MODULE - 1

1

INTRODUCTION

Unit Structure :

1.0 OBJECTIVES

- To understand the meaning, subject matter, uses and limitations of Microeconomics and Macroeconomics
- To study the meaning of Circular flow of income
- To study the circular flow of income and expenditure in a two sector model economy

- To study circular flow of money with saving and investment in a two sector economy
- To understand circular flow of income in three sector economy
- To understand circular flow of income in a four sector economy
- To understand the importance of circular flow of income
- To study the concepts of GNP, GDP, NNP and NDP
- To understand the meaning of personal income and disposable income
- To study different methods of measurement of national income

1.1 INTRODUCTION

Macroeconomics study examine the economy as a whole i.e. it is a study of aggregates. To study the income and expenditure of the country macroeconomics provides several tools. Therefore study of these tools used to explain national income and expenditure and how to measure it becomes inevitable.

1.2 DISTINCTION BETWEEN MICROECONOMICS AND MACROECONOMICS

1.2.1 Meaning :-

Macroeconomics is concerned with the nature, relationships and behaviour of such aggregate quantities and averages as national income, total consumption, savings and investment, total employment, general price level, aggregate expenditure and aggregate supply of goods and services. As macroeconomics deals with aggregate quantities of the economy as a whole, it is also called as aggregative economics.

1.2.2 Subject matter :-

Theories of National Income, consumption, saving and investment, theory of employment, theories of economic growth, business cycles and stabilization policies, theories of money supply and demand and theory of foreign trade broadly constitute the subject matter of macroeconomics. Macroeconomic theories seek to answer questions such as how is the level of National Income of a country determined? What determines the levels of overall economic activities in a country? What determines the level of total employment? How is the general level of price determined? etc.

1.2.3 Uses :-

The main justification for macroeconomics lies in the need for generalising the behaviour of and relationships between economic aggregates. To study the system as a whole and to explain the behaviour of aggregate quantities and the relationship between them is extremely difficult. Macroeconomic approach has made it possible. It ignores the details pertaining to the individual economic agents and quantities and compresses the unmanageable economic facts to a manageable size and

makes them capable of interpretation. Macroeconomic theories are used in formulating public policies. They provide clarity to the macroeconomic concepts and quantities and bring out the relationship between macro variables of the economy in the form of models or equations.

1.2.4 Limitations :-

Study of macroeconomics is limited to only aggregates. It cannot be applied to explain the behaviour of individual components of the economic system and the individual quantities. Secondly, it ignores the structural changes in constituent elements of the aggregate. Hence conclusions drawn from the analysis of aggregates may involve error of judgement and may be misleading.

1.3 MEANING OF CIRCULAR FLOW OF INCOME

The circular flow of money refers to the process whereby money payments and receipts of an economy flow in a circular manner continuously over a period of time. The various components of money payments and receipts are saving, investment, taxation, loans, government purchases, exports, imports, etc. These are shown in diagram in the form of current and cross-current in such a manner that the total money payments equals the total money receipts in the economy.

1.4 CIRCULAR FLOW OF INCOME

The modern economy is a monetary economy, where money is used in the process of exchange. The modern economy performs economic activities such as production, exchange, consumption and investment. In order to carry out these economic activities people are involved in buying and selling of goods and services. The transactions take place between different sectors of the economy. The process of production and exchange generates two kinds of flows.

1. Product or real flow, that is the flow of goods and services, and
2. Money flow.

Product and money flow in opposite direction in a circular way. The product flow consists of a) factor flow, that is flow of factor services and b) goods flow that is flow of goods and services. In a monetized economy the flow of factor services generates money flows in the form of factor payments which take the form of money flows. The factor payments and expenditure on consumer goods and services take the form of expenditure flow. Expenditure flow is in the form of money flow. Both income and expenditure flow in a circular manner in opposite direction. The entire economic system can therefore be viewed as circular flows of income and expenditure. The magnitude of these flows determines the size of national income. We can explain how these flows are generated and how they make the system work.

The economists, however use simplified models to explain the circular flow of income and expenditure dividing the economy into four sectors namely, I) Household sector, II) Business or Firms sector , III) Government sector, and IV) Foreign sector. These sectors are combined to make the following three models for the purpose of showing the circular flow of income.

I) Two- sector model including the household and business sectors;

II) Three- sector model including the household, business and government sectors; and

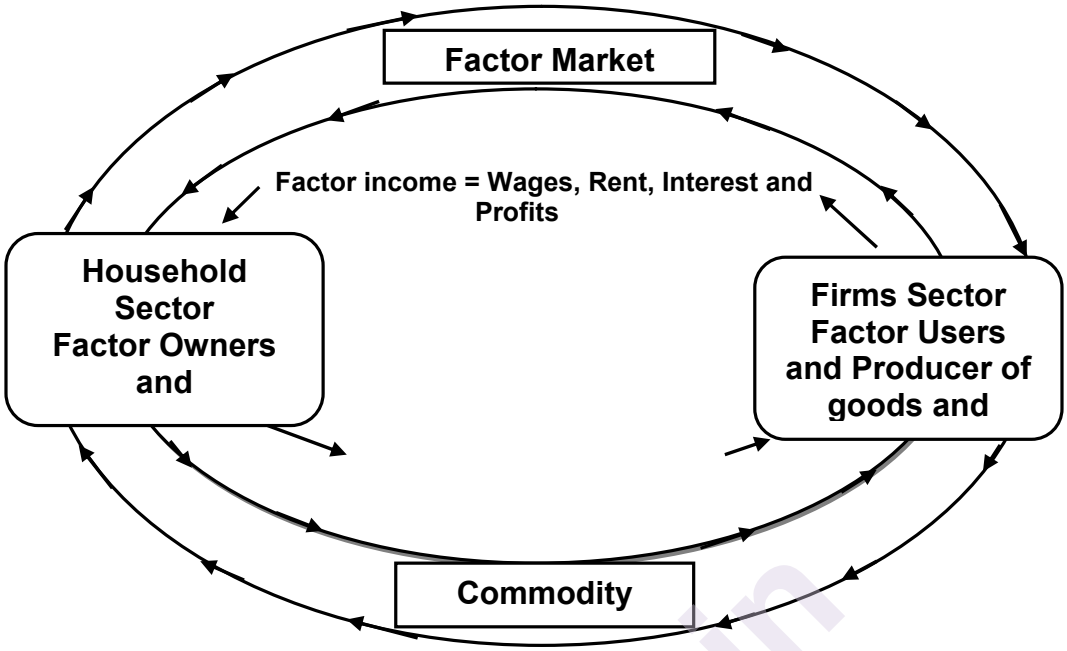
III) Four- sector model including the household, business, government and the foreign sectors.

1.5 CIRCULAR FLOW OF INCOME AND EXPENDITURE IN A TWO – SECTOR ECONOMY MODEL

We begin with a simple hypothetical economy where there are only two – sectors, the household and business firms which represent a closed economy and there is no government and no foreign trade. The household sector owns all the factors of production that is land, labour, capital and enterprise. This sector receives income in the form of rent, wages, interest and profit, by selling the services of these factors to the business sector. The business sector consists of producers who produce goods and sell them to the household sector. The household sector consists of consumers who buy goods produced by the business sector.

Thus in the first instance, money flows in the form of such income payments as rent, wages, interest and profits from the business sector to the household sector when the former buys the services of the factors of production to produce goods. Money so received is, in turn, spent by the household sector to buy goods produced by the business sector. In this way money flows in a circular manner form the business sector to the household sector and from the household sector to the business sector in the economy.

The circular flow in a two sector economy is depicted in Fig. 1.1 where the flow of money as income payments from the business sector to the household sector is shown in the form of an arrow in the upper portion of the diagram. On the other hand, the flow of money as consumption expenditure on the purchase of goods and services by the household sector is shown to go the business sector by an arrow in the lower portion of the diagram. As long as income payments by the business sector for factor services are returned by the household sector to purchase goods, the circular flow of income payments and consumption expenditure tends to continue indefinitely. Production equals sales or supply equals demand, and the economy will continue to operate at this level in a circular flow of money.



Flow of goods and services
Fig. 1.1

The above analysis of circular flow of income and expenditure in a two – sector closed economy is based on following assumptions.

1. The economy consist of two sectors namely household and business or firms;
2. Household sector spends their entire income received in the form of rent, wages, interest and profits from the business sector on buying of goods and services produced by the firms. They do not hold or save any part of their income.
3. The business firms keep their production exactly equally to their sales or as much as demanded by the households. There are no changes in their inventories.
4. The business sector does not keep any undistributed money as reserve. The money it receives by selling goods and services to the household sector is fully spent in making payments as rent, wages, interest and profits to the household sector.
5. There are no government operations.
6. There is no inflow or outflow of income or no foreign trade.

It is these assumptions that keep the flow of money to move in a circular manner in the economy. But these assumptions are unrealistic and do not fit in the actual working of the economy.

1.6 CIRCULAR FLOW OF MONEY IN A TWO SECTOR ECONOMY WITH SAVINGS AND INVESTMENT

In the analysis of circular flow of income in a two sector economy, we have assumed that, all money income received by the households is spending on consumer goods and services. But in reality, the households do not spend their entire money income on goods and services. They save a part of their income for various purposes. Let us now explain if households save a part of their income, how their savings will affect money flow in the economy.

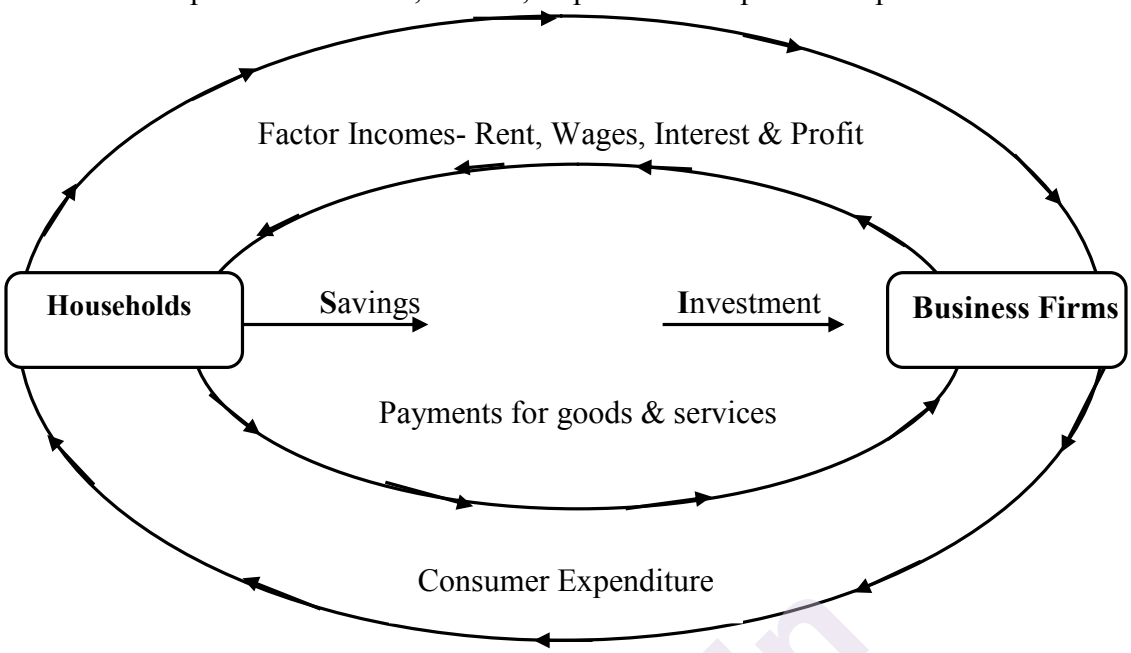
When households save, their expenditure on goods and services will decline to that extent and as a result money flow to business firms will contract. With reduced money income firms will hire fewer workers or reduce payments to the factors of production. This will lead to the fall in total income of the households. Thus, savings reduce the flow of money expenditure to business firms and cause a fall in economy's total income. Economist, therefore call savings a leakage from the money expenditure flow.

But savings by households will not reduce aggregate expenditure and income, if their savings are brought back into the flow of expenditure. In free market economies financial market consists of commercial banks, stock market and non-bank financial institutions etc. plays an important role of mobilization of savings, where households deposit their savings. On the other hand, business firms borrow money from the financial market for the purpose of investment. Thus, through the financial market savings and investment are again brought into the expenditure stream and as a result total flow of spending does not decrease. Circular flow of money with savings and investment is explained with the help of following assumptions.

1. All the households need to deposit their savings with the financial institutions\ market.
2. There are no inter-households borrowings.

In the following figure, in the middle of the circle a box represents financial market. Money flow of savings is shown from households towards the financial market. Then the flow of investment expenditure is shown as borrowing by business firms from the financial market.

The circular flow of money with savings and investment is shown in the following fig. 1.2.



Flow of goods & services
Fig.1.2

The necessary condition for the constant flow of income is savings must be equal to investment. As mentioned above, saving a part of income is not spent on consumer goods and services. In other words, saving is *withdrawal* of some money from the income flow. On the other hand, investment means some money is spent on buying new capital goods to expand production capacity. In other words, investment is *injection* of some money in circular flow of income. But savings and investments in an economy need not necessarily be equal.

If planned savings is more than planned investment expenditure, income, output and employment will fall and therefore, flow of money will decline. On the contrary, if planned investment expenditure is more than planned savings, income, output and employment will rise and therefore, flow of money will increase. Thus, the economy will be in equilibrium if planned savings is equal to planned investment expenditure.

It is clear from the above analysis that, the flow of money will continue at a constant level only when the condition of equality between planned savings and planned investment is satisfied.

1.7 CIRCULAR FLOW OF INCOME IN A THREE SECTOR ECONOMY

The two sector economy model consists of households and business firms. But in a three sector economy additional sector is government sector. Government affects the economy in many ways. Here we will concentrate on its taxing, spending and borrowing roles. In the

modern economy government plays variety of role. Government performs different functions. For this it requires huge amount of income. Government receives income in the form of taxes from households and business firms. Taxes are paid by the households and business firms which not only reduces their disposable income but also their expenditure and savings.

Governments' spending includes expenditure on goods and services, pension payments, unemployment allowance etc. Money spent by Government is an injection of income into the economy which further received by the households and business firms.

Another important method of financing Government expenditure is borrowing from financial market. This is represented by money flow from the financial market to the Government is labelled as Government borrowing.

In a three sector economy we have the following three economic agents.

1. Households and business firms
2. Financial sector
3. Government

The circular flow of income in a three sector economy is shown in the following fig. 1.3.

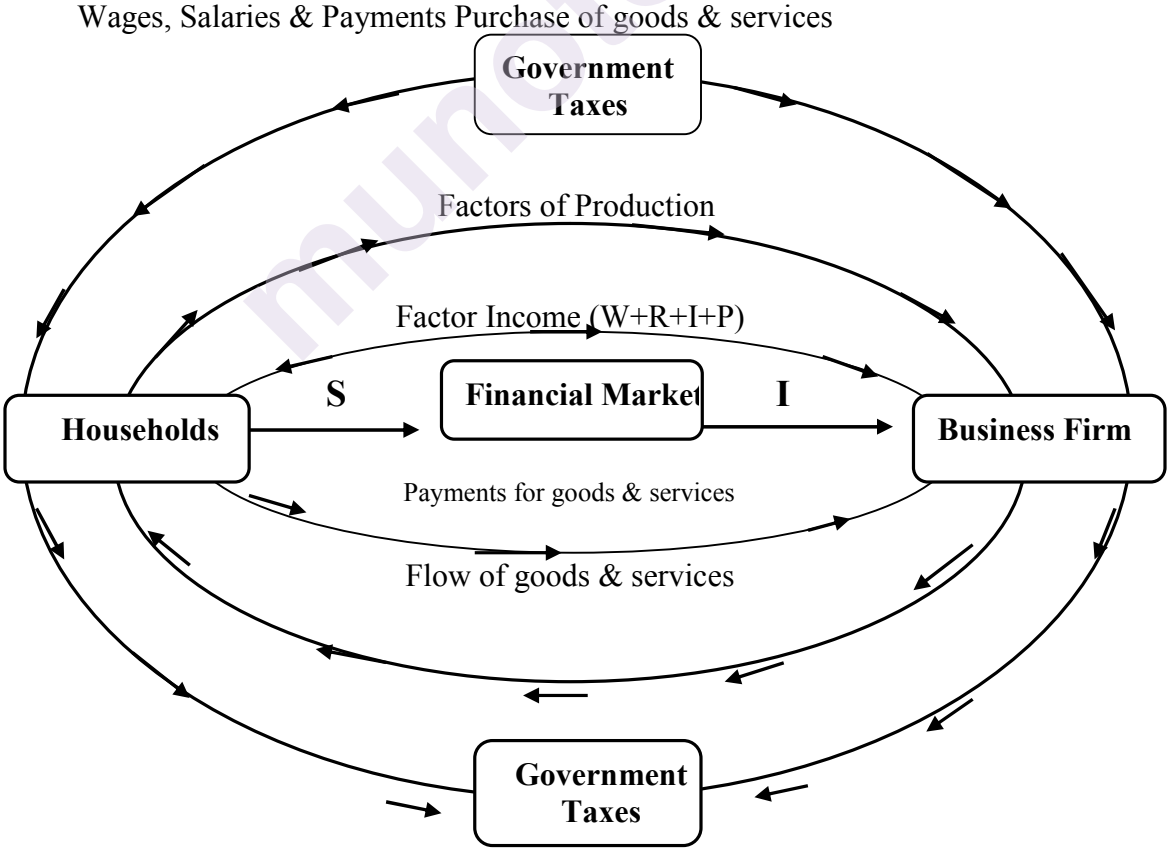


Fig. 1.3

The above figure clearly shows that, income received by the Government in the form of taxes from households and business firms is used for spending in the form of wages, salaries, allowances, pension, subsidies and purchases of goods and services from them. Money spent by the Government is received by the households and business firms.

Thus, the *leakages* (*withdrawal)* in the form of savings and taxes arise in the circular flow of income. The savings and taxes are further get *injected* back into the circular flow of income in the form of investment and Government spending. When these *leakages* (*withdrawal)* are equal to *injections* in the form of investment and Government spending the flow of money in the economy operates smoothly.

The inclusion of the Government sector significantly affects the overall economic situation. Total expenditure flow in the economy is the sum of consumption expenditure (C), investment expenditure (I), and Government expenditure (G).

Thus, it is symbolically expressed as,

$$\text{Total expenditure (E)} = C + I + G$$

Total income (Y) received is allocated to consumption (C), savings (S) and taxes (T).

Thus, symbolically expressed as,

$$Y = C + S + T$$

Since expenditure (E) made must be equal to the income received (Y) from equation above we have

$$C + I + G = C + S + T$$

Since C occurs on both sides of the equation and will therefore be cancelled out, we have

$$I + G = S + T$$

By rearranging we obtain

$$G - T = S - I$$

This equation is very significant because it shows what would be the consequences if Government budget is not balanced. If Government expenditure (G) is greater than the tax (T), the Government will have a budget deficit. To finance the budget deficit, the Government will borrow from the financial market. For this purpose, then private investment by business firms must be less than the savings of the households. Thus Government borrowing reduces private investment in the economy.

1.8 CIRCULAR FLOW OF MONEY WITH THE FOREIGN SECTOR OR CIRCULAR FLOW OF MONEY IN FOUR SECTOR OPEN ECONOMY

So far the circular flow of money has been shown in the case of a closed economy. But the actual economy is an open one where foreign trade plays an important role. Exports are an *injection* or inflows into the circular flow of money. They create incomes for the domestic firms. When foreigners buy goods and services produced by domestic firms, they are exports in the circular flow of money. On the other hand, imports are *leakages* from the circular flow of money. They are expenditure incurred by the household sector to purchase goods and services from foreign countries. These exports and imports in the circular flow are shown in fig. 1.4.

Take the inflows and outflows of the household, business and government sectors in relation to the foreign sector. The household sector buys goods imported from abroad and makes payments for them which is a leakage from the circular flow of money. The householders may receive transfer payments from the foreign sector for the services rendered by them in foreign countries.

On the other hand, the business sector exports goods to foreign countries and its receipts are an injection in the circular flow of money. Similarly, there are many services rendered by the business firms to foreign countries such as shipping, insurance, banking etc. for which they receive payments from abroad. They also receive royalties, interest, dividends, profits, etc. for investment made in foreign countries. On the other hand, the business sector makes payments to the foreign sector for imports of capital goods, machinery, raw materials, consumer goods and services from abroad. These are the leakages from circular flow of money.

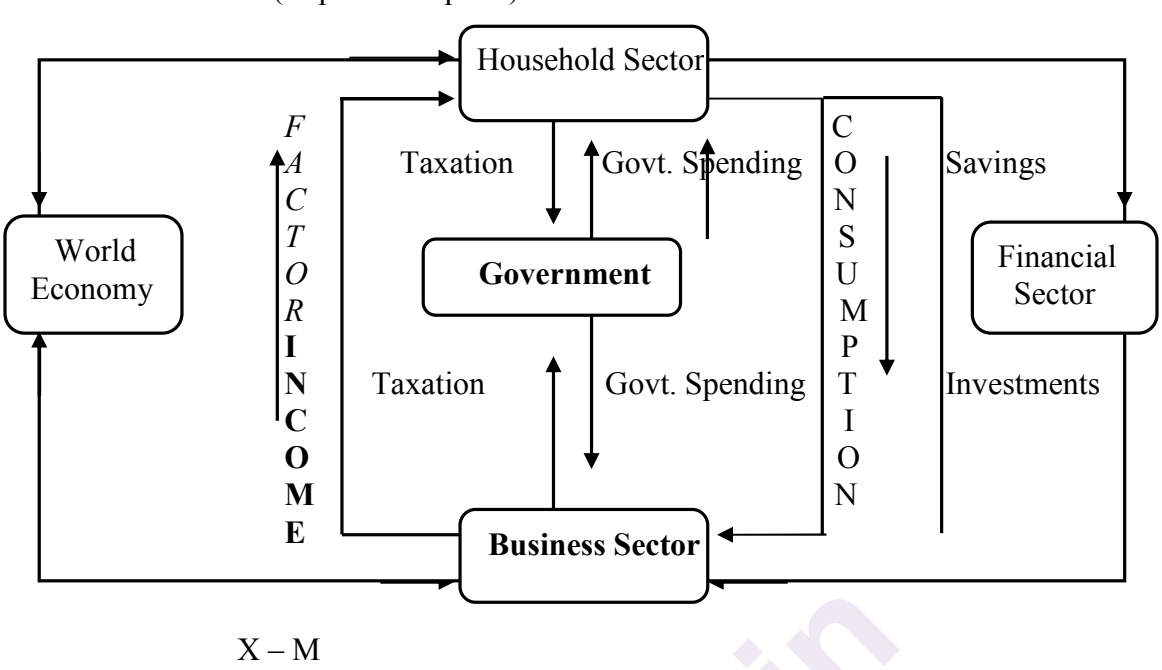


Fig.1.4

Like the business sector, modern governments also export and import of goods and services, and lend to and borrow from foreign countries. For all exports of goods, the government receives payments from abroad. Similarly, the government receives payments from foreigners when they visit the country as tourists and for receiving education, etc. and also when the government provides shipping, insurance and banking services to foreigners through the state-owned agencies. It also receives royalties, interests, dividends, etc. for investments made abroad. These are injections into the circular flow of money. On the other hand, the leakages are payments made to foreigners for the purchase of goods and services.

Figure 1.4 shows the circular flow of money in four sector open economy with saving at the right hand and taxes and imports at the left hand shown as leakages from the circular flow on the upper side of the figure, and investment, and government purchase (spending) on the right hand side and exports as injections into the circular flow, on the lower level left hand side of the figure. Further, imports, exports and transfer payments have been shown to arise from the three domestic sectors- the household, the business and the government. These outflows and inflows pass through the foreign sector which is also called the 'Balance of Payments Sector.'

Thus Figure 1.4 shows the circular flow of money where there are inflows and outflows of money, receipts and payments among the business sector, the household sector, the government sector, and the foreign sector in current s and cross- currents.

1.9 IMPORTANCE OF CIRCULAR FLOW OF INCOME

1. To understand the functioning of the economy - Money being the life blood of a modern economy, its circular flow gives a clear picture of the economy. We can know from its study whether the economy is working smoothly of there is any disturbance in its smooth functioning. The circular flow of money is important for studying the functioning of the economy and for helping the government in formulating polity measures.
2. To understand the link between producers and consumers – The circular flow of money establishes a link between producers and consumers. It is through money that producers buy the services of factors of production from the household sector and in turn household sector purchases goods and sector from the producers.
3. To find out the leakages in circular flow of income – Leakages or injections in the circular flow of money disturb the smooth function of the economy. For example, saving is a leakage out of the expenditure stream. If saving increases, this contracts the circular flow of money. This tends to reduce employment, income and prices thereby leading a deflationary process in the economy. On the other hand, consumption expenditure and investment are injections in the circular flow of money which help to increase employment, income, output and prices and thus lead to inflationary tendencies.
4. Highlights the importance of monetary and fiscal policies – The study of the circular flow of money also highlights the importance of monetary policy in bringing about the equality between savings and investment through the capital market. Similarly, it also points out the importance of fiscal policy in bringing about the equality between saving plus taxes and investment plus government expenditure.

To conclude, the circular flow of money possesses much theoretical and practical significance in an economy.

1.10 GROSS NATIONAL PRODUCT (GNP):

GNP is the total market value of all final goods and services produced in a year plus net income from abroad. This is the basic social accounting measure of the total output or aggregate supply of goods and services. GNP includes four type of final goods and services. First, consumer's goods and services to satisfy, the immediate needs and wants of the people. Second, gross private domestic investment. Third, goods and services produced by government and four, net income from abroad i.e. net export of goods and services GNP is the total amount of current production of final goods and services

There are two things which have to be noted in regard to gross national product Firstly, it measures the market value of annual output or it is a

monetary measure. This enables the process of adding up the different types of goods and services produced in a year. However, for accuracy, the figure for GNP is adjusted for price changes Secondly, for calculating gross national product accurately, all goods and services produced in any given year must be counted only once. GNP includes only the market value of final goods and ignores transactions involving intermediate goods. Final goods are those goods, which are being purchased for final use and not for further processing. The inclusion of intermediate goods will involve double counting. This will give us an inflated figure of the national product.

In national income accounting, GNP is calculated both at market prices and factor cost. In order to calculate GNP at market prices, the outputs of all final goods and services are valued at market price and the values thus obtained are added. The market price of a good includes indirect taxes such as the sales tax and excise tax. Thus it is greater than the price received by the seller. Sometimes, the government may grant subsidy on a product. In this case, the market price would be less than the price received by the seller GNP at factor cost eliminates the influences of indirect taxes and subsidies. It provides an estimate of the total value of the final goods and services produced during a year at cost of production.

GNP at factor cost is obtained by subtracting net indirect taxes from GNP at market prices. GNP at Factor cost = GNP at market price - Net indirect taxes = GNP at market prices - (Total indirect taxes - Subsidies)

National income is usually calculated by 3 methods

(a) The product method.
(b) The income method
(c) The expenditure method

In the product method, GNP is the value added by the various industries and activities of the economy in a particular year. In the income method, we add up the income earned by the owners of factors of products in a particular year. This gives the gross national income (GNI). In the expenditure method; we add up the final expenditure of all residents in a country. All the three different ways of looking at one and the same thing.

1.11 GROSS DOMESTIC PRODUCT (GDP):

GDP refers to the value of final goods and services produced within the country in a, particular year. GDP is different from GNP. A part of GNP may be produced outside the country For example the money earned by the lndian’s working in USA is a part of India's GNP But it is not a part of GDP since they are earned abroad. Therefore the boundaries of GNP are determined by the citizens of a country whereas the boundaries of GDP are determined by the geographical limits of *a* country. It is also clear that the difference between GDP and GNP is due to the "net revenue from abroad." If the citizens of a country are earning more from abroad than foreigners are earning in that country, GNP exceeds GDP If the foreigners

in the country are earning more than its citizens are earning abroad, GNP is less than GDP

1.11.1 Net National Product :-

This is a very important concept of national income. In the production of gross national product, during a year, some capital is used up or consumed i.e. equipment, machinery etc. the capital goods wear out or undergo depreciation. Capital goods fall in value due to its use in production process. By deducting the charges for depreciation from the gross national product, we get the net national product. It means the market value of all the final goods and services after providing for depreciation. It is called national income at market prices. In other words, net national product is the total value of final goods and services produced in the country during a year after deducting the depreciation, plus net income from abroad.

1.11.2 Net Domestic Products:-

NDP is obtained by subtracting the depreciation from the GDP. NDP differs from MNP due to the net income from abroad. If the net income from abroad is positive, NDP will be less than NNP If the net income from abroad is negative, NDP will be greater than NNP NDP is also calculated either at market price or at factor cost.

National Income at Factor Cost:- means sum total of all income earned by resource suppliers for their contribution of land, labour, capital and entrepreneurial ability which go into the years net production. National income at factor cost shows how much it costs society In terms of economic resources to produce the net output. We use the term national income for the national income at factor prices.

National Income at factor cost = Net national product (National Income at market prices) - (indirect taxes +Subsidies)

1.12 PERSONAL INCOME

Personal income is the sum of the income actually received by individuals or households during a given year. Personal incomes earned are different from national income. Some incomes which are earned such as social security contributions corporate income taxes and undistributed corporate profits are not actually received by households. In the same manner, some incomes which are received like transfer payments are not currently earned ex Old age pension, unemployment compensation, relief payments interest payments etc. To get personal income from national we must subtract from National income the three types of incomes which are earned but not received and add incomes that are not currently earned, Personal income = N.I. - Social Security - contributions - corporate income taxes -undistributed corporate profit + Transfer Payments

1.13 DISPOSABLE INCOME

The personal income which remains after payment of taxes to the government in the form of income tax, personal property tax etc., is called disposable income. Disposable income = Personal Income - Personal Taxes. An individual can decide to consume or save the disposable income as he wishes.

Check Your Progress :

1. Generally three methods are use to calculate national Income- Explain.
2. Distinction Between : NNP and NDP

1.14 METHODS OF MEASUREMENT OF NATIONAL INCOME

For measuring national income, the economy through which people participate in economic activities, earn their livelihood, produce goods and services and share the national products is viewed from three different angles :

1. The national economy is considered as an aggregate of producing units combining different sectors such as agriculture, mining, manufacturing, trade and commerce, etc.

2. The whole national economy is viewed as a combination of individuals and households owing different kinds of factors of production which they use themselves or sell factor services to make their livelihood.
3. The national economy may also be viewed as a collection of consuming, saving and investing units (individuals, households and government).

National income may be measured by three different corresponding methods :

A) Net product method
B) Factor-income method
C) Expenditure method

1.15 NET OUTPUT OR VALUE ADDED METHOD :

It is also called the Value Added Method. It consists of three stages: i) estimating the gross value of domestic output in the various branches of production; ii) determining the cost of material and services

used and also the depreciation of physical assets; iii) deducting these costs and depreciation from gross value to obtain the net value of domestic output.

Measuring gross value : For measuring the gross value of domestic product, output is classified under various categories and it is computed in two alternative ways : i) by multiplying the output of each category of sector by their respective market price and adding them together, or ii) by collective data about the gross sales and changes in inventories from the account of the manufacturing enterprises and computing the value of GDP on the basis thereof. If there are gaps in data, some estimates are made thereof and gaps are filled.

Estimating cost of production : is, however a relatively more complicated and difficult task because of non-availability of adequate and requisite data. Countries adopting net-product method find some ways and means to calculate the deductible cost. The costs are estimated either in absolute terms or as an overall ratio of input to the total output. The general practice in estimating depreciation is to follow the usual business practice of depreciation accounting.

Following a suitable method, deductible costs including depreciation are estimated for each sector. The cost estimates are then deducted from the sectoral gross output to obtain the net sectoral products. The net sectoral products are then added together. The total thus obtained is taken to be the measure of net national products or national income by net product method.

1.16 FACTOR - INCOME METHOD :

This method is also known as income method and factor-income method. Under this method, the national income is calculated by adding up all he ―incomes accruing to the basic factors of production used in producing the national product. The total factor-incomes are grouped under three categories :

Labour income : included in the national income have three components : a) wages and salaries paid to the residents of the country including bonus and commission and social security payments; b) supplementary labour incomes including employer‘s contribution to social security and employers welfare funds and direct pension payments to retired employees; c) supplementary labour incomes in kind, e.g. free health and education, food and clothing, and accommodation, etc. Compensations in kind in the form of domestic servants and other free-of-cost services provided to the employees are included in labour income. War bonuses, pensions, service grants, are not included in labour income as they are regarded as transfer payments. Certain other categories of income, e.g., incomes from incidental jobs, gratuities, tips etc., are ignored for lack of data.

Capital income : According to Studenski, capital income include the following capital earnings
Dividends excluding inter-corporate dividends;

Undistributed before-tax profits of corporations;

Interest on bonds, mortgages, and savings deposits (excluding interests on war bonds, and on consumer-credit)

Interest earned by insurance companies and credited to the insurance policy reserves;

Net interest paid out by commercial banks;

Net rents from land, building, etc., including imputed net rents on owner-occupied dwellings;
Royalties;
Profits of government enterprises.

iii) Mixed income : include earnings from
Farming enterprises;
Sole proprietorship (not included under profit or capital income)

c) Other professions, e.g., legal and medical practices, consultancy services, trading and transporting etc. This category also includes the incomes of those who earn their living through various sources as wages, rent on own property, interest on own capital, etc.

All these three kinds of incomes added together give the measure of national income by factor income method.

1.17 EXPENDITURE METHOD

Also known as final product method, measures national income at the final expenditure stages. In estimating the total national expenditure, any of the two following methods are follows;

First, all the money expenditures at market price are computed and added up together, and Second, the value of all the products finally disposed of are computed and added up, to arrive at the total national expenditure.

The items of expenditure which are taken into account under the first method are
Private consumption expenditure;
Direct tax payments;

Payments to the non-profit making institutions and charitable organizations like schools, hospitals, orphanages, etc., Private savings. Under the second method, the following items are considered
Private consumer goods and services;
Private investment goods;
Public goods and services;
Net investment abroad.

The second method is more extensively used because the data required in this method can be collected with greater ease and accuracy.

Treatment of Net Income from abroad :

Nowadays, most economies are open in the sense that they carry out foreign trade in goods and services and financial transactions with the rest of the world. In the process, some nations get net income through foreign trade while some lose their income to foreigners. The net earnings or loss in foreign trade affects the national income. In measuring the national income, therefore, the net result of external transactions are adjusted to the total. Net incomes from abroad are added to, and net losses to the foreigners are deducted from the total national income arrived at through any of the above three methods.

Briefly speaking, all exports of merchandise and of services like shipping, insurance, banking, tourism and gifts are added to the national income. And all the imports of the corresponding items are deducted from the value of national output to arrive at the approximate measure of national income. To this is added the net income from foreign investment. These adjustments for international transactions are based on the international balance of payments of the nations.

1.18 MEASUREMENT OF NATIONAL INCOME IN INDIA:

In India, a systematic measurement of national income was first attempted in 1949. Earlier, many attempts were made by some individuals and institutions. The earliest estimate of India‘s national income was made by Dadabhai Naoroji in 1867-68. Since then many attempts were made, mostly by economists and the government authorities to estimate India‘s national income These estimates differ in coverage, concepts and methodology and are not comparable. Besides, earlier estimates were mostly for one year, only some estimates covered a period of 3 to 4 years. It was therefore not possible to construct a consistent series of national income and assess the performance of the economy over a period of time.

In 1949, a National Income Committee (NIC) was appointed with P.C. Mahalnobis as its Chairman, and Dr. D.R. Gadgil and V.K.R.V. Rao as members. The NIC not only highlighted the limitations of the statistical system of that time but also suggested ways and means to improve data collection systems. On the recommendation of the Committee, the

Directorate of National Sample Survey was set up to collect additional data required for estimating national income. Besides, the NIC estimated the country's national income for the period from 1948-49 to 1950-52. In its estimates, the NIC also provided the methodology for estimating national income, which was followed till 1967.

In 1967, the task of estimating national income was given to the Central statistical Organization (CSO). Till 1967, the CSO had followed the methodology laid down by the NIC. Thereafter, the CSO adopted a relatively improved methodology and procedure which had become possible due to increased availability of data. The improvements pertain mainly to the industrial classification of the activities. The CSO publishes its estimates in its publication, Estimates of National Income.

Methodology :- Currently, output and income methods are used by the CSO to estimate the national income of the country. The output method is used for agriculture and manufacturing sectors, i.e., the commodity producing sectors. For these sectors, the value added method is adopted. Income method is used for the service sectors including trade, commerce, transport and government services. In its conventional series of national income statistics from 1950-51to 1966-67, the CSO had categorized the income in 13 sectors. But, in the revised series, it had adopted the following 15 break ups of the national economy for estimating the national income;

Forestry and logging;
Fishing;
Mining and quarrying;
Large-scale manufacturing;
Small-scale manufacturing;
Construction;
Electricity, gas and water supply;
Transport and communication;
Real estate and dwellings;
Public administration and Defence;
Other services;
External transactions.
National Income is estimated at both constant and current prices.

Check Your Progress :
1. Write notes on the following :
Net output method
Factor income method
c) Expenditure method

1.19 SUMMARY

1. As macroeconomics deals with aggregate quantities of the economy as a whole, it is also called as aggregative economics. Theories of National Income, consumption, saving and investment, theory of employment, theories of economic growth, business cycles and stabilization policies, theories of money supply and demand and theory of foreign trade broadly constitute the subject matter of macroeconomics. Macroeconomic theories are used in formulating public policies. They provide clarity to the macroeconomic concepts and quantities and bring out the relationship between macro variables of the economy in the form of models or equations.

2. The circular flow of money refers to the process whereby money payments and receipts of an economy flow in a circular manner continuously over a period of time.

3. Product and money flow in opposite direction in a circular way. The product flow consists of a) factor flow, that is flow of factor services and b) goods flow that is flow of goods and services. In a monetized economy the flow of factor services generates money flows in the form of factor payments which take the form of money flows. The factor payments and expenditure on consumer goods and services take the form of expenditure flow. Expenditure flow is in the form of money flow. Both income and expenditure flow in a circular manner in opposite direction.

4. In a two sector model of circular flow, the household and business firms which represent a closed economy and there is no government and no foreign trade. The household sector owns all the factors of production that is land, labour, capital and enterprise. This sector receives income in the form of rent, wages, interest and profit, by selling the services of these factors to the business sector. The business sector consists of producers who produce goods and sell them to the household sector. The household sector consists of consumers who buy goods produced by the business sector.

