tax remains constant, though the tax base changes, are called proportional taxes. Here, the tax base may be income, money value of a property, wealth, or goods etc. Income is, however, regarded as the main tax base, because it is the determinant of taxable capacity of a person.

In a proportional tax system, thus, taxes vary in direct proportion to the change in income. If income is doubled, the tax amount is also doubled. This has been illustrated in the schedule below (see Table 19.1).

Table 19.1 Schedule of Proportional and Progressive Tax Rates

Tax Base (Y) (Rs.)	Proportional		Progressive	
	Tax Rate (R) (Percent)	Amount of Tax (T) (Rs.)	Tax Rate (R) (Percent)	Amount (Tax) (T) (Rs)
1,000	10	100	10	100
2,000	10	200	15	300
3,000	10	300	25	750

Thus, a proportional tax extracts a constant proportion of rising income.

Progressive Taxes :

The taxes in which the rate of tax increases as the tax, base increases are called

progressive taxes. Thus, in aprogressive tax, the amount of tax paid will increase at a higher rate than the increase in tax base or income, for the taxation amount is the product of multiplying the base by the rate and both these increase in a progressive tax. Thus, a progressive tax extracts an increasing proportion of rising income. The progressive rate of taxation is illustrated in Table 19.1.

Regressive Taxes :

When the rate of tax decreases as the tax base increases, the taxes are called

regressive taxes.This has been illustrated in the shedule below (see Table 19.2).

Table 19.2 Schedule or Regressive and Degressive Tax Rates

Tax Base (Y) (Rs.)	Regressive		Degressive	
	Tax Rate (R) (Percent)	Amount of Tax (T) (Rs.)	Tax Rate (R) (Percent)	Amount (Tax) (T) (Rs)
1,000	10	100	5	50
2,000	8	160	6	120
3,000	6	180	7	210
4,000	5	200	7	280

It must be noted that in regressive taxation, though the total amount of tax increases on a higher income in the absolute sense, in the relative sense, the tax rate declines on a higher income. Thus, a regressive tax extracts a declining proportion of the rising income. As such, relatively a heavier

burden (sacrifice involved) fals upon the poor than on the rich. Generally, taxes on necessaries are regressive as they take away a greater percentage of lower incomes as compared to higher incomes.

Thus, the regressive taxation is unjust and inequitable. It does not comply with the canon of equity. It tends to accentate inequalities of income in the community.

Digressive Taxes :

Taxes which are mildly progressive, hence not very steep, so that high incomeearners do not make a due sacrifice on the basis of equity, are called degressive. In degressive taxation, a tax may be progressive upto a certain limit; after that it may be charged at a flat rate. This has been Ilustrated in Table 19.2

In a degressive taxation, thus, the tax payable increases only at a diminishing rate. Diagrammatically, the differences in progressive, proportional, regressive and digressive taxation may be shown as in Fig 19.1.

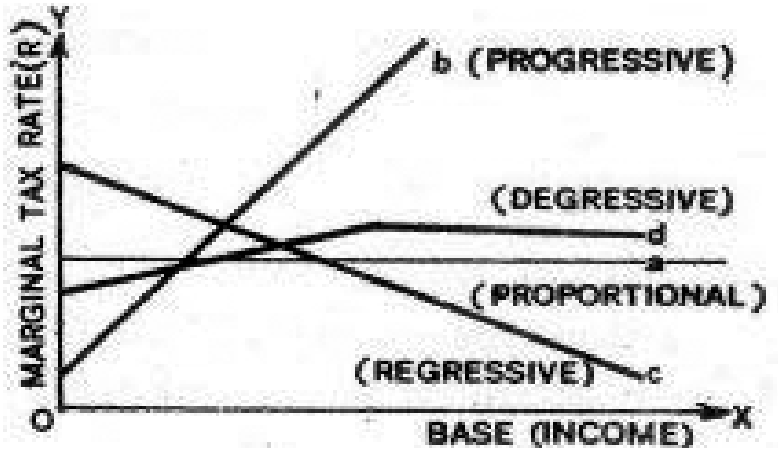

Figure 19.1

Fig 19.1 depicts the proportion of income taken away in taxation under different tax rates. Tax line a represents progressive tax rate, tax line b represents proportional tax rate, tax line e shows regressive tax rate and tax line d denotes degressive tax rate.

The proportional tax rate has a constant slop graphically, while the progressive tax rage has a rising positive slope. The steeper the slope of the tax line, the progressive the tax regime. The regressive tax rate line has a declining negative slope. The steeper the negative slope of the tax line, the more regressive the taxation. Digressive tax rate line has a rising slope initially, but it becomes constant after a point.

In a nutshell, we may put, thus:

1. When there is no change in the marginal rate of tax: $\Delta\left(\frac{dr}{dy}\right) = 0$, taxation is proportional.

2. It, > 0 (i.e. positive change in the marginal rate of tax), where dy > 0; taxation is progressive.
3. If, < 0 (i.e. negative change), wehre dy > 0; taxation is regressive,
4. If, however, (i.e. positive-cum-constant), when dy > 0, taxation is degressive.

Now, the question may arise: of the above-state categories of rate structure, which is the best? The answer would be: we have to select that tax system which will distribute the tax burden most equitably. Regressive and degressive taxations are, of course, not accepted by any economist on th ground of equity. But ther has been a heated controversy regarding proportional and progressive taxation.

Relative Merits or Proportional Taxes :

1. The proportional taxation leaves the tax-payer in the same relative economic status.
2. Proportional taxation is simple to calculate and to administer. Since they are uniformly levgied, they are very convenient to estimate.
3. Proportional taxation is not as repugnant to tax-payers as progressive taxation.
4. The effect on willingness to work hard and save is not adverse in the case of proportional taxes.