5. In a three sector economy additional sector is government sector. Government affects the economy in many ways. Government receives income in the form of taxes from households and business firms. Taxes are paid by the households and business firms which not only reduces their disposable income but also their expenditure and savings.

   Governments' spending includes expenditure on goods and services, pension payments, unemployment allowance etc. Money spent by Government is an injection of income into the economy which further received by the households and business firms. Another important method of financing Government expenditure is borrowing from financial market. This is represented by money flow from the financial market to the Government is labeled as Government borrowing.

6. Four sector open economy the circular flow of income shows where there are inflows and outflows of money, receipts and payments among the business sector, the household sector, the government sector, and the foreign sector in current s and cross- currents.

7. GNP is the total market value of all final goods and services produced in a year plus net income from abroad. This is the basic social accounting measure of the total output or aggregate supply of goods and services.

8. GDP refers to the value of final goods and services produced within the country in a, particular year. GDP is different from GNP.

9. Net national product is the total value of final goods and services produced in the country during a year after deducting the depreciation, plus net income from abroad.

10. NDP is obtained by subtracting the depreciation from the GDP.

11. Personal income is the sum of the income actually received by individuals or households during a given year. Personal income = N.I - Social Security - contributions - corporate income taxes -undistributed corporate profit + Transfer Payments

12. The personal income which remains after payment of taxes to the government in the form of income tax, personal property tax etc., is called disposable income. Disposable income = Personal Income - Personal Taxes.

13. National income may be measured by three different corresponding methods :

A) Net product method

B) Factor-income method

C) Expenditure method

1.20 QUESTIONS

1. Explain the scope and importance of macroeconomics.
2. Explain the circular flow of national income in a two sector economy.
3. Discuss the three sector model of circular flow of national income.
4. Briefly explain circular flow of national income in an open economy.
5. Explain various national income accounting concepts.
6. Differentiate between personal income and disposable income.
7. Describe various methods of measurement of national income.

❖❖❖❖

2

TRADE CYCLES

Unit Structure :

2.0 OBJECTIVES

- To study various features of Trade cycle
- To understand different phases of trade cycles
- To understand the meaning of different phases of trade cycles
- To study classical theory of macroeconomics

2.1 INTRODUCTION

Business cycles / trade cycles are inevitable in an economy. To study their different phases and features therefore helps the economy to take remedial measures to maintain economic stability.

National income and employment are macroeconomic concepts which helps to achieve economic growth and development of the country at a faster rate. The views of classical economists are useful to understand these concepts.

2.2 FEATURES OF BUSINESS / TRADE CYCLES

Though different business cycles differ in duration and intensity they have some common features which can explain below.

1. A business cycle is a wave like movement in macro economic activity like income, output and employment which shows upward and downward trend in the economy.
2. Business cycles are recurrent and have been occurring periodically. They do not show some regularity.

3. They have some distinct phases such as prosperity, recession, depression and recovery.
4. The duration of business cycles may vary from minimum of two years to a maximum of ten to twelve years.
5. Business cycles are synchronic. That is they do not cause changes in any single industry or sector but are of all embracing character. For example, depression or contraction occurs simultaneously in all industries or sectors of the economy. Recession passes from one industry to another and chain reaction continues till the whole economy is in the grip of recession. Similar process is at work in the expansion phase or prosperity.
6. There are different types of business cycles. Some are minor and others are major. Minor cycles operate for a period of three to four years and major business cycles operate for a period of four to eight years. Though business cycles differ in timing, they have a common pattern of sequential phases.
7. Expansion and contraction phases of business cycle are cumulative in effect.
8. It has been observed that fluctuations occur not only in level of production but also simultaneously in other variables such as employment, investment, consumption, rate of interest and price level.
9. Another important feature of business cycles is that downswing is more sudden than the changes in upswing.
10. An important feature of business cycles is profits fluctuate more than any other type of income. The occurrence of business cycles causes a lot of uncertainty for business and makes it difficult to forecast the economic conditions.
11. Lastly, business cycles are international in character. That is once started in one country they spread to other countries through trade relations between.

2.3 PHASES OF BUSINESS CYCLES

Business cycles have shown distinct phases, the study of which is useful to understand their fundamental causes. Generally, a business cycle has four phases.

1. Prosperity (Expansion, Boom, or Upswing)
2. Recession (upper turning point)
3. Depression (Contraction or Downswing) and
4. Revival or Recovery (lower turning point)

The four phases of business cycle are shown in the following figure. It starts from trough or lower turning point when the level of economic activity is at the lowest level. Then it passes through recovery and prosperity phase, but due to the causes explained below the expansion

cannot continue indefinitely, and after reaching peak, recession and depression or downswing starts. The downswing continues till the lowest turning point and reaches to trough. It is important to note that no phase has any definite time period or time interval. Similarly any two business cycles are not the same.

The prosperity starts at trough and ends at peak. The recession starts at peak and ends at trough. One complete period of such movement is called as a trade cycle.

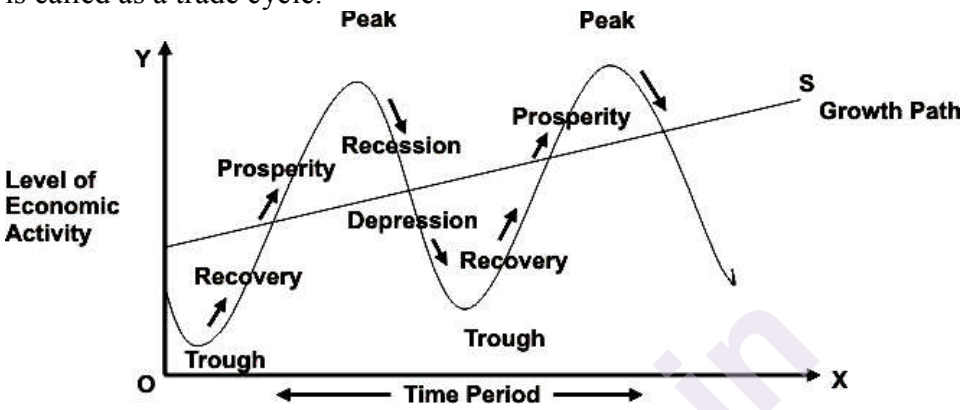


Fig. 2.1

Four phase of trade cycles are briefly explained as follows.

1. Prosperity – Prosperity is 'a stage in which the money income, consumption, production and level of employment are high or rising and there are no idle resources or unemployed workers.'

This stage is characterized by increased production, high capital investment, expansion of bank credit, high prices, high profit, a high rate of interest, full employment income, effective demand, inflation MEC, profits, standard of living, full employment of resources, and overall business optimism etc.

The prosperity comes to an end when forces become weak and therefore, bottlenecks start to appear at the peak of prosperity. Due to high profit, inflation and over optimism make the entrepreneurs to invest more and more. But because of shortage of raw material and scarcity of factors of production prices of goods and services rises. As a result there is fall in demand and profit, business calculations go wrong. Thus their over optimism is replaced by over pessimism. Thus prosperity digs its own grave.

2. Recession- When the phase of prosperity ends, recession starts. Recession is an upper turning point. This is a phase of contraction or slowing down of economic activities. Recession is generally of a short duration.

After boom, demand falls, production becomes excess and investment results in over investment. Finally, it leads to recession.

During this phase profit, investment and share prices falls significantly, Because of lack of investment the demand for bank credit, rate of interest, income employment, and demand for goods and services falls.

If recession continues for a long period of time then finally, it reaches to the phase of depression.

3. **Depression –** It is a period in which business or economic activity in a country is far below the normal. Depression is 'a stage in which the money income, consumption, production and level of employment falls, idle resources and unemployment increases.'

It is characterized by a sharp reduction of production, mass unemployment, low employment, falling prices, falling profits, low wages, and contraction of credit, fall in aggregate income, effective demand, MEC, a high rate of business failure and atmosphere of all round pessimism etc. The depression may be of a short duration or may continue for a long period of time.

After a period of time, moderate increase in the demand for goods and services helps to increase in investment, production, employment, income and effective demand. Finally, it leads to recovery.

4. Recovery – Depression phase is generally followed by recovery. Various exogenous and endogenous factors are responsible for reviving the economy. When the economy enters the phase of recovery, economic activity once again gathers momentum in terms of income, output, employment, investment and effective demand. But the growth rate lies below the steady growth path.

Thus, a recovery phase starts which is called the lower turning point. It is characterized by improvement in demand for capital stock, rise in demand for consumption good, rise in prices and profits, improvement in the expectations of the entrepreneurs, slowing rising MEC, slowly increasing investment, rise in employment, output and income, rise in bank credit, stock market becomes more sensitive and revival slowly emerges etc.

The phase of recovery once started, it slowly takes the economy on the path of expansion and prosperity. With this the cycle repeats itself.

Check your Progress :

1. What is a business cycle? What are its different features?

2. What is a business cycle? Explain the different phases of a trade cycle.

2.4 INTRODUCTION OF THE CLASSICAL THEORY OF INCOME AND EMPLOYMENT :

The study of classical theory of income and employment is essential because some of the aspects of classical theory are more relevant to the conditions prevailing in the developing countries. Classical theory highlights those factors, which govern income and employment in these countries. In fact Keynesian macro economic model is not able to explain the conditions of unemployment and underemployment in less developed countries. Hence it cannot explain the determination of income and employment in such countries.

Hence it is necessary to study the classical theory

The classical theory of employment is a supply-oriented theory. It is the product of an accumulation and refinement of ideas developed by the 18lh and 19'" century economists. The classical economists were basically concerned with the long run problem of growth of the economy's production capacity and efficient allocation of the given resources at full employment. The classical economists focused their attention more on the supply side and demand side was neglected while discussing the growth process. According to Adam Smith, Ricardo, Say, Mill and followers of classical thought, except Malthus believed that there is no problem on the demand side as the aggregate demand would always take care of itself. Hence the main problem is that of supply rather than demand.

According to the classical economists if prices and wage rates were flexible, there would be a built in tendency for the economy to operate at full employment. As a result they ignored the problems of unemployment. The classical economists focused on the following problems:-

1 The different types of goods and services that would be produced in the economy

2. The allocation of productive resources among the competing firms and industries. The classical economists tried to find out the conditions

leading to the most efficient use and optimum allocation of the given resources.

3 The relative price structure of different goods and factors

4 The distribution of real income among the productive factors. The main postulates of the classical theory of employment are the following.
   1. Long term analysis
   2 Full employment
   3. Say's law of markets
   4 interest Rate and Flexibility
   5. Wage rate and Flexibility

2.4.1 The Assumption of Full Employment:-

The classical economists believed in the prevalence of a stable equilibrium at full employment as the normal characteristic in the long run. Any deviation from this is abnormal under perfect competition in a free capitalist economy, forces operate in the economic system which tend to maintain full employment without inflation. As a result, the level of output is always at full employment with the optimum use of resources in the long run. Full employment is a condition where there is absence of involuntary unemployment to restore full employment again.

The classical theory believed m full employment as a normal condition. This was on certain basic assumptions. –

1. Say‘s law of market- .Supply creates its own demand according lo Say's law. Hence there can never be any deficiency of demand.
2. Any unemployment that in the process of a competitive system is automatically eliminated by the free market price system

2.5 SAY'S LAW OF MARKET

The belief of classical theory regarding the existence of full employment in the economy is based on Say's Law put forward by a French economist J B. Say. According to J. B. Say's law. "Supply creates its own demand". This implies that any increase in production made possible by the increase in the productive capacity or the stock of fixed capital will be sold in the market. There will be no problem of lack of demand. This appears to be a simple proposition. But it has a number of implications.

Say's law contends that the production of output in itself generates purchasing power, equal to the value of that output, supply creates its own demand. Production increases not only the supply of goods but by virtue of the requisite cost payment to the factor of production, also creates the demand to purchase these goods. Any production process has two effects:

1. As factors are employed in production process, income is generated in the economy on account of the payment of remuneration to the factors of production.

2. It results in the production of a certain level of output, which is supplied in the market. According to Say's law additional output creates additional incomes which creates an equal amount of extra expenditure.

A new production process, by paying out income to its employed factors generates demand at the same time, as it adds to supply. Thus any increase in production is followed by a matching increase in demand.

In the original form Say's law was applicable to a barter economy. In a barter economy, people produce goods either to consume or to exchange them for other products. In the process the aggregate demand for goods equals the aggregate supply of goods. Hence there is no possibility of over production. Introduction of money also does not change the basic law. Money is used only as a medium of exchange. The classical theorists believed that money is neutral and does not influence the real process of production and distribution. There is a circular flow of money from the firm to house holds and from households to firms. The firm purchases inputs for production. They pay in the form of wages, rent, interest and profits. This becomes the income of households. The households spend their income on goods and services produced by firms. In this circular flow there is no saving and hoarding. All income received is spent. In case the household saves a part of the income, the circular flow can still be maintained if savings are equal to investment.

If there is a divergence between saving and investment, the equality is maintained through the flexibility of money interest. Interest is a reward for saving. Higher the interest, more are the savings and vice-versa. At the same time, lower the interest rate, higher the demand for investment and vice-versa. If I > S rate of interest will rise. Savings will also increase and investment will fall till the two become equal.

2.5.1 Assumptions of the Law

The following assumption forms the backbone of Say =s law.

1. Optimum Allocation of Resources:- The resources are optimally allocated in different channels of production on the basis of equality of marginal products and proportionality.
2. Perfect Equilibrium:- Demand and supply equilibrium leads to the fixing of commodity price and factor prices.
3. Perfect Competition:- The commodity and the factor markets have perfect competition as the market conditions.
4. There is a free enterprise or free market economy.
5. Laissez-faire policy of the government:- There is no government intervention in the economic field. Laissez-fair policy leads to

automatic adjustment and smooth working of the market mechanism in the capitalist system.

6. Elastic Market:- The market is very wide and spread out without limits. Therefore as the output product increases, markets also expand.
7. Market Automatism:- A free market economy stimulates capital formation. In an expanding economy, new workers and firms will be automatically absorbed into the production channels. There is no displacement of workers or firm.
8. Circular Flow:- There is no break in the circular flow of income and expenditure Income is automatically spent through consumption expenditure, and investment expenditure.
9. Saving Investment Equality:- All the savings are automatically invested. Therefore, savings is always equal to investment. Savings investment equality is the basic condition of equality. Interest flexibility ensures this.
10. Long term :- The economy's equilibrium process is considered from the long term point of view.

Thus according to Say's law, when savings will be offset by an equivalent investment and since hoarding is zero, aggregate demand will always be equal to aggregate supply. Hence there will be no general over production in the long run. Therefore, equilibrium can be maintained automatically at full employment level. Since over-saving is not possible; Say s Law implied that underemployment equilibrium is not possible.

Interest rate flexibility and wage flexibility are the 2 factors which ensures this equilibrium between be discussed.

1. Interest Rate Flexibility :- According to Say's law, all incomes are spent i.e. income = expenditure. However, there may be "leakages" in the circular flow of income & expenditure. Whatever is saved is invested in production activities. Savings and investments tor saving. If savings exceed investment, the rate of interest will fall. Hence investment will rise and level of savings will fall till they are in equilibrium. Therefore, in classical theory of employment, the rate of interest is a strategic variable, which brings about equality between savings and investment Interest rate maintains the equilibrium between savings and investment.

2. Wage Rate Flexibility and Employment :- According to the classical economist, money wage cut policy can solve the problem Involuntary employment is due to a rigid wage structure. If the wages can be lowered, involuntary unemployment will disappear. A self-adjusting system of wage will push the economy towards full employment stage.

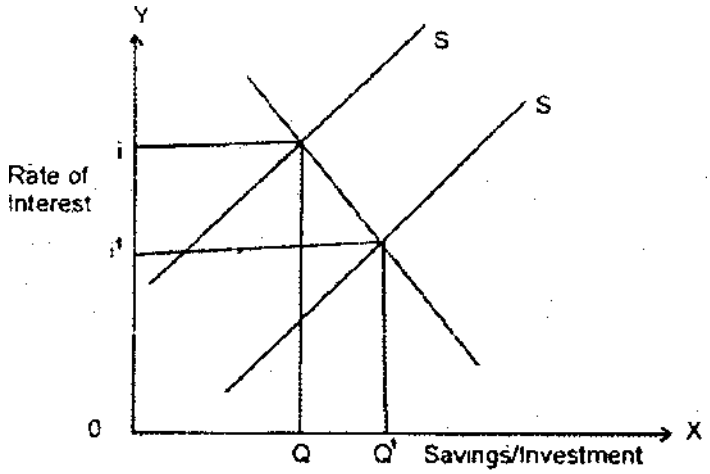


Figure 2.2

2.5.2 Implications of Say's Law:-

1. Automatic Adjustment of Full Employment- A free enterprise economy automatically reaches a stage of full employment level. There are no obstacles to full employment General employment and over production are impossible.

2. Self-adjusting Mechanism:- Increase in supply will ensure an increase in demand in the process of the functioning of a free capitalist economy There is no need for government intervention.

3. Resource adjustment and utilisation of resources take place automatically in an expanding capitalist economy. When new workers and firms start operating, they also help to produce additional output and income. The entire economy becomes richer with the increased National Income. The unused and new resources are also productively employed in such a way as to benefit the whole society.

4. Money plays a passive role. It is only a medium of exchange to facilitate transactions. Behind the flow of money, there is a real flow of goods and services, which is important. As a result, changes in the supply of money has no effect on the economy's process of equilibrium at full employment level.

5. A free enterprise economy under Laissez-faire policy has built in flexibility. Market mechanism helps in optimum adjustments in the economy.

6. Rate of interest is an equilibrating factor in classical theory. Flexible interest rates lead to equilibrium between savings and investment.

2.5.3 Criticism:-

J.M. Keynes vehemently criticized the classical theory. The assumptions on which the classical theory is based can be criticized The Great Depression of 1930's has revealed the weaknesses of the classical

theory. The classical theory could not suggest a solution to the problem of a depressed economy facing large scale unemployment.

1. Unrealistic Assumptions at Full Employment:- According to Keynes. The basic assumption of full employment itself is unrealistic. An economy can be in a state of equilibrium. In under employment situation also full employment equilibrium is just one possible equilibrium condition according to Keynes.

2. Too much emphasis on Long Run:- Keynes gave importance to the short run According to him. In the long run, we are all dead.

3. Keynes refuted Say's Law of Markets:- According to Keynes, the classical economists failed to examine the level of aggregate demand. Supply may not create demand. Over production is a possibility and reality according to Keynes. Supply can exceed demand. Hence automatic self adjusting mechanism will not work.

4. Interest is not an equilibrating factor:- Keynes attacked the classical theory in regard to savings and investment. Flexible interest rates will not lead to equilibrium savings and investment. Changes in income bring about the equilibrium between savings and investment according to Keynes.

5. Role of money is neglected:- The classical economists considered money as a veil. Its role is neutral. Keynes recognized the importance of precautionary measures and speculative demand for money He also recognized the effect of money on output, incomes, employment.

6. Keynes attacked the Laissez faire policy of classical economists. In the conditions -of the modern world, state intervention is necessary to solve the problem of unemployment. Government spending, taxation and borrowing are important instruments to increase employment and income in an economy.

7. Wage cut policy is not practical. Due to the strong trade unionism it is not possible to cut wage rates as suggested by the classical economists as a remedy to employ more workers. A wage cut may in fact lead to reduced purchasing power with workers which will lead to reduced effective demand for products. This will adversely affect the levels of employment. Hence a general wage cut will lead to reduced volume of employment. The workers will revolt if the money wages are cut. This is due to money illusion.

8. The classical system will work only if there is perfect competition. In such a case there should not be trade unionism, wage legislation etc. But in. reality, all these factors exist. Hence classical theory will not become applicable.

Check Your Progress :

1. Examine the statement : The classical theory was a supply oriented theory.
2. What are the main postulates of classical theory of employment?
3. State the assumptions of Say s Law of Markets.

2.6 SUMMARY

1. Though different business cycles differ in duration and intensity they have some common features.
2. A business cycle has four phases.
   - ❖ Prosperity (Expansion, Boom, or Upswing)
   - ❖ Recession (upper turning point)
   - ❖ Depression (Contraction or Downswing) and
   - ❖ Revival or Recovery (lower turning point)
3. Prosperity is a stage in which the money income, consumption, production and level of employment are high or rising and there are no idle resources or unemployed workers.
4. When the phase of prosperity ends, recession starts. Recession is an upper turning point. This is a phase of contraction or slowing down of economic activities. Recession is generally of a short duration.
5. Depression is a stage in which the money income, consumption, production and level of employment falls, idle resources and unemployment increases.
6. When the economy enters the phase of recovery, economic activity once again gathers momentum in terms of income, output, employment, investment and effective demand.
7. The belief of classical theory regarding the existence of full employment in the economy is based on Say's Law put forward by a French economist J B. Say. According to J. B. Say's law. "Supply

creates its own demand". This implies that any increase in production made possible by the increase in the productive capacity or the stock of fixed capital will be sold in the market. There will be no problem of lack of demand.

2.7 QUESTIONS

1. What are the features of trade cycle?
2. What is a business cycle? Explain the different phases of a trade cycle.
3. Explain classical macroeconomics with special reference to Say's Law of Markets.
4. State and explain the Say's Law of markets.

❖❖❖❖

Module 2

3

BASIC CONCEPTS OF KEYNESIAN ECONOMICS

Unit Structure :

3.0 OBJECTIVES

- To study Keynesian theory of income and employment
- To understand the concept of effective demand
- To understand the meaning of consumption function
- To study Keynesian multiplier theory
- To study the concept of investment function
- To understand the concept of marginal efficiency of capital

3.1 INTRODUCTION

With reference to the last modules classical economists views on national income and employment, in this module modern economist, J. M. Keynes views on national income and employment has been explained.

3.2 INTRODUCTION OF THE KEYNESIAN THEORY OF INCOME AND EMPLOYMENT :

J.M. Keynes in his book "The General Theory of Employment, Interest and Money, popularly known as the General Theory, published in 1936 rejected the classical theory of full employment equilibrium. He brought out the real determinants of income and employment in a modern economy. His theory is called General theory since he studied all the cases of employment i.e. full employment, less than full employment, and more than full employment. According to Keynes, the economy can

be in equilibrium at any level of employment. Full employment is just one possible situation in an economy. Underemployment situations are more common. Another reason why Keynes theory is called the General Theory is that it explains inflation as well as unemployment. Inflation is due to excess demand, whereas unemployment is due to lack of demand. Thus Keynes theory is demand oriented. It stresses effective demand as a crucial factor in determining the levels of income and employment. Yet another reason for Keynes theory being called a genera Theory is that it integrates theories of money and value. Keynes in contrast to the classical economists gave importance to the short run equilibrium. Keynes assumed that the amount of capital, ' population, technology etc, do not change in the short run. Therefore, in the short run, the income and the output depend on the volume of employment. The levels of employment in turn depend on the effective demand, which depends on aggregate spending. Hence it is necessary to know 'what is effective demand?'.

3.3 THE PRINCIPLE OF EFFECTIVE DEMAND

The principle of effective demand occupies a strategic position in Keynes theory of employment. Effective demand manifests itself in the total spending of the commodity on consumption and investment goods. Total employment depends upon effective demand Therefore unemployment results from lack of effective demand. Higher the level of effective demand, the more the level of employment in the economy.

Effective demand depends upon 2 factors - Aggregate demand function, and aggregate supply function.

3.3.1 Aggregate Demand Price and Function:-

The aggregate demand price for the output of any given amount of employment is the total sum of money or proceeds which is expected from the sale of the output produced .when that amount of labor is employed. In other words, the aggregate demand price is the amount of money, which the entrepreneurs expect to receive from the sale of output produced at a particular level of employment. The aggregate demand curve or function is a schedule of the proceeds expected from the sale of the output at different levels of employment. The aggregate demand curve slopes upwards from left to right. It means that as the level of employment and income increase aggregate demand price also increases With increase in income, people tend to spend a small amount of income on consumption goods, Hence with increase in output and employment, aggregate demand price increases at a diminishing rate The slope of the curve diminishes will increase in employment. The figure below depicts an aggregate demand function.

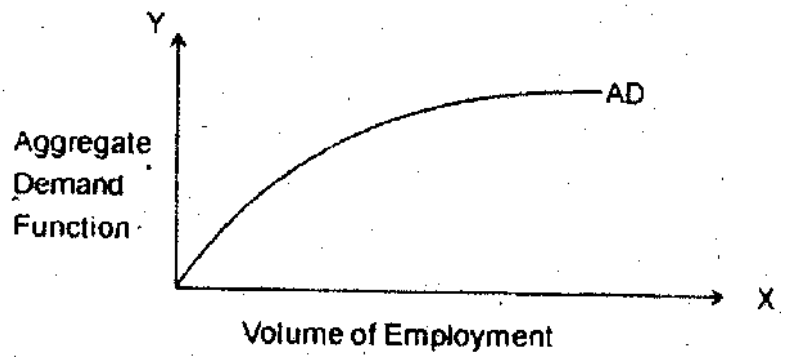


Figure 3.1

3.3.2 Aggregate Supply Price :

The main aim of an entrepreneur in a capitalist society is to earn profits. The producer will employ workers in such a way as to maximise profits. Employment of labour means that some costs have to be incurred. A certain minimum amount of proceeds will be necessary to induce employers to provide any given amount of employment. The supply price for any given quantity of commodity refers to that price at which the seller is willing or is induced to supply that amount in the market. If the seller does not get the minimum receipts, he will reduce output and employment. The aggregate supply curve or function is a schedule of the minimum amount of proceeds required to induce entrepreneurs to provide varying amount of employment. It shows the cost of producing a certain level of output or the minimum receipts which must be obtained if that level of output is to be maintained. The aggregate supply function slopes upwards. The shape of aggregate supply function depends entirely on technical conditions of production. It is decided by the manner in which cost rises in response to expansion of employment. The figure below shows the aggregate supply function.

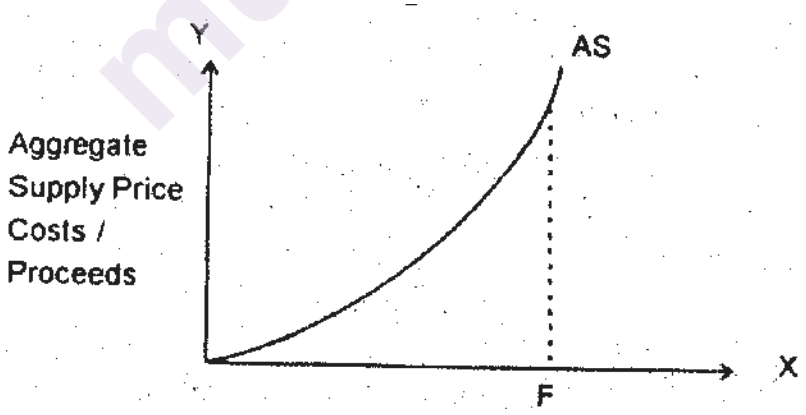


Figure 3.2

3.3.3 Equilibrium Level of Employment:-

The intersection of the aggregate demand function with aggregate supply function determines the level of income and employment. The aggregate supply schedule represents costs involved at each possible level of employment. The aggregate demand schedule represents the expectation of maximum receipts of the entrepreneur at each possible

level of employment. As long as receipts exceed costs, the level of employment will go on increasing. The process will continue till receipts become equal to cost. At the point of equilibrium, the amount of sales proceeds which the entrepreneurs expect to receive is equal to what they must receive in order to just appropriate their total costs.

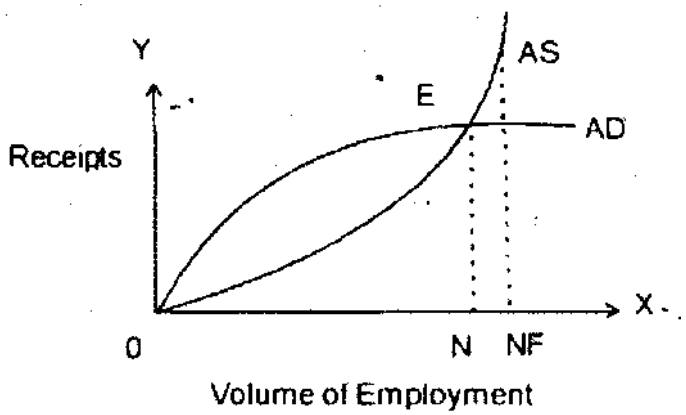


Figure 3.3

The point E, where the aggregate demand curve intersects the aggregate supply curve is called the point of effective demand. The equilibrium level of employment is ONF. This is not necessarily full employment. If the level of employment is more or less than ON, the profits will be less than maximum. ONF level of employment is the full employment level in the diagram since at this level of employment the aggregate supply curve AS is vertical in shape. Hence ON level of employment is less than full employment. This happens because investment demand is insufficient to fill the gap between income and consumption.

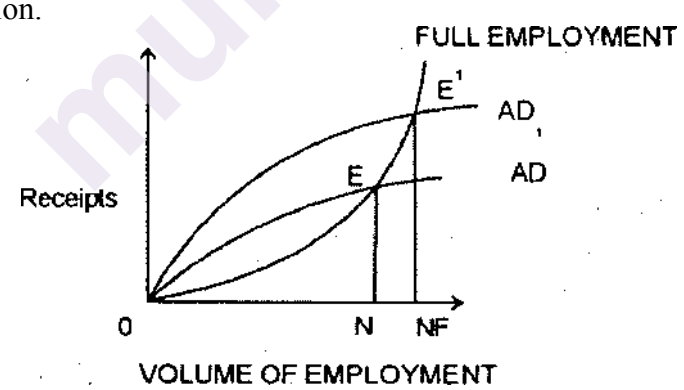


Figure 3.4

For reaching full employment, employment level has to be increased. For this either the aggregate supply curve should be lowered or aggregate demand should be increased. Increasing the aggregate supply curve will necessitate increase in the productivity. This is a long run problem. Keynesian theory is concerned with short run analysis. Hence raising the aggregate demand is possible. This shifts the equilibrium point to £1. This is the full employment equilibrium. Any expansion of demand beyond E1 will lead to inflation.

3.4 CONSUMPTION FUNCTION

In Keynes theory of income and employment, we have already seen that the volume of employment in a society depends on the level of effective demand which in turn is determined by the aggregate demand function. The aggregate demand is made up of 2 components i.e. consumption expenditure and investment expenditure. Consumption expenditure is a major component of aggregate demand in an economy. The consumption expenditure depends on the size of income and propensity to consume, which is called consumption function. The marginal efficiency of capital and the rate of interest determine investment. The Investment multiplier expresses the relationship between the increases in investment and increases in consumption. We will be studying the consumption function and the investment Multiplier in this unit.

In macro economic theory, Keynes singled out income as the main determinant-Of consumption. The relationship is expressed in the form of a function. The consumption function is the assumed direct relationship between the national income level and the planned or desired consumption expenditure. Keynes called it the propensity to consume. Algebraically the basic relationship between consumption spending and national income is shown as C = f(Y)

'C' stands for consumption function, 'Y' stands for national income, 'f. stands for functional relationship.

The simplest form of relationship between income and consumption can be expressed as follows .
C = cY

This means that the consumption (C) is a constant proportion (c) of income (Y)

According to Keynes, at various income levels, a schedule of the propensity to consume is a statement showing the functional relationship between the level of consumption at each level of income.

TABLE: 3.1 CONSUMPTION FUNCTION

INCOME Y	CONSUMPTION (C) (In crores of rupees)
200	
300	220
400	300
500	380
600	540
700	620

The schedule relating to the various amounts of consumption at different levels of income is called the consumption function, it is clear from the above table that consumption is an increasing function of income since both the variables Y and C move in the same direction. Consumption function can be represented diagramatically as below.

3.5 KEYNESIAN MULTIPLIER THEORY

The multiplier theory explains the effect of changes in the investment upon the consumption expenditure and the resulting generation of income. The theory of multiplier is an integral part of the General theory of employment since it establishes a precise relationship between aggregate employment and income and the rate of investment, given the marginal propensity to consume According to the multiplier theory, when there is an increment of aggregate investment, income will increase by an amount, which is K times the increase of investment. It explains the cumulative effects of changes in investment on income through their effects on consumption expenditures. It helps us to understand the dynamic process of income generation.

3.5.1 The Concept of Multiplier:

R.F Kahn developed the concept of multiplier in 1931. This was used to explain the effect of an increase in investment on employment. Keynes used the idea to explain the effect of an increase in investment on income Keynes multiplier is known as the investment income multiplier.

Multiplier expresses a relationship between an initial increment in investment and the resulting increase in aggregate income. Multiplier is the numerical coefficient which indicates the increase in income which will result in response to an increase in investment It is expressed as the ratio of the realised change in aggregate income to the given change in investment. i.e the reciprocal of the MPS

3.5.2 The Working of the Multiplier Process :

Sequence analysis helps us to understand the working of the multiplier. For ex., during a given period, if the investment goes up by Rs.10 crores income goes up by Rs. 10 crores. Suppose MPC is 0.5 or 50%, Rs.5 crores will be spent for consumption by the people who receive this income. The amount spent on consumption means a further amount of income received within the economy. Those people who received Rs. 5 crores now will spend 50% of that income in consumption i.e.Rs.2.5 crores in the second round. In the third round, Rs.1.25 crores will be generated and so on. The interval between consumption responses is the multiplier period". As we move from one multiplier period to another, the addition to the income gradually diminishes. The process will continue till the total increment in income becomes so large that it results in additional savings which is equal to the increase in investment. This process can be explained with the help of a formula.

$$\Delta Y = \Delta I\ (I + C + C^2 + C^3 + \ldots\ldots\ldots + C^n)$$

ΔY = increase in income, ΔI, initial increase in investment, c = MPC Since the absolute value of C is less than 1, the sum of the infinite geometrical progression is

$$1 + C + C^2 + C^3 + \ldots\ldots\ldots + C^n = \frac{1}{1-C}$$

C = MPC, where C is less than one,

$$\text{Change in income} = -\frac{1}{1 - \text{MPC}} \times \text{change in investment}$$

$$Y = \frac{10x1}{1-05} = 10\ x\ \frac{1}{1/2}$$

= 10 x 2 = Rs. 20 crores

Given the MPC to be 0 .5 an initial investment of Rs 10 crores will lead to Rs. 20 increase in the income. In the above example, Keynes ignores time lags. Modern economists on the other hand feel that it takes time for the impact of the initial investment to make itself felt throughout the entire economy.

The multiplier effects of investment on income can be diagrammatically shown

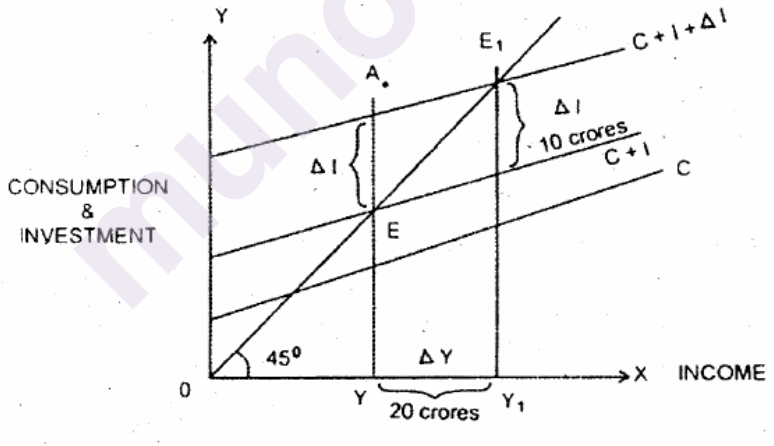


Figure 3.5

The C curve is the consumption curve and it is drawn on the assumption that MPC is constant at all levels of income i.e. 0.5. The level of effective demand is determined by consumption and investment outlays i.e. consumption and investment. This is super imposed on the C curve. The 45 degree line OY shows that Income = Consumption + Savings. The original equilibrium is at E where the consumption + Investment curve intersects the 45 degree line. The equilibrium level of income is O. As new investment is injected, the line shifts to C + I + Δ I.

The new equilibrium point is at E1 and the new equilibrium income is OY, Taking the original example, an initial outlay of Rs. 10 leads to an increase in income to Rs. 20, where K = 2. Hence the increase in income (Δ Y) is a multiplier of the increase in investment (Δ l).

4.1.3 Assumptions of the Multiplier Theory :

The following are the assumptions of the multiplier theory :

1. Constant Marginal Propensity to Consume.
2. Monetary and fiscal policies remain stable so that they do not affect the propensity to consume.
3. The multiplier period is absent.
4. Excess capacity exists in the economic system. The assumption is that the economy operates at less than full employment.
5. Closed economy is another assumption. The effect of international economic transactions are ruled out.
6. There should be a net increase in investment.
7. Consumer goods are available in sufficient quantities.

4.1.4 Leakages of the Multiplier :

There are serious limitations in applying the concept of multiplier in practice. Certain forces, which operate in an economy, reduce the strength of the process of income propagation. - Leakages reduce the income generated. They are

1. Increase in the MPS: The higher the marginal propensity to save, the greater the leakages of additional income out of the income. In a dynamic economy, the MPC or MPS is not constant. With increases in income MPS rises. As a result, the multiplier value may fall.
2. Debt Cancellation: Paying back of debts taken by people reduces the value of the multiplier since consumption is reduced.
3. Hoarding Idle Cash Balances: If people prefer to hold liquid cash than spend it on consumption goods, it will lead to a leakage from the income stream and reduce the value of the multiplier.
4. Imports: the income spent on imports will not lead to income generation within the domestic country, and hence leads to a restriction of the value of the multiplier.
5. Purchase of Old Shares and Securities: If the newly generated income is used to buy old stocks, shares and securities, consumption will be less and as a result, the value of the multipliers will be low.
6. Inflation: Rise in the prices adversely affects the real consumption of people. Hence consumption will not increase during inflation. This also affects the value of the multiplier.

3.5.3 Criticism :

1. It is a static phenomenon: it does not explain the dynamic change. It explains the process of income propagation from one point of equilibrium to another under static assumptions. The actual sequence of events is not explained.
2. It is a timeless phenomenon: Keynes assumed an instantaneous relationship between income, consumption, and investment. However, there are time lags between consumption and income. Hence according to modern economists, multiplier effect takes time to make an impact.
3. No Empirical Evidence: There is no empirical evidence to prove the operation of multiplier effect. It does not tell us anything about the real world.
4. It gives too much importance to Consumption: The emphasis is exclusively on consumption.
5. The theory has neglected the derived demand phenomenon of investment in capital goods sectors. It fails to establish a relationship between the demand for capital goods and consumption goods.
6. Some economists like Prof. Hazhtt hold that the multiplier concept is only a myth. There cannot be a precise mechanical relationship between investment and income

Check Your Progress :

1. Examine the working of the multiplier process.
2. Explain the factors which reduces the strength of the process of income generation.