Relative Merits of Progressive Taxes :

1. A proportional taxz is inequitable, as it falls relatively heavily on poor incomes. A progressive tax is more equitable, as larger part is taxed on higher incomes. It is justifiable as the law of diminishing marginal utility operates in the case of money. Hence, the disultility of paying a high tax by the rich is not as much as that of a poor in paying even a low tax. Therefore, the rich should be taxed at a higher rate than the poor.
2. Progressive taxes may be justified on the ground that higher incomes contain surpluses, which have cent per cent capacity to bear taxes. Thus, progressive taxation fully complies with the principle of capacity to bear or ability to pay the tax.
3. Progressive taxes are more economical, as the cost of collection does not rise when the rate of taxes increases.
4. Progressive taxation has greater revenue productivity them proportional taxation.

5. The progressive tax system also complies with the canon of elasticity. For a rise in income is automatically taxes at a higher rate under the system so that revenue increases with economic expansion.

6. Progressive taxes are an engine of social improvement. The strong should assist the weak and the rich should aid the poor. This social morale is well sustained by progressive taxation.

7. Progressive taxation can lead to a better distribution of income and wealth, hence, an incrase in general welfare of the community. According to Kaldor, the desire to reduce economic inequalities can be regarded as justificaiton for adopting a highly progressive tax system.

19.8 SPECIFIC AND AD-VALOREM TAXES

According to the method of assessment, taxes on commodities may be classified into two types-*specific* and *ad-valorem.*

Taxes which are based on specific qualities or attributes of goods are called specific taxes. Specific taxes are generally assessed on the weight, number or volume of the commodity taxed. e.g. specific excise duty may be levied on cloth as so many paise (say 10 paise) per metre.Taxes which are levied entirely on the basis of the money value of the goods taxed are called *ad-valorem taxes,* e.g. sales tax on a commodity may be levied as some percent (say, 3 per cent) on its selling price.

Specific taxes are easy to calculate and to adminsiter.*Ad-valorem taxes,* on the other hand, are difficult to administer and collect as they involve the assessment of the value of goods. The price of every grade of article is to be verified before the levy of tax. But ad-valorem taxes are more equitable in incidence, as they are based, upon the value of the article so that the canon of ability to pay is fulfilled. Being in proportion to the prices, such taxes fall more heavily on the reicher consumers.Specific taxes, on the other hand, ar regressive in character in that when the same specific tax is levied on different qualities of goods, a relatively higher burden falls upon low quality cheap goods which are generally consumed by the poor.Thus, from equity point of view, ad-valorem taxes are preferred to specific taxes. Sometimes, however, a compromise between these two types of taxes is also attempted. For this prupose, commodities may be graded according to their quality and different rates of specific taxes may be imposed on them.For example, while levying excise duty on closth, a specific tax of say 25 paise per metre may be imposed on superior quality, while the medium and coarse cloth may be charged at a rate of 15 paise respectively.

19.9 SUMMARY

A good tax system recognises the basic rights of the tax payers is expected to pay his taxes but not undergo harrashment. With this end in view tax laws should be simple in language and the tax liability should be determinable with certainity. The mode and timing of the payment should suit the convenience of the tax payer to extent possible. At the same time a tax system should be equitable as between different tax payers. It should be progressive so as to levy an equitable burden on all. A good tax system should be flexible enough to counteract these cycle fluctuation which are often occuring in the economy. Another problem that India faces is that of regional disparities. Tax measures should be so devised as to counteract this tendency and bring about a more equitable economic growth. In the process of economic growth a good tax system should help in counteracting inflationary forces.

19.10 FURTHER STUDY

1. Bhatia, H.L. : Public Finance

2. Singh, S.K. : Public Finance

3. Sinha, V.C. : Public Finance

UNIT 20 : PUBLIC EXPENDITURE

Objectives

After going through this unit you should be able to understand :

- Meaning of public expenditure
- Causes of increasing public expenditure
- Differences between public & private expenditure
- Cannons of public expenditure & its classification
- Effects of public expenditure

Structure

20.1 INTRODUCTION

Public expenditure refers to the expenses which the Government incurs for its own maintenance as also for the society and the economy as a whole. These days, some Governments are incurring expenditure to help other countries and that would also form a part of the total public expenditure. With expanding State activities, it is becoming increasingly difficult to judge what portion of the public expenditure can be ascribed to

the maintenance of the Government itself, and what portion to the benefit of the society and the economy.

Though historically public expenditure is found to be continuously increasing overtime in almost every country, traditional thinking and philosophy have not been very encouraging to the growth of public expenditure. It is because the market mechanism was considered a better method whereby the working of the economy could be guided and the allocation of the resources could be decided. It was argued that each conomic unit was the best judge of its own economic interests and the government was certainly not able to decide on behalf of others. urthermore, while a private economic unit was guided by its own economic interests, the public sector would not be having any such motivation. Accordingly, efficiency would be at a lowebb there. Hd this philosophy been practised also in its entirely, public expenditure would not have grown as rapidly as it did. In reality, however, the problems of labour exploitation, economic and social injustice and such like things assumed serious proportions and could not be ignored. The result was that along with the advocacy of laissez-faire, various socialist and welfare ideas also gained currency. And, of course, the governments found that they could no longer remain silent spectators of the miseries of the people.

However, in spite of the fact that public expenditure has increased rapidly during the last two centuries or so in almost every State, and in spite of its growing role and importance in national economies, the area of public expenditure remains relatively unexplored. As Lowell Harris says, the economists have generally concentrated their attention on the theory of taxation. The theory of public expenditure has been more of less confined to that of generalities in terms of the effects of public expenditure on employment and prices etc. Of course, it may be pointed out, that lately this deficiency is being removed by various studies in the field of public expenditure.

20.2 CAUSES OF INCRFEASING PUBLIC EXPENDITURE

There are two important and well-known theories of increasing public expenditure which we shall be discussing below. The first one is connected with Wagner's name and other with Wiseman and Peocock.