3.6 INTRODUCTION OF THE INVESTMENT FUNCTION

In modern macroeconomic analysis, the term investment refers to real investment.

A firm invests when it uses steel or other material to build plant or when new machines are purchased. This is real investment. When a person buys shares or deposits money in the money in the bank, it tends to be financial investment.

Investment leads to the production of new capital goods - plant and equipment. Capital formation takes place if the newly produced capital goods leads to a net addition to the given stocks of capital assets over and above their replacement requirement (depreciation).

Investment may be either gross investment or net investment. Gross investment is defined as a flow of expenditure or new fixed capital assets or an addition to inventories over a given period of time. Since we are not considering inventories, gross investment means the investment expenditure on fixed capital. A part of the new capital will be needed simply to replace the depreciated capital stock This must be deducted to find out the net addition to the existing capital stock Therefore, Net investment = Gross investment Depreciation of Fixed Capital investment can also be classified into autonomous investment and induced investment. Autonomous investment does not change with the changes in income i.e. it is independent of income. It takes place in construction of roads, building etc.

Autonomous investment depends on population growth and technical progress than on the level of income. Most of the investment activity of the government is autonomous in nature Induced investment changes with changes in income,

3.6.1 Determinants of Investment :

Investment function refers to inducement to invest or investment demand. According to the classical economists, investment demand is a decreasing function of the rate of interest.

FORMULA
I = f (i) where I = Investment
(i) = rate of interest

According to Keynes, the volume of investment depends upon two factors, 1) The marginal efficiency of capital and 2) The rate of interest. The marginal efficiency of capital is called the expected rate of profit.

Prospective investors

Prospective investors will compare the marginal efficiency of capital with the rate of interest Inducement to investment depends on these two factors. If investment is to be profitable, the expected rate of profit must not be less than the current rate of interest in the market. New investment will take place if the expected rate of profit is greater than the rate of interest. The rate of interest does not change in the short run. Hence inducement to invest basically depends on the marginal efficiency of capital.

3.6.2 Marginal Efficiency of Capital:

To examine the profitability of ventures, Keynes introduced the concept of marginal efficiency of capital. Marginal efficiency of a given capital asset is the highest rate of return over the cost expected from an additional or marginal unit of that capital asset According to Kurihara, marginal efficiency of capital is the ratio between the prospective yields of additional capital assets and their supply price, expressed as e = Q / P

Where e = marginal efficiency of capital
Q = the expected yield of return
P = The supply price of this asset.

Hence the marginal efficiency of capital depends upon two factors - 1) The prospective yield from the capital asset, 2) the supply price of this asset. "Prospective yield" means the amount of annual income an investor expects to obtain from selling the output of his investment or capital assets after deducting the running expenses In other words, the prospective yield of a capital asset is the aggregate net return expected from it during its life time The total expected life of a capital asset can be divided into a series of periods i.e. years. The annual returns or annuities can be represented by Q1, Q2, Q3, Q4. The series of annuities or returns is called prospective yield of investment. An investor has to consider the supply price of an asset. The supply price of a particular type of asset is the cost of producing a totally new-asset of that kind Combining the two concepts. Keynes defines marginal efficiency of capital as "being equal to that rate of discount which would make the present value of the series of annuities given by the return expected from the capital asset during its life just equal to its supply price In other words, the marginal efficiency of a capital asset is the rate at which the prospective yield expected from one additional unit of the asset must be discounted if it is just equal to the cost i.e. the supply price of the asset The following equation signifies the concept of MEC.

FORMULA

$$C = \frac{R_1}{1+r} + \frac{R_2}{(1+r)^2} + \frac{R_3}{(1+r)^3} + ... + \frac{R_n}{(1+r)^n}$$

C = Supply price of capital assets
R_1, R_2, R_3 …… R_n are the annual prospective yields from the capital asset, 'r' is the rate of discount or the marginal efficiency of capital, 'r' is the internal rate of return on R that asset. The term $\frac{R_1}{(1+r)^1}$ represents the current value of the annuity or yield receivable at the end of the first year, discounted at the rate 'r'. If the rate of discount is assumed to be 10%, each rupee which we expect to get after a year is worth 90.91 paise now i.e. 90.91 paise currently invested at 10% will become one rupee within a year. In the same way, $(1 + e)^2$ represents the current value of annuity or return expected at the end of the second year discounted af the rate of r.

An example can be taken to explain how the marginal efficiency of capital is calculated. If we suppose that the supply price cost of a machine is Rs, 1600 and its economic life is two years, the prospective yield on this machine in each year is Rs. 1440 and its disposal value is also Rs.1440. The marginal efficiency of capital can also be obtained.

$$1600 = \frac{1440}{(1+r)} + \frac{1440}{(1+r)^2}$$

$$\therefore 1600(1+r)^2 = 1440(1+r) + 1440$$

$$\therefore 1600(1+2r+r^2)^2 = 1440 + 1440r + 1440$$

$$\therefore 1600 + 3200r + 1600r^2 + 1440 + 1440r + 1440$$

$$\therefore 1600r^2 = 1760 - 1280 = 0$$

By using the formula for the root of anabatic equation
$ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$r = \frac{-1760 \pm \sqrt{(1760)^2 - 4(1600) - (-1280)}}{2(1600)}$$

$$r = -1.6 \, or \, r = 0.5$$

Since 'r' cannot be negative r = 0.5 or r = 50%

If this is the rate of return, investment in the machine will be profitable, if the cost of borrowing funds (rate of interest) is less than 50% i.e. given the cost of capital asset at Rs. 1600, MEC was calculated at 50%. Suppose the ratio of interest is 18%. investment will be profitable.

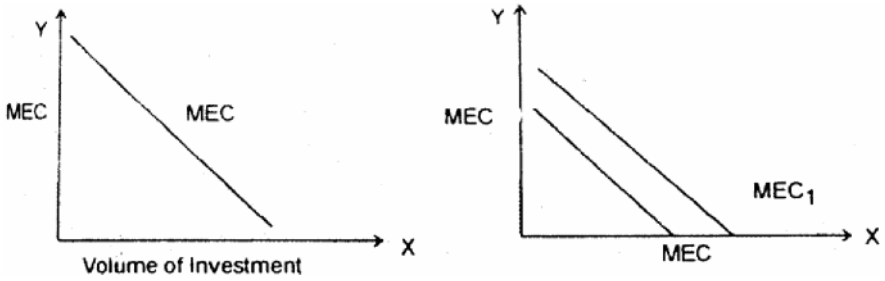
MEC Schedule (curve)

MEC falls as investment increases due to fall in the prospective yield and increase in the supply price of the capital assets. The marginal efficiencies of all types of capital assets which may be made during a given period of time represents the schedule of MEC or the investment demand schedule.

Table 3.2
MEC Schedule

Investment Rs.	MEC %
20000	15
50000	12
75000	10

It is clear from the above table that as investment increases MEC goes on falling. The downward slope of the curve shows the inverse relationship between investment and MEC i.e. an increase in investment will lead, to a fall in MEC.



VOLUME OF INVESTMENT
Figure 3.6

The more elastic the MEC curve, the greater the investment given a fall in the interest rate. Usually the MEC curve tends to be inelastic. MEC curve shifts if the profit expectations change or the technology improves. Keynes believed that investment responds to changes in expectation and shifts in MEC rather than the rate of interest.

MEC and the Rate of Interest:

MEC is expressed as a ratio and compared to the rate of interest. There is a comparison between the expected rate of profit and the rate of interest. In effect it is a comparison between the supply price of an asset and its demand price. Keynes makes a distinction between the demand price and the supply price of a capital asset. The demand price of an asset is defined as the sum of the expected future yields discounted at the current rate of interest. We have already seen that supply price = the sum of prospective yields discounted by the MEC.

In symbolic terms, demand price of an asset can be put as follows.

$$DP = \frac{Q}{(1+i)} + \frac{Q_2}{(1+i)^2} + \frac{Q_3}{(1+i)^3} + ... + \frac{Q_n}{(1+i)^n}$$

DP = demand price, Q1, Q2, Q3,... Qn = the prospective yield or annuities, i = current rate of interest.

For Example, the market value of an asset., which promises to yield Rs. 1600 at the end of one year and Rs. 1210 at the end of 2 years will be estimated at higher than Rs 2000, when the interest rate is less than 10%. If the market rate of interest is 5% the present value of capital asset will be

$$\text{Demand Price} = \frac{1100}{1.05} - \frac{1210}{\left(1+(0.05)^2\right)} = 1047.62 + 1097$$

$$= 2144.62$$

This is the demand price of a capital asset.

The effect of the relative positions of demand and supply on the behaviour of investor in taking decisions will be as follows

1) When MEC = interest rate, SP = DP - neutral
2) If MEC > DP > SP - favourable
3) When MEC < DP < SP – unfavourable

The two strategic variables in investment decisions are the MEC and the rate of interest. MEC of an asset falls as I in that asset increases. The reasons are,

1. The prospective yield of that asset will fall as more units are produced. More production will lead to the units competing with each other to meet the demand for the product.

2 The supply price of the asset will rise as more of the assets are produced. Investment will be in equilibrium when MEC becomes equal to the given current rate of interest. This is given by the following diagram

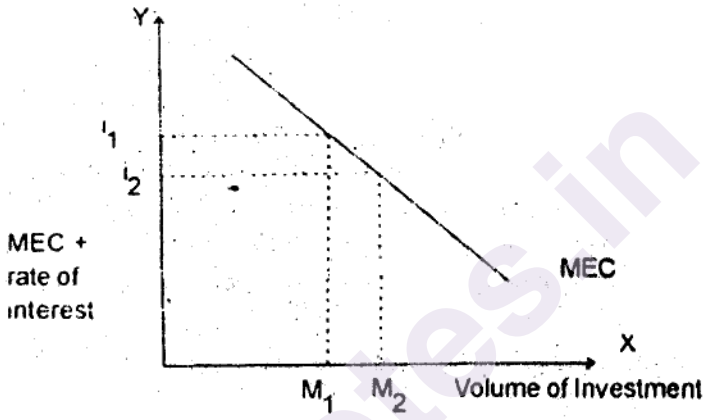


Figure 3.7

At i_1 rate of interest investment is OM_1. At this level of investment, MEC = i_1. If the rate of interest falls to i_2, investment will rise to OM_2. However change in profit expectation can shift the MEC curve also.

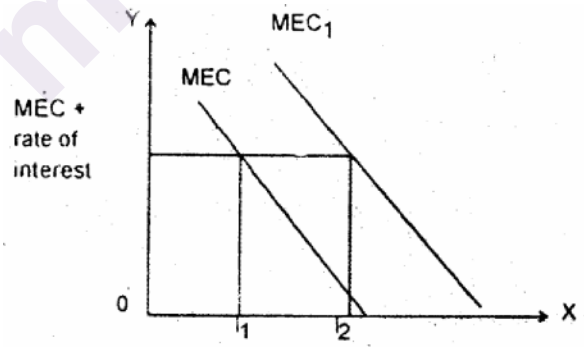


Figure 3.8

This is shown by the above diagram. Due to rise in profit expectation, MEC curve shifts to MEC_1. As a result investment also increases to i_2. MEC is the prime factor in determining investment, since rate of interest is rather rigid during the short period.

Factors Affecting MEC :

A number of short run and long run factors affect the marginal efficiency of capital.

Short run Factors:

1. Expectation about demand, price and cost of Production: It there is an expectation of demand to increase and hence prices to rise, a high MEC leads to increased investment and vice versa
2. Business Optimism and Pessimism: If the atmosphere is one of optimism , entrepreneurs will estimate MEC to be high.
3. Changes in Income: Unexpected windfall gains suddenly increases income levels. This will induce an increase in MEC.
4. An increase in the propensity to consume will raise the MEC and vice-versa: Increased demand for consumption goods will induce the demand for capital goods

Long Run Factors :

1. Population Growth: Increase in population leads to increase in demand. MEC will increase as a result.
2. Technological Advancement: Improvement and growth of new technology leads to new products, new markets etc. This will have a favourable impact on the MEC.
3. Development of Infrastructure: Developing the infrastructure also has a positive-impact on the MEC in the long run.

Check Your Progress :

1. State which two factors determine the investment demand.
2. Examine the factors which affect MEC.

3.7 SUMMARY

1. J.M. Keynes in his book "The General Theory of Employment, Interest and Money, popularly known as the General Theory, published in 1936 rejected the classical theory of full employment equilibrium.

2. The principle of effective demand occupies a strategic position in Keynes theory of employment. Effective demand manifests itself in the total spending of the commodity on consumption and investment goods. Effective demand depends upon 2 factors - Aggregate demand function, and aggregate supply function.

3. The consumption function is the assumed direct relationship between the national income level and the planned or desired consumption expenditure. Keynes called it the propensity to consume. Algebraically the basic relationship between consumption spending and national income is shown as C = f(Y)

4. According to the multiplier theory, when there is an increment of aggregate investment, income will increase by an amount, which is K times the increase of investment. It explains the cumulative effects of changes in investment on income through their effects on consumption expenditures. It helps us to understand the dynamic process of income generation.

5. Investment function refers to inducement to invest or investment demand. According to the classical economists, investment demand is a decreasing function of the rate of interest.

   FORMULAI = f (i) where I = Investment (i) = rate of interest

6. According to Keynes, the volume of investment depends upon two factors, 1) The marginal efficiency of capital and 2) The rate of interest. The marginal efficiency of capital is called the expected rate of profit.

7. According to Kurihara, marginal efficiency of capital is the ratio between the prospective yields of additional capital assets and their supply price, expressed as e = Q / P
   Where e = marginal efficiency of capital
   Q = the expected yield of return
   P = The supply price of this asset.

3.8 QUESTIONS

1. Differentiate between aggregate demand function and aggregate supply function.
2. Explain the concept of effective demand.
3. Explain the meaning of consumption function.
4. Discuss the concept of Keynesian multiplier.
5. Critically examine the working of Keynesian multiplier.
6. Explain in detail the concept of marginal efficiency of capital.

4

INVESTMENT MULTIPLIER EFFECT ON INCOME AND OUTPUT

Unit Structure :

4.0 OBJECTIVES

- To study the theory of investment multiplier
- To study the principle of acceleration
- To understand the concept of super multiplier
- To understand the relevance of Keynesian theory tools to the developing countries

4.1 INTRODUCTION

In this section we will learn the Keynesian explanation of the terms investment multiplier. In what way investment multiplier affect the income and output is therefore necessary to study. In subsequent topic, relevance of Keynesian tools to the developing countries economies is explained.

4.2 THEORY OF MULTIPLIER

The theory of multiplier was first developed by Prof. R.F. Kahn in 1931. It explains the effects of initial increase in investment on aggregate employment. Kahn's multiplier was thus known as 'employment multiplier.'

J.M. Keynes used the concept of multiplier to analyze the effects of change in investment on income via changes in consumption expenditure. Thus this multiplier came to be known as the investment

multiplier. It may be defined as "the ratio of the change in income to the change in investment." It is symbolically expressed as, $K = \Delta Y / \Delta I$.

Where K = Stands for Multiplier, ΔY = change in income and ΔI= change in investment.

In an economy, when there is a small increase in investment, there would be multiplier increase in national income. For example, if the investment is increased by Rs. 4 cro. and if as a result, the national income increases by Rs. 20 cro. the value of 'K' (multiplier) will be 5. In other words, investment multiplier points out that, national income will rise much more than the initial increase in investment. A part of this additional income is spent on consumption goods. Since, one man's expenditure is another man's income. The consumption expenditure of the people at the first round would become income of the people at the second round and so on.

Graphical Presentation -

The multiplier is depends upon the marginal propensity to consume (MPC). If the MPC is higher, the size of multiplier would be higher and vice versa. The concept of multiplier can be explained with the help of following diagram.

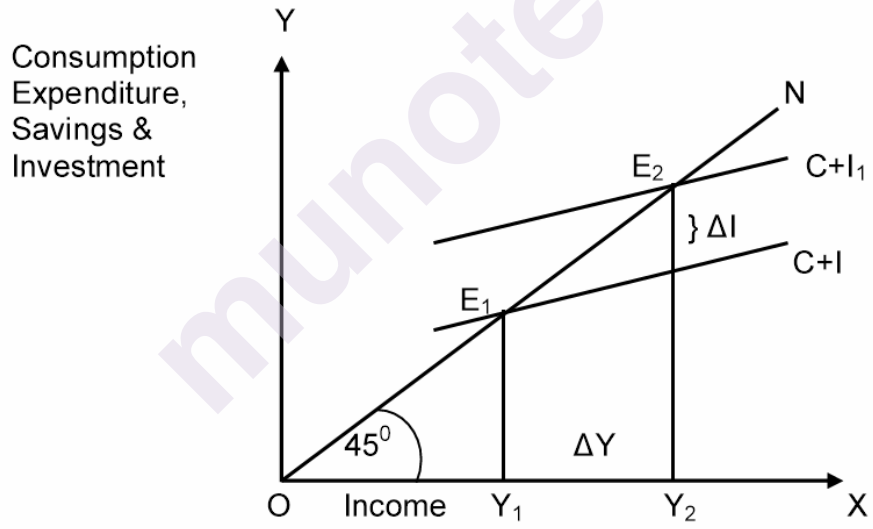


Fig. 4.1

In the above diagram, OX axis represents income and OY axis represents investment, consumption expenditure and savings. 45^0 line is known as consumption line. C+I is the initial investment curve which intersects ON line at E_1 point. When the investment is C+I the national income is OY_1. When there is an increase in investment from C+I to $C+I_1$ the national income would rise from OY_1 to OY_2.

Working of the Multiplier -

The working of 'K' is explained as under. The following table shows how there would be a multiplication in income according to income

propagation assuming that MPC is half or 50% of the income with the initial investment of Rs. 200 crores.

Table 4.1

Rounds	Initial investment	ΔY	ΔC	ΔS
1st	200 cro.	200	100	100
2nd		100	50	50
3rd		50	25	25
4th		25	12.50	12.50
5th		12.50	6.25	6.25
6th		6.25	….	….
Finally	200	400	200	200

The above table shows that the initial investment of Rs. 200 crores is the income of the people. Out of 200 crores 50% i.e. Rs. 100 crores is spent on consumption and remaining amount of Rs. 100 crores is saved. The consumption expenditure of the people at the first round would become income of the people at the second round. Again out of Rs. 100 crores Rs. 50 crores is spent on consumption and remaining Rs. 50 crores is saved. The consumption expenditure of the people at the second round would become income of the people at the third round. Again 50% of the income is spent on consumption and remaining 50% is saved. This process will go on and on till the initial income of Rs. 200 crores would not become zero.

Calculation of the Multiplier -

The value of 'K' or multiplier is equal to reciprocal of 1- MPC. It is symbolically expressed as, $K = \frac{1}{1 - MPc}$ or $K = \frac{1}{MPs}$

If MPC is 4/5 then,

$K = \frac{1}{1 - \frac{4}{5}}$

$K = \frac{1}{\frac{1}{5}}$, K = 5. The value of 'K' will be 5.

The following table would indicate the different values of 'K' at different MPC figures.

Table 4.2

MPC	MPS	Value of 'K'
0	1	1
1/2	1/2	2
2/3	1/3	3
3/4	1/4	4
4/5	1/5	5
1/3	2/3	$1\frac{1}{2}$
3/5	2/5	$2\frac{1}{2}$
8/9	1/9	9
9/10	1/10	10
99/100	1/100	100
1	0	Infinity

So from this schedule it is clear that larger the MPC the greater would be the value of 'K' and vice versa.

Reverse working of the Multiplier -

So far, we have described the working of the multiplier in the forward direction. But the multiplier may work in the reverse or backward direction also. It means that a decrease in investment causes a multiple decrease in aggregate income. For example, if investment decreases by Rs. 10 cr., it will reduce the income by an equal amount. If MPC is half, consumption expenditure will fall by Rs. 5 cr. Thus reduction in investment leads to the reverse operation of the multiplier which causes a decrease in aggregate income. This is shown in the following figure with the help of saving and investment curves.

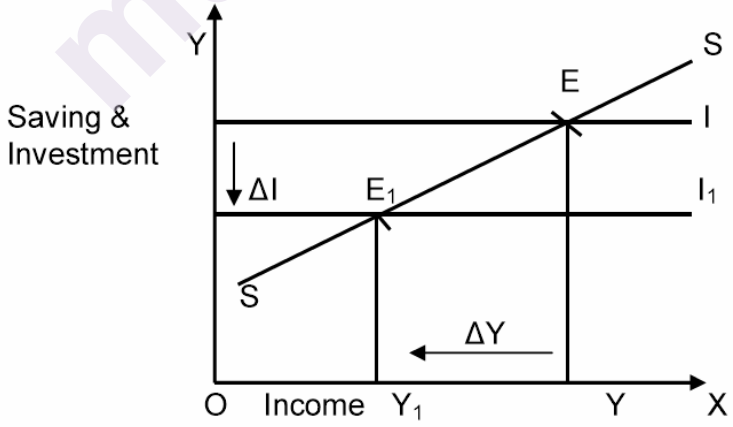


Fig.4.2

In the above diagram horizontal straight line is autonomous investment curve. SS curve is the saving curve. The I curve is the original investment curve which intersects SS saving curve at E point. At this point the equilibrium level of income is OY. When the investment decreases the

original investment curve I shift downwards to the I_1. The new investment curve I_1 intersects the SS saving curve at E_1 point. At this equilibrium point the level of income decreases from OY to OY_1. The fall in income (ΔY) is a multiple of decline in investment (ΔI).

Thus in a community with lower MPC, the initial decline in investment will have greater adverse effect on the level of income and employment. However, MPC is less than one but greater than zero. This implies that people neither spend the full amount of extra income nor reduce consumption by the full decrement of income. Hence income and employment cannot continue to decline till to zero. This otherwise, reverse working of the multiplier would imply a complete collapse of the economy.

Assumptions-

The concept of multiplier is based on the following assumption.

1. The value of multiplier depends upon increase in investment.
2. It is assumed that the increase in investment has not further indirect effects on investment.
3. The calculation of multiplier depends on the assumption of a closed economy.
4. The MPC is constant.
5. There exists unemployment in the economy.
6. There is absence of multiplier period.
7. Keynes has assumed that, change in investment is of autonomous and not induced type.
8. It is assumed that the consumer goods are regularly made available.

Leakages in Multiplier Process –

The size or value of multiplier is reduced by the leakages in income stream on account of the following factors.

1. Savings- In actual life the people does not spend the entire increase in income on consumer goods. On the contrary they save a part of it. The saved portion of increased income does not get converted in investment. This limits the value of 'K'. Thus higher the propensity to save of the people lower shall be the value of 'K'.
2. Repayment of old debts – The income recipients may repay their old debts to lenders instead of spending their income on consumer goods. The value of 'K' is reduced if lenders who receive this money from the borrowers do not spend it.
3. Accumulation of idle cash deposits- A part of increased income may be saved in the form of idle bank deposit instead of spending their income on consumer goods. The value of 'K' is reduced if the bankers who receive this money do not spend on consumer goods.

4. Purchase of old assets – The income recipients may buy old assets such as shares and securities from the people who may not increase their consumption. This will reduce value of 'K'.

5. Excess of import – The import of foreign goods may be increase this will not help the domestic employment. This is because money is spent on foreign goods resulting in a net outflow of funds to foreign countries. This would reduce value of 'K'.

6. Inflation – The rise in prices would reduce additional money expenditure even to buy same amount of goods and services. Hence actual consumption may not increase. This will reduce value of 'K'.

7. High taxes – High rate of taxes may lead to decline in consumption expenditure and the value of 'K'.

Limitations -

1. Availability of consumer goods – The theory assumes that multiplier depends upon the availability of consumer goods. The shortage of consumer goods will not increase the consumption expenditure. Ultimately it will reduce the magnitude of multiplier.

2. Full employment level – The multiplier works in the economy where the level of income is low and unemployment is high. Once the economy reaches the level of full employment the multiplier fails to work. At this level any increase in investment will not increase aggregate output and employment. This will limit the value of 'K'.

3. Multiplier period – According to Keynes, when income of the people increases they spend a part of it on consumption and remaining amount is saved. But in reality there is time gap between the receipt of increased income and the expenditure on consumption. This time gap is called as multiplier period. The value of multiplier depends upon the multiplier period of the time gap. Longer the time gap, the smaller will be the value of 'K' and the smaller the time gap, the larger will be the value of 'K'.

4. Availability of resources – The concept of multiplier depends on the availability of resources for the production of consumer goods. But the shortage of resources will adversely affect the working of the multiplier and thus it will reduce the value of multiplier.

4.3 THE PRINCIPLE OF ACCELERATION

The principle of acceleration was propounded first by a French Economist Albert Aftalion in 1909. The principle is generally associated with the name of an American Economist J.M. Clark in 1917.

Multiplier and accelerator are parallel concepts. Multiplier shows the effect of change in investment on income ($K = \Delta Y/\Delta I$). The accelerator shows the effect of change in consumption on investment.

The machine making industry depends on consumption goods industry. It states that a given increase in the demand for consumer goods in an economy generally leads to an accelerated increase in the demand for investment goods. The principal of accelerator may be defined as, "the ratio of change in investment to change in consumption." We can illustrate this with the help of a simple example.

An expenditure of Rs. 10 cr. on consumption goods industry leads to an increase of Rs. 20 cr. in investment goods industry. So we can say that the value of accelerator is 2. The value of acceleration depends upon the nature of investment goods. The principle of accelerator is symbolically expressed as, $a = \frac{\Delta I}{\Delta C}$.

Where a = stands for acceleration co-efficient
ΔI = change in investment expenditure
ΔC = change in consumption expenditure
As stated above 20/10= 2 is the value of accelerator.

The operation of the principle of accelerator may be illustrated by the following example.

Let us suppose that, in order to produce 1000 consumer goods 100 machines are required. We further suppose that, the working life of a machine is 10 years and after 10 years the machine has to be replaced. This means that every year 10 machines have to be replaced. While the demand for consumer goods remained stable the annual demand for machines would be 10. This might be called as replacement demand. Now let us suppose that the demand for consumer goods rises by 10%, naturally more machines will be required to meet the increased demand for consumption goods. We shall now need 10% or 10 more machines to increase the production of consumer goods. The annual demand for machines will thus rise from 10 to 20 (10 machines for replacement demand and 10 machines for meeting the increased demand for consumer goods). The demand for machines shall be 20 which represent an increase of 100%. The point to be noted here is that a comparatively small rise of 10% in the demand for consumer goods causes a rise of 100% in the demand for machines.

Accelerator states that, the changes in the demand for investment goods are larger than the changes in the demand for consumer goods industries.

The principle of accelerator can be explained with the help of following diagram.

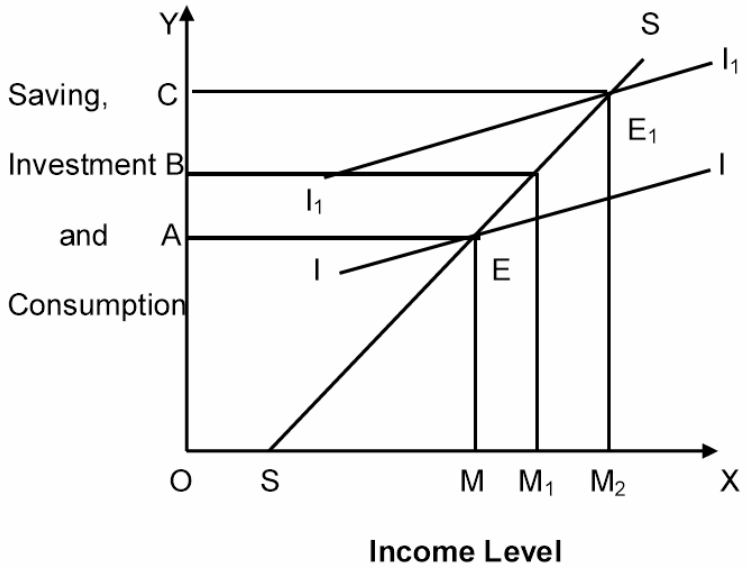


Fig.4.3

In the above diagram, SS is the saving line slopes upward from left to right. II and I_1I_1 are investment curves. OX axis represents savings, investment and consumption. In this diagram II investment curve intersects SS saving curve at point 'E'. At this equilibrium point OM is the equilibrium level of income and savings and investment both are equal to each other (OA). However AB increase in investment is exogenous investment. An increase in investment from OA to OB pushes the income level from OM to OM_1. An increase in investment from II to I_1I_1, the new investment curve I_1I_1 intersects SS saving line at point E_1. At this equilibrium point, the equilibrium level of income is OM_2 and OC is the saving and investment. An increase in investment from OB to OC is induced investment. As a result, income level rises from OM_1 to OM_2. MM_1 portion of increase in income is due to multiplier effect and M_1M_2 increase in income is due to accelerator effect. This increase in income is because of induced investment.

In short, the principle of accelerator shows the change in investment to the change in consumption.

Working of the Accelerator –

The working of the accelerator is explained by a hypothetical example based on the following assumptions.

1. Current demand for consumption goods is 1000 units.
2. To maintain a constant flow of 1000 consumer goods, 100 machines (capital goods) are required.
3. The capital output ratio remains constant and is equal to 1: 10. The acceleration co-efficient is 1.

4. The average life of a machine is 10 years. After 10 years machines have to be replaced means 10 machines are needed a very year.

5. Any increase in demand for consumer goods will require additional machines besides replacement demand.

Table 4.3 Working of the Accelerator

Period	Consumption goods units	Capital required	Replacement investment	Induced investment	Total investment
0	1000	100	10	0	10
1	1000	100	10	0	10
2	1100	110	10	10	20
3	1200	120	10	10	20
4	1300	130	10	10	20
5	1500	150	10	20	30
6	1700	170	10	20	30
7	1900	190	10	20	30
8	2000	200	10	10	20
9	1900	190	10	-10	0

The above table shows total output of consumption goods, net capital investment and total investment. When consumption demand rises by 10% in period 2, total investment rises to 20 that is 100% increase in investment. In period 3 and 4 the demand for consumption goods rises by 10% but total investment remains at 20. It shows that the total output of consumption goods rises at the same rate. In period 5, 6 and 7the absolute increase in output of consumption goods is higher than the earlier periods. The total investment rises further to 30 units of capital. In period 8, the demand for consumption goods rises by 10% only. As a result, the total investment falls to 20 units because the absolute increase in output is lower. If the demand for final goods falls by 10% in period 9, the net investment is negative. Hence, the total investment becomes zero.

It is clear from the above table that, net investment depends on the changes in total output of consumption goods, given the acceleration co-efficient. Further net investment is positive so long as the demand for consumption goods rises. However, when it falls, net investment is negative. It is important to note that in general a small change in the demand for consumption goods leads to substantial change in induced investment depending upon the acceleration co-efficient.

Limitations –

Generally, the principle of accelerator works in a way as explained above. However, in reality it is difficult to find out the working of the acceleration. The operation of the principle of acceleration has certain limitations.

1. The life of machine used for producing consumer goods is an important factor in the analysis of principle of acceleration. But in practice it is very difficult to decide accurate life of the machine.
2. If the capacity of machines is in excess of actual requirements, the increase in demand for consumers' goods would not necessarily lead to increase in investment. The increased demand can be met by using the excess capacity.
3. If the demand for consumers' goods is purely temporary in nature, then there would be no rise in investment. In such a case, a producer would overwork the existing machinery and thus avoid additional investment.
4. In certain cases, the investors do not wait for changes in the rate of consumption and therefore, investment is made sufficiently in advance assuming that the demand would increase in future. Generally, this happens in case of the public sector undertakings.
5. The principle is based on the assumption that the ratio between consumption and investment remains constant. But in reality, it hardly happens.
6. If the economy operates at level of full employment or near that level, the principle of acceleration would have little scope.

In spite of all these limitations, the principle of acceleration is considered as a useful tool of economic analysis.

4.4 SUPER MULTIPLIER

Combined Effects of Multiplier and Accelerator –

The principles of multiplier and accelerator are useful for understanding the dynamic process of income generation. The principle of multiplier explains the effect of change in initial investment on final increase in income. On the other hand, the principle of accelerator explains the effect of change in consumption on the level of investment and further on income and employment. This clearly shows that, the principle of multiplier explains only one aspect of income generation. But the principle of accelerator revels two important aspects namely- income and employment. Hence, in order to measure the total effect of initial investment on national income it is necessary to combine the effects of multiplier and accelerator.

The combined working shows that on the one hand the autonomous investment raises income through consumption expenditure as a result of multiplier effect. This induced consumption expenditure

further leads to an increase in induced investment. This generates more income as a result of accelerator effect. Again multiplier works because of increase in investment and similarly, expands the increase in income and employment. This leads to a flow of induced investment.

This effect of combined operation of the multiplier and acceleration is called the 'Leverage Effects' or the super multiplier. This leverage effects brings about the accelerated change in income and employment.

The process of income propagation by way of the multiplier and accelerator principles can be explained with the help of following example. Let us suppose that, the MPC is half or 50%. The acceleration co-efficient is 2 i.e. capital-output ratio is 2:1 and the initial investment expenditure is 100 crores.

The Following table shows that the initial investment expenditure of Rs.100 cr. generates an equal amount of increase in income i.e. Rs. 10 cro. The induced consumption expenditure in the first period from this increased income will be Rs. 50 crores because MPC is half and the induced investment is Rs. 100 crores. The acceleration co-efficient is 2 and income increases to Rs. 250 crores (100 + 50 +100 = 250).

Table 4.4 Combined Effects of Multiplier and Accelerator

(In Crores)

Multiplier period	Initial Investment	Induced consumption	Induced investment	Total increase in National Income
0	100	0	0	100
1	100	50	100	250
2	100	125	150 (2 X75)	375
3	100	187.50	125 (2 X 62.50)	412.50
4	100	206.25	37.50 (2 X 187)	343.75

Further, in the second period, the induced consumption expenditure form this increased income is Rs. 125 cr., as the MPC is 50% of the income. But, consumption in period 2 is a function of income of the previous period. Therefore, the actual increase in consumption in period 3 is the difference between the period 2 and 1 i.e. 125 - 50 = 75. Hence the induced investment is Rs. 150 crores because the value of co-efficient is 2 and income increases to Rs. 375 crores (100 + 125 + 150 = 375).

In this way, total income reaches the peak level of Rs.412.50 crores in the third period. However, income starts falling from fourth

period as the induced investment declines. The effect of induced investment comes to an end after a certain period.

The consumption expenditure falls further and thus the acceleration effect becomes negative. However, income will once again start rising due to autonomous investment.

The above table revels that induced investment will be high in the initial stages when consumption is quite high. But when additional consumption expenditure is not high enough in the later stages the induced investment will gradually fall.

The following diagram shows combined operation of the multiplier and accelerator.

In the above diagram the horizontal lines II and I_1I_1 are autonomous investment of the multiplier. Further, the saving curve SS intersects II investment curve at E point. At this point the equilibrium level of income is OY at which S = I. When investment increases to I_1I_1, it intersects SS curve at E1 point. At this new equilibrium point the level of income increases from OY to OY1. Therefore, increase in income YY_1 is the multiplier effect.

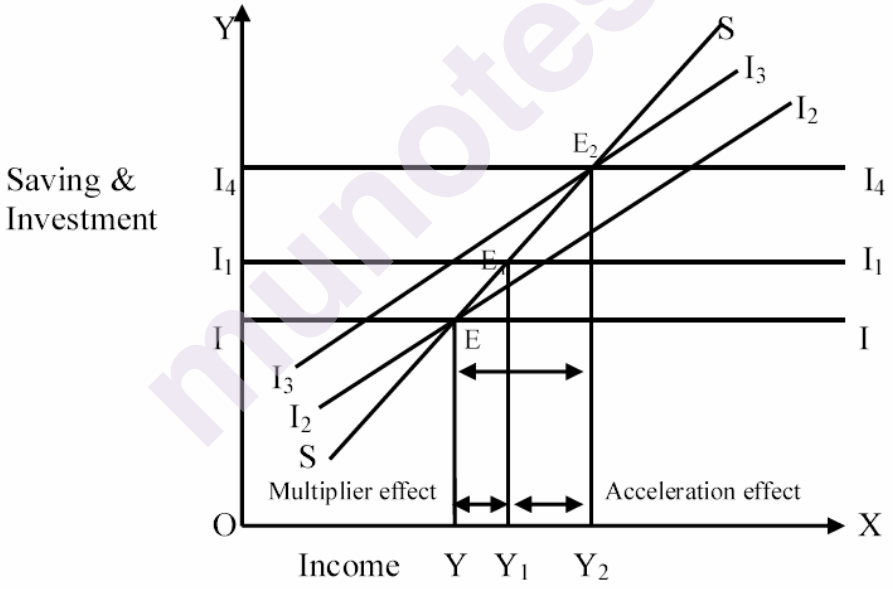


Fig. 4.4

On the other hand, in case of acceleration principle, the induced investment is shown by the rising curve I_3I_3. It shows that when autonomous investment I_1I_1 is undertaken the rising curve I_3I_3 intersects SS curve at E_2 point. The horizontal line I_4I_4 shows induced investment. At this equilibrium point E_2 the level of income is OY2 which indicates that induced investment brings about further increase in income from OY1 to OY2. Thus, Y1 Y2 is the acceleration effect and YY2 is the super-multiplier effect.

4.5 RELEVANCE OF KEYNESIAN THEORY TOOLS TO THE DEVELOPING COUNTRIES

J. M. Keynes by his publication of 'The General theory' (1936) has had a great influence on economic policies of both developed and developing countries. The Keynesian theory of income and employment was presented in 1936 in the context of the Great World Trade Depression of 1929-33. The Keynesian prescription have been adopted by some advanced economies which succeeded in achieving high employment and reasonable price stability. Economics in developing countries like India. They argued that Keynesian prescriptions cannot be applied in developing countries due to differences in economic structures of such countries from those of industrially advanced countries. However, some modern economists believe that some of the Keynesian concepts and prescriptions are still applicable to the present developing countries.

I: The Traditional View: This view explains the views about the irrelevance of Keynesian economics

1. **Demand Deficiency:** According to Keynes, deficiency of demand or purchasing power is the root cause of unemployment in advanced countries. But in underdeveloped countries unemployment occurs mainly due to shortage of capital and general scarcity of entrepreneurship arising from lack of sufficient employment opportunities. In developing countries, the unemployment arises due to the structural constraints/limitations-inadequate capital stock compared to the size of labour force.