Wagner's Law of Increasing State Activities :

Adolph Wagner (1835-1917) was a German economist who based his Law of Increasing State Activities on historical facts, primarily of Germany. According to Wagner, there are inherent tendencies for the activities of different layers of a Government (such as central and state governments) to increase both intensively and extensively. There was a funtional relationship between the growth of an economy and the growth of the Government activities so that the governmental sector grows faster that the economy. In the original version, it is not clear whether Wagner

was referring to an increase in (a) absolute level of public expenditure, (b) the ratio of government expenditure to GNP, or (c) proportion of public sector the total economy Musgrave's interpretation is that Wagner was thinking of (c) above F. S. Nitti supported Wagner's thesis and concluded with empirical evidence that this 'law' was not only applicable to Germany but to various governments which differed widely from each other. All kinds of governments, irrespective of their levels (say, the central or state governments), intentions (peaceful or war like), and size, etc., has indicated the same tendency of increasing public expenditure.

Firstly, the traditional functions of the State were expanding. Defence was becoming more expensive than ever before. Within the country, administrative set up was increasing both in coverage and intensity. The government machinery had to be manned by experts in their fields. Administration of justice etc., was becoming more extensive and cumbersome as the society progressed. An additional force pushing up public expenditure here is the fact that various complexities of social and economic nature develop which make an efficient administration also more complex and expensive.

Secondly, the State activities were increasing in their coverage. Traditionally the State activities were limited to only defence, justice, law and order, maintenance of the State and social overheads. But with the growing awareness of its responsibilities to the society, the government was expanding its activities in the field of various welfare measures. These included the measures to enrich the cultural life of the society and also those designed to provide social security to the people (such as old age pensions and so on). Subsidies for the direct provision of various merit goods and public goods were on the increase. State activities were also increasing on account of its efforts an redistributing income and wealth.

Thirdly, the need to provide and expand the sphere of public goods was being increasingly recognized. The State was trying to shift the composition of national produce in favour of public goods and this necessitated the expansion of the investment activity of the government.

Wagner's law was based upon historical facts. It did not show the inner compulsions under which a government had to increase its activities and public expenditure as time passes. His law was applicable to modern progressive governments only in which the State was interested in expanding the public sector of the economy and undertake other activities for the general benefit. This general tendency of expending State activities had a definite long-term trend, though in the short-run, financial difficulties could come in the way. "But in the long-run the desire for development of a progressive people will always over come these financial difficulties."

Wagner was emphasizing the long-run forces rather than short-term changes in public expenditure. He was also not concerned with the mechanism of increase in public expenditure. Singe his study is based on the historical experience, the precise quantitative relationship between the

extent to which public expenditure would increase and the time taken was not fixed in any logical or functional manner. The fact that over-time, public expenditure had been increasing could not be used to predict the extent to which public expenditure would change in future. Actually, it is consistent with Wagner's law to state that in future the Stte expenditure would increase at a rate slower than the national income though in the past it had increased at a faster rate. Thus in the initial stages of economic growth, the State would find that it has to expand its activities quite fast in various fields like education, health, civic amenties, transport, communications, and so on. But when such an initial deficiency to met, then the increase in State activities may be at a rate slower that he over-all growth in the economy.

Additional factors which contribute to this tendency of increasing public expenditure would include the necessarily growing role of the State in the increasing complexities of modern life.

Firstly, we note that population itself is increasing in most cases which thus becomes a major contributing factor to the growth of public expenditure. The sheer scale of various public services has to increase in harmony with the pupulation growth. For example, more schools, hospitals, and such like servixes have to be provided to meet the extra needs of the growing population.

Secondly, an increasing shift of population to the urban areas takes place. Existing cities grow and new ones come up. Urbanization implies a much larger per capita expenditure on civic amenities. Also quite a good amount of incidental services like those connected with traffic, roads, and so on have to be provided.

Thirdly, it is noticed that prices have a secular tendency to go up. Though there are periods when prices have fallen, the over-all trend has been for them to rise.

Fourthly, the size and nature of public services now involves specialization. The quality of the servixes improves, both as a historical fact as also due to circumstantial compulsions. Better quality services and higher qualified administrators, technicians etc., imply a higher cost of providing the public services. The government has to purchase a number of goods and services for its own maintenance also. With rising prices, expenditure on them also goes up.

Fifthly, a modern government consider it a part of its duty to protect the economy from the evils of market mechanism. Accordingly, anti-cyclical and other regulatory measures are adopted. Efforts are made to reduce the income and wealth inequalities and bring about social and economic justice. Quite a sizeable expenditure on various welfare and social security measures in undertaken and it tends to increase.

Sixthly, modern governments have shown a tendency to run into debt and this leads to a subsequent increase in public expenditure in the form of increasing cost of debt servicing and repayment of the loans.

Seventhly, the ideals of planning and economic growth are being increasingly accepted and this implies an increase in public sector as also various efforts on the part of the government towards capital accumulation and economic growth.

Buchanan and Tullock, in the context of US experience, have viewed Wagner's theory in terms of increasing discrepancy between growth of government expenditure and government output and termed the phenomenon as "Wagner Squared" hypothesis. They base their argument on two facts. Firstly, in contrast with the situation prevailing in the private sector, expenditure on civil servants grown faster than the corresponding increase in their output. Secondly, with increasing social security and other measures, the proportion of population receiving transfer payments from authorities increases. This way, public expenditure keeps on increasing both in absolute terms and as a proportion of national income. It may be noted that even if the expenditure on civil services as a proportion of expenditure on employees in the private sector does not increase, and even if the proportion of population receiving transfer payments remains stable, the "Wagner Squared" hypothesis would hold. The major limitation of this hypothesis isthat output of public servants cannot be measured with any degree of accuracy.

Alan Tait Peacock does not agree with this explanation of Buchanan and Tullock. He says that a typical individual does not relate his tax payments with the receipt of Government services. He considers his tax liabilities as they are and strives for additional public services; that is, he fights for additional opportunities for milking Government services and not for reducing taxes. The politicians, to win their votes, try to expand government services and therefore impose more taxes. The government expenditure keeps on increasing without any reference to productivity/cost ratio of Government services.