   The Keynesian policy of increasing aggregate demand by increasing government expenditure (financed by printing money) is quite relevant for solving the problem of cyclical unemployment of capitalist countries. But this policy cannot solve the problem of disguised unemployment of developing countries caused by rapid growth of population, especially in rural areas, shortage of physical capital and inadequate availability of mass consumption goods. In simple terms, since unemployment is not due to lack of demand, the solution to the problem does not lie in creating additional demand or purchasing power.

2. **Stability v/s Growth:** J. M. Keynes was concerned with the short-run macroeconomic problems of the advanced capitalist countries. But Keynes ignored the issue of economic growth which is a long-term phenomenon. This is the major drawback of Keynesian economics. Therefore, the Keynesian theories and policies cannot be applied to study the problems of slow rate of economic growth of developing countries as also to promote faster economic growth by adopting certain macroeconomic policies.

Keynes did not address the problem of economic growth which is so important for developing countries.

3. **Irrelevance of Keynes's Policy Prescriptions:** According to some economists the main Keynesian prescription or remedy i.e., increasing government expenditure (through creating new money) is likely to cause inflation in developing countries (LDCs or UDCs), rather than increasing employment, output and real income. Whereas the Classical prescription, i.e., increasing the rate of savings and capital formation is more effective for increasing employment and output in such countries. This may be supported by a steady increase in the supply of essential consumer goods, mainly food grains. Thus, the Classical Supply Side policies are more relevant in UDCs rather than the Keynesian Demand Side policies or measures.

4. **Working of Multiplier:** Keynesian multiplier principle does not work in the developing countries for diminishing unemployment and for raising income due to the existing structure of the economy. Underdeveloped/ developing countries like India are still agrarian economies. It is characterised by low productivity and low supply elasticity. Under such situation, an increase in public investment expenditure in agriculture is likely to have a different type of multiplier effect. It will lead to an increase in the prices of agricultural goods rather than an increase in the supply of such goods. A shortage of industrial raw material (from agriculture) also leads to cost-push inflation. In LDCs, there is not much excess capacity in consumer goods industries. Similarly, it is not possible to increase the supply of basic inputs in response to an increase in demand and the main problem of labour-surplus countries like India is the prevalence of disguised unemployment in rural areas. Thus Keynesian multiplier principle fails to increase employment and output in such countries.

II. Modern Views: Relevance of Keynesian Economics: Modern economists have found relevance of Keynesian economics, mainly in developing countries. Following points will explain this relevance.

1. **Full Employment:** The faith that in a free competitive economy envisaged by the English Classical School full employment would be automatically reached and the economy would stabilise there has been completely shattered as a consequence of the General Theory of Keynes. Thus the General Theory has dealt a death-blow to the laissez-faire doctrine. Keynes has convincingly demonstrated that the government will have to intervene and follow a positive and steadfast policy to raise the level of employment and thus avoid fluctuations in the economy. Therefore, both in developed and developing countries, a positive and interventionist policy is being followed by the governments to realise the objective of full employment (or to raise the level of employment in the economy).

2. **Demand Deficiency or Deficiency of Demand:** In developing countries also capital is bound to remain unutilised in spite of the fact that the return on it is positive. According to Ragnar Nurkse, in developing countries the inducement to invest is low due to limited size of the domestic market for industrial goods. Wide spread poverty and low per capita income is responsible for the low market for mass consumption goods. Stagnation and demand deficiency is due to many reasons such as slow growth in agricultural production, fall in consumption demand of the rural people due to negative growth of agricultural sector, slow down in the rate of investment in public as well as public sector, fall in exports etc. Industrial growth has slowed down due to supply-side constraints like low rate of savings, inadequate stock of capital, infrastructural deficiency and shortage of raw material. It shows that the setback is from both the demand side and the supply side. So, the Keynesian concept of deficiency of demand has some relevance to developing countries like India.
   The Keynesian concept of demand deficiency is partly relevant in India.

3. **Business Investment Behaviour:** According to Keynes, the two important determinants of investment are the Marginal Efficiency of Capital and the Rate of Interest. Expectations play an important role in influencing investment behaviour of the firm.

   Keynes explained investment behaviour in terms of 'Animal Spirits'. Animal Spirits refers to entrepreneurs' optimism and willingness to undertake risky investment projects. Thus, investment is the most volatile component of GDP. Keynes linked the high variability of investment to the animal spirits of entrepreneurs', i.e., their fickle (indecisive, inconsistent) and volatile expectations of the future profitability of investment. Keynes argued that major investment projects are usually undertaken not on the basis of careful calculation of profits they are expected to make, but on the strength of 'hunches' of entrepreneurs that, beneath the uncertainties that would make a rational and cautious person delay a decision, there is an opportunity to be grasped by whoever has the courage to try.

   The periodic decline in private investment in India can be explained in terms of 'Animal Spirits'. Private investment in India fell from time to time due to political instability and economic uncertainty, which reduced confidence of investors. Investment in both financial assets (new shares) and physical assets (real capital) fell due to uncertainty regarding implementation and continuation of various economic reform programmes.

4. **Investment Choice by Household:** Keynes's theory of demand for money postulates that at a high rates of interest people hold less cash and buy more bonds. At low rates of interest, they just do the opposite. People's liquidity preference depends on the existing rates of interest as also on uncertainties regarding changes in the rate of interest in the

future. This is what is experienced in India sometimes. Sometimes, investment in shares by households has declined and investment in bank deposits has increased steadily. People in developing countries like India keep a large sum of money in liquid form (in the form of cash balance and bank deposits, withdrawable by cheques) and make a small investment in financial assets like equity shares.

5. **Household Consumption Behaviour:** The Keynesian consumption function hypothesis is quite relevant in developing countries like India both at the micro level and at the macro level. An individual's consumption expenditure depends only on his disposable income, as has been postulated by Keynes's absolute income hypothesis. The rate of interest does not affect short-run consumption spending in such countries much. Aggregate consumption also depends on the pattern of income distribution and the stock of wealth of the community as suggested by Keynes.

6. **The Working of the Multiplier:** In the developing economies like India, the Keynesian multiplier principle now works for a number of reasons. At present in India there is considerable idle capacity in various industries. In addition, due to the partial success of Green Revolution, the production of food grains has increased steadily over the years. Under such situation an act of Investment is likely to generate a multiplier effect from the supply side such as shortage of power, coal, infrastructural deficiency and imperfections in the economy. For such constraints the true size of the multiplier is less than what is warranted by a high Marginal Propensity to Consume (MPC).

7. **Fiscal policy and Deficit Financing:** Keynes in his later writings laid emphasis on fiscal policy (taxation and public expenditure/expenditure policy) to attain the goal of full employment. Keynes recommended that manipulating rates of various taxes and with appropriate pattern of public expenditure, the goal of full employment or higher level of employment can be realised more effectively than by monetary policy alone. What is more important is that Keynes completely knocked out the foundation and accepted practice of the concept of balanced budget. In case of the existence of substantial unemployment in the country, instead of raising tax rates (which might discourage private investment), Keynes recommended the policy of deficit financing. It is as a result of the Keynesian theory that deficit financing or budgeting has become a fairly common practice, especially in developing countries where there are vast potential resources lying unutilised and enormous poverty but not adequate saving and investment to make use of the resources because of the low level of income of the people.

8. **Income Analysis:** Another impact of Keynesian theory has been that the entire approach of looking at economic phenomenon and the system has undergone radical change. Now it has become common practice to think in terms of income analysis-level of income

(aggregate and per capita), rate of saving and investment and so on. Almost every country compiles and publishes such annual income analysis which gives true picture of the functioning of the national economy.

9. **Economic Role of the Government:** Keynes suggested the adoption of Stabilisation Policy by the government to fight depression and unemployment and also to maintain price stability. Although Keynes completely ignored the problem of long-term growth, there is need for government intervention in the form of adoption of appropriate monetary and fiscal policies to give a genuine boost to private investment and enable the economy to achieve self-sustaining growth, in the long run along with reasonable price stability. The government of a developing country should also make sufficient investment to provide an integrated infrastructure without which faster economic growth is not possible. Adequate infrastructure will enable the private sector to overcome supply-side constraints on economic growth. The government should also invest in social infrastructure such as education and public health, as has been suggested by Amartya Sen.

   A related point may be noted in this context. In advanced countries, the government spending obstructs private investment by diverting loanable funds and raising the rate of investment. This is known as the 'Crowding-Out Effect'.

   But in developing countries, government expenditure on infrastructural investment stimulates private investment by removing supply constraints. This is known as the Crowding-In Effect. Public investment not only generates demand for goods and services produced in the private sector but stimulates growth of the economy by improving infrastructural facilities, the absence of which is a major obstacle to economic growth in developing countries like India.

   While in advanced countries government spending and private investment are competitive in nature, in developing countries, they are complementary.

Conclusion: J.M.Keynes has left deep impact on economic thinking in almost all developing countries.

4.6 SUMMARY

1. The theory of multiplier was first developed by Prof. R.F. Kahn in 1931. It explains the effects of initial increase in investment on aggregate employment. Kahn's multiplier was thus known as 'employment multiplier.' J.M. Keynes used the concept of multiplier to analyze the effects of change in investment on income via changes in consumption expenditure. Thus this multiplier came to be known as the investment multiplier. It may be defined as "the ratio of the change

in income to the change in investment." It is symbolically expressed as, $K = \Delta Y / \Delta I$.
Where K = Stands for Multiplier, ΔY = change in income and ΔI= change in investment.

2. The principle of acceleration was propounded first by a French Economist Albert Aftalion in 1909. The principle is generally associated with the name of an American Economist J.M. Clark in 1917. Multiplier and accelerator are parallel concepts. Multiplier shows the effect of change in investment on income ($K = \Delta Y/\Delta I$). The accelerator shows the effect of change in consumption on investment.

3. This effect of combined operation of the multiplier and acceleration is called the 'Leverage Effects' or the super multiplier. This leverage effects brings about the accelerated change in income and employment.

4. J.M.Keynes by his publication of 'The General theory' (1936) has had a great influence on economic policies of both developed and developing countries. The Keynesian theory of income and employment was presented in 1936 in the context of the Great World Trade Depression of 1929-33. The Keynesian prescription have been adopted by some advanced economies which succeeded in achieving high employment and reasonable price stability in economics in developing countries like India. Some modern economists believe that some of the Keynesian concepts and prescriptions are still applicable to the present developing countries.

4.7 QUESTIONS

1. Discuss in detail the theory of investment multiplier.
2. Explain the working of investment multiplier.
3. Briefly explain the leakages and importance of investment multiplier.
4. Explain in detail the principle of acceleration.
5. Discuss the relevance of Keynesian theories to developing countries economy.

Module 3

5

POST KEYNESIAN DEVELOPMENTS IN MACRO ECONOMICS

Unit Structure :

5.0 OBJECTIVES

- To study integration of commodity and money markets
- To understand the meaning of the goods market and the IS curve
- To understand the meaning of the money market
- To study equilibrium in the goods and money market
- To study the impact of fiscal policy and the monetary policy on the goods and money market
- To understand the meaning of Phillips curve
- To understand Keynesian explanation of Phillips curve
- To study short run and long run Phillips curve

5.1 INTRODUCTION

In the first two modules we have seen the Classical economists and Modern economist Keynesian theories applicable to macroeconomic study. In this module we are going learn about the Post Keynesian developments of macroeconomics.

5.2 INTEGRATED APPROACH (THE IS & LM MODEL)

The goods and the money markets are interlinked by two economic variables, namely: interest rate and national income. In this model, interest rate is introduced in the goods market through investment demand. The goods market therefore has two variables – interest rate (i) and national income (GDP). The goods market equation is known as the IS curve. The IS curve represents equality between saving (S) and investment (I) and all points on the IS curve show goods market equilibrium at different levels of interest and national income. The money market equilibrium is determined by the demand for and supply of money at various levels of interest and national income. The demand for money is a function of income and interest rate. The supply of money is determined by the Central Bank (the RBI in India or the Federal Reserve in the USA). The money market equation is known as the LM curve. The LM curve represents equilibrium between demand and supply of money at various levels of interest rates and national income. Various points on the LM curve shows equality between demand for money (L) and supply of money (M).

The IS-LM model shows how the equilibrium levels of income and interest rates are simultaneously determined by the simultaneous equilibrium in the two interdependent goods and money markets. Hicks, Hansen and Johnson put forward the IS-LM model on the basis of Keynesian framework of national income determination in which investment, national income, rate of interest, demand for and supply of money are interrelated and inter–dependent. These variables are represented by two curves, namely; the IS and the LM curves.

5.3 THE GOODS MARKET AND THE *IS* CURVE

The goods market is in equilibrium when aggregate demand is equal to national income. In a closed two sector economy, the aggregate demand is determined by consumption demand and Investment demand (AD = C + I). Changes in the interest rate affect aggregate demand through changes in investment demand. With the fall in interest rates, the profitability of investment rises because the cost of investment falls. Increase in investment demand leads to increase in aggregate demand and rise in the equilibrium level of national income. The IS curve shows the different combinations of national income and interest rates at which the

goods market is in equilibrium. The derivation of the IS curve is depicted in Figure 5.1 below.

In panel (A) of Fig. 5.1 you will notice that the relationship between planned investment and rate of interest is depicted. It will be obvious from the figure that planned investment is inversely related to the rate of interest. When the interest rate falls, planned investment rises, leading to an upward shift in the aggregate demand function. The shift in the aggregate demand function is depicted in panel (B) of the figure, where in, you will see that an upward shift caused in the aggregate demand function leads to a higher level of national income in the goods market. Thus in the goods market, the level of national income is inter-connected with the interest rate through planned investment. The IS curve is the locus of various combinations of interest rates and the levels of national income at which the goods market is in equilibrium.

In panel (C) of Fig. 5.1, the IS curve is depicted. It shows that the changes in the level of national income are a function of changes in the level of aggregate demand, planned investment and rate of interest. At the given rate of interest r_0, the level of national income Y_0 is plotted. When the interest rate falls to r_1, planned investment increases to I_1 and the aggregate demand function shifts from AD_0 to AD_1 and the goods market assumes equilibrium at Y_1 level of national income. We therefore plot Y_1 level of national income corresponding to r_1 level of interest rate. Similarly when the interest rate further falls to r_2, planned investment increases to I_2 and the aggregate demand curve shifts upward to AD_2. Now the goods market assumes equilibrium at Y_2 level of national income. In panel (C), the equilibrium national income Y_2 is shown against the rate of interest r_2. By repeating this process for all possible interest rates, we can trace a series of combinations of interest rates and income levels corresponding to goods market equilibrium. By joining points such as E_0, E_1, E_2 etc. in panel (C) of the diagram, we obtain the IS curve. You will notice that the IS curve so obtained is downward sloping indicating that when the rate of interest falls, the equilibrium national income rises.

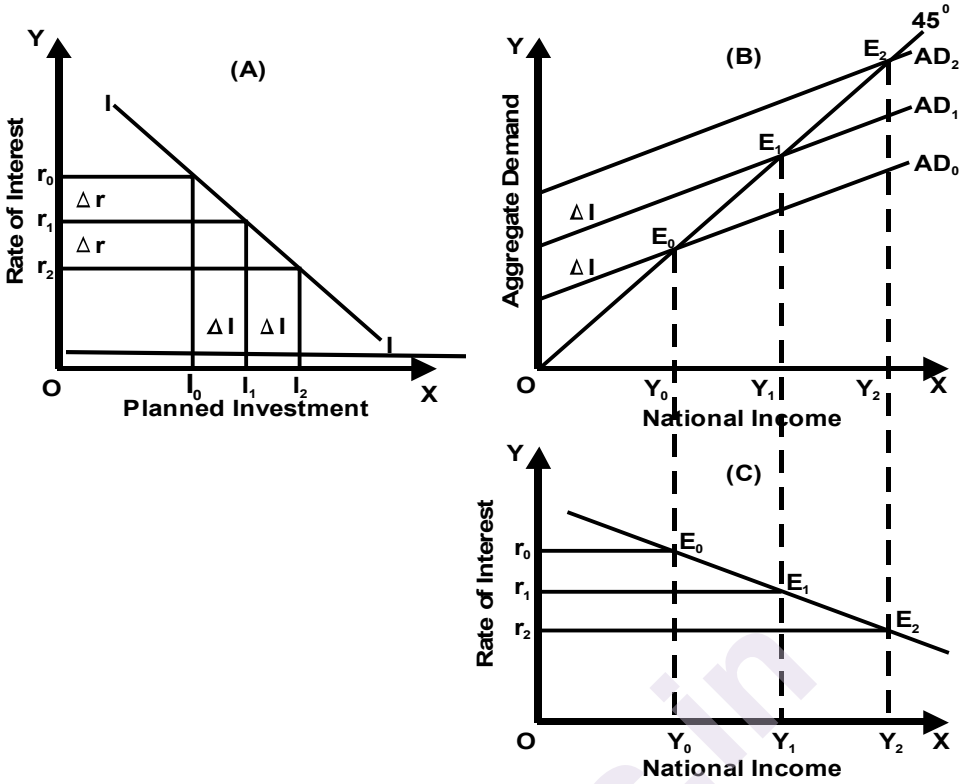


Fig. 5.1: Derivation of the IS Curve

THE SLOPE OF *IS* CURVE

The IS curve has a negative slope indicating an inverse relationship between the rate of interest and the level of aggregate demand. A higher interest rate will lower the level of planned investment and hence lower the level of aggregate demand and the equilibrium level of national income. Similarly, a lower interest rate will raise the level of planned investment and hence higher will be the level of aggregate demand and the equilibrium level of national income.

The steepness of the IS curve is determined by the elasticity of investment demand curve and the size of the investment multiplier. The elasticity of investment demand shows the degree of responsiveness of investment expenditure to the changes in the rate of interest. If the investment demand is relatively elastic, a given fall in the rate of interest will result in a more than proportionate change in investment demand bringing about a larger shift in the aggregate demand curve and larger level of national income, thus making the IS curve flatter. Conversely, if the investment demand is relatively inelastic, the IS curve will be relatively steep. The steepness of the IS curve is also determined by the size of the investment multiplier. The value of the multiplier is determined by the size of the marginal propensity to consume. Greater the mpc, greater will be the size of the investment multiplier and greater will be the level of national income as a result of increase in investment. Thus making the IS curve flatter. Conversely, if the mpc is lower, the IS curve will have a steeper slope.

SHIFTS IN THE *IS* CURVE

Changes in autonomous expenditure causes a shift in the IS curve. Autonomous expenditure is independent of the level of income and the rate of interest. Autonomous expenditure may increase on account of increase in government expenditure, increase in autonomous consumption expenditure or increase in autonomous investment demand. Autonomous investment demand may rise due to increase in firm's optimism about future profits. Autonomous consumption demand may rise due to households' estimate of future incomes. Government expenditure has an autonomous component given the wide-scale use of deficit financing. An increase in autonomous expenditure at a given interest rate would shift the aggregate demand curve upwards leading to an increase in the equilibrium level of national income. With interest rate remaining constant, an upward shift in the aggregate demand curve will cause the IS curve to shift towards the right indicating increase in national income at the given interest rate.

In figure 5.2 below, the shift in the IS curve is depicted by introducing the third component of the aggregate demand namely government expenditure and it is denoted by 'G'.

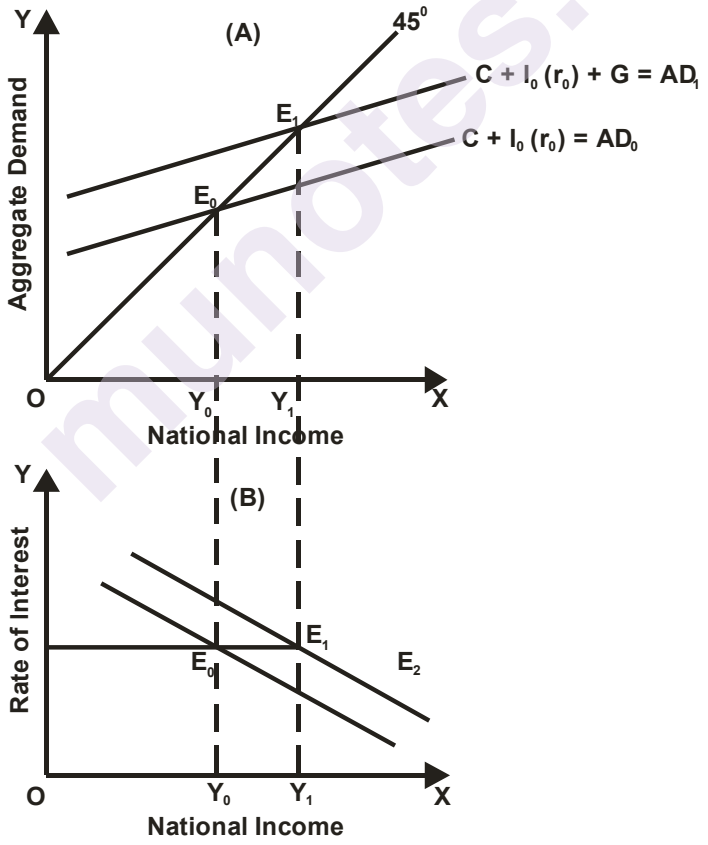


Fig. 5.2: Shift in the IS Curve on account of Increase in Autonomous Expenditure

You will notice from the figure 5.2 that when the rate of interest is r_0, the planned investment is I_0 and the Aggregate Demand Curve is AD

which intersects the 45° line at point E_0 and Y_0 level of national income is determined. It is also depicted in panel (B) of the diagram by point E_0. Let us now introduce the government component in the composition of the aggregate demand and assume that the entire component is autonomous in nature. Government expenditure 'G' will shift the aggregate demand curve to AD_1 which intersects the 45° line at point E_1 and a higher level of national income Y_1 is determined. Correspondingly, we obtain point E_1 on panel (B) of the diagram as the new equilibrium point and accordingly Y_1 level of national income is plotted. The change in the level of national income from Y_0 to Y_1 is not on account of any change in the interest rate and hence the IS curve shifts to the right. The new equilibrium point E_1 is horizontally contiguous and to the right of point E_0 indicating a shift in the IS curve.

The movement along the IS curve indicates shifts in equilibrium income caused by shifts in the aggregate demand curve as a result of changes in interest rates. A shift in the aggregate demand curve caused by any other factor other than interest rate must be represented by a shift in the IS curve.

5.4 THE MONEY MARKET AND THE *LM* CURVE

The LM curve shows the different combinations of interest rates and incomes corresponding to equilibrium in the money market. According to Keynes, liquidity preference is the sum of transaction and speculative demand for money. The transaction demand for money is directly related to the level of income and the speculative demand for money is inversely related to the rate of interest. The total money demand function can be stated as: $M_d = L(Yr)$, where 'M_d' stands for demand for money, 'Y' for real income and 'r' for rate of interest. The LM curve can be obtained by drawing a series of money demand curves at various levels of income intersecting the supply curve of money as determined by the monetary authorities. The LM curve so obtained shows various interest rates given the demand for and supply of money at different levels of income. The derivation of the LM curve is depicted in Fig. 5.3 below.

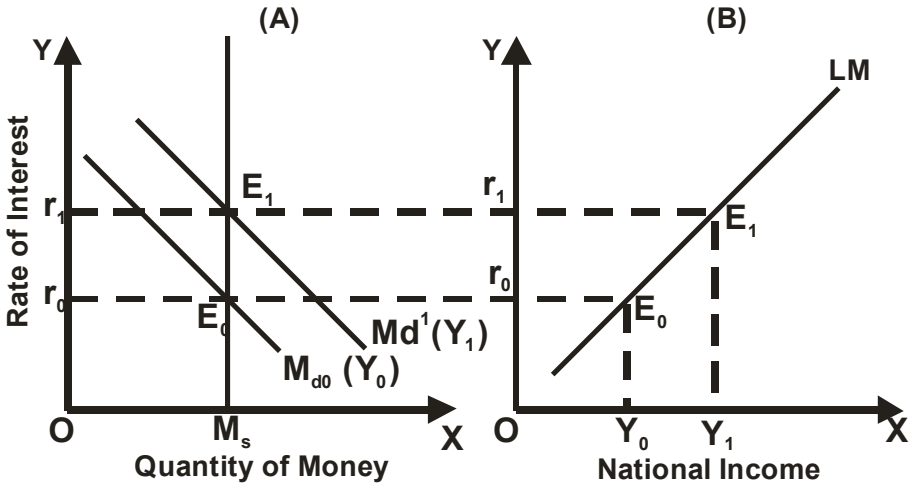


Fig. 5.3: Derivation of the LM Curve

In Fig. 5.3 above, panel (A) shows various money market equilibrium points at different levels of income and panel (B) depicts the derivation of the LM curve showing the different combinations of interest rates and income corresponding to money market equilibrium. In panel (A), the M_s curve indicates the supply of money as fixed by the monetary authorities. For the given income level Y_0, the money demand curve Md0 is drawn which intersects the supply curve at point E_0. Point E_0 indicates the initial money market equilibrium. It shows that when the money demand is Md0, the interest rate is r_0.

In panel (B) of the figure, the corresponding point E_0 is shown. At point E_0, the money market is in equilibrium with the combination of income level Y_0 and interest rate r_0. At the higher income level Y_1, the demand for money will be higher at each interest rate. The new money demand curve Md^1 at interest rate r_1, intersects the supply curve at point E_1. Point E_1 is the new money market equilibrium. At a higher income level, the quantity of money demanded rises but higher interest rates reduces the quantity of money demanded to the original level. In panel (B), point E_1 is plotted showing the new money market equilibrium with interest rate r_1 and income level Y_1. By considering all possible income levels and by plotting the money demand curves at each income level and by plotting the corresponding equilibrium points in panel (B), the LM curve is derived.

THE SLOPE OF THE *LM* CURVE

The LM curve is upward sloping. At higher income levels, it requires higher interest rates to maintain the money market equilibrium with constant money supply. If the quantity demanded of money is proportionately greater than the change in the income level, the interest rate will be higher and steeper will be the slope of the LM curve. Further, if the quantity demanded of money is less responsive to the rise in interest rates, greater will be the rise in interest rate to maintain the money market equilibrium and steeper will be the LM curve. Conversely, the more the

quantity of money demanded responds to interest rates and the less it responds to income, the flatter will be the LM curve.

SHIFTS IN THE *LM* CURVE

Given the money demand function, an increase in money supply will lead to fall in interest rate at the given level of income. With fixed income level the rate of interest must fall with a rise in money supply in order to maintain the money market equilibrium. The fall in interest rate will shift the LM curve to the right indicating a rise in the money demand function. This is depicted in Fig. 5.4 below.

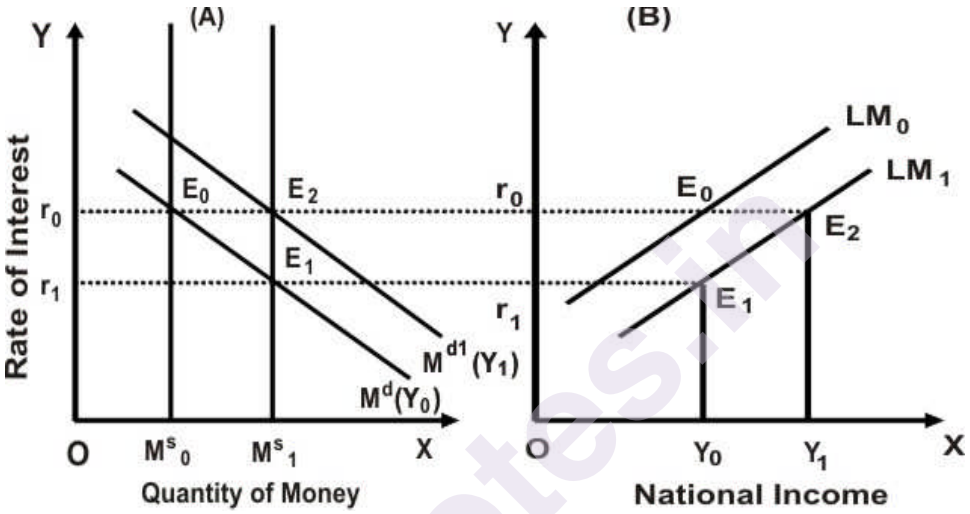


Fig. 5.4: Shift in the LM Curve on account of Increase in Money Supply

You will notice in panel (A) of fig. 5.4 that with the initial money supply M^s_0 at Y_0 level of income, the money market is in equilibrium at the interest rate r_0. When the money supply increases to M^s_1 at r_0 interest rate, there is excess money supply at the given income level Y_0. In order to maintain the money market equilibrium, the interest rate must fall to r_1 if the people are induced to demand more money at the income level Y_0 and the new money supply M^s_1. The new interest income combination (r_1, Y_0) will be on LM_1 as shown in panel (B). Similarly, with the increase in money supply from M^s_0 to M^s_1 and with the given interest rate r_0, the income must increase to Y_1 so that more money is demanded corresponding to the new money supply M^s_1. You will notice in panel (A) that with the increase in money supply at the given interest rate r_0, the income increases and raises the money demand curve to $Md^1(Y_1)$ and the money market is in equilibrium at point 'E_2' with r_0 as the interest rate and Y_1 as the income level. The new interest-income combination (r_0, Y_1) is plotted on the LM_1 curve in panel (B). Thus increase in money supply will shift the LM curve to the right and if the money supply is reduced, it will raise the interest rate at the given level of income and cause the LM curve to shift to the left.

5.5 EQUILIBRIUM IN THE GOODS AND MONEY MARKETS

The equilibrium rate of interest and the level of income is determined at the intersection point of the IS and LM curve. The goods market is in equilibrium at all points on the IS curve and the money market is in equilibrium at all points on the LM curve. Hence, only at the point of intersection between these two curves, both the money market and the goods market will be simultaneously assuming equilibrium. Such an equilibrium condition is depicted in Fig. 5.5 below.

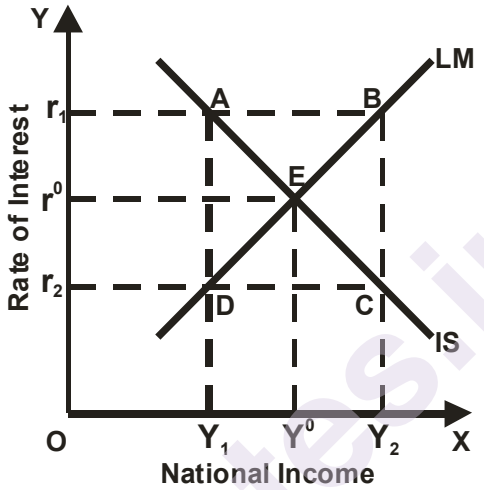


Fig. 5.5: Simultaneous Equilibrium in the Goods and Money Market

The simultaneous equilibrium in both the markets is determined at point E, whereby r_0 is the interest rate determined and Y_0 is the level of national income. At interest rate r_1 and income level Y_1, the goods market will be in equilibrium at point 'A' on the IS curve. But at the interest rate r_1, the money market will be in equilibrium only at income level Y_2 at point 'B' on the LM curve. At interest rate r_1, the income level Y_1 is too low for money market equilibrium and hence the money demand is not enough to match the given quantity of money supply. With excess supply of money, interest rate will fall until it reaches r_0 level. At r_0 interest rate, aggregate demand and national income would have risen sufficiently to increase money demand so that equilibrium in the two markets is obtained. Alternatively, at r_2 interest level, the income level Y_2 required for goods market equilibrium at point 'C' is greater than the income level Y_1 required for equilibrium in the money market at point 'D'. With income too high for money market equilibrium, there is excess demand for money pushing the interest rates up until they reach r_0 with Y_0 income level where both markets are in equilibrium.

5.6 FISCALAND MONETARY POLICIES AND THE *IS-LM* MODEL

The IS-LM model helps us to explain as to how changes in monetary policy initiated by the Central Bank of a country and changes in fiscal policy initiated by the Government of a country influences the rate of interest and the level of national income in a country.

FISCAL POLICY AND IS-LM MODEL

Changes in fiscal policy can be explained in terms of changes in government expenditure and changes in taxes imposed by the Government. We will first look at the impact of increase in government expenditure on the rate of interest and the level of national income. This is shown in Fig. 5.6 below. Autonomous increase in government expenditure raises aggregate demand for goods and services produced in an economy and pushes the IS curve to the right in the upward direction. You will notice that autonomous increase in government expenditure shifts the IS curve from IS_1 to IS_2. Here, the horizontal distance between the two IS curves is equal to $\Delta G \times \frac{1}{MPS}$ which shows the increase in income that takes place according to the Keynesian multiplier. You may notice that with the LM curve remaining constant, the IS_2 curve intersects the LM curve at point F. The IS-LM model therefore explains us that with the increase in autonomous government expenditure (ΔG), the equilibrium shifts from point E to point F and the rate of interest rises from R_1 to R_2 and the level of national income increases from Y_1 to Y_2. The IS-LM model therefore explains us that increase in autonomous government expenditure or expansionary fiscal policy helps to increase both the level of national income and the rate of interest.

An interesting point that IS-LM model brings to light is the difference in the increase in national income as given by the Keynesian multiplier and the one given by this model. The increase in national income by Y_1Y_2 is less than what would happen given the Keynesian multiplier. Keynes assumed that investment is fixed and autonomous and brought out his concept of investment multiplier to explain changes in national income as a result of changes in investment expenditure. However, the IS-LM model takes into consideration the fall in private investment due to the rise in interest rate that takes place with the increase in government expenditure. The extent of fall in private investment expenditure as a result of rise in interest rates is termed as Crowding Out effect. Similarly, a fall in government expenditure will bring about the leftward shift in the IS curve and with the LM curve remaining constant, the rate of interest will fall along with a fall in the level of national income. Reduction in government expenditure to control inflation is an example of Anti-inflationary or Contractionary fiscal policy.

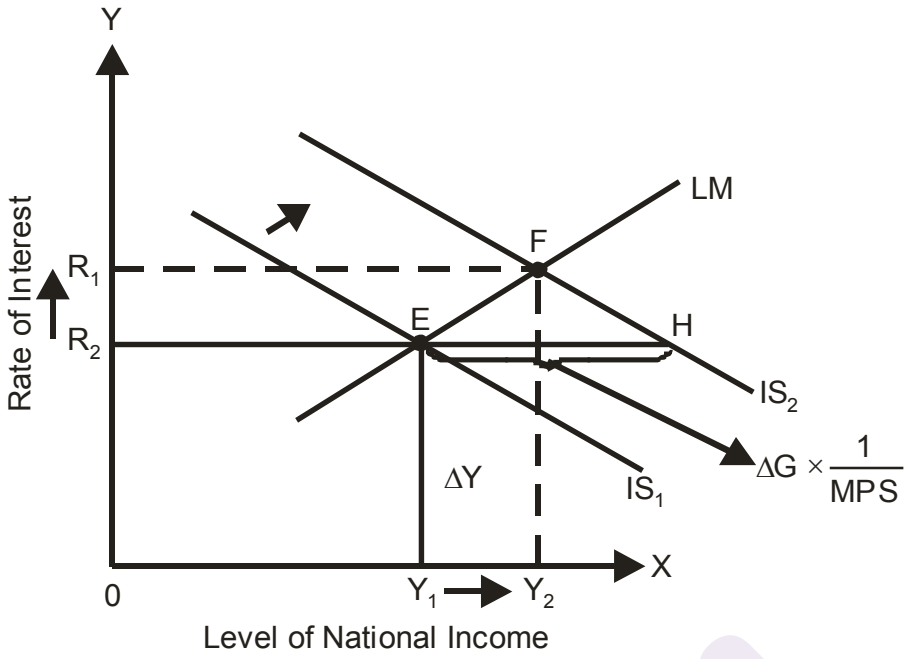


Fig. 5.6: Impact of increase in Government Expenditure on Interest Rate and National Income

Now, we will see what would be the impact of reduction in taxes on the rate of interest and the level of national income in the economy. Reduction in taxes is an alternative to increase in government expenditure. Tax reduction increases the disposable income of the people leading to increase in consumption expenditure and thereby increase in aggregate demand. When the government reduces taxes, the IS curve shifts to the right as shown in Fig. 5.7 below from IS_1 to IS_2. Once again, you will notice that the change in national income as result of reduction in taxes is only Y_1Y_2 which is less than what the Keynesian tax multiplier $\Delta T \times \frac{MPC}{MPS}$ would make us available. You may notice that the effective increase in national income as a result of the tax multiplier is equal to EH. Whereas, the IS-LM model shows that the increase in national income is much less than what the Keynesian tax multiplier would generate as the LM curve remains constant and the new IS curve IS_2 intersects the LM curve at point D. According to the new equilibrium point D, the new rate of interest is R_2 and the rise in national income is Y_1Y_2. Similarly, if the government wants to control inflationary pressures in the economy, it may initiate a raise in taxes. When the taxes are increased, the disposable incomes of the people would fall leading to a fall in consumption expenditure. Fall in consumption expenditure will help in controlling price rise.