We may add that modern governments have found new weapons whereby to increase their expenditure even without collecting more taxes. They now own public undertakings which can be a source of revenue to them. But more important than that is their capacity and willingness toresort to deficit financing. Even in countries like USA and Canada, deficit financing of the order of 6 percent of GNP has become a common occurrence. The public opinion is not strong enough to check this sort of policy even though it has disastrous inflationary effects.

Wiseman-Peacock Hypothesis :

The second thesis of the growth of public expenditure was put forth by **Wiseman and Peacock** in their study of public expenditure in UK for the period 1890-1955. The main thesis of the authors in that public expenditure does not increase in a smooth and continuous manner, but in jerks or steplike fashion. At times some social or other disturbance takes place which at once shows the need for increased public expenditure which the existing public revenue cannot meet. While earlier, due to an insufficient pressure for public expenditure, the revenue constraint was

dominating and restraining an expansion in public expenditure, now under changed requirements such a restraint gives way. The public expenditure increases and makes the inadequacy of the present revenue quite clear to every one. The movement from the older level of expenditure and taxation to a new and higher level is the **'displacement effect.'** The inadequacy of the revenue as compared with 'required' public expenditure creates an **'inspection effect.'** The government and the people review the revenue position and the need to find a solution of the important problems that have come up and agree to the required adjustments to finance and increased expenditure. Then attain a new level of 'tax tolerance.' They are now ready to tolerate a greater burden of taxation as a result the general level of expenditure and revenue goes up. In this way, the public expenditure and revenue get stabilized at a new level till another disturbance occurs to cause a 'displacement effect.' Since each major disturbance leads to the government assuming a larger proportion of the total national economic activity, the net result is the 'concentration effect.' The concentration effect also refers to the apparent tendency for central government economic activity to grow faster that that of the state and local level governments. British data are consistent with this finding, but its application to other countries needs verification. Moreover, this aspect of concentration effect is also closely connected with the political set up of the country.

On the faxt of it, Wiseman Peacock hypothesis looks quite convincing. But we must remember that they are emphasizing the recurrence of abnormal situations which cause sizeable jumps in public expenditure and revenue. In all fairness to the historical facts, we must not forget that on account of the advance of the economy and the structural changes therein, there are constant and regular increments in public expenditure revenue. Public expenditure has a tendency to grow on account of a systematic expansion of the public activities as also an increase in their intensity and quality. Increasing population, urbanization and an ever-increasing awareness of the civic rights on the part of the public, coupled with an increasing awareness of its duties on the part of the State, leads to an upward movement of public expenditure. To an extent this public expenditure gets financed by ever-increasing revenue also which is made possible through the expansion and structural changes in the economy. These days, in underdeveloped countries like India, the State is deliberately trying to increase its activities and makes an effort to tinance those activities through various tax efforts. Even in developed countries, the State finds that it has an increasing regulatory duty towards the economy to protect it against instability and excessive inequalities of income and wealth. Thus, Wiseman-Peacock hypothesis is still a description of a particular tendency and does not isolate all the relevant causes at work.

It must be emphasized that part from various factors like population growth, defence expenditure, urbanization, rising prices etc., which by themselves were pushing the public expenditure up, an important force in the field has been the failure of the market mechanism

to let the economy achieve its various objectives efficiently. Inherent deficiency of market mechanism make the economy a prey of economic instability, income and wealth inequalities, defective patterns of consumption, employment and investment and so on. In a number of cases the market mechanism is not able to pull the economy out of its vicious circle of poverty and launch it on a path of secular and rapid economic growth. Perforce, then the sphere of government activities increases and has led to a corresponding increase in public expenditure also.

20.3 COMPARISON BETWEEN PRIVATE AND PUBLIC EXPENDITURE

With regard to similarities between the public and private expenditures, we must remember that neither the private units nor the public authorities would like just to waste the expenditure without any corresponding 'return.' Given the objectives to be achieved, each will try to achieve it with the minimum possible expenditure. Any shortfall on this front will be on account of inefficiency, uncertainty, lack of foresight and similar other causes. Another point of similarity between the two is that in both the private and public expenditures there is an element of flexibility, though it is generally more in the case of public expenditure. Both private economic units and public authorities take a collective view of the income, expenditure and the possibilities of adjustments in each. While an individual will consider the possibilities of shifting his total time between an effort to earn and leisure, and a firm will think of the cost of earning more and spending more, the public authorities will compare effects of additional revenue raising efforts with the results of extra expenditure. It must also be remembered that in each case there can be more than one way of raising additional income. The authorities, for example, can plan to raise the additional tax or non-tax revenue, or borrowing or even raising taxation in various forms. There are, therefore, problems of over-all efficient and integrated management of finances. They are related to the alternative ways in which finances can be raised, the efforts needed to raise them the effects of such revenue efforts and the corresponding benefits of the expenditure which are to be incurred. It is also obvious that depending upon different circumstances prevailing at the time, the net equilibrating solution will differ. While in some cases a larger tax and expenditure level might be indicated, in others the amount indicated will be smaller. Similarly, in the case of private finance, we have different levels at which the solutions will be fount.

However, while private and public expenditures are similar in their over-all and complex ramifications, the dissimilarities between them are also quite glaring. The first such dissimilarity is the objective with which the expenditure is increased. In the case of an individual economic unit, generally it will be an exchange relationship which will determine the mode, pattern and volume of expenditure. As a consumer, an individual will be equating the marginal utility of the good (or service) purchased against the disutility of expenditure. A commercial economic unit will be

comparing the private marginal returns from an expenditure with the amount spent. Public authorities however cannot and do not always adopt commercial auttitude towards their expenditure plans. They have to look towards the social benefits which will be generated in the process of their expenditure activities. And in quite a few cases these social benefits are vague and immeasurable. The State has to impute social valuation to these benefits and decide whether it is worthwhile undertaking these expenditures or not. Also, there are certain State expenditures which are in the nature of bringing about social and economic justice in the field of income and wealth distribution. The benefits of such State expenditures again cannot be evaluated directly.

Keeping in view the fact that the State is the guardian of the social welfare and the economic and social health of the society, quite a few items of expenditure are not related to the cost of providing the necessary services. These services can be in the nature of social security and some of them are meant to be of long-term benefit to the society. An individual has a limited horizon and will plan the future only within a foreseeable future. The State will take a very long view. It is with this end in view that the State may even plan to incur public expenditure in such a way that it runs into a king of permanent deficit. A private economic unit cannot do so. These days, most States are finding the philosophy of functional finance a better approach that the traditional approach of prudish budgeting according to which deficits or surpluses could only be temporary. The objectives of public expenditure are now far wider than imagined earlier.

20.4 CLASSIFICATION OF PUBLIC EXPENDITURE

It is conventional to classify public expenditure into various economic categories. Accounting classification has been there for centuries because it is through this classification that the State executive maintains an effective control and check over public expenditure and possible leakages and wastages, diversions and misappropriations. It may be departmental classification or classification according to heads of expenditure. Such a classification is good for auditing and for safeguarding against misappropriations, etc., but it does not help us in understanding its effects. It is, therefore, difficult to formulate an appropriate expenditure policy on this basis. In the same way, a distinction between obligatory (or legally committed) expenditure and optional expenditure can only highlight the constraints under which the government's budgetary policy has to work. It cannot bring out fully the possible effects to different expenditure policies. These days however, an increasing need for a useful and effective classification of public expenditure is felt. It is only through such classification that the economic effects of various State activities can be gauged and proper policies formulated. A fuller discussion of the economic classification of the government budgets will be taken up in a later portion of the book. Here, however, we can take up two

classifications of public expenditure, each of them indicating an area of possible effects on the economy.

Productive and Unproductive Expenditures. The first one is the distinction between productive and unproductive expenditure. The accepted approach here is to emphasize that while some expenditures were in the nature of consumption, others were in the nature of investment and helped the economy in improving its productive capacity. Under the laissez-faire philosophy, the only productive public expenditures would be those which were incurred to create and maintain social overheads. Expenditures on administration, defence, justice, law and order and maintenance of the State were unproductive. Adam Smith believed that an economy added to its capital stock and production of tangible goods. If we extend this logic to public expenditure, it will follow that only those public expenditures were productive which created some tangible assets in the economy such that those tangible assets, in their turn, enabled the economy to produce more in future. Some people would like to adhere to the usual classical thinking in which the government sector is considered as something foreign and alien to the economy proper. In this case, only those public expenditures would be productive which added to the tangible assets of the government, or more precisely income yielding tangible assets of the government. Public expenditure may be on various public enterprises of commercial type. The government could be changing for the services of those enterprises to pay for them. They could even be a source of profit the authorities. Depending upon the pricing policies and other factors, such public expenditures may be self-liquidating partially or fully; that is to say the government might be recovering the public expenditures from the beneficiaries of these projects.

It is obvious that suich views the deficient in their analytical and realistic contents. Basically the government sector is a part and parcel of the economy as a whole and must be considered as such. Accordingly, whether an asset is added to the ownership of the government or to that of the private sector should not be the determining factor in deciding about the productiveness or otherwise of any public expenditure.

Secondly, it would also follow that there would be many assets which would not be income-yielding to the government, but which would be really necessary for the productive efficiency of the economy. Such assets ought to be termed productive even though on normal commercial considerations they are not. Parks, water-works and similar goods and services which add to the productive efficiency of the economy must be viewed as productive assets and expenditure on their creation and maintenance as the productive expenditure. Such public expenditure is, therefore, also self-liquidating in an indirect manner. There will be an increase in the national product and the authorities will be able to collect, even without raising the tax rates or their coverage, an additional revenue.

Thirdly, it is not necessary that the so-called productive assets must be in some tangible form only such as buildings, machinery and the like. The productive power of the society can reside in the form of human

wealth also. It can manifest itself in different forms. It through education, training, health, better living conditions, better about relations, etc., the working population of the country can add to its productive power, the expenditure on such items should certainly be termed productive. Even if some of these expenditures do not add to the productive effort and national income, they will be adding to the enjoyment of the people. Of course, just as some tangible assets can be useless, so can be some expenditures on particular types of education and training, etc. But that is a question of choosing proper forms of education and training which would be useful for the economy.

Fourthly, there are certain public expenditures without which the economy cannot live and cannot maintain its productivity. Rather in many cases such expenditures indirectly help the economy in attaining higher levels of productivity. Examples are those of defence expenditure, expenditure on research, and so on. Even efficient administration, postal and telegraph, services, etc., will be indirectly adding to the health and efficiency of the economy. Therefore, a precise distinction between productive and unproductive public expenditures is not easy. Each case has to be judged on its own merits. Basically, we may take the position that any wasteful and avoidable expenditure is unproductive, which all the necessary and relevant expenditure is productive.

Transfer and Non-transfer Expenditures. This classification was favoured by Pigou. An expenditure may be in the form of a payment which is without corresponding transfer of real resources or their use by the State. For example, the State would be paying interest on its debt, or would be paying old-age pensions, or unemployment benefits, etc. In these cases, the government is simply transferring the right or claim to use the goods and services to certain sections of the society. With the acceptance of the philosophy of a welfare State, even some transfer expenditure may become a non-transfer one. Non-transfer expenditure is that by which the State pays for its purchases or use of goods and services. While in the case of transfer expenditure, the beneficiaries are to decide about the use of real resources, in the case of non-transfer expenditure, it is the State which uses the resources straightway. Such a use of resources by the State, of courses, may be for consumption purposes or for investment purposes. Expenditure on defence, education and such like things are all of non-transfer or ‘real expenditure’ type as are the investment expenditures. It must, of course, be remembered that when the government incurs a real expenditure, it is not implied that the government will necessarily purchase at the market rates. For one reason or the other, the government may be purchasing at concessional rates or at non-economicrates.