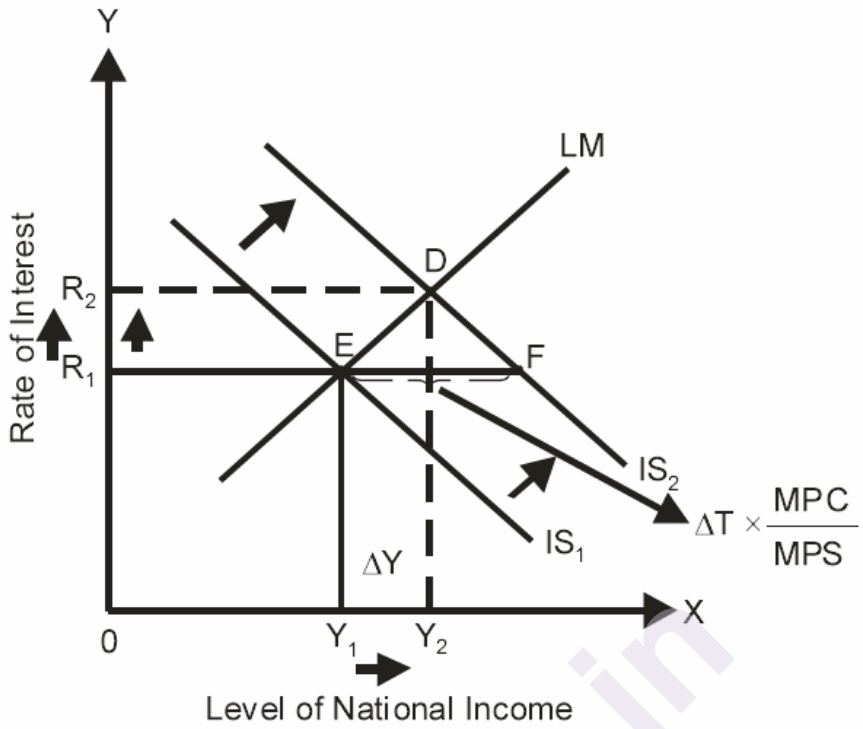


Fig. 5.7: Impact of Reduction in Taxes on Interest Rate and National Income

MONETARY POLICY AND THE *IS-LM* MODEL

The monetary policy of the government is determined and executed by the Central Bank of the country. Changes in the monetary policy can bring about changes in the rate of interest and the level of national income. Like fiscal policy, the monetary policy can be expansionary or contractionary. In order to increase the availability of credit and push economic growth rate to a higher level, the Central Bank may follow an expansionary monetary policy. However, in times of rising prices, the Central Bank may follow a contractionary or tight monetary policy to control the rising prices. The IS-LM model can be used to show the impact of both expansionary and contractionary monetary policies on the rate of interest and the level of national income. Changes in money supply will cause a shift in the LM curve. While increase in money supply will shift the LM curve to the right, the opposite will happen when money supply is reduced. Assuming that the economy is in a state of recession i.e., when the growth rate in the national income is regularly falling, the Central Bank would follow an expansionary monetary policy to draw the economy out of recession. The Central Bank would follow steps that would increase money supply in the economy. Increase in money supply, with demand for money remaining constant would create a downward pressure on the rate of interest and the rate of interest would fall. When the interest rate falls, investment demand will rise leading to an increase in national income in the economy. Thus, with the increase in money supply, the LM curve will shift towards the right and intersect the constant IS curve at point D as shown in Fig. 5.8 below. You will notice that the

economy moves from the initial equilibrium point E to D, the rate of interest falls from R_1 to R_2 and the level of national income increases from and the level of national income increases from Y_1 to Y_2. The IS-LM model therefore shows that expansion in money supply lowers the rate of interest and increases national income. Similarly, if the economy is caught in an inflationary spiral, the Central Bank may follow a tight monetary policy that is it would reduce money supply and bring about a rise in the rate of interest and fall in the level of national income. Less income will reduce the aggregate demand in the economy and reduce the pressure on rising prices thereby controlling the inflation rate.

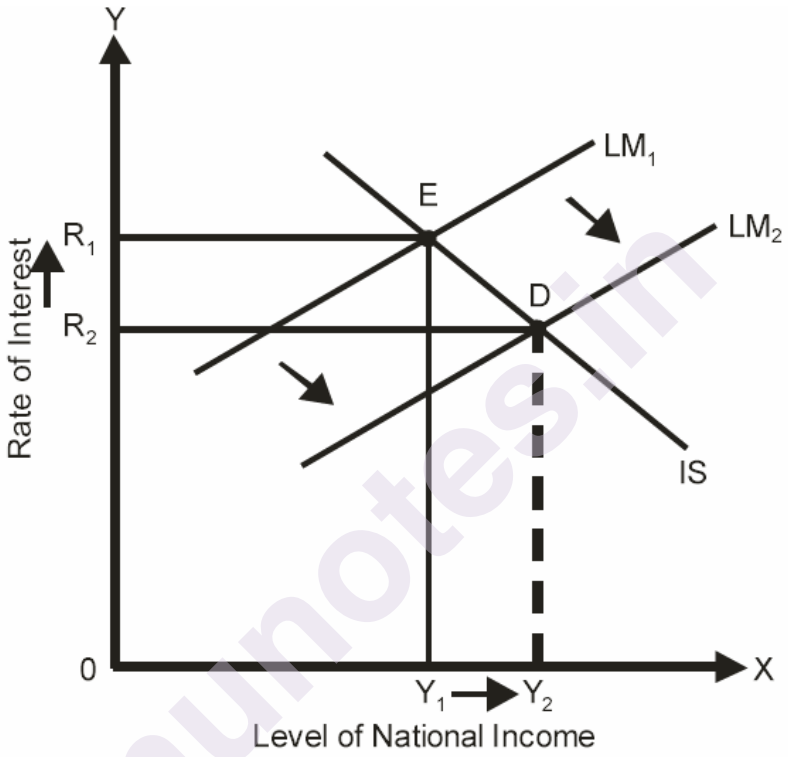


Fig. 5.8: Impact of Expansionary Monetary Policy on Interest Rate and National Income

5.7 INTRODUCTION OF PHILLIPS CURVE

Economic growth without inflation and unemployment is the objective behind macro-economic policies of modern times. However, in the short term, there seems to be a trade-off between inflation and unemployment and hence macro-economic policy makers need to balance between inflation, economic growth and unemployment. A low inflation rate is seen to accompany lower economic growth rate and higher unemployment whereas a high inflation rate is seen to accompany higher economic growth rate and lower unemployment. Here, in this chapter, we look at the Phillips curve which was the first explanation of its kind to show the negative relationship between unemployment and inflation rate. We also look at the long run picture and see whether the negative relationship sustains in the long run.

In 1958, AW Phillips, a professor at the London School of Economics published a study of wage behavior in the United Kingdom for the years 1861 and 1957. Phillips found an inverse relationship between the rate of unemployment and the rate of inflation or the rate of increase in money wages. The higher the rate of unemployment, the lower the rate of wage inflation i.e. there is a tradeoff between wage inflation and unemployment. The Phillips curve shows that the rate of wage inflation decreases with the increase unemployment rate. Assuming W_t as the wages in the current time period and W_{t+1} in the next time period, the rate of wage inflation, g_w, is defined as follows:

$$g_w = \frac{W_{t+1} - W_t}{W_t} \qquad \text{……..(1)}$$

By representing the natural rate of unemployment with u^*, the Phillips curve equation can be written as follows:

$$G_w = -\varepsilon (u - u^*) \qquad \text{…….. (2)}$$

where ε measures the responsiveness of wages to unemployment. This equation states that wages are falling when the unemployment rate exceeds the natural rate i.e. when $u > u^*$, and rising when unemployment is below the natural rate. **The difference between unemployment and the natural rate, $u - u^*$ is called the unemployment gap.** Let us assume that the economy is in equilibrium with stable prices and the level of unemployment is at the natural rate. At this point, if the money supply increases by ten per cent, the wages and the price level must rise by ten per cent to enable the economy to be in equilibrium. However, the Phillips curve shows that for wages to rise by ten per cent, the unemployment rate will have to fall. A fall in the unemployment rate below the natural level will lead to increase in wage rates and prices and the economy will ultimately return to the full employment level of output and unemployment. This situation can be algebraically stated by rewriting equation one above as follows.

$$W_{t+1} = W_t [1 - \varepsilon (u - u^*)] \qquad \text{…… (3)}$$

Thus for wages to rise above their previous level, unemployment must fall below the natural rate. The Phillips curve relates the rate of increase of wages or wage inflation to unemployment as denoted by equation two above, the term 'Phillips curve' over a period of time came to be used to describe a curve relating the rate of inflation to the unemployment rate. Such a Phillips curve is depicted in Fig. 7.1.

You may notice that when the rate of inflation is ten per cent, the unemployment rate is three per cent and when the rate of inflation is five per cent, the rate of unemployment increases to eight per cent. Empirical or objective data collected from other developed countries also proved the existence of Phillips Curve. Economists believed that there existed a stable Philips Curve depicting a tradeoff between unemployment and

inflation. This trade-off presented a dilemma to policy makers. The dilemma was a choice between two evils, namely: unemployment and inflation. In a dilemma, you chose a lesser evil and inflation is definitely a lesser evil for policy makers. A little more inflation can always be traded off for a little more employment. However, further empirical data obtained in the 70s and early 80s proved the non-existence of Phillips Curve. During this period, both Britain and the USA experienced simultaneous existence of high inflation and high unemployment. While prices rose rapidly, the economy contracted along with more and more unemployment.

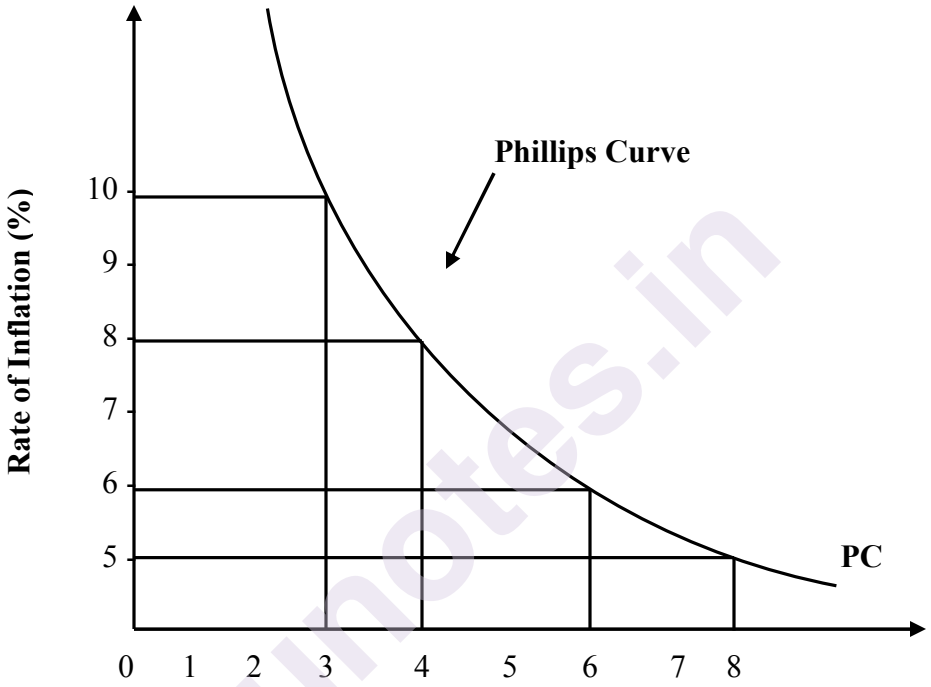


Fig.5.9 – Phillips Curve

5.8 KEYNESIAN EXPLANATION OF PHILLIPS CURVE

The explanation of Phillips curve by the Keynesian economists is shown in Fig. 5.10. Keynesian economists assume the upward sloping aggregate supply curve. The AS curve slopes upwardly due to two reasons. Firstly, as output is increased in the economy, the law of diminishing marginal returns begins to operate and the marginal physical product of labor (MPP_L) begins to decline. Since the money wages are fixed, a fall in the MPP_L leads to a rise in the marginal cost of production because $MC = W/ MPP_L$. Secondly, the marginal cost goes up due a rise in the wage rate as employment and output are increased. Following rise in aggregate demand, demand for labor increases and hence the wage rate also increases. As more and more labor is employed, the wage rate continues to rise and the marginal cost of firms increases. You may notice that in Panel (a) of Fig.5.10 that with the initial aggregate demand curve AD_0 and the given aggregate supply curve AS_0, the price level P_0 and

output level Y_0 are determined. When the aggregate demand increases, the AD_0 curve shifts to the right and the new aggregate demand curve AD_1 intersects the aggregate supply curve at point 'b'. Accordingly, a higher price level P_1 is determined along with a rise in GNP to Y_1 level. With the increase in the real GNP, the rate of unemployment falls to U_2. Thus the rise in the price level or the inflation rate from P_0 to P_1, the unemployment rate falls down thereby depicting an inverse relationship between the price level and the unemployment rate. Now when the aggregate demand further increases, the AD curve shifts to the right to become AD_2. The new aggregate demand curve AD_2 intersects the aggregate supply curve at point 'c'. Accordingly, the price level P_2 and output level Y_2 is determined. The level of unemployment now falls to U_3. In Panel (b) of Figure 5.10, points a, b and c are plotted and these points corresponds to the three equilibrium points a, b and c in Panel (a) of the figure. Thus a higher rate of increase in aggregate demand and a higher rate of rise in price level are related with the lower rate of unemployment and vice versa. The Keynesian economists were thus able to explain the downward sloping Philips curve showing inverse relation between rates of inflation and unemployment.

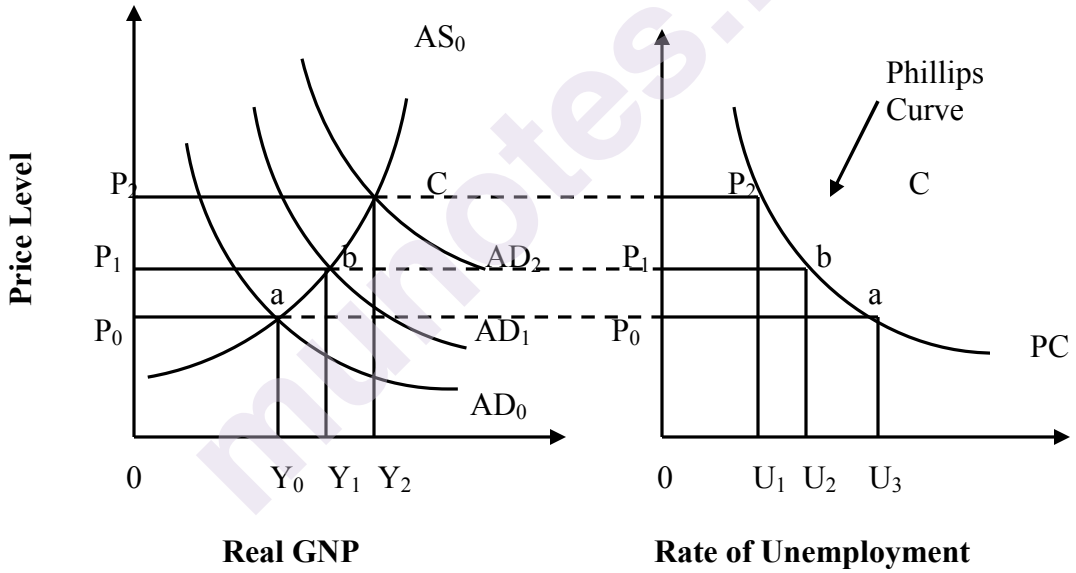


Fig.5.10 – Keynesian Explanation of Phillips Curve

5.9 COLLAPSE OF THE PHILLIPS CURVE HYPOTHESIS (1971-91)

The Phillips Curve hypothesis was accepted as a cure to increase the level of employment and income in the sixties. It became a macroeconomic tool to explain the trade-off between inflation rate and unemployment rate. It suggested that policy makers could choose different combinations of unemployment inflation rates. Policy makers may choose low unemployment and high inflation as long as it is politically and economically expedient. However, the stable relationship between higher inflation and lower unemployment as seen in the sixties

could not be replicated in the seventies and thereafter, particularly in the United States and Great Britain. It was seen that both inflation rate and unemployment rate had increased on numerous occasions and the trade-off had thus disappeared. Further, there cannot be a long run trade-off between inflation and unemployment because in the long run the aggregate supply curve becomes vertical and any further expansion after the point of full employment is reached will only add to the price level without adding anything to income, employment and output. Thus there is no permanent unemployment-inflation trade-off. Data obtained in the seventies and thereafter indicated a shift in the Phillips curve i.e. in various years, at a given rate of inflation, the Phillips curve either shifted to the left or to the right, indicating thereby that at times, given the inflation rate, unemployment rate has increased or decreased. The stable relationship between inflation rate and unemployment rate thus was proved to be non-existent.

Causes of Shift in Phillips Curve

The shifts in the Phillips curve according to Keynesians is due to adverse supply shocks experienced in the seventies in the form of unprecedented oil price hikes. Adverse supply shocks gave rise to the phenomenon of Stagflation and the breakdown of the Phillips curve hypothesis. The impact of adverse supply shocks on national product and the price level is depicted in Fig. 5.11. The original aggregate demand and supply curves AD_0 and AS_0 are in equilibrium at point E_0. Accordingly, the price level P_0 and national output Y_0 is determined. The oil price hike initiated by the Oil and Petroleum Exporting Countries (OPEC) an oil cartel of oil producing Middle East countries contributed to the rise in cost of production of a large number of goods and services in which oil is used as an input. Increase in the cost of production caused the aggregate supply curve to shift to the left in the upward direction, thereby causing the price level to rise along with a decrease in national output. Notice that the new aggregate supply curve AS_1 now intersects the aggregate demand curve AD_0 at point E_1 and accordingly the new price level P_1 is determined. However, at a higher price level P_1, the national output has fallen to Y_1 leading to rise in unemployment. Such a situation is explained in terms of stagflation where in both unemployment and price level increases. This new phenomenon experienced, particularly by the United States in the seventies and thereafter has caused the shift in the Phillips curve. Stagflation, thus, consigned the Phillips curve hypothesis to the pages of economic history.

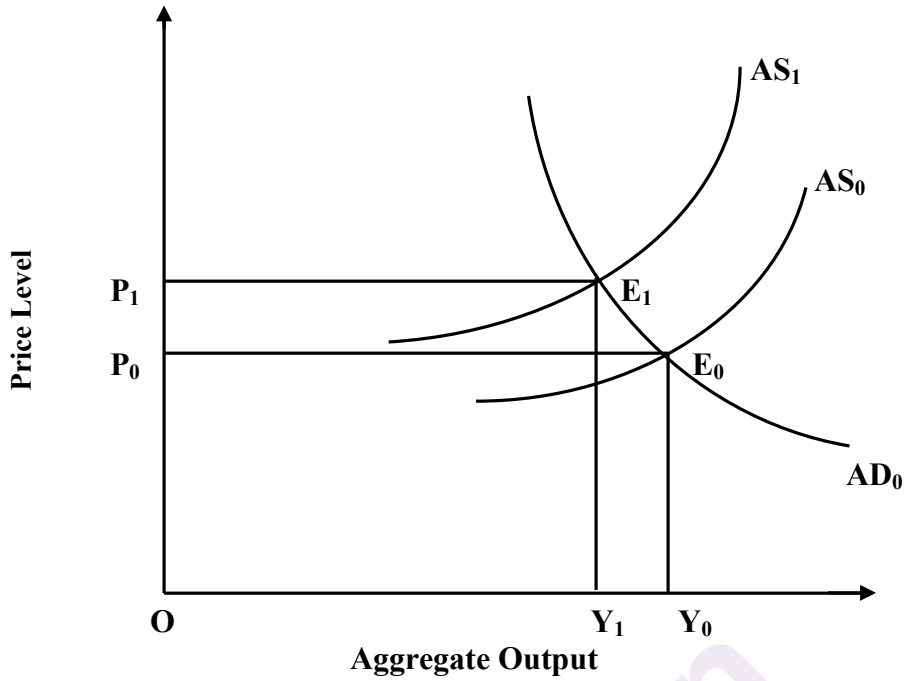


Fig. 5.11 – Adverse Supply Shock, Stagflation and Rejection of the Phillips Curve Hypothesis

5.10 NATURAL UNEMPLOYMENT RATE HYPOTHESIS AND THE THEORY OF ADAPTIVE EXPECTATIONS

Milton Friedman put forward the concept of 'natural rate of unemployment' to prove that the Phillips curve phenomenon does not operate in the long run and that the long run Phillips curve is vertically sloping, thereby having no relationship between inflation rate and unemployment rate. However, he accepted the fact that there exist a short run negative relationship between inflation rate and unemployment rate. Milton Friedman says that the economy is stable in the long run at the natural rate of unemployment and any intervention in the form of expansionary fiscal and monetary policies would only result in higher prices without higher output.

When current GDP is at its potential level, unemployment is not zero or there is no full employment. The unemployment rate that exists on account of frictional and structural reasons when the economy is operating at full employment level is called the natural rate of unemployment or more appropriately NAIRU (Non-accelerating Inflation Rate of Unemployment). The natural rate of unemployment is the rate at which in the labor market, the current number of unemployed is equal to the number of jobs available. Natural unemployment exists due to frictional and structural reasons. For example, fresh additions to the labor force may spend time to search suitable jobs. Individuals pursuing higher education may actually be in the labor force but may not participate in the workforce due to educational commitments. While the sunset industries may be on the decline and thereby reducing the workforce from its rolls, the sunrise industries would be expanding and adding to its workforce. However,

unemployed labor force needs to be trained for suitable jobs before they are recruited. Unemployment arising out of frictional and structural causes is termed as natural unemployment and the number of such unemployed persons constitutes the natural rate of unemployment. In other words, Milton Friedman argues that if information were not to fail, there will be no divergence between full employment and actual employment. The natural rate of unemployment is estimated in the range of four to six per cent in the developed countries.

The term 'NAIRU' is a more appropriate term to describe the natural rate of unemployment because the term 'natural rate of unemployment' connotes that unemployment cannot fall below the natural rate. The Phillips curve hypothesis shows that unemployment rate can fall below the NAIRU in the short term. Thus, when actual GDP is greater than potential GDP ($Y > Y^*$), unemployment will be less than NAIRU ($U < U^*$) and vice versa. When the unemployment rate is below the NAIRU, demand forces put pressure on wages to rise faster than productivity. When the unemployment rate is above the NAIRU, demand forces put pressure on wages to rise more slowly than productivity or even to fall. When unemployment is at the NAIRU, demand forces exert no pressure on wages relative to productivity.

In order to prove the non-existence of Phillips curve in the long run, Milton Friedman put forward the theory of adaptive expectations. People's expectations are formed on the basis of previous and present rate of inflation and adapt their expectations only when the actual inflation rate is different from their expected rate. The tradeoff between inflation and unemployment is therefore only in the short run. Milton Friedman's theory of adaptive expectations and the derivation of the vertically sloping long run Phillips curve is depicted in Fig.5.12.

It is assumed that the economy is operating at point A_0 on the short run Phillips curve (SPC_1) and the natural rate of unemployment is six per cent. The actual inflation rate is four per cent. The nominal wages are set on the basis of four per cent inflation rate and it is expected that the inflation rate will continue to be the same in future. When the government adopts expansionary monetary and fiscal policies, the inflation rate goes up to six per cent. Since the nominal wages are set on the basis of four per cent inflation rate, the firms make additional profits equal to two per cent and hence they make fresh investments, thereby increasing the level of employment and output. As a result of fresh investments, the unemployment rate falls below the natural rate of unemployment and the economy moves to point A_1 where the corresponding inflation rate is six per cent and the unemployment rate is three per cent. Thus, Milton Friedman and other monetarists argue that there exists a short run trade-off between inflation rate and unemployment rate.

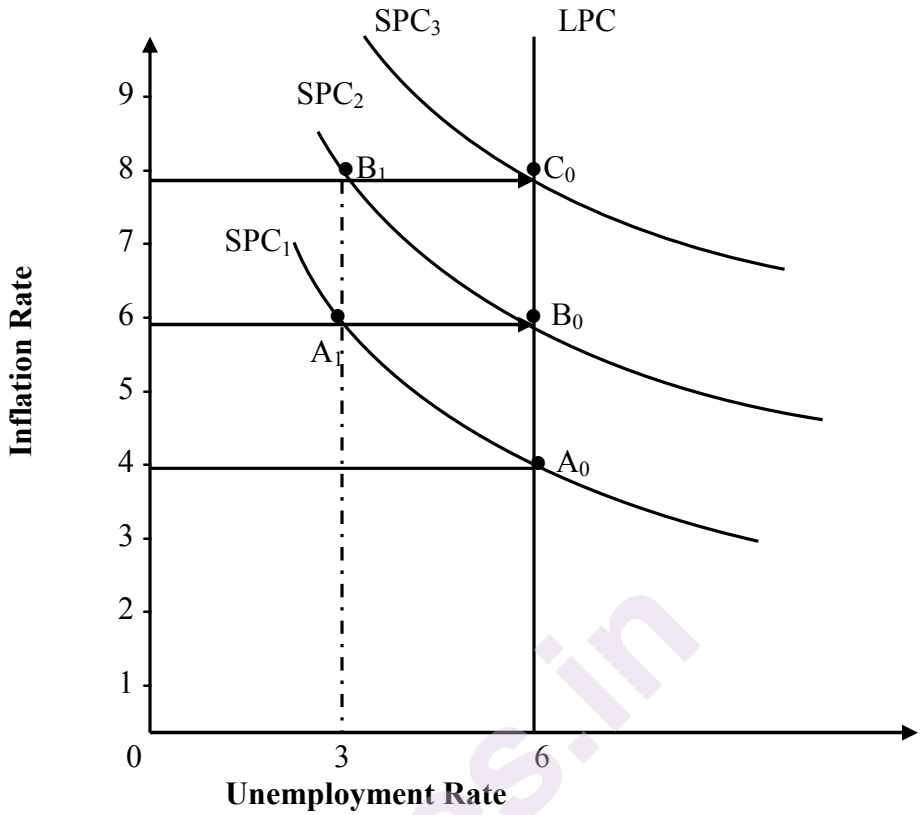


Fig.5.12 – Shift in the Short Run Phillips Curve & derivation of the Long Run Phillips Curve

5.11 LONG RUN PHILLIPS CURVE AND THE THEORY OF ADAPTIVE EXPECTATIONS

The economy after having reached point A_1 does not stay put at that point because after a time lag, the workers are informed that the current inflation rate is six per cent and that their real wages have fallen by two per cent. Organized workers will therefore demand compensation for the inflation which is over and above the expected rate in order to restore their real incomes. When wage compensation actually takes place, the profits levels are also restored to the original levels and the economy returns to its original equilibrium position at point B_0. However, point B_0 is on the new short run Phillips curve SPC_2. Corresponding to point B_0, the actual inflation rate is six per cent and the unemployment rate is back at its natural level i.e. six per cent. Now the expected inflation rate would be six per cent and workers will continue to expect the same rate of inflation in future. The shift in the Phillips curve will continue as long as expansionary monetary and fiscal policies are adopted by the Government and the economy will move along the points B_1, C_0 etc. When points such as A_0, B_0, C_0 are joined, the long run Phillips curve is obtained. Note that the LPC is vertically sloping and the vertical slope indicates that it is neutral between inflation rate and the unemployment rate. Milton Friedman thus proves that there is no long run trade-off between inflation rate and unemployment rate. The theory of adaptive expectations indicate

that workers adapt to the new rates of inflation and their expected inflation rate gets adapted in due course i.e. after a time lag and the economy returns to its original status with a higher rate of inflation.

5.12 RATIONAL EXPECTATIONS AND THE LONG RUN PHILLIPS CURVE

According to Milton Friedman's theory of adaptive expectations, nominal wages lag behind changes in the price level or the inflation rate. The adjustment lag in nominal wages to the price level causes business profits to go up. When profits go up, business units expand their scale output and as a result the level of unemployment in the economy falls below the natural rate.

The advocates of rational expectation theory believe that there is no adjustment lag involved between nominal wages and changing price level. They argue that there is a quick adjustment between nominal wages and expected changes in the price level and hence there is no trade-off between inflation and unemployment. The rate of inflation resulting from increase in aggregate demand is well anticipated by workers and firms and gets factored in wage agreements. Such adjustments made in quick succession sometimes and sometimes in advance lead to further price increases. Thus, there is a rise in the price level without any rise in the real output or fall in unemployment below the natural rate. According to the Rational Expectations theorists, given the availability of resources and technology, the aggregate supply curve is vertically sloping at the potential GDP level or at the natural unemployment rate level. The long run Phillips curve therefore corresponds to the long run aggregate supply curve at the natural rate of unemployment. The long run Phillips curve is therefore a vertical straight line or vertically sloping at the natural rate of unemployment. The derivation of the long run aggregate supply curve is shown in Fig. 5.13 and the long run Phillips curve is depicted in Fig. 5.14.

According to the Rational Expectations theorists, the workers and firms are rational beings and have a good understanding of the operation of the economy. Both workers and firms can therefore fairly and correctly anticipate the consequences of the economic policies of the Government. Secondly, all product and factor markets are very competitive and hence factor and product prices are highly flexible to bring about quick and rapid adjustments. Figure 7.6 shows the argument made by Rational Expectations theorists about the relation between inflation and unemployment. The original equilibrium is at point 'a' where the initial short run aggregate demand curve AD_0 and the short run aggregate supply curve AS_0 intersect each other and the equilibrium, full employment, national output OY_0 and price level P_0 is determined, given the natural rate of unemployment.

Now when the government adopts expansionary monetary and fiscal policies, the economic units or the factor owners will correctly

anticipate the inflationary impact of these policies and make upward adjustment in factor and product prices thereby holding real national output and real wages at their original level. The shift in the short run aggregate demand and supply curves will therefore be vertically upward as shown in the figure. The economy now operates at the new equilibrium point 'b' which is corresponding to the original equilibrium point 'a'. However, the equilibrium is achieved at a higher price level P_1. At every occasion when the Government adopts expansionary policies when the economy is operating at the full employment level of income and output, the aggregate demand and supply curves behave in the same manner and the equilibrium point changes from point 'b' to point 'c' and so on and so forth. By joining these points, the Long Run Aggregate Supply curve is obtained. Note that the long run AS curve is vertically sloping indicating thereby that once the full employment equilibrium income and output is determined at the natural rate of unemployment, any expansionary policy will only result in price rise, real national output remaining constant.

As the long run aggregate supply curve is vertically sloping at the natural unemployment rate, the long run Phillips curve is also vertically sloping.

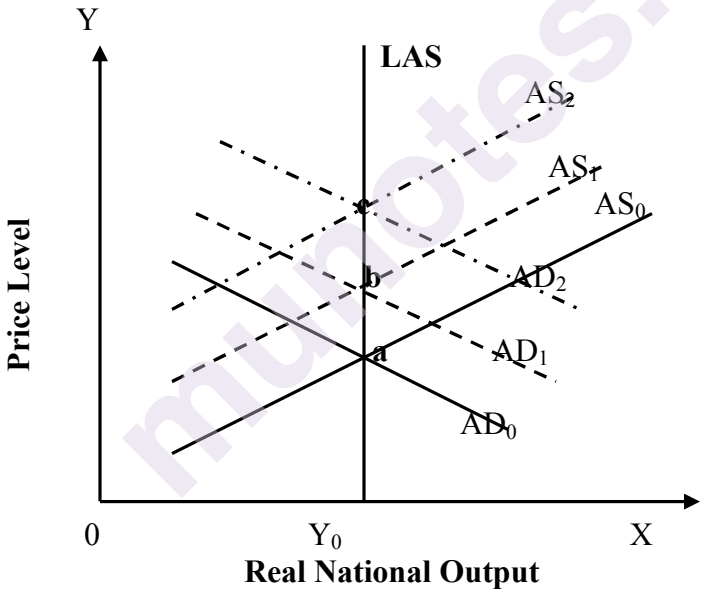


Fig.5.13 – Inflation and Output (Rational Expectations Theory)

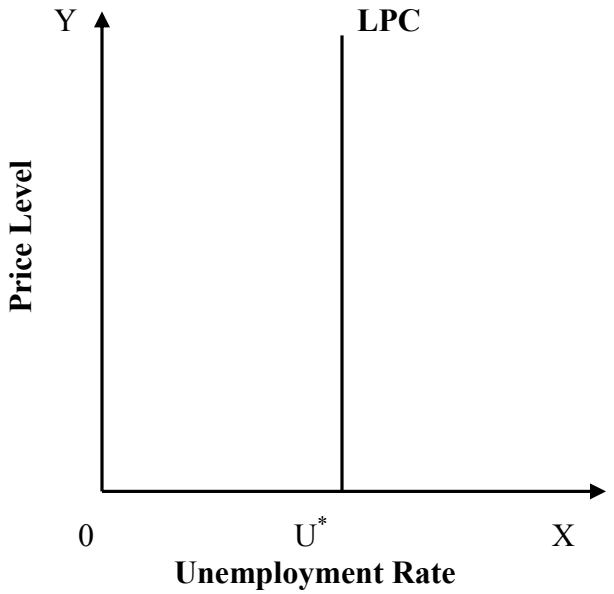


Fig.5.14 – The Long Run Phillips Curve (Rational Expectations Theory)

5.13 RELATIONSHIP BETWEEN SHORT AND LONG RUN PHILLIPS CURVE

The position of the short run Phillips curve passing through a long run Phillips curve is determined by the anticipated or expected inflation rate. The short run Phillips curve can be compared to the short run aggregate supply curve because both the curves are drawn with a given expected price level. The short run Phillips curve drawn with an expected inflation rate shifts its position as the inflation rate changes (See figure 5.15). If the expected inflation rate is six per cent, the short run Phillips curve (SPC_1) also passes through the corresponding point 'A_0' on the long run Phillips curve with natural unemployment rate of six per cent. The movement along a short run Phillips curve is determined by changes in aggregate demand. When there is an unexpected increase in aggregate demand, the actual inflation rate is found to be more than the expected inflation rate and the real national output increases causing the unemployment rate to fall below the natural rate. The new short run equilibrium is determined at point 'A_1' which is to the left of the original equilibrium point. Conversely, if there is an unexpected decrease in aggregate demand, the actual inflation rate will fall below the expected rate and the unemployment rate will increase and real national output will fall. In this case, the movement will be downwards and to the right. The shift in the short run Phillips curve is caused due to the divergence between actual and expected inflation rates and this divergence is caused by unexpected changes in monetary and fiscal policies of the government. If the actual inflation rate is greater than the expected inflation rate, the short run Phillips curve will shift upward and vice-versa. The distance by

which the short run Phillips curve shifts to a new position is equal to the change in the expected rate of inflation.

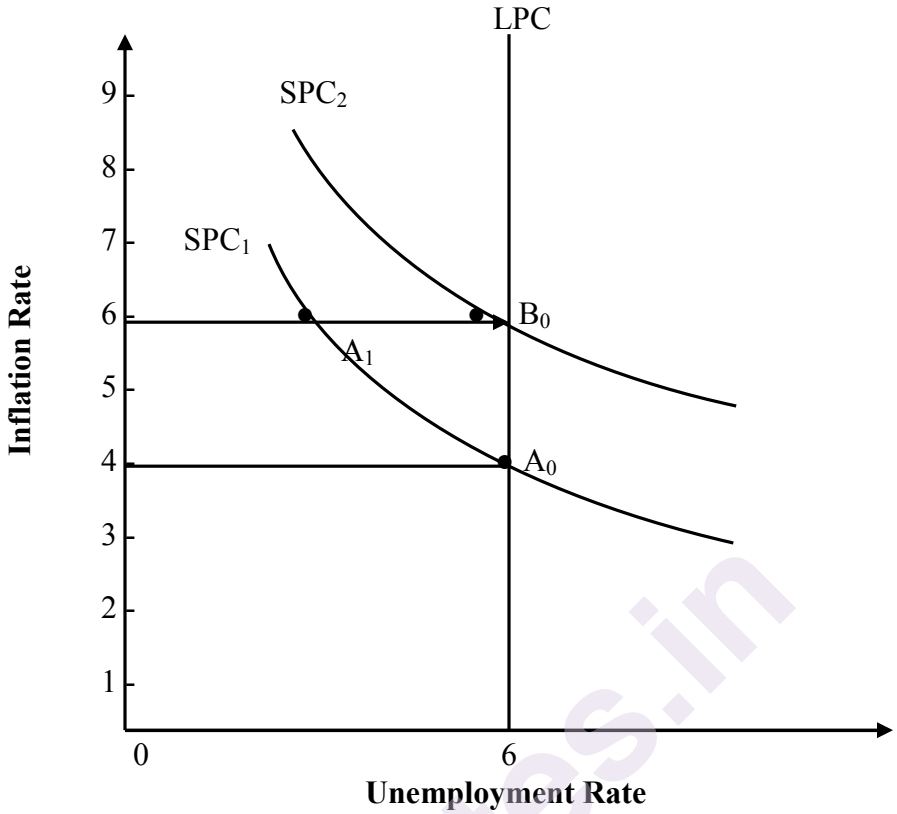


Fig.5.15 – Relationship between the Short Run Phillips Curve and the Long Run Phillips Curve

5.14 SUMMARY

1. The IS-LM model shows how the equilibrium levels of income and interest rates are simultaneously determined by the simultaneous equilibrium in the two interdependent goods and money markets. Hicks, Hansen and Johnson put forward the IS-LM model on the basis of Keynesian framework of national income determination in which investment, national income, rate of interest, demand for and supply of money are interrelated and inter–dependent.

2. The IS curve shows the different combinations of national income and interest rates at which the goods market is in equilibrium.

3. The LM curve shows the different combinations of interest rates and incomes corresponding to equilibrium in the money market.

4. The equilibrium rate of interest and the level of income is determined at the intersection point of the IS and LM curve. The goods market is in equilibrium at all points on the IS curve and the money market is in equilibrium at all points on the LM curve. Hence, only at the point of intersection between these two curves, both the money market and the goods market will be simultaneously assuming equilibrium.

5. The IS-LM model helps us to explain as to how changes in monetary policy initiated by the Central Bank of a country and changes in fiscal policy initiated by the Government of a country influences the rate of interest and the level of national income in a country.

6. In 1958, AW Phillips, a professor at the London School of Economics published a study of wage behavior in the United Kingdom for the years 1861 and 1957. Phillips found an inverse relationship between the rate of unemployment and the rate of inflation or the rate of increase in money wages. The higher the rate of unemployment, the lower the rate of wage inflation i.e. there is a trade-off between wage inflation and unemployment. The Phillips curve shows that the rate of wage inflation decreases with the increase unemployment rate.

7. The position of the short run Phillips curve passing through a long run Phillips curve is determined by the anticipated or expected inflation rate.

5.15 QUESTIONS

1. Explain the derivation of IS curve in the goods market.
2. Discuss the derivation of LM curve in the money market.
3. Briefly explain the simultaneous equilibrium in the goods and money market.
4. Explain the impact of increase and decrease in government expenditure on interest rate and national income.
5. Discuss the impact of expansionary monetary policy on interest rate and national income.
6. Discuss Keynesian explanation of Phillips curve.
7. Explain Rational expectations theory.
8. Discuss the relationship between short run and long run Phillips curve.

6

STAGFLATION AND SUPPLY SIDE ECONOMICS

Unit Structure :

6.0 OBJECTIVES

- To study the meaning of stagflation
- To study meaning and propositions of supply side economics

6.1 INTRODUCTION

In this section we are going to study the meaning of the concept stagflation and basic propositions and critical approach to supply-side economics.

6.2 STAGFLATION

The Keynesian economics emphasised the importance of adoption of demand management policies (like monetary and fiscal policies) to fight either inflation or to solve the problem of unemployment. Keynes was of the view that true inflation occurs only when the country reaches full employment. This implies that inflation and unemployment cannot exist simultaneously.

However, the Phillips Curve established an inverse relationship between inflation and unemployment. It was not possible for a country to achieve price stability and full employment at the same time. So, the policy makers came across the dilemma situation. The rate of inflation could be reduced only by allowing the rate of unemployment to rise and the rate of unemployment could be reduced only by allowing the rate of inflation to rise.