20.5. CANONS OF EXPENDITURE

Like canons of taxation, people have propounded canons of public expenditure also which should govern the public expenditure decisions. Some of these canons are in the nature of administrative safeguards while others are expected to be of help to the economy and society in their

diverse objectives. It, of course, goes without saying that these canonsare only broad generalizations and detailed guidelines have to be worked out in each specific case.

(1) Canon of Economy. The resources of the economy are always scarce compared with its needs. No wastage should, therefore, be permitted. Public expenditure is the financial counterpart of the resources which the government uses up directly or places at the disposal of certain sections of the society for this purpose. It is therefore, essential that the process of public expenditure should not involve the use of resources more that what are just necessary. Utmost caare must be taken to avoid wasteful usage of public funds. And as the sphere of government activities increases both in coverage and quality, it becomes all the more difficult to judge the exact type and extent of wasteful expenditure. Therefore, still greater care and a scientific approach towards the assessment of the required expenditure is needed.

One form of wastage of public expenditure is the delay that often accompanies in formulating the plans of public expenditure, their sanction and their execution. On account of the faulty planning and execution and the delays involved, some benefits are lost; or to put it differently, for given benefits the authorities pay more. Furthermore, on account of delays, when prices are rising, costs themselves go up. These days, various costing methods have been evolved for use of continuous check on various cost elements of projects, especially the manufacturing ones. The authorities also use these methods in a number of such projects. In quite a few projects, the cost benefit approach is adopted in which the social cost and social benefits of a project are estimated (including an imputed valuation of the intagible social costs and benefits) and then the worthwhileness of the project is decided. It mst, however, be noted that the techniques of costing and cost-benefit analysis are not applied to all items of public expenditure. And there are certain expenditures which are contractual. The authorities are under obligation to incur them (such as interest on public loans) and the question of economy in their use just does not arise.

(2) Canon of Sanction. This canon asserts that not public funds should be used without proper authorization and further that funds must be sued only for the purpose for which they have been sanctioned. In a democratic set up, it is the legislature which sanctions the expenditure on demand by the executive authorities. The idea is that such a restriction would avoid unscrupulous and unwanted expenditure and will also be a check against misappropriation of funds. Given the authority by the legislature, detailed authorizations are worked out and at each stage the spending unit has to ave the sanction and approval of the appropriate authorities. Since, however, there can always be emergencies and delays in getting the sanction of the legislature for additional funds, a certain flexibility is granted in a number of cases up to a margin.

(3) Canon of Benefit. This is a clearly related to the canon of economy. Actually economy of expenditure is a relative term an not an absolute one.

Any expenditure is to be viewed against the benefits, that will accure from it. Canon of benefit also says that the public expenditure should be incurred only if it is beneficial to the society.

Now the beneficial nature of public expenditure can manifest itself also in the form of various effects on income and wealth distribution, effects on production, and so on. In the final analysis this canon leads the authorities to observe the 'principle of maximum social advantage' which we have already discussed in an earlier part of the book.The additional consideration here would be that it may be possible to reallocate the same public expenditure between different items in a manner which increases social benefit. The authorities should, therefore, try to choose that combination of items for public expenditure which collectively maximize the social benefit.

(4) Canon of Surplus. This canon should actually be inerpreted to mean that the government should avoid deficit budgeting, at least a presistant one. It should always try to be prodent and should ais at meeting its current expenditure needs out of it current revenue. It should not over-spend and run into a debt. Since it may not be possible to avoid some deficits, it would be better if the general effort is directed at achieving a modrate surplus. Such moderate surpluses during some years will take care of reasonable but unavoidable deficits during other years. If on account of war, etc., a large deficit has to be incurred, them the government should try to pay of its debts as soon as possible.

This canon, however, no longer finds favour with the fiscal authorities or with economists in general. This canon was an off-shoot of the laissez-faire philosophy. These days, however, the regulatory role of the government is recognized in an increasing measure and therefore the choice of a surplus or a deficit budget is left to be decided on the merits of the case. Thus during depression in a developed country, the government would do well to run into a deficit to stimulate demand and production. Objectives of stabilization and economic growth may necessitate recurring deficits. Resource mobilisation efforts in an underdeveloped country often necessitate a deficit financing. It is a concealed taxation through which can be used for capital formation. In the growth process, the barter sector of an underdeveloped economy gets increasingly monetised while the economy itself grows in complexities. In order to help and sustain this process, the financial and credit structure of the economy must also develop along healthy and efficient lines. To this end, deficit financing through resultant increase in money supply and public debt, provides the necessary credit base.

21.6 EFFECTS OF PUBLIC EXPENDITURE

Idea regarding the need and the effects of public expenditure have varied over time. The earlier approach was closely linked with the philosophy of laissez-faire according to which the best government was the one which governed the lease. It was argued that every one was the

best judge of his own interests and that the government could not be expected to take any decision which was basically superior to the private ones. The only sphere where the government could legitimately operate was the preservation of the society and undertaking those activities which were needed by the economy but were commercially unprofitable. It was this logic which delimited the State's legitimate sphere of activities to defence, law and order, justice, administration and social overheads.

However, the fact that the market mechanism failed in many respects to bring about the desired results in the economy, forced an increasing intervention on the part of the State. This not only led to a rapid growth in the government sector and public expenditure but also fed various analytical hypotheses concerning public expenditure. However, we find that on account of the basic differences in the approaches adopted by various writers, we have no general agreement as to the way in which public expenditure can be used and the way it would affect the working of an economy. Thus, we find that some authors have characterized public expenditure as a potent tool for bringing about income and employment stability in the economy. Others are skeptical about the very possibility of using public expenditure usefully. To them public expenditure is a sheer waste and therefore a burden upon the economy. Still others would look at public expenditure as a major weapon for bringing about an egalitarian society - through various welfare measures and so on.