6.2.1 Stagflation

In 1070s most of the advanced capitalist countries of the world faced the problem of stagflation. It refers to a situation of high inflation and high unemployment, when the rate of growth of GDP itself is low. The Keynesian policy measures failed to solve this new problem. As a result, a new school of economics emerged. This is known as the supply-side economics which lays stress on the management of aggregate supply to fight the disease of stagflation (i.e., inflation in the midst of stagnation).

The term stagflation refers to an economic situation where stagflation and inflation co-exist. It is characterised with low economic growth, increasing unemployment and high rate of inflation. It goes against the conclusion of Phillips Curve, the inverse relation between inflation and unemployment. In this we come across a continuous increase in price level and also increasing rate of unemployment.

Stagflation refers to the coexistence of inflation and unemployment in a stagnant economy.

The term "stagflation" was first used during a time of economic stress in the United Kingdom by politician Iain Macleod in the 1960s while he was speaking in the House of Commons. At the time, he was speaking about inflation on one side and stagnation on the other, calling it a "stagnation situation." It was later used again to describe the recessionary period in the 1970s following the oil crisis, when the U.S. underwent a recession that saw five quarters of negative GDP growth and inflation doubled in 1973 and hit double digits in 1974 unemployment hit 9% by May 1975.

Causes of Stagflation: Economists are not unanimous about the causes of stagflation. To some supply shocks or cost push as major factors responsible for stagflation where as others argued that demand pull is the main reason for this unusual economic phenomenon known as stagflation. Following are the factors responsible for of stagflation. The sharp rise in oil price

1. **Supply Shock (The Oil Price Hike):**
   Stagflation refers to the coexistence of inflation and unemployment in a stagnant economy. A high rate of unemployment means a reduced rate of output. The problem of stagflation occurred in the context of adverse supply shock caused by a sudden and a sharp rise in the price of crude oil in October 1973 by the OPEC (Organisation of Petroleum Exporting Countries) cartel. A sharp rise in oil price by almost 300% at a time raised the cost of in oil importing countries and resulted in high prices of several products. The reason was that oil was used as the main or subsidiary input in a large number of industries.

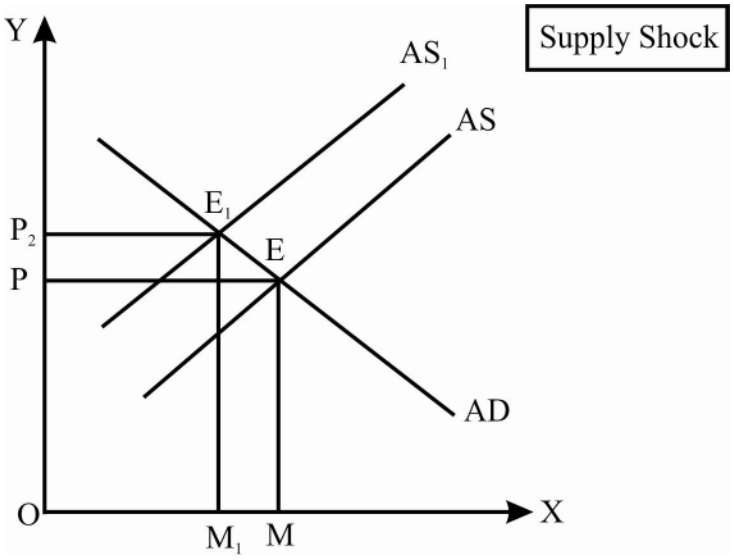


Fig 6.1

In the above diagram Real GDP(Y)/output is shown on the X-axis and Aggregate Price Level on the Y-axis. The curve AS is the Aggregate Supply Curve and AD is the Aggregate Demand Curve. The economy is in equilibrium at point E where AD curve and AS curve intersect with each other. At this equilibrium point E, the output in the economy is OM and the price level is OP. A supply shock such as a sharp rise in oil price increases the production costs of making goods and services in the economy. This results in the shift in the AS curve upwards from AS to AS_1. The new equilibrium point is E_1. This results in an increase in price from OP to OP_1 and fall in output from OM to OM_1. In this case the economy experiences fall in output i.e., increasing unemployment and a rise in price i.e., inflation. The output falls due to increase in cost of production and the price level rose due to fall in output and rise in cost. Thus, there was stagflation-fall in output and employment and cost-push inflation at the same time. A fall in production leads to unemployment and the country faces the problem of recession i.e., a situation of high price and low demand (due to fall in income).

2. **Cost-Push:** Cost of production increases due to many factors besides the above-mentioned causes. Other factors are increase in wages, price of raw materials and other inputs. Cost also increases due to infrastructural bottlenecks.

3. **Low Productivity:** Labour productivity is not only very low but may decline due to protection provided to the employees by the trade unions and labour laws enacted by the government. If trade unions have strong bargaining power – they may be able to bargain for higher wages, even in periods of lower economic growth. Higher wages are a significant cause of inflation. Similarly, if an economy experiences falling productivity – workers becoming more inefficient; costs will rise and output fall.

4. **Social Benefits:** Social benefits in the form of unemployment benefits, free supply of goods and services to the poor, food security schemes, minimum basic income scheme, provide income to the poor with no obligation to work create the problem of inflation. These benefits create more demand (inflation) and shortage of goods and services (stagflation).

5. **Excessive Regulation:** Government policy bringing in excessive controls on production and distribution and rigid labour laws, results in less availability of goods and at the same time increase in cost.

6. **Higher Taxes:** Government increases its expenditure with additional revenue. Cost of production increases due to higher tax which may affect supply and/or demand.

7. **Monetary Shocks:** Cheap monetary policy whereby more money is pumped into the economy at a lower cost results in inflation.

8. **Deficit Finance:** Government expenditure more than its revenue leads to more demand for goods and services resulting in higher prices.

9. **Policy Changes:** Democratic governments with an eye on vote bank may introduce popular policy measures such as basic income policy, farmers debt waiver, free electricity, increase in procurement prices and increase in wages and salaries. All these measures increase demand with less than corresponding increase in production of goods and services.

10. **Rise in structural unemployment:** If there is a decline in traditional industries, we may get more structural unemployment and lower output. Thus, we can get higher unemployment – even if inflation is also increasing.

11. **Causes in USA:** Fall in supply of agricultural products, depression of the dollar, removal of wage and price controls are also responsible for supply shocks in USA leading to stagflation. Huge military expenditure by USA in the wake of the Vietnam war in the late 1960s, workers expected the rate of inflation to accelerate in the early 1970s. So, labour unions demanded and succeeded in getting higher wages which later on created the problem of inflation due to increase in purchasing power. This further resulted in higher cost, fall in output and aggregate supply curve shifting to left which finally resulted in stagflation.

6.2.2 Consequences of Stagflation:

- Stagflation refers to the coexistence of inflation and unemployment in a stagnant economy Stagflation is a situation of inflation in a stagnant economy. Thus, it has all the negative aspects associated with inflation and recession. It is a strange situation which neglects the conclusion of Phillips Curve.

- It is a situation where economy is stagnant. Output and employment is stagnant, does not increase, yet prices continue to rise.

- The economy is in recession state in terms of production and employment. It means the economy is in stagnant position. While unemployment increases, investment does not respond to the incentives provided by increase in prices. Decline in investment leads to less production of goods and services.

- There is vicious circle of downfall. Less or fall in investment leads to fall in production which again results in less or fall in income. This leads to fall in the savings and then further decline in investment.

- The above explained situation actually should lead to a decline in price. But on the contrary the price level increase. However, this inflation does not attract more investment and employment.

- The economy does not have the advantage of a trade-off between inflation and unemployment. The relation is direct where people suffer from twin problems of inflation and unemployment. The production and supply are reduced, bringing down the income and employment and at the same time pushing the prices up. Any additional money supply to encourage more production and employment will only result in increase in prices with hardly any response from supply of goods and services. Following diagram will explain the effects on output and price.

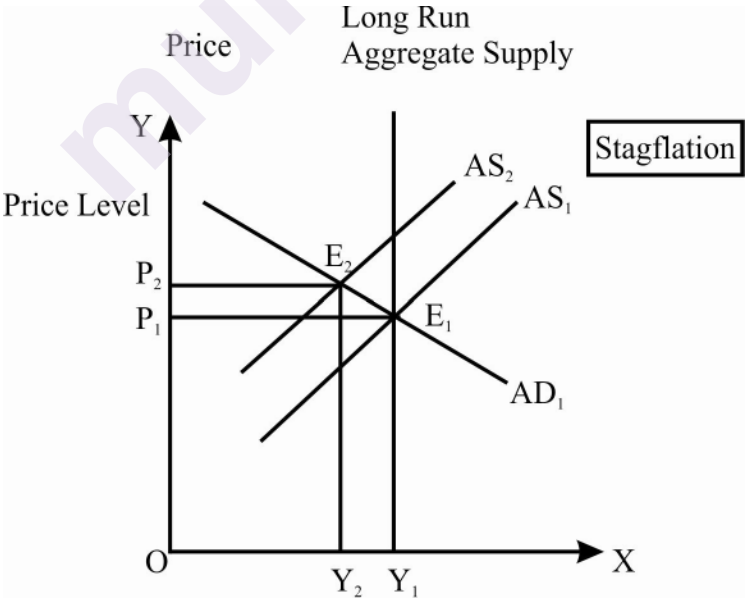


Fig 6.2

Output is shown on the X-axis and the price level on the Y-axis. The original Aggregate Demand Curve AD_1 cuts the original Aggregate Supply Curve AS_1 at the original equilibrium point E_1. The output is OY_1 and the price is OP_1The aggregate supply curve shifts to the left i.e. from $AS_1$to AS_2. The new equilibrium point is E_2. The output falls from $OY_1$to $OY_2$and the price rises from $OP_1$to OP_2. Here the economy experiences both the stagnation (falling output) and inflation (rising prices). This situation is termed as stagflation.

If we discuss the situation through Phillips Curve, we will have an upward sloping supply curve where both price level and unemployment increase together.

To bring out the economy out of stagflation the government may require to adopt a combination of measures which has simultaneous effect on inflation and stimulating production of goods and services. A judicious application of monetary, fiscal and other measures are required to be implemented.

6.3 SUPPLY-SIDE ECONOMICS: BASIC PROPOSITIONS AND CRITICAL APPROACH

Supply-side economics is the school of thought that promotes the use of fiscal policy to stimulate long-run aggregate supply. Supply-side economists advocate reducing tax rates in order to encourage people to work more or more individuals to work and providing investment tax credits to stimulate capital formation.

Serving as the standard economic model from the Great Depression onwards, Keynesianism's star began to fade in the 1970s, as it struggled to arrest the declining growth and rising inflation - known as stagflation - that plagued many advanced economies. Sensing an opportunity, neoliberals stepped in, pushing supply-side principles as the antidote. Most famously, the new theory became the bedrock of 'Reaganomics' or the "trickle-down" - the economic policy pursued by 40th U.S. President Ronald Reagan.

President Reagan and his Republican contemporaries popularized the controversial idea that greater tax cuts for wealthy investors and entrepreneurs provide them with incentives to save and invest, and produce economic benefits that trickle down into the overall economy. He often quoted the aphorism **"a rising tide lifts all boats"** to explain his take on the theory.

Supply-side economics is an economic theory that postulates tax cuts for the wealthy result in increased savings and investment capacity for them that trickle down to the overall economy. The intended goal of

supply-side economics is to explain macroeconomic occurrences in an economy and offer policies for stable economic growth.

The three pillars of supply-side economics are tax policy, regulatory policy, and monetary policy. The core point of supply-side economics is that production (i.e., the "supply" of goods and services) is the most important in determining economic growth as against the Keynesian economics, or demand-side economics, which believes that the level of demand or the demand for goods (spending) in the economy is the key driving factor to economic growth, rather than supply.

The focus of the supply-side economics is on the supply side of macroeconomic equilibrium. According to supply-side economics, the short-term problem of stagflation can be brought under control by shifting the aggregate supply curve to the right.

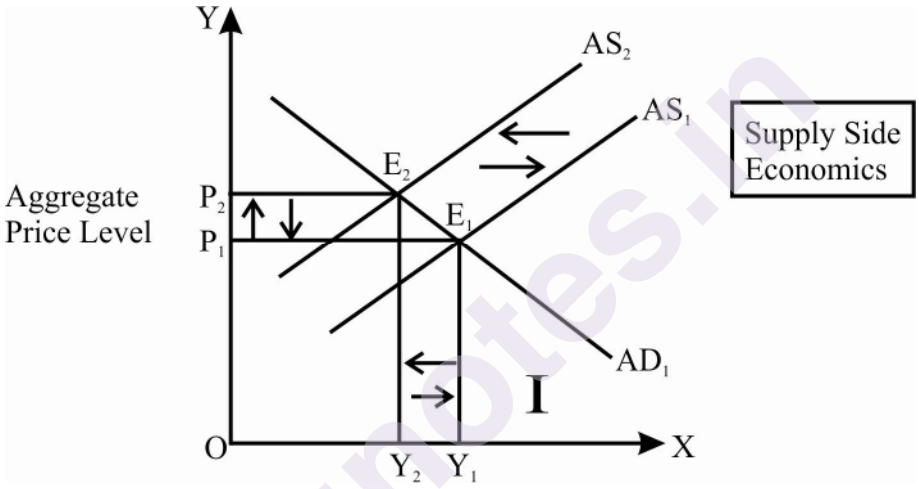


Fig 6.3

In the above diagram, the original Aggregate Demand Curve AD_1 cuts the original Aggregate Supply Curve AS_1 at the original equilibrium point E_1. The aggregate output is OY_1 and the aggregate price level is OP_1.The aggregate supply curve initially shifts to the left from $AS_1 to\ AS_2$ due to adverse supply shocks which raises costs and prices. Thus, aggregate output falls from $OY_1$to OY_2 and the price rises from $OP_1\ to\ OP_2$ due to cost-push pressures. Now the problem can be solved by shifting the aggregate supply curve AS_2 to the right to $AS_1$by adopting appropriate supply management policies. As a result, aggregate output returns to the original level (OY_1) and the price level also falls from $OP_2\ to\ OP_1$.

The supply-siders also lay stress on long-term growth of the economy. The main determinants of the growth are the supply of labour, the rate of saving and rate of investment. These can be increased by giving economic incentives in the form of tax cuts.

6.3.1 The Main Propositions of Supply-Side Economics:

Following are the important propositions of supply-side economics: -

1. **The Effect of Tax Cut on Work Effort:** Since beyond some point a rise in marginal tax rate reduces people's willingness to work, a cut in marginal rate will increase labour supply by increasing the after-tax wage and giving necessary inducement to people to enjoy less leisure and work hard (i.e., work for longer than normal hours). Similarly, a cut in marginal tax rates on corporate income increases the after-tax return on labour employed. This will induce firms to employ more labour. An increase in the supply of and the demand for labour will lead to an increase in aggregate output.

2. **Incentives for savers and Investors:** A cut in marginal tax rate will also encourage people to save more and business firms to invest more. A cut in tax will raise interest income of households and the net return on capital employed by business firms. In fact, a cut in tax on investment income, such as profit, induces firm to invest more and take more risks. As a result, the rate of capital formation will increase. An increase in the stock of capital will, in its turn, raise labour productivity and lead to a fall in labour cost. As a result, the rate of inflation will slow down. In addition, with an increase in the rate of capital accumulation, there will be an expansion of the economy's production capacity. These two factors will conjointly lead to an increase in aggregate supply. So, the aggregate supply curve will shift to the right. As a result, the aggregate output will rise, the rate of unemployment will fall and the price level will come down.

3. **Cost-Push Effects of Indirect Taxes:** The Keynesian economists considered only direct taxes such as income tax on individuals and corporations. Such taxes reduce aggregate demand by reducing disposable income of people and thus consumption and investment components of demand. As a result, inflation can be brought under control.

By contrast, the supply-siders take into account indirect taxes such as sales tax, excise duty and the VAT or goods and Services Tax (GST). Such taxes are a part of business cost. So, if the government imposes additional taxes on commodities and raw materials in order to cover its growing expenditure (as part of its policy of expanding of the public sector) cost-push pressures will be generated in the economy. Such indirect taxes, much like rise in the wage rate or oil price hike, act as a supply shock and are responsible for causing stagflation by shifting the aggregate supply curve to the left.

Thus, while direct taxes act as an anti-inflationary measure in Keynesian economics, indirect taxes create inflation from the supply side by generating cost-push pressures in the economy.

4. **Parallel Economy:** High taxes encourage tax evasion and tax avoidance and finally leads to the emergence of parallel economy. In many countries this parallel economy is as strong as the official economy. When tax rates are very high, individuals and business firms try to evade and avoid tax payment. A cut in taxes is likely to increase tax compliance and raise tax revenue.

5. **Tax Rate and Tax Revenue:** The main argument of the supply-side economics is that macroeconomic problem can be solved by cutting taxes. Arthur Laffer, in 1974, explained through the 'Laffer Curve' the relationship between tax rate and tax revenues. As pointed out by Arthur Laffer, there is the possibility that an increase in the tax rate, because of the disincentive effect actually lowers tax revenue. Laffer based his argument on the logic that tax revenue would be zero if tax rates were either zero or 100 per cent. If, they were zero, obviously no tax would be collected. If they were 100 per cent, all of a person's income would be taken away by the government. So, there would be no incentive to work and, therefore, no income to tax. As real world tax rates are higher than zero but lower than 100 per cent, Laffer concluded that there must be a tax rate at which tax revenue is maximised. As tax rates rise, initially revenue would also rise. Then it would reach a maximum and if the tax rate is raised further, tax revenue will fall.

It is explained in the following diagram---

Laffer Curve

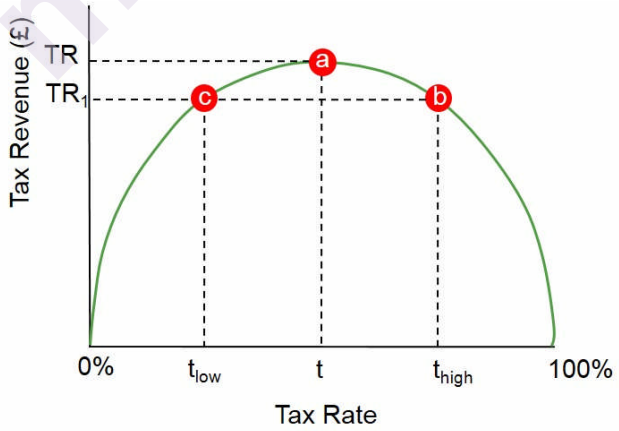


Fig 6.4

As the tax rate increases the tax revenue also rises. At some point 'a', in the above diagram, tax revenue is maximum. If the tax rate is raised further, then the tax revenue starts falling.

Tax cuts raise revenue by giving incentives to people to work hard and save more. Similarly, tax cuts give incentives to business firms to invest more and take more risks. As a result, the aggregate supply curve shifts to the right and stagflation is brought under control.

Laffer also pointed out that low tax rates will increase tax revenue by widening the tax net, i.e., by ensuring that more and more people have taxable income. Tax revenue is also likely to rise due to widening of the tax base, due to an increase in the size of the GDP or national income. If income of a country increases more and more people will pay taxes.

A policy of tax cut raises revenue for two more reasons.

i. It imposes tax compliance and reduces the extent of tax evasion and avoidance. Many people buy NSCs (National Saving Certificates) and put their money in PPF because it is tax free.
ii. If employment increases due to fiscal stimulus, the government's transfer expenditure in the form of unemployment compensation or cash subsidy will fall. So, the net revenue of the government (= taxes – transfers) will rise.

6.3.2 Criticism of Supply-Side Economics

The main propositions of supply-side economics have been criticised by several economists.

1. **The Ineffectiveness of Tax Cut:** A cut in income (wage) tax is unlikely to raise work effort if, at a higher level of income, people show leisure preference. An individual is likely to work less and still maintain the same standard of living. A cut in tax on interest income will have the same effect. People may not save more and may even reduce saving. W.J.Baumol has pointed out that if any individual saves for a particular purpose or has a certain target level of saving in mind, a rise in interest rate will lead to a fall in saving. And a cut in interest tax is equivalent to a rise in interest on saving. Statistical studies suggest that tax reduction leads to a very small increase in either labour supply or household saving.

2. **Increase in Budget Deficit:** A cut in taxes is also likely to increase budgetary deficits., government's expenditure remaining constant. This is likely to cause inflation due to monetisation of the deficit, i.e., creation of new money by the central bank for making loan to the government. Inflation is bound to occur because the economy will get overheated. Milton Friedman criticised this supply-side economics as he said that a tax cut reduces tax revenue but increases deficit.

3. **Increasing Inequality:** A cut in taxes will benefit only the and affluent sections of society, which earn income from various sources such as wage, interest and dividend. They also make capital gains from

investment in equity shares and real estate. This will lead to an increase in the degree of inequality of income and wealth (since income itself is a source of wealth). In other words, the rich will get richer, while the economic conditions of the poor will remain unchanged or may even deteriorate.

4. **Krugman's Criticism:** Krugman stated that supply-side economists got a chance to experiment their theory during President Regan's administration but unfortunately, they failed.

5. **Gaibraith Criticism:** John Kenneth Galbraith pointed out that supply-side economics was merely a cover for the tickle down approach to economic policy, what an older and less elegant generation called 'horse-and sparrow theory'. If you feed the horse enough oats, some will pass through the road for the sparrows. As it was humorously put, 'water-trickles down but money trickles up'.

6. **The Possibility of Inflation:** Supply-siders have also ignored the possibility of inflation from marginal tax cuts. A cut in personal tax will stimulate spending by raising disposable income. Similarly, a cut in corporate income (profit) tax will raise investment spending. As a result, aggregate private demand (C + I) will increase and will shift the aggregate demand curve to the right. It is explained in the following diagrams:

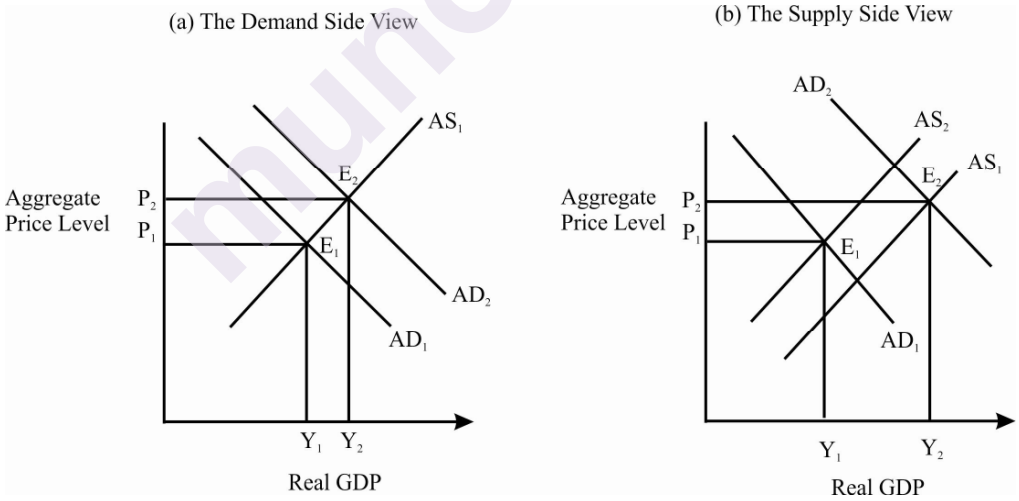


Fig 6.5

In diagram (a), the aggregate demand curve shifts to the right from AD_1 to AD_2 It causes the demand pull inflation as Keynesian thought. Due to this shift in the demand curve the price level rises from OP_1 to OP_2, in spite of an increase in real GDP (or aggregate output).

However, supply-siders point out that the tax cuts will stimulate the economy and shift the aggregate supply curve to the right

from AS_1 to AS_2 as shown in panel (b). However, since the supply-side effects of tax cuts are stronger than their demand-side effects, there is very little rise in the price level but a substantial increase in real GDP from Y_1 to Y_2. As a result, the rate of unemployment will fall. So, the economy will be able to achieve high employment growth even in the absence of accelerating price inflation. Thus, the problem stagflation can be largely, if not totally, avoided.

6.3.3 Conclusion: In the short run, the demand-side effect of tax cuts will be stronger than their supply-side effects. So, tax cuts are not likely to accelerate inflationary pressures in the economy. Tax cuts will raise aggregate demand immediately. But their supply-side effects can be felt only in the long run. Thus, supply-side policies cannot be used for achieving price stability and full employment in the short run. In other words, supply-side policies are not substitutes of Keynesian short-run stabilisation policies. However, supply-side policies can be used to achieve faster economic growth in the long run.

6.4 SUMMARY

1. The term stagflation refers to an economic situation where stagflation and inflation co-exist. It is characterised with low economic growth, increasing unemployment and high rate of inflation. It goes against the conclusion of Phillips Curve, the inverse relation between inflation and unemployment. In this we come across a continuous increase in price level and also increasing rate of unemployment.

2. Supply-side economics is the school of thought that promotes the use of fiscal policy to stimulate long-run aggregate supply. Supply-side economists advocate reducing tax rates in order to encourage people to work more or more individuals to work and providing investment tax credits to stimulate capital formation.

6.5 QUESTIONS

1. Explain the meaning and causes of stagflation.
2. Discuss the consequences of stagflation with the help of a diagram.
3. Explain the meaning and propositions of supply side economics
4. Critically examine supply side economics.

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Module 4

7

MONEY, PRICES AND INFLATION

Unit Structure :

7.0 OBJECTIVES

- To understand the concept, constituents and determinants of money supply
- To study the concept of velocity of circulation of money
- To study Keynesian theory of demand for money
- To study Keynesian Liquidity Preference Theory of rate of Interest
- To study Friedman's theory of demand for money

7.1 INTRODUCTION

In this module we will study the concepts and theories rated to money as one of the important aspect in macroeconomics. What are the constituents of money supply, what factors determine the supply of money in an economy, and the Keynesian and Friedman's approach to demand for money are explained in detail.

7.2 CONCEPT OF MONEY SUPPLY

Money supply refers to the amount of money which is in circulation in an economy at any given time. It is the total stock of

money held by the people consisting of individuals, firms, State and its constituent bodies except the State treasury, Central Bank and Commercial Banks. The cash balances held by the Federal and federating governments with the Central Bank and in treasuries are not considered as part of money supply because they are created through the administrative and non-commercial operations of the government. Further money supply refers to the disposable stock of money. Therefore money supply is stock of money in circulation. Money supply can be looked at from two points of views, namely, money supply as a stock and money supply as a flow. Thus at a given point of time, the total stock of money and the total supply of money is different. Money supply viewed at a point of point is the stock of money held by the people on a given day whereas money supply viewed overtime is viewed as a flow. Units of money are spent and re-spent several times during a given period. **The average number of times a unit of money circulates amongst the people in a given year is known as Velocity of Circulation of Money.** The flow of money is measured by multiplying the stock of money with the coefficient of velocity of circulation of money.

7.3 CONSTITUENTS OF MONEY SUPPLY

There are two approaches to the constituents of money supply. They are the traditional and the modern approaches.

1. **Traditional Approach:** According to the traditional approach, the money supply consists of currency money consisting of coins and notes and bank money consisting of checkable demand deposits with commercial banks. The currency money is considered high powered money because of the legal backing of the State. The Central Bank of a country issues currency notes and coins because it has the monopoly of note and coin issue. The supply of money in a country depends upon the system of note issue adopted by the country. For instance, India adopted the Minimum Reserve System in 1957. Under this system, the Reserve Bank of India has to maintain a minimum reserve of `.200 Crores consisting of gold and foreign securities. Out of this, the value of gold should not be less than `.115 Crores. With this reserve, the Reserve Bank of India has the power to issue unlimited amount of currency in the country.

   Checkable demand deposits of commercial banks are used in the settlement of debt. Payments made through checks change the volume of demand deposits by creating derivative deposits. The creation of demand deposits is determined by the credit creation activities of the commercial banks. Bank money is considered as secondary money whereas cash money is known as high powered money. Thus according to the traditional approach, the total supply of money is the sum of high powered money and secondary money or currency and bank money. The ratio of bank money to currency money depends upon the extent of monetization, banking habits and banking

development in a country. In advanced countries, ratio of bank money to currency money is high whereas in poor countries the ratio of currency money to bank money is high.

2. **The Modern Approach:** According to the modern approach, money supply includes currency money and near money. Money supply therefore consists of coins, currency notes, demand deposits of commercial banks, time deposits of commercial banks, financial assets, treasury bills and commercial bills of exchange, bonds and equities.

RESERVE BANK OF INDIA'S APPROACH TO THE MEASUEMENT OF MONEY SUPPLY:

According to the Reserve Bank of India since its inception in 1935, money supply in the narrow sense of the term was the sum of currency with the people and demand deposits with the commercial banking system. Narrow money was denoted by the RBI by M_1. In 1964-65, the concept of broad money or aggregate monetary resources was introduced. Broad money was considered equal to M_1 + Time deposits with commercial banks. In March, 1970 the RBI accepted the report of the Second Working Group on Money Supply. This report was published in the year 1977 and it gave a broad definition of money supply. Accordingly, four measures of money supply were brought into effect. These four measures are as follows:

1. M_1 = Currency with the public + Demand deposits with the commercial Banks + Other deposits with the RBI.

2. M_2 = M_1 + Post Office Savings Bank Deposits.

3. M_3 = M_1 + Time deposits with the commercial banks.

4. M_4 = M_3 + Total Post Office Deposits (excluding NSCs).

The Reserve Bank of India gives importance to narrow money (M_1) and broad money (M_3). Narrow money excludes time deposits because they are not liquid and are income earning assets while broad money includes time deposits because some liquidity is involved in it as these assets earns interest income in future. Since time deposits have become convertible in recent times, they have become more liquid than what they were before. The M_2 and M_4 measures of money supply include post office savings and other deposits with the post offices.

The third working group on money supply recommended the following measures of monetary aggregates through their report submitted in 1998:

1. M_0 =Currency in circulation + Bankers' deposits with the RBI + Other deposits with the RBI. (M_0 is compiled on weekly basis).

2. M_1 =Currency with the public + Demand deposits with the banking System + Other deposits with the RBI = Currency with the public + Current deposits with the banking system + Demand liabilities Portion of Savings Deposits with the banking system + other Deposits with the RBI.

3. M_2 = M_1 + Time liabilities portion of saving deposits with the banking System + Certificates of deposits issued by the banks + Term Deposits [excluding FCNR (B) deposits] with a contractual maturity of up to and including one year with the banking system =Currency with the public + current deposits with the banking System + Savings deposits with the banking system + CertificatesOf Deposits issued by the banks + Term deposits [excluding

FCNR (B) deposits] with a contractual maturity up to and including one year with the banking system + other deposits with the RBI.

4. M_3 = M_2 + Term deposits [excluding FCNR (B) deposits] with a Contractual maturity of over one year with the banking system +Call borrowings from Non-depository financial corporations by the Banking system. (M_1, M_2 & M_3 are compiled every fortnight).

In addition to the monetary measures stated above, the following liquidity aggregates to be compiled on monthly basis were also recommended by the working group:

1. L_1 =M_3 + All deposits with the Post Office Savings Banks (excluding National Savings Certificates).

2. L_2 = L_1 + Term deposits with Term lending institutions and refinancing Institutions (FIs) + Term borrowing by FIs + Certificates of Deposits issued by FIs.

3. L_3 =L_2 + Public deposits of Non-banking Financial Companies. (L_3 is compiled on quarterly basis).

7.4 DETERMINANTS OF MONEY SUPPLY

Currency in circulation and demand deposits are the main constituents of money supply. While the demand deposits are created by the commercial banks, currency is issued by the Central Bank and the Government. The supply of money is determined by the following factors:

1. **Size of the Monetary Base:** Money supply depends upon the size of the monetary base. The monetary base refers to the group of assets which empowers the monetary authorities to issue currency money.

Money supply changes with changes in the monetary base. The monetary base of an economy consists of monetary gold stock, reserve assets such as government securities, bonds and bullion, foreign exchange reserve with the central bank and the amount of central bank's credit outstanding. In the present times, gold stock is not considered as part of the monetary base.

2. **Community's Choice:** The relative amount of cash and demand deposits held by the people also influences the supply of money. If the people prefer to make check payments much more than cash payments, the total money supply maintained by a given monetary base would be larger and vice versa. Since money deposited in commercial banks generates derivative deposits and expand the supply of bank money through the credit multiplier, people's preference of bank money to cash would increase the supply of money. However, the choice of the community is determined by factors such as banking habits, per capita income, availability of banking facilities and the level of economic development. If these factors are developed, the money supply would be larger and vice versa.

3. **Extent of Monetization:** Monetization refers to the use of money as a medium of exchange. The choice of the community for money as a liquid asset depends upon the extent of monetization of the economy. If monetization is high, demand for money would be high and vice versa.

4. **Cash Reserve Ratio:** The Cash Reserve Ratio refers to the ratio of a bank's cash holdings to its total deposit liabilities. It determines the coefficient of the credit multiplier. The CRR is determined by the Central Bank of a country. The credit multiplier (m) is determined as the reciprocal of the CRR (r). Therefore $m = 1/r$. Excess funds with the commercial banks multiplied by the credit multiplier will give us the extent of credit creation by the commercial banks. Lower the CRR, greater will be value of the credit multiplier and therefore greater will be the supply of bank money and vice versa.

5. **Monetary Policy of the Central Bank:** Monetary policy is defined as the policy of the Central Bank with regard to the cost and availability of credit in the economy. The monetary policy of the Central Bank of any country will be according to the macro-economic conditions. Thus under inflationary conditions, the Central Bank may follow restrictive monetary policy and thereby reduce the supply of bank money by pursuing both qualitative and quantitative measures of controlling money supply. Similarly under recessionary conditions the Central Bank may follow expansionary monetary policy and thereby raise the supply of money in the economy.

6. **Fiscal Policy of the Government:** Fiscal Policy is defined as a policy concerning the income and expenditure of the government. While the government raises revenue through various sources like different types

of taxes, borrowing and through deficit financing, it spends the money raised for various developmental and non-developmental purposes. When the government raises revenue by imposing fresh taxes or by raising the existing level of taxes, it helps to reduce money supply. Similarly, market borrowing by the government reduces money supply and raises the market interest rates. This is known as the crowding out effect of government borrowing. When the government spends the money so raised, money supply increases. However, when the government runs a deficit budget, it adds to the existing stock of money supply and thus raises the supply of money in the economy. The opposite will be the impact of a surplus budget but surplus budgets are a rarity in modern times.

7. **Velocity of Circulation of Money:** Velocity of circulation of money refers to the average number of times a unit of money as a medium of exchange changes hands during a given year. Money supply is measured as total money in circulation multiplied by the velocity of circulation (M×V). Thus higher the velocity of circulation of money, higher will be the money supply and vice versa.

7.5 VELOCITY OF CIRCULATION OF MONEY

The velocity of circulation of money determines the flow of money supply in an economy in a given period of time, normally such a period is one year. The average number of times a unit of money changes hands is known as the velocity of circulation of money. The supply of money in a given period is obtained by multiplying the money in circulation with the coefficient of velocity of circulation i.e., M × V where M refers to the total amount of money in circulation and V refer to the velocity of circulation of money in the given period.

Factors Determining Velocity of Circulation of Money: The velocity of circulation of money is determined by the following factors:

1. **Time Unit of Income Receipts:** The more frequently people receive income, the shorter will be the average time period of holding money and greater will be the velocity of circulation of money. Thus if in a given society large number of people receive income on daily basis, the velocity of circulation of money would be higher than the one in which people receive income on weekly, fortnightly or monthly basis.

2. **Method and Habits of Payment:** The velocity of circulation of money would be high if large number of people prefers to make payment on instalment basis. As a result, the same unit of money will change hands more often than when payments are made in full.

3. **Regularity of Income Receipts:** If in a society people receive income on a regular basis, they will spend their current income

without bothering about future and hence the velocity of circulation of money would be high. However, if future income receipts are uncertain, people will not spend more money in the present and hence the velocity will be less.

4. **Saving Habits of the People:** If the marginal propensity to save is high in a society, then the people will be spending less in the present and hence the velocity will be less. Similarly, if the marginal propensity to consume is high the people will spend more and the velocity of circulation of money will be high.

5. **Income Distribution:** Income distribution may be more equal or more unequal in a society. If inequalities of income are high in a society with the top 20 % taking away a major portion of the national income, velocity of circulation of money would be low because the richer sections of the society will be holding more idle cash balances. However, if income distribution is more equal or less unequal, the bottom 40% of the people will receive more incomes and spend more thereby increasing the velocity of circulation of money.

6. **Development of Banking and Financial System**: If the banking and financial institutions in a country are well developed, mobilization of savings can be effectively carried out and more credit made available to the needy. This not only prevents hoarding of cash balances but also increases the velocity of circulation of both currency and bank money.

7. **Business Cycle:** During the prosperity phase of the business cycle, investment, output, income, employment and prices rise. Thus the velocity of circulation of money would be high during the prosperity phase. However, during the downturn of the business cycle, investment, output, income, employment and prices begin to decline thereby reducing the velocity of circulation of money.

8. **Liquidity Preference of the People:** If the liquidity preference of the people is high i.e., if they wish to hold a greater part of their income in the form of idle cash balances, the velocity of circulation of money would be low and vice versa.

9. **Speedy Clearance of Checks and Transfer of Funds:** A more advanced banking system would help speedy clearance of checks and transfer of funds from one account to another account, thereby increasing the velocity of circulation of money.

7.6 MEANING OF MONEY

Money is defined in Economics as 'anything that is generally accepted in payment for goods and services as a medium of exchange.'

Money consists of currency and checkable demand deposits. Money is different from income and wealth. While income refers to a flow of purchasing power which is used to make payments for the services obtained from the factors of production, wealth is a stock of accumulated purchasing power. While income is a flow variable that is measured over a given period of time, wealth is a stock variable that is measured at a given point of time. While income is generally in the form of money and income in the form of money is known as nominal income, income in the form of goods and services is known as income in kind or real income. Real income is also measured in terms of constant prices. Wealth can be held in the form of monetary assets. Saving is the primary source of wealth. Money is the most liquid asset. The liquidity of assets refers to the ease with which an asset can be converted into a medium of exchange. Assets are classified as either financial assets or real assets and are ranked according to their liquidity. Currency, checkable deposits, savings deposits are the examples of liquid financial assets. Stocks and bonds are relatively less liquid financial assets. Precious metals like silver, gold, platinum etc are liquid real assets. Artwork, machinery and real estate are the examples of less liquid real assets. The liquidity of an asset is determined by the following factors:

1. Existence of a well established market in which the asset can be quickly sold.
2. Size of transaction costs (brokers fees, time costs)
3. Stability of the asset's price.