Let us, however, proceed with the recognition of the fact that the government sector is a part of the economy and that it should be treated as such. It is a different thing, of course, that just as different sectors of the economy are interdependent and have influence on each other, similarly, the government sector also is interlinked with the rest of the economy. But there is one major difference. It is that the private sector of the economy is guided by the market mechanism while the government sector can be used by the authorities to bring about certain changes in the economy. Within limits, the government sector can flout the laws of the market. It is also an important measn of directing the working the rest of the economy. It is this intricate relationship between the government sector and rest of the economy which spells out different possible effects of public expenditure.

(i) Public Expenditure and Economic Stabilizations :

It is a well-known fact that the market forces by themselves leave much to be desired in the field of economic results. The more advanced and free the market mechanism, the more prone the economy is to fluctuations in income, employment, and prices. It is for this reason that with the development of capitalism, for enterprise economies came to experience ever-stronger trade cycles. Accordingly the need to use some effective anti-cyclical measures was recognized-more so since the a havoc which the Great Depression of the 1930's caused. Keynesian diagnosis of the basic cause of the ills of a developed market economy was the deficiency of effective demand which was caused on account of a low marginal propensity to consume coupled with a low marginal efficiency of investment. He therefore advocated a continuous injection of additional

purchasing power in the market through stimulation of investment and consumption activities' and through direct public investment. This direct investment was a part of the public expenditure. Such a public expenditure was meant to directly add to the effective demand in the market and generate a high value multiplier by distributing income to those sections of the population which had a high marginal propensity to consume. The addition to demand by such sections whould also stimulate investment activity and thus through an all-round increased demand, the depression could be overcome. Keynesian prescription was basically directed towards curing a state of depression-but the logic of the argument can also be extended to that of curing an inflationary situation. To put it differently Keynsesian policy prescription can be developed into a scheme of compensatory finance correcting the deficiency or excess for demand by the private sector of the economy. During a depression the State was expected to increase total spending in the economy. And this could be done, if need be, through deficity financing. Public borrowings, to the extent they came out of savings of the people, would help in the stimulation of over all demand when they were spent. This would be more so, when the savings of the people were not finding an investment outlet, due to an all-round deficiency of demand.

Similarly, if deficit financing was being met through creation of additional money, he stimulating effect of additional public expenditure would again be felt. In either case there would be a net increase in total expenditure and demand flows in the economy. During a boom, on the other hand, the need is to curb extra demand. This may be done through reducing public expenditure while maintaining the same amount of taxation and/or borrowings. Here taxation would drain away some of the purchasing power from the hands of the people and public borrowings would be in the same way cut into market investment (since market savigs are not likely to go unvested on account of good investment opportunities). Thus a curtailing of public expenditure would restrain the inflationary pressures.

It must be remembered that the use of public expenditure as an ant cyclical weapon implies the existence of a well-knit and sensitive market mechanism where, through the fee working of the input-output relationships between different industries, any change starting in one industry spreads to the rest of the economy. It is necessary that such spreading out of effects should be even enough and without undue time lags. And if a depression is to be cured through stepping up of demand, then there must be adequate unutilized excess capacity in the economy. If these assumptions are satisfied, them the authorities have to concern themselves only with the aggregate demand and not with the particular directions in which it is flowing, since through the interaction between demand flows and supply flows and automatic adjustment takes place. In a market where there are technical and other rigidities, the effect created in one sector may not evenly spread to the others. It must be noted that such rigidities are not absent even in developed countries. As a result, under

such circumstances, public expenditure no longer remains a simple and easy tool.

The authorities have to regulate not only the total magnitude of demand in the economy, they have also to ensure that the subdivisions of the demand flows match the supply flows. Public expenditure as anti-cyclical tool will have to be devised in a detailed manner. If this care is not taken, and if the authorities use public expenditure just to stimulate demand in general, then such a stimulating effect will be felt only for certain items while many other industries and areas would remain unaffected, or would be affected only partially. Actually, it is quite possible that while some sectors of the economy are suffering from lack of demand some others might be groaning under inflationary pressures on account of too much demand. Similarly, it is also possible that when the government reduces its expenditure to curtail over-all demand, the effect is more or less concentrated in the in-dustries for which the government reduces the expenditure directly.

In summary, we may say that in under developed countries, public expenditure as a general weapon against economic instability has only a limited use; a very detailed programme has to be worked out to meet the specific problems on hand and even then public expenditure alone may not be adequate to overcome the difficulties. A careful and judicious combination of the import and export subsidies, duties and other steps has to be used for achieving effective results.

(ii) Public Expenditure and Production :

Public expenditure can help the economy in numerous ways in attaining higher levels of production and growth. The various ways in which such effects might be brought about are obviously in ter-related. The analysis of these effects can be taken up separately in the context of developed an under developed economies.

Let us first take up the case of developed market economy. Such an economy has enough of flexibility but may be suffering from a deficiency of effective demand. Public expenditure can add to the effective demand directly and thus generate conditions favorable for the market forces to push up production. Actually such public investment need not be productive in the sense of adding to the supply side of the market also. This public investment can just be means of disbursing purchasing power to those who would spend the same and add to the effective demand.

But the technique of increasing production through increasing demand becomes ineffective once the level of full employment is reached. Money income goes up but real income does not increase correspondingly because real income depends upon the use of real resources. If, therefore, demand is pushed beyond full employment, it will only add, to the inflationary pressures. It may be noted further that the public expenditure may not be able to push up production proportionately because of various rigidities from which even a developed economy is likely to suffer. For

example, some industries may not have unutilized excess capacity when demand goes up. In some industries monopolistic practices may be in vogue and there can be strong militant trade unions. Under different technical and other types of timidities the economy may not be able to respond fully to increase demand. The result is likely to be a partial increase in production when demand increases through the use of public expenditure and the results can be quite inflationary beyond a limit. Once we recognize the rigidities from which a developed economy may be suffering and the corresponding lack of complete interflow of demand between its various sectors, the coexistence of inflation and unemployment cannot be ruled out. In such a case the authorities cannot be in different as regards the manner in which public expenditure generates additional demand in the economy. Specific details of public expenditure would have to be decided so as to achieve selective additions to demand along those lines which suffer from shortage of effective demand.