The price of a rupee is always a rupee. The prices of other assets measured in terms of money generally fluctuate. However, the value of a rupee is not fixed as it is measured in terms of purchasing power. For instance, at current prices a potato vada would cost you Rupees Ten a piece. In 1974 when I was studying in the fifth standard, Rupees Ten would fetch me 100 pieces of potato vada and with that money I could have arranged a potato vada party for 100 students. (The value of money: $V_m = 1/P$, where 'P' stands for price level.

7.6.1 FUNCTIONS OF MONEY:

Money is a matter of functions four: medium, measure, standard and store. Money therefore has four important functions.

1. **Medium Of Exchange:** Money functions as a medium of exchange and hence permits a time interval between buying and selling goods and services. Money replaces barter where goods or services are traded directly for other goods or services. Barter does not provide a time interval between buying and selling goods and services. Money eliminates the need for a double coincidence of wants. For instance, a farmer who has jowar in his stocks and wants to trade it for wheat must find a person who has wheat and also wants to trade wheat for jowar. Money greatly improves the efficiency of transactions by reducing transactions costs. In a barter economy, transaction costs would include cost of search. The cost of search is eliminated in a

monetary economy. In a monetary economy, the farmer only needs to find a person who wants to buy jowar and has the purchasing power to pay for it. The farmer need not be bothered if the person has wheat and is willing to trade wheat for jowar. The need for double co-incidence of wants is eliminated in a monetary economy.

2. **Unit of Account:** A unit of account is a standard numerical unit of measurement of the market value of goods, services and other transactions. It is also known as a "measure" or "standard" of relative worth and deferred payment. Money as a unit of account is essential for entering into commercial agreements that involve debt and future payments. Money is divisible into small units without destroying its value. Precious metals can be coined from bars and melted down to bars again. Money is fungible, i.e., one unit or piece must be perceived as equivalent to any other commodity or service. Hence diamonds or works of art are not suitable as money. A specific weight, or measure, or size must be verifiably countable. For instance, coins are often made with ridges around the edges so that any removal of material from the coin leading to fall in its intrinsic value will be easy to detect. The unit of account is the unit in which values are stated, recorded and settled. Money is a means of measuring and recording value. Wheat is measured in kilograms. Distance is measured in kilometers. Value is measured in units of money. In barter, the value or price of every good and service must be measured in terms of the value of every other good and service. In a barter economy with only 100 goods there would be: $[(N(N-1))/2] = 4950$ prices. However, in a monetary economy with only 100 goods, there would be only 100 prices. At current prices, a kilogram of wheat would be accounted in the range of Rs.25 to Rs.35 and a kilogram of rice would be accounted in the range of Rs.30 to Rs.50.

3. **Store of Value:** Since money, as a medium of exchange, represents purchasing power, it can be stored and used in the future. Money is a store of value but it is not usually a good store of value. During inflation, money looses its value. The value of money is inversely related to the price level. Higher the price level, lower will be the value of money and vice versa. Symbolically, the value of money can be found out with the following formula:

   $Vm=1/P$

   Assuming the price level to be 100, the value of Rs. 100 would be 100. If the price level goes up to 200, the value of Rs. 100 would be only 50. Money may therefore not be acceptable as a store of value during periods of high inflation. Instead, people may prefer to store value in the form of gold and real estate.

4. **Standard of Deferred Payments:** Deferred payment means future payments. Money is used as a standard of deferred payments and hence debt contracts are signed in monetary terms. Loans and future payments are agreed and contracted in monetary terms as money units

are accepted as the means of settling future accounts. However, during periods of very high inflation, money may not be used as a standard of deferred payments because the future value of present money is inversely related to the general price level i.e. when the price level goes up, the value of money falls. Thus during inflationary periods, money may be used as a medium of exchange but not as a standard of deferred payments.

7.7 KEYNES' THEORY OF DEMAND FOR MONEY

Keynes put forward his theory of demand for money in his famous work "The General Theory of Employment, Interest and Money" (1936). According to Keynes, people hold cash balances on account of three reasons or motives. These are the transaction motive, the precautionary motive and the speculative motive. Accordingly the demand for money can be separated into three parts namely transaction demand, precautionary demand and speculative demand for money. The total demand for money or cash balances can be divided into two namely; active and idle cash balances.

Active Cash Balances:

Demand for active cash balances is divided into transaction and precautionary demand for money. The **transaction demand** for money arises due to the fact that money is a medium of exchange. Further receipts and payments do not take place simultaneously. There is always a time gap between two successive receipts and payments are an ongoing affair in the routine course. Hence people need to hold cash balances to pay for their regular transactions. According to Keynes, transaction motive for holding money is the need of cash for the current transactions of personal and business expenditure. Therefore, households and firms hold money on account of the transaction motive. Their respective transactions motives can be referred to as income and business motives. The income motive refers to the transaction motive of households. Families hold cash balances to execute routine transactions. Household demand for money depends upon the following factors:

1. **The Level of Income**: Transaction demand for money by the households is directly related to the level of income, i.e. higher the level of income, higher will be the transaction demand for money and vice versa.

2. **The Price Level**: Higher the price level, higher will be the transaction demand for money and vice versa. When prices rise, more money will be required to purchase the same quantity of goods and services and hence the transaction demand for money would rise when prices rise.

3. **The Spending Habits**: If the people in a society are thrifty, they would require less money for transactions purposes. However, if large number of persons in a society is spendthrift, they would require more money for transaction purposes.

4. **The Time Interval:** If the time interval between two successive income receipts is big, then the people will hold larger cash balances under transaction motive and vice versa.

Similarly, firms need cash balances to pay for raw materials, transport, wages and salaries and other payments. Cash balance held by firms to satisfy these requirements is the money held under **business motive**. The quantum of money held under business motive is directly related to the turnover of firms i.e. larger the turnover, larger will be the amount of money held under business motive.

Transactions demand for money is therefore the sum of money held under income motive and business motive. It is income determined and remains stable in the short run because income change takes place only in the long run. Transactions demand for money is an increasing function of income. Symbolically, the transactions demand for money function can be stated as follows:-

$$L_t = f(Y)$$

Where; L_t = Liquidity preference under transactions motive.
Y = Level of national income.

People also hold cash balances to provide for unforeseen requirements. The amount of cash balances held by people to provide for unforeseen requirements is referred to as precautionary demand for money or money held under precautionary motive. Sickness, unemployment, death, accidents etc are some of the unforeseen events which may take place in the lives of people. The precautionary demand for money depends upon uncertainty of future receipts. It is directly related to income and relatively stable. The precautionary demand for money is interest inelastic and changes in response to changes in uncertainty. Symbolically, the precautionary demand for money can be stated as follows:

$$L_p = f(Y)$$

Where; L_p = Liquidity preference under precautionary motive.

The transaction and precautionary demand for money cannot be easily separated in practice and since both the money demand functions are income determined and also interest inelastic, they are collectively known as **active balances**. Symbolically, the demand for active balances can be stated as follows:

$$L_1 = L_t + L_p$$

Both transaction and precautionary demand for money is income determined, we can restate the money demand function for active balances as follows:

$L_1=f(Y)$

The demand for active balances is graphically depicted in Fig. 7.1 below.

You will notice that at income level OY_1, OM_1 is the demand for active cash balances. When income level rises to OY_2, the demand for active cash balances also rises to OM_2. The demand for active cash balances is proportionate to changes in income.

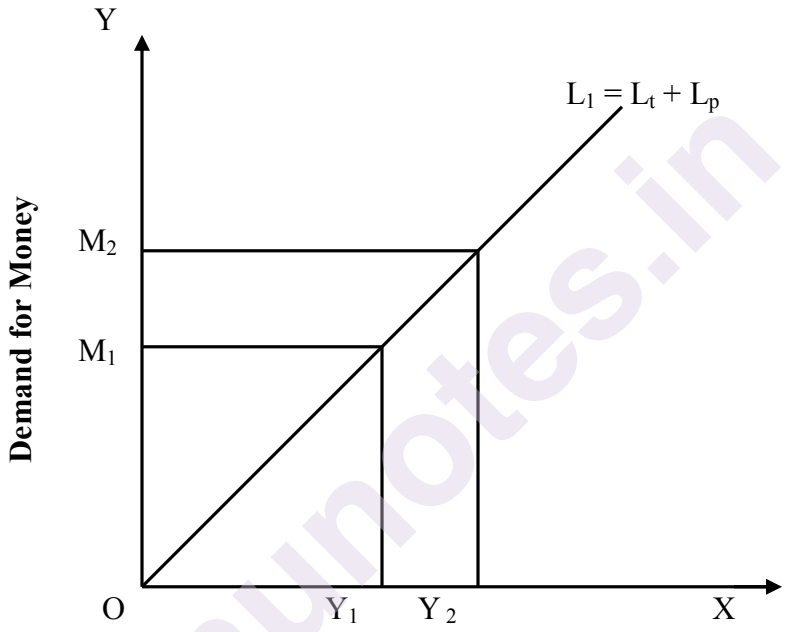


Fig. 7.1: Demand for Active Cash Balances

Idle Cash Balances (Speculative Demand for Money):

The cash balances held by people for speculative purposes are known as demand for idle cash balances. The speculative motive for holding cash balances originates from uncertainty about the future rate of interest. Speculative demand for money arises because of the store of value function of money. The speculator holds cash balances in order to make speculative gains from investment in securities. According to Keynes, investors make capital gains by speculating in securities or bonds. The speculative demand for money depends upon the rate of interest. The demand for speculative cash balances is inversely related to the rate of interest. When people expect the prices of income yielding assets such as bonds to fall, the speculative demand for money rises and vice versa. Symbolically, the speculative demand for money can be stated as follows

$L_2=f(i)$

Where; L_2 = Speculative demand for money.

I = Rate of interest.

The opposite relationship between rate of interest and speculative demand for money is shown in Fig.7.2 below:

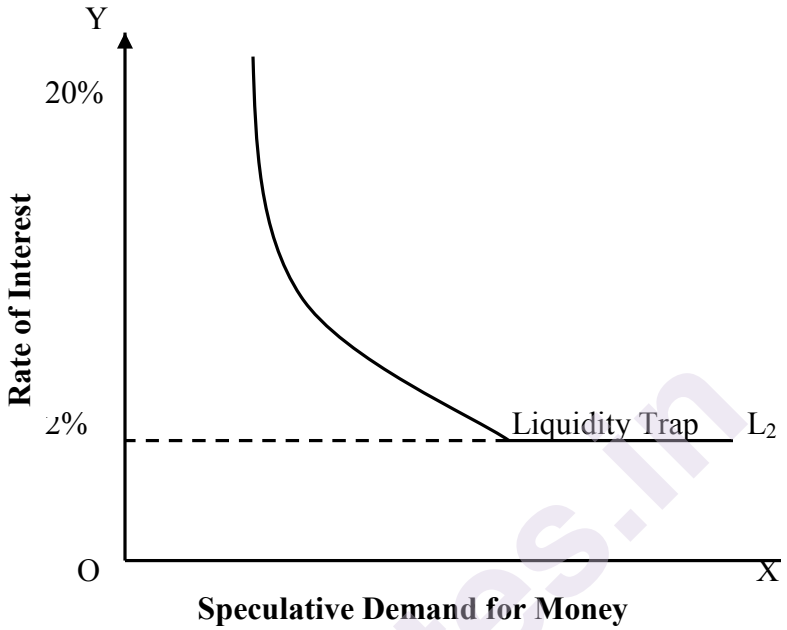


Fig. 7.2: Demand for Idle Cash Balances

You will notice that the speculative demand for money is inversely related to the rate of interest. When the rate of interest falls, the speculative demand for money rises and vice versa. Speculative demand for money is therefore highly interest elastic. However, at a very low interest rate, the speculative demand for money becomes perfectly elastic i.e., the entire income is held in the form of idle cash balances. This is due to the fact that bond prices and interest rates move in opposite directions. When the interest rate rises, the bond or security prices fall and vice versa. The speculative demand for money is also income determining and not income determined as in the case of transaction and precautionary demand for money. When the interest rate is expected to rise, people prefer to hold cash balances at the current interest rate so that they can take advantage of a rise in interest rate in the future. When speculative demand for money is rising, it indicates a greater preference for liquidity.

The Concept of Liquidity Trap:

At a very low rate of interest, the speculative demand for money is perfectly elastic i.e., the entire income is held by people in the form of cash balances for speculative purposes. In the situation of liquidity trap, percentage change in the demand for money in response to a percentage change in the rate of interest is equal to infinity. Symbolically, the liquidity trap situation can be stated as follows:

$\frac{\Delta M}{} \times \frac{i}{} = \alpha$

M Δi

You will notice that the L_2 curve in Fig.5.2 shows the liquidity preference under the speculative motive at different rates of interest. At a very high interest rate of 20%, the speculative demand for money is very low and vice versa. However, when the interest rate is only 2%, the speculative demand for money becomes perfectly elastic. At this point, any increase in money supply or income will be held by the people in the form of idle cash balances. In the diagram, the liquidity trap situation is shown by highlighting the horizontal segment of the liquidity preference curve. The liquidity trap situation arises because at very low rate of interest, the opportunity cost of holding cash balances is negligible and that in future the opportunity cost of holding cash balances is expected to rise.

Aggregate Demand for Money:

The aggregate or total demand for money is the sum of transaction, precautionary and speculative demands for money. Symbolically, the aggregate demand for money can be stated as follows:

$L=L_1 + L_2$

Where; L=Aggregate demand for money.

The functional relationship between aggregate demand for money and the determining variables: nominal level of aggregate income and the rate of interest can be stated as follows:

$L=f(Y, i)$

The liquidity preference schedule of a community can be obtained by superimposing the L_1 curves at each level of income on the L_2 curves. The liquidity preference schedule of a community is shown in Fig.7.3 below.

In Fig.7.3, Panel (A) shows the schedule of active balances (the sum of transaction and precautionary demand for money) held by people at different levels of income. The demand for active balances is perfectly inelastic to changes in interest rate in the short run and changes proportionately to the changes in the level of income. Accordingly, L_1 (Y_1) shows the demand for active cash balances at Y_1 level of income and so on and so forth. The L_1 curves are vertically sloping because they are interest-inelastic. In Panel (B), the L_2 curves shows demand for idle cash balances or speculative demand for money. You will recall that speculative demand for money is interest-elastic and inversely related to the rate of interest. Hence the L_2 curve is downward sloping. However, at a very low rate of interest, it becomes horizontal indicating that the entire income is held in the form of idle cash balances. In Panel (C), the liquidity preference curve indicating total demand for money is shown. It is the result of super-imposition of the L_1 curves on the L_2 curves. Accordingly, the curves $L(Y_1)$, $L(Y_2)$ and $L(Y_3)$ are obtained and they

represent the liquidity preference schedules of the community at various levels of interest rates and national income.

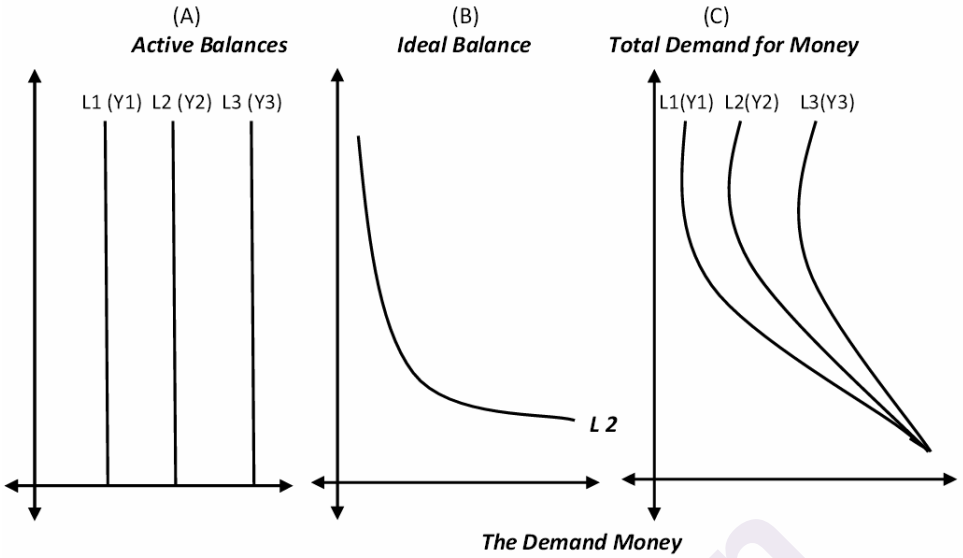


Fig. 7.3: Total Demand for Money

7.8 THE LIQUIDITY PREFERNECE THEORY OF INTEREST

According to Keynes, the rate of interest is determined by the demand for and supply of money. Interest is the reward for lending liquidity or temporarily giving up cash balances held by the people. Symbolically, the rate of interest can be stated as follows:

$$R_i = f(D_M, S_M)$$

Where, R_i = Rate of interest.
D_M = Demand for money, and
S_M = Supply of money.

The demand for money can be expressed in the form of a liquidity preference schedule. Further, the demand for money as stated earlier is the sum of demand for active and idle cash balances. While the demand for active cash balances is determined by the transaction and precautionary motives, the demand for idle cash balances is determined by speculative motive. There is a direct relationship with the demand for active cash balances and the level of income. Whereas, the demand for idle cash balances is inversely related to the rate of interest. The total demand for money can be symbolically stated as follows:

$L = L_1 + L_2$

Where; L = Aggregate demand for money.
L_1 = Demand for active cash balances.
L_2 = Demand for idle cash balances.

The total demand for money can therefore be symbolically re-stated as follows:

$L = f(r, y)$

Where L = Aggregate demand for money.
r = Rate of interest.
y = Level of national income.

DETERMINATION OF THE RATE OF INTERST:

The equilibrium rate of interest is determined by the intersection between the demand curve for and supply curve of money. The supply of money is determined and controlled by the monetary authority and the banking system. At any time, the stock of money is fixed. The supply of money is a stock rather than a flow. Hence, it is represented by a vertical straight line. The money held by all the people in the country is the total supply of money held as shown in Figure 7.4. In this figure, OM is the supply of money. SM is the vertical supply curve of money and LP is the demand or liquidity preference curve. They intersect with each other at point E. EM or OR is the equilibrium rate of interest. It shows that the demand for money is exactly equal to the supply of money. Any change in the demand or supply of money will bring about a change in the rate of interest. If the supply of money alone increases, the equilibrium rate of interest would fall and vice versa. This is shown in Figure 5.5. It can be seen in this figure that the original equilibrium rate of interest is OR. The original supply of money is OM. When the supply of money alone increases to OM_1, the equilibrium rate of interest would fall to OR_1 and vice versa. On the supply side, the rate of interest is influenced by the supply of money. By controlling the supply of money, the monetary authority can influence the rate of interest and the liquidity preference.

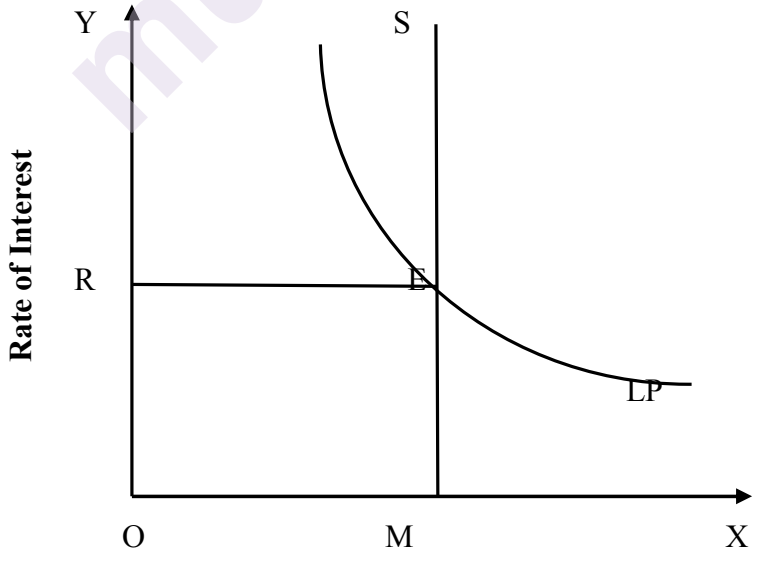


Fig. 7.4 – Determination of Interest Rate

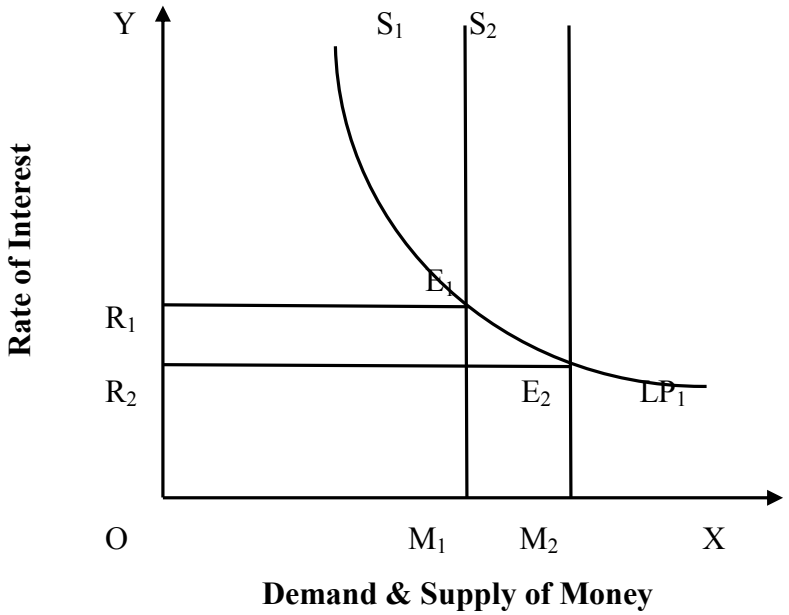


Fig. 7.5 (A) – Changes in the Rate of Interest

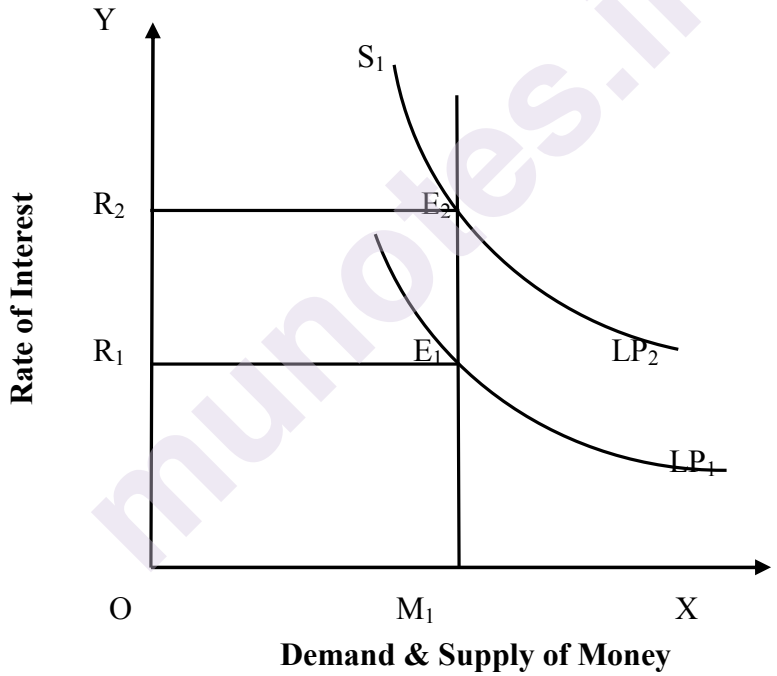


Fig. 7.5 (B) – Changes in the Rate of Interest

CRITICAL ANALYSIS OF THE LP THEORY OF INTEREST:

The Keynesian theory of interest has been criticized by Hansen, Robertson, Knight, Hazlitt, Hutt and others. The following are the main criticisms:

1. **The theory lacks in realism and comprehensiveness:** Speculative demand for money is the most important component which determines interest rate according to Keynes. The theory assumes that people will hold more money by selling bonds when the rate of interest falls and

hold less cash but more bonds in the case of the rise in the interest rate. However, Robertson does not regard bonds as the only alternative to money. The theory is therefore not realistic and lacks comprehensiveness.

2. **Methodologically Inadequate:** A change in the quantity of money would tend to change the price of the good in the same proportion but not the price of bonds. There is no functional relationship between the price level and the rate of interest. Monetary changes do not have direct or lasting effect on the rate of interest. By assuming a functional relationship between the quantity of money and the rate of interest, the Keynesian theory is found to be methodologically inadequate.

3. **Only Speculative Demand for money is considered to be rewarding:** Keynes believed that money held as a store of wealth does not bear any fruit whereas money held for speculative purpose yields rate of interest as a reward. According to WH Hutt, money is as productive as all other assets and the demand for money assets is a demand for productive resources.

4. **Saving is Essential for Liquidity:** Keynes believed that the rate of interest is the reward for parting with liquidity and not for saving. Saving is essential for making investments. According to Viner, "Without saving there can be no liquidity to surrender. The rate of interest is the return for saving without liquidity".

5. **Liquidity Trap does not exist:** In reality the liquidity preference schedule may be perfectly inelastic at a low rate of interest. It is wrong to assume that people will expect the rate of interest to go up in a depression.

6. **Incomplete Theory:** Hicks, Hansen, Somers, Lerner and others says that the rate of interest along with the level of income is determined by four factors, namely: the investment demand function or MEC, the saving function or the consumption function, the liquidity preference function and the quantity of money function. Keynes did not bring all these factors in his interest theory and therefore failed to provide an integrated and determinate theory of interest.

7.9 FRIEDMAN'S THEORY OF DEMAND FOR MONEY

According to Milton Friedman who restated the quantity theory of money and prices there are four determinants of demand for money (i) the level of prices (ii) the level of real income and output (iii) the rate of interest (iv) rate of change in general price level.

Friedman Classifies the holders of money into (a) ultimate wealth holders (b) business enterprises His theory is relevant to the ultimate wealth holders

Friedman has given a very broad concept of wealth which includes all sources of income or services. According to Friedman, the demand for money is a demand for capital asset since money like capital assets provides services and returns. Bonds are monetary assets in which the people can hold their wealth and enjoy fixed interest income. The return on bonds is the sum of the coupon rate of interest and the anticipated capital gains or losses due to the expected change in the market rates of the interest People can also hold their wealth in the form of equity shares and enjoy returns in the form of dividend income and capital gains or losses Milton Friedman gave his demand function in the following manner

Md = f (w. h. rm, rb , re , P., u)

This is the nominal $\wedge$ money demand function. The demand for real money balances can be derived by dividing the nominal money demand by the price level

Md = f (w. h, r m, r b, re, P . ____, u)

Where. . $\wedge$ = demand for real money balances.

w = wealth of the individual
h = the proportion of human wealth to the total wealth held by the individuals
rm = the rate of return on money or interest
rb = the rate of interest on bonds
re = the rate of return on equity shares
p = the price level
u = Institutional factors.

The simplified version of Friedrman's demand function for money can be written as,

. = f (r, Yp, u)

The demand-function of Friedman, though it looks similar to Keynes equation is different from Keynes in some ways :-

(1) Keynes gave importance to current income whereas Friedman gave importance to wealth

(2) Friedrman's theory does not consider unstable elements like the Keynes speculative demand for money

(3) Friedman did not consider the possibility of a liquidity trap situation.

Check Your Progress :

1. What is the Keynesian approach to demand for money?
2. Explain the concept of Liquidity trap.
3. What are the Friedman's determinants of demand for money?

7.10 SUMMARY

1. Money supply refers to the amount of money which is in circulation in an economy at any given time. It is the total stock of money held by the people consisting of individuals, firms, State and its constituent bodies except the State treasury, Central Bank and Commercial Banks.

2. The velocity of circulation of money determines the flow of money supply in an economy in a given period of time, normally such a period is one year. The average number of times a unit of money changes hands is known as the velocity of circulation of money. The supply of money in a given period is obtained by multiplying the money in circulation with the coefficient of velocity of circulation i.e., $M \times V$ where M refers to the total amount of money in circulation and V refer to the velocity of circulation of money in the given period.

3. Money is defined in Economics as 'anything that is generally accepted in payment for goods and services as a medium of exchange.'

4. According to Keynes, people hold cash balances on account of three reasons or motives. Accordingly the demand for money can be separated into three parts namely transaction demand, precautionary demand and speculative demand for money. The total demand for money or cash balances can be divided into two namely; active and idle cash balances.

5. According to Keynes, the rate of interest is determined by the demand for and supply of money. Interest is the reward for lending liquidity or temporarily giving up cash balances held by the people. Symbolically, the rate of interest can be stated as follows:

   $Ri = f(DM, SM)$

According to Milton Friedman who restated the quantity theory of money and prices there are four determinants of demand for money (i) the level of prices (ii) the level of real income and output (iii) the rate of interest (iv) rate of change in general price level.

7.11 QUESTIONS

1. Explain the meaning and constituents of money supply.
2. What are the factors affecting velocity of circulation of money?
3. Discuss Keynesian approach to demand for money.
4. Critically analyze Keynesian Liquidity Preference theory of rate of interest.
5. Explain Friedman's approach to demand for money.

❖❖❖❖

8

MONEY AND PRICES AND INFLATION

Unit Structure :

8.0 OBJECTIVES

- To study classical approach to demand for money
- To study Fisher's equation of exchange
- To study Cambridge approach to demand for money
- To understand the meaning and types of inflation
- To study various causes of inflation
- To understand various effects of inflation
- To know the measures to control inflation

8.1 INTRODUCTION

As against the Keynesian and Friedman's approach to demand for money in previous unit, the views of Classical economists and Cambridge economists to demand for money is explained in this unit. The meaning, types, causes, effects and measures to inflation in an economy is explained in detail.

8.2 THE CLASSICAL APPROACH TO DEMAND FOR MONEY

The classical economists emphasized the medium of exchange function of money According to the classical economists like J.S. Mill. David Hume and Irving Fisher, the demand for money arises since money facilitates the exchange of real goods and services among individuals. Hence money is demanded for buying and selling goods and services or for spending over a period of time The classical economists believed that the demand for money depends on objective factors like the volume of exchange transactions of goods and services produced and supplied during a given period of time, the amount of money needed to buy the goods and services and by the velocity of circulation. Since the volume of goods and services changes from time to time, the demand for money also changes The classical approach to the demand for money can be grouped into the Fisher's cash -- Transactions Approach and the Cambridge economists' cash-Balances approach

8.3 THE FISHER'S APPRO CH TO DEMAND FOR MONEY

Irving Fisher's Equation of Exchange is one of the most prominent explanations which analyse the demand for money. According to Fisher, the demand for money means the amount of money to be held to undertake a given volume of transactions over a period of time. Fisher's equation of exchange is given as MV = PT, where M is the money supply, V the transaction velocity, T transactions and 'P' the price level. 'PT' in the equation represents the demand for money and MV stands for the supply of money. The demand for money (Md) is equal to . It means that the demand for money is equal to 'P' multiplied by 'T' over a period of time and divided by V The demand for money depends on the amount of money which people have to hold in order to carry on a volume of transactions over a period of time. According to Fisher 'V and 'T' are constant during the short period As a result, the demand for money varies with changes in 'P'. According to Fisher the supply of money (Ms) is equal to demand for money (Md). It means that the demand for money is always equal to the supply of money. Fisher's version of demand for money stresses the role of money in spending and not saving The demand for money changes in proportion to the changes in the price level. V also determines the demand for money.

8.4 THE NEO-CLASSICAL OR CAMBRIDGE APPROACH TO DEMAND FOR MONEY :

The Cambridge approach or the cash balances approach was given by Marshall, Pigou, Robertson and Keynes. These economists stressed the store of value function of money. This approach concentrates on what individual want to hold for satisfying the transaction motive and

precautionary motive. According to this approach, the demand for money refers to the cash balances held by all individuals in an economy. The following factors influence the decisions of individuals in holding cash.

(i) The prevailing prices of goods and services and the expected changes.
(ii) The existing interest rates and expected changes in future.
(iii) The wealth in the hands of the people.

These factors remain constant according to the Cambridge economists. The total demand for money or cash balances is a certain proportion of national income. The demand for money can be expressed as, Md = KPY, where MD is the demand for money, K is the constant proportion of income Y. It is the proportion of national income which people desire to keep in the form of cash balances and Py is the nominal national Income. According to the Cambridge economists the demand for money is the constant proportion (K) of Y. Wherever there is a change in the price level or in the real national income, the demand for money also changes in equal proportion For example if MD is Rs. 2000 crores and the money income is Rs 6000 crores per year K = 1/3 per year. This imples that on an average the public likes to hold money amounting to 1/3 of the annual income.

Check Your Progress :

1. Distinguish between Cash transaction and Cash balance approach to demand for money.

8.5 THE KEYNESIAN APPROACH OF DEMAND FOR MONEY :

J M Keynes introduces his theory on the demand for money through his book titled, the "General Theory of Employment. Interest and Money" in 1936. According to Keynes money was demanded due to three main motives i.e. the transactions motive, the precautionary motive and the speculative motive. The speculative motive of demand for money is a special contribution of Keynes.

(i) The transaction motive :

It refers to the transaction demand for money as a medium of exchange for carrying on current trade and business transactions. Money is demanded for transaction purposes since it is received at discrete intervals of time and expenditure goes on continuously. Keynes classified the transactions motive into (a) income motive and (b) business motive.

(a) The income motive :

People hold cash to bridge the gap between the receipt of income and expenditure. The income in the form of salary or wages is recovered at a certain time like once in a week or once in a month. But expenditure goes on throughout all the time. To meet day-to-day expenditure a part of the income has to be held in the form of liquid cash. The following factors decide the amount of money held by people:

(i) ***Level of Income*** As the level of income increases, the transaction demand for money of the individual will increase and vice versa.

(ii) ***Tune Interval:*** The longer the time interval between the receipt of income and expenditure, the higher the amount of money held by people for transaction purposes.

(iii) The standard of Living : The higher standard of living, the larger the amount of money held and vice versa.

(b) The business Motive :

The businessmen and the firms also hold cash balance in order to bridge the interval between the time of incurring business costs or expenses and the receipt of the sale proceeds. The larger the volume of turnover or transactions for the business firms, the greater will be the amount of money held for this purpose. The amount of money held by the business firms depends on the size of their income and their turnover. The aggregate demand for money for satisfying the transaction motive is the sum total of the individuals demand for cash as well as the individual firm's demand for cash. This aggregate demand for money will depend upon total size of national income, the level employment and the price level.

The transactions demand for money primarily depends on the level of income. The transaction demand for money which is income-elastic can be expressed in the following manner.

L = (fy) where Lt with transaction demand for money, T stands for function of and y stands for the national income. The figure below shows the transaction demand for money.

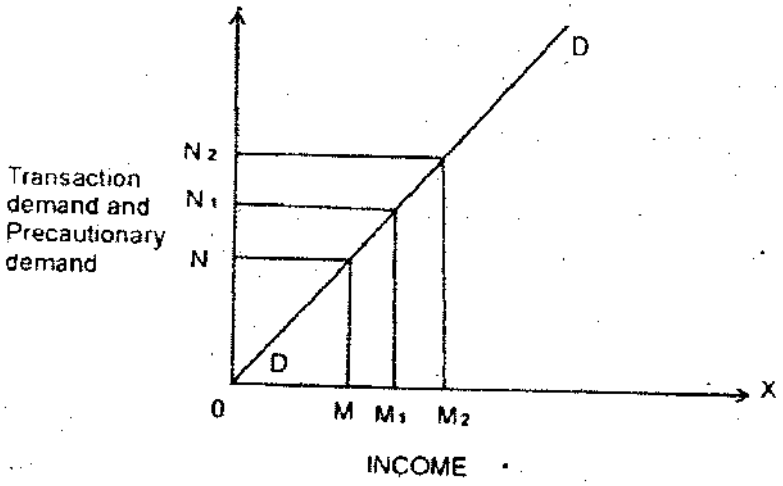


Figure 8.1

In the above figure, dd is rising indicating that, with the increase in national income, the demand for money for transaction purposes also rises,

(ii) The Precautionary Motive :

Besides the money kept also for transaction purposes, people hold additional amount of money to meet unexpected or unforeseen contingencies, emergencies or unexpected events. Money held for such precautions is known as precautionary motive. The accessibility of individuals and firms to the credit market determines the amount of money held for this purpose. If borrowing is easy or the assets of the people can be easily connected into cash, the amount of money held for this motive will be very low and vice versa. Uncertainty regarding future will make individuals and firms keep aside money for precaution purposes. The precautionary motive of demand for money depends on the income level ie. L = f(y), where 'Lp' stands for precautionary motive, T a function of and y, the level of income,

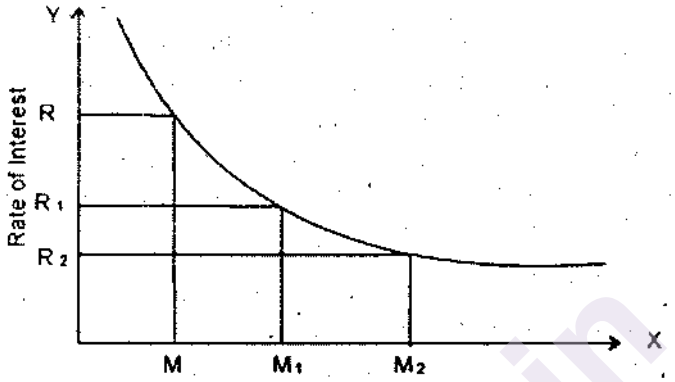
(iii) Speculative motive :

People hold money as a store of wealth or liquid asset for investment and lending, with a view to make speculative gains. People speculate about the future prices of bonds or securities or future interest rates. People prefer to hold securities where prices are expected to rise in future and vice-versa. People make capital gains from speculative about the prices of bond or securities or future interest rates. According to Keynes. the speculations motive is the desire to earn profit by knowing better than the market what the future will bring forth The individuals have to choose between holding money or other assets Uncertainly regarding the behavior of the future interests and price of bonds leads to speculation. If the rate of interest is high and the prices of bonds are low, the lower will be liquidity preference. In such a case money will be lent or bonds will be purchased. There is an inverse relation between the prices of bonds and interest rate.