The case is a different one with underdeveloped economies. Such economies are characterized by a low level of saving and investment activity. This deficiency, again, may be remedied by stimulating private saving and investment, or through direct public saving and investment, or both. Thus in under developed countries, there is a shortage of social overheads, skilled labour, capital equipment and machinery. A number of important and basic industries either do not exist or need to be expanded. Public expenditure can be directly used to create and maintain social overheads. Itcan also be used to crate human skills through education and training. In India, we find a good deal of regional disparities. Certain districts, or parts thereof, have been enlisted as economically backward. Various tax concessions and credit facilities are being provided for setting up industries in these areas. Public expenditure can be used to provide in necessary economic infra-structure for the development of selected economic activities and can be used to give subsidies for increasing their profitability. Thus the authorities can add to the process of capital accumulation. To the extent that this capital formation is financed through foreign aid, the process of economic growth is accelerated.

In this process of accelerating capital accumulation, the authorities have to take a few precautions so as to maximize the benefits of public expenditure and to avoid the possible harmful incidental effects.

Firstly, these various projects have generally a long gestation period.

Secondly, on account of faulty planning and execution a lot of wastage can take place in public expenditure. This must be avoided.

Thirdly, because resources are limited compared with their need care must be taken to choose the most appropriate and most useful projects.

Fourthly, a careful decision has to be taken regarding the volume of public expenditure in various projects and on various measures expected to stimulate private investment. Public expenditure may also be used to

encourage the market sector of an underdeveloped economy for contributing to the process of economic growth.

Public expenditure can be used to create demand for various products, and thus stimulate private production.

Public sector investment can be specifically directed towards creation of particular supplies and facilities, which form important and necessary inputs for other industries.

Research and development are important and helpful activities which must be undertaken in a full measure. New, effective and cheap methods of production can be found whereby local resources are used and a saving in imports and foreign change is effected. Nw products can be invented which will help the economy in its various productive activities. In these diverse ways, the economy can be helped in effecting a re-allocation of its resources and in the process of economic growth.

(iii) Public Expenditure and Economic Growth :

The factors discussed above would enable us to see the role of public expenditure in economic growth also. In a developed country, through economic stabilization, stimulation of investment activity and soon, public expenditure maintains a rate of growth which is a smooth one. In an underdeveloped country, public expenditure has an active role to play in reducing regional disparities. developing social overheads, creation of infrastructure of economic growth in the form of transport and communication facilities, education and training, growth of capital goods industries, basis and key industries research and development and so on. Public expenditure has great role to play in the form of stimulating saving and capital accumulation.

One way in which public expenditure is expected to affect the pace of economic growth is the will and capacity of the people to work, save and invest. It must be recognized, however, that public expenditure is only a part of the over-all economic policy that a country may be adopting. Taxation, licensing and various policy instruments may aid public expenditure in achieving different objectives. Of course, if the things are ill-planned, different institutions may even work at cross purposes. When therefore, the probable effects of public expenditure are mentioned, it is always understood that these effects have to be considered in the context of taxation and other measures being pursued by the government and that there is a coordination between different objectives and institutions.

Public Expenditure and Distribution :

An important aspect of the market mechanism is the inequalities of income and wealth that arise on account of it and which through the institutions of private property and inheritance get widened with the passage of time. Furthermore, such income and wealth disparities not only spell a social and economic injustice, they also distort production and employment patterns.

Lesser inequalities of income and wealth, it may be claimed, contribute towards economic stability. It is generally recognized that marginal propensity to consume falls as income rises. As a result during the expansionary phase of a trade cycle, consumption demand tends to lag behind and causes a check on further expansion of demand in the economy. Without such a check the upward movement of the trade cycle might develop into a real inflation. Similarly, during a depression, consumption refuses to dip below a certain level and as a result the economy is provided a firm base below which on account of a minimum demand it would not go. Furthermore, such a stability in the economy itself is helpful to economic growth. Private investment is affected, amongst other things, by safety and expected rates of return. With economic stability and expectation thereof, the risk of loss is reduced and this has, therefore, a healthy effect on the investment climate.

Welfare considerations also favors and equitable distribution of income and wealth. The purpose of an economic policy should be to contribute towards achieving the maximum social benefits. Though we cannot prove objectively that marginal utility of income falls as income increases, such a statement may be accepted on commonsense basis. If that is a geed, it follows that any movement towards equitable distribution of income and wealth would increase the aggregate satisfaction in the community. Leerner has shown that even if we do not know the exact way in which marginal utility of income falls with a rise in income and even if we cannot have interpersonal comparisons of utility, still a shift-towards equality would probably add to the aggregate satisfaction of the community.

20.7 COCLUSION

Though, historically, public expenditure is found to be continuously increasing over time in almost every country. Traditional thinking of philosophy have been very encouraging to the growth of public expenditure. It was argued that each economic unit was the best judge of its qwn economic interest and the Government was certainly not able to decide on behalf of others, but, however, the fact that market mechanism is failed in many respects to bring about the desired result in the economy. Forced an increasing intervention on part of the state, this not only led a rapid growth in Government sector and public expenditure but also fed various analytical hypothesis concerning public expenditure.

20.8 FURTHER STUDY

1.	Bhatia, H.L.	:	Public Finance
2.	Singh, S.K.	:	Public Finance
3.	Sinha, V.C.	:	Public Finance
4.	Musgrave & Musgrave	:	Public Finance