If the interest rate is expected to rise, or the prices of bonds to fall, people sell the bonds or assets and hold more cash. The people will

buy the bonds when their prices actually fall In the other hand, if the people expect the rate of interest to fall, or prices of bonds to rise, people will buy bonds whose prices are expected to go up. This leads to a fall in liquidity preference. This shows that speculative demand for money is interest elastic. –

L = f(i) where. L2 is the demand for money for speculative purpose, (i) the rate of interest



Liquidity preference (Speculative demand for money)

Figure 8.2

The above figure shows the inverse relation between the rate of interest and the speculative demand for money. It slopes downwards from left to right indicating that when the rate of interest is high, the demand for money is low and vice versa.

8.6 MEANING OF INFLATION

A sustained rise in the general price level over a period of time is known as inflation. Conversely, a sustained fall in the general price level would be known as deflation. Inflation is measured in terms of a price index. For instance in India, we have the wholesale price index (WPI) and the consumer price index (CPI). The Price Index is based on a basket of goods and services. Within a given basket, the prices of some goods and services may rise or fall. However, when there is a net increase the price of the basket, it is called inflation.

Inflation is a rate of change in the price level. The rate of change is measured with reference to the base year so that a long term perspective is obtained with regard to price rise. For all practical purposes, inflation rate is measured on yearly basis. However, in recent years, the inflation rate is also measured on monthly and weekly basis. The rate of inflation can be measured as: $\mathbf{P = [(P_1 - P_0) / P_0] \times 100.}$ For example, the price index based on the Wholesale Prices in India for the year 2003-04 was 180.3 and in 2004-05, it was 189.5. The rate of inflation for the year 2004-05 was 5.1 per cent. Inflation rate measured on the basis of wholesale price index (WPI) for the period 2005-06 to 2012-13 in India is given in Table 8.1.

Table 8.1 Inflation Rate based on Wholesale Price Index (WPI) in India for the period 2005-06 to 2012-13.		
Year	**Wholesale Price Index**	**Inflation Rate (%)** $P = [(P_1 - P_0)/P_0] \times 100$
2005-06	**104.5**	**-**
2006-07	**111.4**	**111.4 – 104.5/104.5 × 100 = 6.6%**
2007-08	**116.6**	**116.6 –111.4/111.4 × 100 = 4.6%**
2008-09	**126.0**	**126.0 – 116.6/116.6 × 100 = 8.06**
2009-10	**130.8**	**130.8 – 126.0/126.0 × 100 = 3.80**
2010-11	**143.3**	**143.3 – 130.8/130.8 × 100 = 9.55**
2011-12	**156.1**	**156.1 – 143.3/143.3 × 100 = 8.93**
2012-13	**164.8**	**164.8 – 156.1/156.1 × 100 = 5.57**

TYPES OF INFLATION BASED ON RATES OF INFLATION

On the basis of the rate of price rise, inflation is classified into five categories. They are **creeping or moderate inflation, walking, running, galloping and hyper inflation**. When the rate of price rise is less than three per cent per annum, it is called creeping inflation. An inflation rate of about three per cent per annum is considered creeping. When prices creep upwards at a moderate rate, inflation serves as an incentive to investment. As a result, the rate of investment, employment, output and aggregate demand rises in the economy and the economy moves into the prosperity phase.

When inflation rate crosses the three per cent mark and remains within single digits i.e. below the 10 per cent mark, it becomes walking inflation. Walking inflation leads to a much rapid fall in the purchasing power of money. However, the negative consequences of single digit inflation are not widely felt and hence it is considered within the tolerable limits. However, both monetary and fiscal policies are swung into action to control the rate of inflation and keep it within single digits.

When inflation rate is in double digits, it is known as running inflation. When prices begin to rise by more than 10 per cent per annum and the rate of inflation accelerates, money begins to flow away from productive activities into unproductive or speculative activities. As a result, the supply of goods and services fall in the economy and their prices begin to rise more rapidly. Thus commodity prices rise rapidly for want of investment and prices of gold, real estate and stocks rise more rapidly because more and more money is diverted from the productive sector to the unproductive sector.

When prices rise by about 100 per cent annum, the situation is known as galloping inflation and when the inflation rate is over 1000 per cent a year, it is called hyper inflation. Both galloping and hyper inflation signals the collapse of the economy. Productive activity is at an all time

low, people lose confidence in the currency and the economy looks like more of a barter economy. During world war one, countries like Austria, Hungary, Germany, Poland and Russia experienced hyper inflation. For instance between1920-23, the German price index rose from one to one billion. In 1994, the inflation rate in Georgia was 15000 per cent per annum. **In 2008, the inflation rate in Zimbabwe was 11.2 million per cent.** In such situations, the paper on which money is printed become more valuable than the money itself i.e. the intrinsic value of even paper money becomes greater than the face value. Thus if you sell money by kilograms you may get more money in return than by exchanging money in the market for goods and services.

8.7 DEMAND PULL, COST PUSH AND STRUCTUAL INFLATION

Broadly speaking, there are three types of inflation which constitutes the causes of inflation. Demand side factors will cause demand pull inflation, supply side factors will cause cost push inflation and structural factors will cause structural inflation. Here in this section, we will analyze these three major types of inflation.

1. Demand -pull Inflation: Demand pull inflation takes place due to rise in aggregate demand. Aggregate demand may rise due to combined effect of higher demand from the various sectors of the economy such as the firms, households and the government. According to Keynes, inflation arises when there is an inflationary gap in the economy. Inflationary gap arises when aggregate demand is greater than aggregate supply at full employment level of output. Keynes explained inflation in terms of demand pull forces. When the economy is operating at the full employment level of output, supply cannot increase in response to increase in demand and hence prices rise.

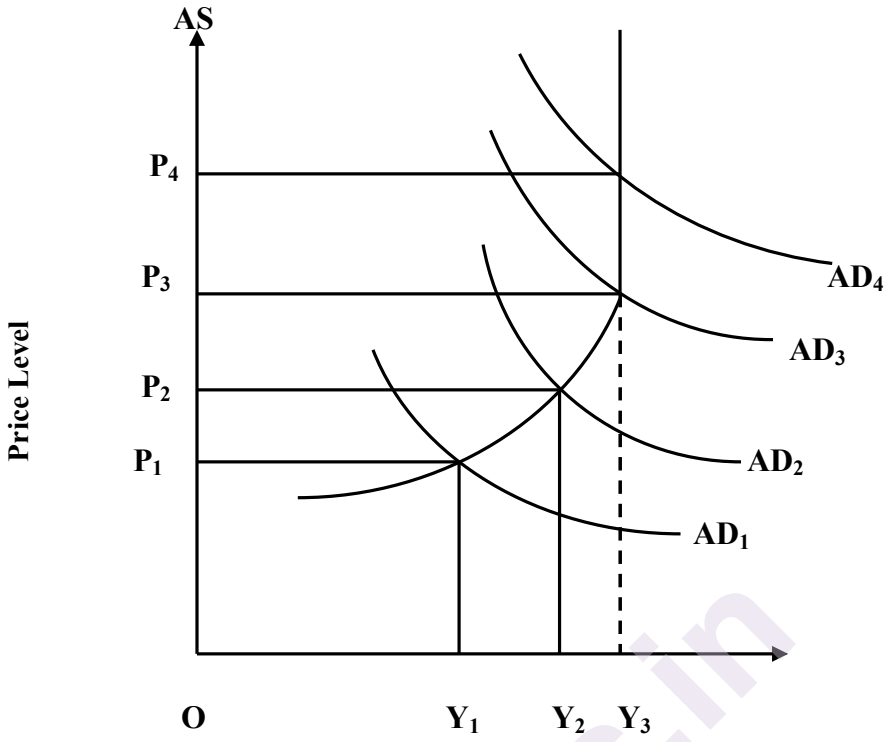


Fig. 8.3: Demand Pull Inflation

Demand pull inflation is depicted in Fig.8.3. You may note that aggregate demand and supply curves are measured along the X-axis and the general price level is measured along the Y-axis. The aggregate supply curve AS rises upward in the beginning and becomes vertical when full employment level of output is achieved at point OY_f. This is because the supply of output cannot be increased once full employment level of output is achieved. When the aggregate demand curve is AD_1, the equilibrium is less than full employment level and the price level OP_1 is determined. When aggregate demand increases to AD_2, the price level rises to OP_2 due to excess demand at price level OP_1. Since the economy is operating at less than full employment level, the real sector of the economy responds to rise in prices and hence the output increases to OY_2. When the aggregate demand further rises to AD_3, the price level rises to OP_3 followed by increase in output to OY_f. When the aggregate demand further rises to AD_4, the aggregate supply does not respond to remain constant at OY_f and only the price level rises to OP_4. After the full employment level of output the aggregate supply curve becomes perfectly inelastic and parallel to the Y-axis.

2. Cost-push Inflation:

In the absence of rise in aggregate demand, prices may rise due to increase in cost in terms of higher wages, higher input costs and higher profits. These are known to be autonomous increases in costs. Inflation on account of rise in costs is known as Cost push inflation.

a) **Wage-push Inflation:** Powerful trade unions may bargain for higher wages and also get it even when the cost of living has not changed or the general price level is constant and there is no change in the productivity of labor. When employers have no choice but to yield to the demands of the trade union, they may pass on the higher costs to the consumers by charging higher prices on the goods and services produced. Such a situation leads to Cost-push inflation. In case of Cost-push inflation, the aggregate demand curve shifts to the left leading to fall in output and rise in the price level. Cost push inflation is also known as stagflation. Cost-push inflation is depicted in Fig. 8.2

b) **Profit-push Inflation:** Firms operating under imperfect market conditions such as monopoly, monopolistic and oligopoly markets may hike their profit margins either autonomously or through collusion. When prices rise on account of hike in profit margins, it is called profit-push inflation. Profit push inflation may lead to cost push inflation if the products are used as inputs by other firms. When prices of capital goods, intermediate goods and raw materials are increased to increase the profit margin by firms operating under imperfect competition and when these goods are used as inputs by other firms, the cost of production of these firms go up, thereby leading to cost push inflation.

c) **Input Cost Inflation:** Supply shocks leading to rise in input costs is an important cause of input-cost inflation. For instance, the oil price shocks of 1970s. The sharp rise in world oil prices during 1973-75 and in 1979-80 created supply shocks and cost-push inflation. Recent increases in the prices of crude oil also caused the inflation rate to go up. For instance, the weekly inflation rate in India was 12.34% during the second week of September 2008 as a result of sharp increase in the international prices of crude oil to $150 per barrel. The government of India took monetary and fiscal measures to bring down the prices. Fortunately, the crude oil prices also fell below the $50 per barrel mark in January 2009 and the weekly inflation rate in India also fell down to 6.4 per cent from the high of 12.34 per cent in September 2008.

d) In January 2009 and the weekly inflation rate in India also fell down to 6.4 per cent from the high of 12.34 per cent in September 2008.

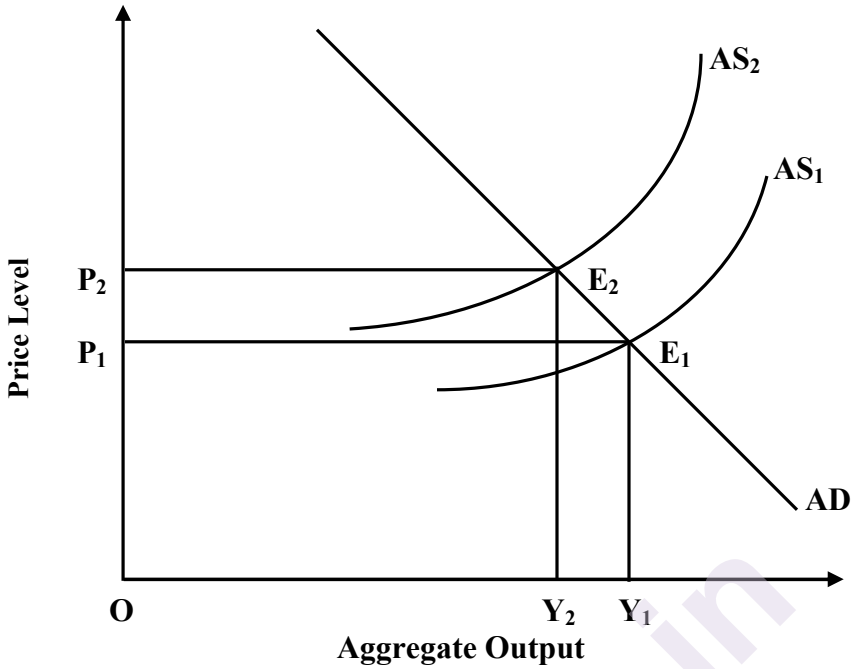


Fig. 8.4 Cost-push Inflation

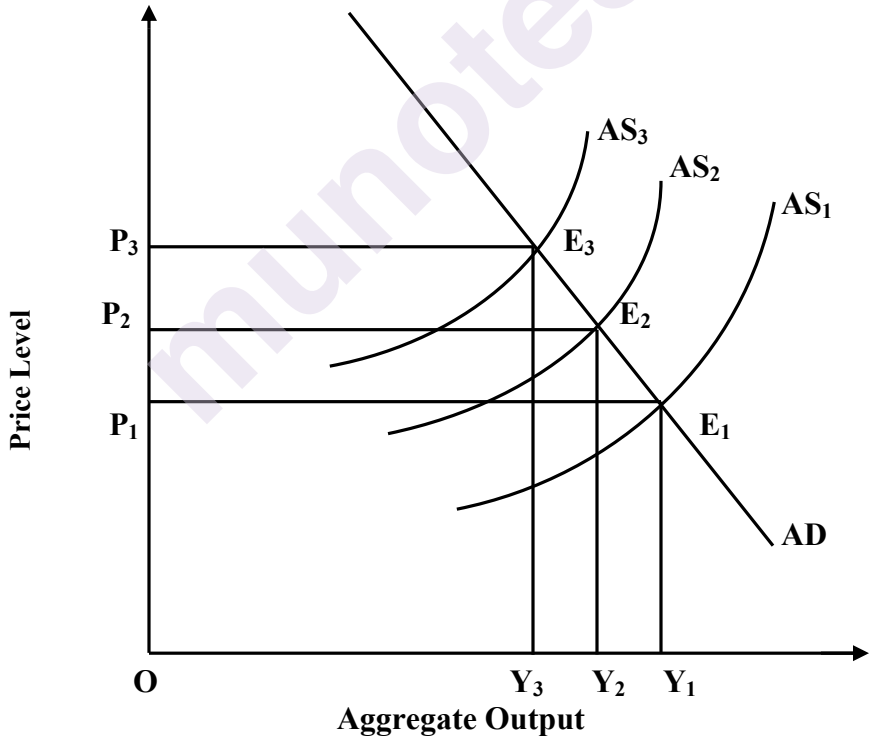


Fig. 8.5 Cost-push Inflation & Direct and Indirect Effects of Supply Shocks

Cost push inflation as a result of rise in input prices is depicted in Fig. 8.4. Oil price shocks and rise in the price of other inputs have direct and indirect effects on the price level. When prices actually rise due to

rise in input costs, the workers revise their price expectations upward. With upward price expectations, real wage rate declines and hence less labor is supplied at the given nominal wage rate. With the upward revision in the expected price level, the aggregate supply curve shifts to the left. This is known as the indirect effect of an expected upward price revision. In Fig.8.5, you will notice that the AS_1 curve shifts to the left to AS_2 and the price level rises to P_2 on account of oil price shock. This is known as the direct effect of a rise in the input cost. Now that the price level has gone up, the workers will revise the expected price level to P_2 . This pushes the AS curve further left to AS_3 and further rise in price level to P_3. The movement from AS_2 to AS_3 is known as the indirect effect of oil price shock.

8.8 CAUSES OF INFLATION

The causes of inflation are classified into two categories. They are demand side and supply side factors. These factors are discussed in this section.

Demand side Factors Causing Inflation:

Inflation is caused by a rise in aggregate demand over aggregate supply. Factors causing in aggregate demand over aggregate supply are as follows.

1. **Increase in Public Expenditure:** Public expenditure has been increasing by leaps and bounds since the emergence of the Welfare State in the second half of the 20th century. Particularly in mixed economies with a pre-dominant public sector, the rise in public expenditure has been phenomenal. The interventionist role of the State has increased over time and the governments are seen to be responsible for building social and economic infrastructure.

   For instance, Government expenditure has regularly increased in India. The Government expenditure in India has continuously increased since the beginning of economic planning. Rising government expenditure has been an important cause of inflation in India. The government or public expenditure was 15.3 per cent of GDP in 1960-61 and since then it has been on a continuous rise. In 1990-91, it was 31 per cent of the GDP. It further rose to 31.2 per cent in 2000-01. About 48% of the public expenditure in India is on non-developmental activities. Expenditure on defense, interest payments and governmental machinery constitutes non-developmental expenditure. Expanding governmental machinery, rising defense expenditure, expenditure on subsidies and growing public borrowing has contributed to the rise in non-developmental expenditure. While non-developmental expenditure increases aggregate demand in the economy, it does not increase aggregate supply and hence price rise.

2. **Deficit Financing:** There is no surplus or even a balanced budget. Governments do not spend according to their incomes. Government budgets are always deficit budgets which means, government expenditure is always greater than income. Increasing fiscal deficit is a general feature of the government budgets of developing countries. In order to finance the budget deficit, governments take recourse to public borrowing and also borrowing from their Central Banks. In order to raise resources for repaying public debt, governments may raise the existing tax rates or raise new taxes. Deficit financing leads to rise in public expenditure and hence rise in aggregate demand, thereby causing inflation.

   For example, the expenditure of the government of India has been more than its income. The gap between expenditure and income or the deficit is filled through deficit financing. The deficit is financed by borrowing funds from the banking system. If the borrowed funds are used for unproductive purposes, they will give rise to inflation. The government of India has used the borrowed funds for non-developmental purposes in a careless manner. The fiscal deficit during the year 2002-03 was Rs.145072 crore and in the year 2007-08, it was Rs.150948 crore.

3. **Increase in Money Supply:** Increase in money supply over and above the quantity of output produced in the economy would result in price rise. Irving Fisher's quantity theory of money explains how increase in money supply without a proportionate increase in output leads to rise in prices and fall in the value of money. Commenting on the effect of money supply on prices, Dr. C Rangarajan, former Governor of the Reserve Bank of India states that "Money has an impact on both output and price. The process of money creation is a process of credit creation. Money comes into existence because credit is given either to the government or the private sector or the foreign sector. Since credit facilitates the production process, it has favorable impact on output. But at the same time the increased money supply raises the demand with an upward pressure on prices". Dr. Rangarajan has therefore accepted the fact in India, price effect of money supply is greater than output effect.

   If increase in money supply was the only reason for rising prices then the rise in prices should be equal to the difference between the increase in money supply and increase in output. In the Indian context, no such relationship is found between the increase in money supply and the inflation rate. For instance, the inflation rate in the year 2004-05 was 5.1 per cent and the excess of money supply over real GDP was only 4.8 per cent. Going by Irving Fisher's formula, the inflation rate must be equal to excess money supply. However, in the Indian context, the inflation rate was slightly higher than the excess money supply. In subsequent years, it is surprising to find that the inflation rate has been much lower than the excess of money supply over real GDP. Divergence between excess money supply and the inflation rate is

brought out in Table 8.2. It clearly means that there are other factors also which lead to increase in prices.

Table 8.2

Comparison between Money Supply, Real GDP and Inflation Rate in India

Year	Increase in Money Supply M_3 (%)	Change in GDP (%) at 1999-2000 Prices	Excess of Money Supply Over Real GDP (%)	Inflation Rate (WPI based)
2003-04	-			
2004-05	12.3	7.5	4.8	5.1
2005-06	17.0	9.4	7.6	4.1
2006-07	21.3	9.6	11.7	5.9
2007-08	22.4	8.7	13.7	4.1

Source: IES 2007-08.

4. **Corruption and Black Money:** Financial corruption leads to creation of black money. Corruption by public servants and ministers amounts to unearned income and leakages in the system. Any leakage in the flow of production would reduce the total quantity of output and increase in aggregate demand. Further unreported incomes or black money would also cause rise in prices. Although unreported incomes are not entirely unearned incomes, they do contribute to excessive consumption expenditure and therefore cause rise in prices.

   According to Transparency International, India and Centre for Media Studies; India Corruption Report 2007, the below the poverty line households (BPL) in India paid a total bribe of Rs.8830 million to obtain public services in the year 2007. This amount is only the tip of the iceberg. Out of the 180 countries surveyed by Transparency International for corruption, India's rank was 74 with an index of 3.5 in the year 2006. An index of 10 indicates complete freedom from corruption and an index of zero indicates total corruption. Countries like Finland, Denmark and New Zealand with a CPI (corruption perception index) score of 9.4 were found to be least corrupt. Countries with a CPI score of less than five are considered to have serious problem. India is therefore one of the most seriously corrupted countries in the world. Myanmar and Somalia with a CPI score of two were the most corrupt countries of the world.

Supply Side Factors Causing Inflation:

Supply lags in the economy causes aggregate supply to fall short of aggregate demand and cause price rise. These supply side causes are as follows.

1. **Fluctuating Agricultural Growth:** The rate of growth of output of food grains must be equal to the rate of growth of demand for food

grains. Demand for food grains increases due to rise in incomes and rise in population. In poor countries, the income elasticity of demand for food grains is high. In poor countries, the agricultural sector is under-developed and largely dependent on nature. Thus when the agricultural sector fails to produce adequate output, the prices of agricultural goods rise.

In the Indian context, population growth rate and the rate of growth of agricultural output has remained the same in the last twenty years. Indian agriculture is dependent on monsoons. Thus bad and poor monsoons mean crop failure and rise in food prices leading to rise in the general price level in the country. In the year 2004-05, food production fell by seven per cent. In the subsequent two years, food production was by 5.2 and 4.2 per cent but once again fell to 0.9 per cent in the year 2007-08. The growth in real national income was much higher than the rise in food production thereby causing the prices to rise.

2. **Hoarding of Essential Goods:** When the agricultural sector fails, food pries begin to rise more rapidly than non-food prices. The problem of food price rise is compounded by hoarding of agricultural goods by traders. Artificial scarcity is created by both whole-sellers and retailers. As a result, there is much greater increase in prices than what is justified by real shortages. In the Indian context, both the big farmers and agricultural traders indulge in hoarding of agricultural goods during the periods of crop failure. In times of food scarcity, hoarding of food grains and other food products only helps the prices to rise further.

3. **Inadequate Rise in Industrial Production:** In the prosperity phase of the business cycle, there is a sustained rise in investment demand which causes a sustained rise in demand for industrial goods. If the capital goods industry fails to respond to the rise in demand, the prices of industrial goods will rise and when the prices of industrial goods goes up, the prices of consumer goods also rise. In the Indian context, during the period 1995-96 to 2001-02, the industrial sector registered slow growth. Inadequate increase in industrial production has also been an important cause of inflation in India.

8.9 EFFECT OF INFLATION

EFFECT OF INFLATION ON PRODUCTION AND ECONOMIC GROWTH, DISTRIBUTION OF INCOME AND WEALTH AND CONSUMPTION AND ECONOMIC WELFARE

Inflation is a theft of income of the unprotected segments of the society. Inflation is therefore a crime against the poor who experience a fall in their real incomes during a period of sustained price rise. Inflation

affects the three most important functions of an economy namely; production, consumption and distribution in an adverse manner.

(A) Effect of Inflation on Production and Economic Growth:

In economies where labor is largely unorganized, single digit or creeping inflation will increase profitability and therefore lead to greater investment, employment, output, income, demand and prices. This is because the wages of unorganized labor is not indexed to inflation. The real wages of unorganized labor will always fall overtime during inflation whether anticipated or not. In the case of unanticipated inflation, the real wages of organized labor will also fall and may be compensated with a time lag. The firms will gain during the intervening period between unanticipated price rise and its compensation to labor. Thus from the point of view of production and economic growth, single digit inflation has a positive impact.

(B) Effect of Inflation on Distribution of Income and Wealth:

The impact of inflation with regard to distribution of income and wealth is not even on all sections of the society. In case of labor, the section that is protected from inflation is the organized labor whose wages and salaries are indexed to inflation. But unorganized labor is not protected from inflation and therefore their real incomes decrease on account of inflation. Similarly debtors who have borrowed money on fixed interest gain on account of inflation because real interest rate falls during a period of rising inflation while creditors lose because at times the real interest rate may be zero and even negative. Similarly people holding ownership capital like equity shares, balanced and growth funds make capital gains because of rising profits of business enterprises while people holding creditor capital like bonds, debentures, fixed deposits and income funds lose due to the fall in real interest rates. Broadly speaking, during an inflationary period, households lose and firms gain. Hence it is said that during inflation the rich become richer and poor become poorer.

(C) Effect of Inflation on Consumption and Economic Welfare:

Inflation is known as a poor man's tax. It reduces the purchasing power of money earned by the poor people and hence their economic welfare. The workers who do not get compensated for the increase in price rise, experience reduction in real incomes because their nominal income remains constant over a long period of time. Even those workers who get compensated for the price rise lose purchasing power during the intervening period between the rise in prices and the compensation in price rise. For instance, the Central and State Government employees in India get compensated for inflation twice in a year and there is always a lag of six months before such compensations are given. Economic welfare depends upon consumption of goods and services and during a period of sustained rise in prices, the people are able to consume less goods and services. As a result, there is a loss of economic welfare.

8.10 MEASURES TO CONTROL INFLATION

Inflation is the result of excess demand over the supply of goods and services. Inflation management, however, needs both demand and supply management as well. Both monetary and fiscal measures can be adopted to control inflation.

Attempt to control inflation in India was made for the first time in the early sixties after experiencing rapid rise in prices during the second five year plan. However, measures taken by the government were not effective to control inflation. Prices continued to rise throughout the planning era except the first five year plan. One of the important tasks of the government was to maintain price stability under the new economic policy. Accordingly, the government undertook various measures to control inflation in the country. These measures were as follows:

(A) MONETARY POLICY MEASURES:

The Central Bank's policy with regard to cost and availability of credit is known as monetary policy. The RBI can raise the rate of interest and increase the cost of credit and also reduce the availability of credit. Quantitative instruments of credit control such as the bank rate, the cash reserve ratio and the statutory liquidity ratio can be used to reduce aggregate demand in the economy. Increase in the bank rate by the RBI will increase the market interest rate in the country. This will reduce the demand for credit and further lead to reduction in aggregate demand. Similarly, if the CRR and SLR are increased, the banks will have less money at their disposal to give loans and advances to the borrowers. Monetary expansion due to rising foreign exchange reserves was controlled by sterilization of foreign exchange reserves. Commenting on the effect of money supply on prices, Dr. C Rangarajan, former Governor of the Reserve Bank of India states that "Money has an impact on both output and price. Since credit facilitates the production process, it has favorable impact on output. But at the same time the increased money supply raises the demand with an upward pressure on prices". **Dr. Rangarajan has therefore accepted the fact in India that price effect of money supply is greater than output effect.**

1. **The Bank Rate:** Bank rate is the rate at which Reserve Bank provides loans to the commercial banks in the country. It is also called the discount rate because the Central Bank provides finance to commercial banks by rediscounting bills of exchange. The bank rate in India was 10 per cent in the 1980s. It was raised to 12 per cent in October 1991. The bank rate was not a very effective in controlling money supply in the pre-reform period. However, in the post reform period, the bank rate has been made more effective and in keeping with the objective of low inflation and high economic growth, the bank rate was reduced to 6 per cent in April 1998 and it continued to be retained at 6 per cent until July 2010. The bank rate however went up to 9.5 % as on 29th

March 2012 on account of inflationary pressures in the Indian economy. Thereafter, the bank rate was brought down to 8.25% in view of recessionary trend in the Indian economy. However, due to sustained inflationary pressures, the bank rate was raised to 10.25% in July 2013.

2. **The Repo and Reverse Repo Rates:** The bank rate as a credit control instrument is losing importance. The repo and reverse repo rates are becoming important in deciding interest rate trends in the Indian economy. The Repo (sale and repurchase agreement) is a swap deal involving the immediate sale of securities and simultaneous purchase of those securities at a future date at a predetermined price. These swap deals take place between the RBI and financial institutions. The repo or the repurchase rate is the rate at which the Central Bank provides funds to banks. Continuing with its anti-inflationary monetary policy stance, between March, 2010 and April, 2011, the RBI has raised the policy rates six times. The repo rate was 5% in March 2010 and in April, 2011 the repo rate went up to 6.75%. The repo rate was further raised to 8.5 % on 25th October, 2011 on the occasion of the Second Quarter Review of the Monetary Policy for the year 2011-12. The reverse repo rate is the rate at which the Central Bank takes funds from banks and the reverse repo rate in March 2010 was 3.5% and in April, 2011 was 5.75 per cent. In October, 2011, the reverse repo rate was raised to 7.5 per cent. In June 2013, the repo rate was 7.25 and the reverse repo rate was 6.25%. Until July 2013, these rates have been retained by the RBI.

3. **Open Market Operations:** Open market operations means the buying and selling of securities by the central bank. The sale of securities leads to contraction of credit and purchase of securities lead to credit expansion. The RBI uses switch operations for buying and selling government securities. Switch operations involve purchase of one loan against sale of another. The use of switch operations prevents unrestricted increase in money supply. Recently, in January 2011, when the SLR was reduced from 25% to 24%, the RBI neutralized the excess liquidity through OMOs. The SLR was further reduced to 23% in the year 2012 and continues to remain at 23%. The RBI conducted Open Market Sales of Government of India Securities of Rs.12,000 crore on July 18, 2013.The RBI, however, could gain Rs. 2,532 crore from the auction, as rest of the bids received had quoted yield rates higher then acceptable to the RBI.

4. **The Cash Reserve Ratio:** The CRR is an effective instrument of credit control. It refers to the cash which the banks have to maintain with the Reserve Bank as a certain percentage of their demand and time liabilities. Changes in the CRR bring about changes in the loanable resources of the banks, particularly the commercial banks. In the late 1980s, there was a rapid growth in money supply and hence the CRR was raised from 10 per cent to 15 per cent. In the post reform period, the CRR was brought down according to the recommendation

of the Narasimham Committee to below the 10 per cent level. However, in August 1994, the CRR was raised to 15 per cent to control the inflationary trends in the economy. Since then inflationary pressures were reduced in the economy and accordingly the CRR was progressively reduced to 4.5 per cent in June 2003. The RBI had to increase the CRR to five per cent in October 2004 and further to 7.5 per cent in October 2007. In August 2008, the CRR was raised to nine per cent. As part of the anti-recessionary policy in the wake of global financial crisis of 2008-09, the CRR was reduced to five per cent in January, 2009. It was raised to 5.75 per cent in February, 2010 and further to six per cent in April 2010 as inflationary pressures started building in the economy on account of the huge fiscal stimulus that was given by the government in the aftermath of the financial crisis of 2008-09 and its negative impact on economic growth in India. In the first quarter review of the monetary policy for the year 2010-11, released in July 2010, the CRR was retained at 6 per cent by the RBI. Subsequently, the CRR was reduced to 4.75 per cent in March 2012 to ease liquidity conditions in the money market. In June 2013, the CRR was 4.0% and it continues to be 4 % in July 2013.

5. **The Statutory Liquidity Ratio:** The Banking Regulation (Amendment) Act 1962 provides for maintaining a minimum SLR of 25% by the banks against their net demand and time liabilities. The SLR is fixed at 25% for co-operative banks, non-scheduled banks and the regional rural banks. In case of commercial banks, it can be raised to 40%. The RBI has used this instrument quite often during the 70s and 80s. In September 1990, the SLR was raised to 38.5 per cent and it remained at this level up to January 1993. This was done to control inflationary pressures and make larger resources available to the government. The Narasimham Committee recommended reduction of SLR to 25 per cent and accordingly the SLR was reduced to 25% in a phased manner in October, 1997. In November 2008, the SLR was further reduced to 24 per cent and in October, 2009, the SLR was restored to 25 per cent once again. However, in December 2010, the SLR was once again reduced to 24%. The SLR was further reduced to 23% in the year 2012 and continues to remain at 23%.

(B) FISCAL POLICY:

The fiscal policy of a country refers to the policy of the Government with regard to income and expenditure. Expansionary fiscal policy is adopted during the periods of economic stability or during the times of recession. In contrast, a tight fiscal policy is adopted when the economy is in the grip of inflation. In order to promote growth, the government may reduce both direct and indirect taxes and increase the level of aggregate demand. The government may also increase public expenditure to increase the level of aggregate demand and achieve a higher economic growth rate. However, in order to control inflation, the Government may raises taxes, add new taxes and reduce public expenditure by reducing the fiscal deficit.

The Government of India made attempts to remove fiscal imbalance from 1991-92 by bringing down fiscal deficit from 6.6 per cent to 4.7 per cent of GDP. However, in 1993-94 the fiscal deficit rose to 6.4 per cent. It was 5.9 per cent in 2001-02. In 2005-06, the fiscal deficit was brought down to below the five percent mark. During the decade 1995-2005, the government has been able to keep the average inflation rate below the five per cent level. However, between 2005-06 and 2012-13, the government had failed to control inflation rate and fiscal deficit once again went up to 6.0 and 6.5 % in the years 2008-09 and 2009-10. The fiscal deficit during the year 2010-11 was Rs.3, 69,043crores and in the year 2011-012, it was Rs.4, 12,817crores. The budget for 2010-11 announced going back to fiscal consolidation and the projected fiscal deficit for 2010-11, 2011-12 and 2012-13 is 5.5%, 4.8% and 4.1 % respectively. The actual fiscal deficit figures in the years 2010-11 and 2011-12 were below the projected figures. However, fiscal deficit in 2008-09 and 2009-10, had gone up due to fiscal intervention made by the Government of India in the wake of the Global Financial Crisis. Near double digit inflation and a very high food price inflation in the last three years is the price paid by the people of India for the fiscal profligacy of the Government of India.

(C) SUPPLY SIDE MEASURES:

Inflation is the result of mismatch between aggregate demand and aggregate supply. Both monetary and fiscal policies can act on the demand and supply side through interest rates, money supply, taxation and public expenditure. However, some measures can directly influence the supply of goods and services. These measures are explained below.

1. **Public Distribution System:** The Public Distribution System was established in the country to provide essential consumer goods particularly to the poor people at low prices. The entire country is covered by this system. However, one cannot say that the system has been able to control price rise. The agricultural price support policy of the government has worked against the objective of price stability. As a result of faulty agricultural policy, food production in India had failed to keep pace with rising demand for food. The recently enacted Food Security Act by the Government of India promises cheap and heavily subsidized food for about 65 % of the population. It remains to be seen whether this measure will bring down food price inflation in the coming years.

2. **Import of Essential Commodities:** In order to improve the supply of essential commodities, the government of India had allowed food imports. During 1995-96, imports of edible oils, palmolein, sugar and pulses were allowed. The Food Corporation of India sold rice and wheat in the open market to control market prices of these food grains. Excise duties on a number of industrial products were reduced to improve the supply of manufactured goods.

3. **Capacity Utilization and Increase in Aggregate Supply:** The productive capacity of the economy should be fully utilized. Widespread unemployment can only lead to rising price level because the unemployed generates demand for goods and services without contributing to their production. The productive apparatus in the country consisting of farm lands, industries, services, forestry, fishing, mining etc must be fully utilized. Under utilization of the potential and sometimes the actual productive capacity will lead to shortage of aggregate supply and hence price rise.

(D) INCOME POLICY:

Income freeze is an important policy measure to counter inflation. Here income freeze refers to inflationary income. Revision in wage rates on account of payment of dearness allowance to organized workers and revision in wage rates to all kind of workers due to rise in the cost of living is an example of wage push inflation. Factor incomes such as rent, wages, interest and profit should reflect the marginal productivity of the given factor. Policy that delinks factor incomes from the price level may help stabilizing the prices and may be the price level comes back to the original level in due course. However, the policy of freezing only wages will not be accepted by organized labor. The argument that wage rate must reflect the marginal productivity of labor is economically sound. But the same argument must be extended to other factors of production.

8.11 SUMMARY

1. The classical economists emphasized the medium of exchange function of money According to the classical economists like J.S. Mill. David Hume and Irving Fisher, the demand for money arises since money facilitates the exchange of real goods and services among individuals. Hence money is demanded for buying and selling goods and services or for spending over a period of time The classical economists believed that the demand for money depends on objective factors like the volume of exchange transactions of goods and services produced and supplied during a given period of time, the amount of money needed to buy the goods and services and by the velocity of circulation.

2. According to Fisher, the demand for money means the amount of money to be held to undertake a given volume of transactions over a period of time. Fisher's equation of exchange is given as MV = PT, where M is the money supply, V the transaction velocity, T transactions and 'P' the price level. 'PT' in the equation represents the demand for money and MV stands for the supply of money.

3. The Cambridge approach or the cash balances approach was given by Marshall, Pigou, Robertson and Keynes. These economists stressed the store of value function of money. This approach concentrates on what individual want to hold for satisfying the transaction motive and

precautionary motive. According to this approach, the demand for money refers to the cash balances held by all individuals in an economy. The following factors influence the decisions of individuals in holding cash.

4. A sustained rise in the general price level over a period of time is known as inflation. Conversely, a sustained fall in the general price level would be known as deflation. Inflation is measured in terms of a price index.

5. Broadly speaking, there are three types of inflation which constitutes the causes of inflation. Demand side factors will cause demand pull inflation, supply side factors will cause cost push inflation and structural factors will cause structural inflation.

6. Inflation is the result of excess demand over the supply of goods and services. Inflation management, however, needs both demand and supply management as well. Both monetary and fiscal measures can be adopted to control inflation.

8.12 QUESTIONS

1. Explain Fisher's approach to demand for money.
2. Explain Cambridge approach to demand for money.
3. Discuss the meaning and types of inflation.
4. What are the causes of inflation?
5. Differentiate between demand pull and cost push inflation.
6. Discuss various effects of inflation.
7. What measures can be adopted to control inflation?

❖❖❖❖

QUESTION PAPER PATTERN
Business Economics Semester III

Maximum Marks: 100 Marks
Time: 3 Hours
Note :
1) Attempt all Questions
2) All Questions carry equal marks
3) Attempt any two questions out of three in each of question 2, 3, 4 & 5

Question No	Particular	Marks
Q-1	**Objective Questions** A) Conceptual questions (Any Five out of Eight) (Two from each module) B) Multiple Choice Questions (10 questions at least two from each Module)	 10 Marks 10 Marks
Q.2 (From Module I)	A) Full Length Question B) Full Length Question C) Full Length Question	20 Marks
Q.3 (From Module II)	A) Full Length Question B) Full Length Question C) Full Length Question	20 Marks
Q.4 (From Module III)	A) Full Length Question B) Full Length Question C) Full Length Question	20 Marks
Q.5 (From Module IV)	A) Full Length Question B) Full Length Question C) Full Length Question	20 Marks