MACRO ECONOMICS-II

BA ECONOMICS

(IV SEMESTER)

CORE COURSE

(2011 ADMISSION ONWARDS)

UNIVERSITY OF CALICUT

SCHOOL OF DISTANCE EDUCATION

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UNIVERSITY OF CALICUT

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STUDY MATERIAL

B.A. ECONOMICS

(2011 ADMISSION ONWARDS)

IV SEMESTER CORE COURSE:

MACRO ECONOMICS-II

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Module I

Theories of Money

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MONEY

The word 'money' is derived from the Latin word 'Moneta' which was the surname of the Roman Goddess of Juno in whose temple at Rome, money was coined. The origin of money is lost in antiquity. Even the primitive man had some sort of money. The type of money in every age depended on the nature of its livelihood. In a hunting society, the skins of wild animals were used as money. The pastoral society used livestock, whereas the agricultural society used grains and foodstuffs as money. The Greeks used coins as money.

Stages in the evolution of money

The evolution of money has passed through the following five stages depending upon the progress of human civilization at different times and places.

1. **Commodity money**

   Various types of commodities have been used as money from the beginning of human civilization. Stones, spears, skins, bows and arrows, and axes were used as money in the hunting society. The pastoral society used cattle as money. The agricultural society used grains as money. The Romans used cattle and salt as money at different times. The Mongolians used squirrel skins as money. Precious stones, tobacco, tea shells, fishhooks and many other commodities served as money depending upon time, place and economic standard of the society.

   The use of commodities as money had the following defects.

   - All the commodities were not uniform in quality, such as cattle, grains, etc. Thus lack of standardization made pricing difficult.
   - It is difficult to store and prevent loss of value in the case of perishable commodities.
   - Supplies of such commodities were uncertain.
   - They lacked in portability and hence were difficult to transfer from one place to another.
   - There was the problem of indivisibility in the case of such commodities as cattle.

2. **Metallic money**

   With the spread of civilization and trade relations by land and sea, metallic money took the place of commodity money. Many nations started using silver, gold, copper, tin, etc. as money.

   But metal was an inconvenient thing to accept, weigh, divide and assess in quality. Accordingly, metal was made into coins of predetermined weight. This innovation is attributed to King Midas of Lydia in the eighth century B C. But gold coins were used in India

many centuries earlier than in Lydia. Thus coins came to be accepted as convenient method of exchange.

As the price of gold began to rise, gold coins were melted in order to earn more by selling them as metal. This led governments to mix copper or silver in gold coins since their intrinsic value might be more than their face value. As gold became dearer and scarce, silver coins were used, first in their pure form and later on mixed with alloy or some other metal.
But metallic money had the following limitations.

(i) It was not possible to change its supply according to the requirements of the nation both for internal and external use.

(ii) Being heavy, it was not possible to carry large sums of money in the form of coins from one place to another by merchants.

(iii) It was unsafe and inconvenient to carry precious metals for trade purposes over long distances.

(iv) Metallic money was very expensive because the use of coins led to their debasement and their minting and exchange at the mint cost a lot to the government.

3. Paper money

The development of paper money started with goldsmiths who kept strong safes to store their gold. As goldsmiths were thought to be honest merchants, people started keeping their gold with them for safe custody. In return, the goldsmiths gave the depositors a receipt promising to return the gold on demand. These receipts of the goldsmiths were given to the sellers of commodities by the buyers. Thus receipts of the goldsmith were a substitute for money. Such paper money was backed by gold and was convertible on demand into gold. This ultimately led to the development of bank notes.

The bank notes are issued by the central bank of the country. As the demand for gold and silver increased with the rise in their prices, the convertibility of bank notes into gold and silver was gradually given up during the beginning and after the First World War in all the countries of the world. Since then the bank money has ceased to be representative money and is simply 'fiat money' which is inconvertible and is accepted as money because it is backed by law.

4. Credit money

Another stage in the evolution of money in the modern world is the use of the cheque as money. The cheque is like a bank note in that it performs the same function. It is a means of transferring money or obligations from one person to another. But a cheque is different from a bank note. A cheque is made for a specific sum, and it expires with a single transaction. A cheque is not money. It is simply a written order to transfer money. However, large transactions are made through cheques these days and bank notes are used only for small transactions.

5. Near money

The final stage in the evolution of money has been the use of bills of exchange, treasury bills, bonds, debentures, savings certificates, etc. They are known as 'near money'. They are close substitutes for money and are liquid assets. Thus, in the final stage of its evolution money became intangible. It's ownership in now transferable simply by book entry.

Definition of Money

To give a precise definition of money is a difficult task. Various authors have given different definition of money. According to Crowther, "Money can be defined as anything that is generally acceptable as a means of exchange and that at the same time acts as a measure and a store of value". Professor D H Robertson defines money as "anything which is widely accepted in payment for goods or in discharge of other kinds of business obligations.

From the above two definitions of money two important things about money can be noted.

Firstly, money has been defined in terms of the functions it performs. That is why some economists defined money as "money is what money does". It implies that money is anything which performs the functions of money.

Secondly, an essential requirement of any kind of money is that it must be generally acceptable to every member of the society. Money has a value for 'A' only when he thinks that 'B' will accept it in exchange for the goods. And money is useful for 'B' only when he is confident that 'C' will accept it in settlement of debts. But the general acceptability is not the physical quality possessed by the good. General acceptability is a social phenomenon and is conferred upon a good when the society by law or convention adopts it as a medium of exchange.

Functions of Money

The major functions of money can be classified into three. They are: The primary functions, secondary functions and contingent functions.

I. Primary functions of money

The primary functions of money are;

- Medium of exchange and
- Measure of value

1. Medium of exchange

The most important function of money is that it serves as a medium of exchange. In the barter economy commodities were exchanged for commodities. But it had experienced many difficulties with regard to the exchange of goods and services. To undertake exchange, barter economy required 'double coincidence of wants'. Money has removed this problem. Now a person A can sell his goods to B for money and then he can use that money to buy the goods he wants from others who have these goods. As long as money is generally acceptable, there will be no difficulty in the process of exchange. By serving a very convenient medium of exchange money has made possible the complex division of labour or specialization in the modern economic organization.

2. Measure of value

Another important function of money is that the money serves as a common measure of value or a unit of account. Under barter system there was no common measure of value and the value of different goods were measured and compared with each other. Money has solved this difficulty and serves as a yardstick for measuring the value of goods and services. As the value of all goods and services are measured in terms of money, their relative values can be easily compared.

II. Secondary functions

The secondary functions of money are;

1. Standard of deferred payments

Another important function of money is that it serves as a standard for deferred payments. Deferred payments are those payments which are to be made in future. If a loan is taken today, it would be paid back after a period of time. The amount of loan is measured in terms of money and it is paid back in money. A large amount of credit transactions involving huge future payments are made daily. Money performs this function of standard of deferred payments because its value remains more or less stable.

When the price changes the value of money also changes. For instance, when the prices are falling, value of money will rise. As a result, the creditors will gain in real terms and the debtors will lose. Conversely, when the prices are rising (or, value of money is falling) creditors will be the losers. Thus if the money is to serve as a fair and correct standard of deferred payments, its value must remain stable. Thus when there is severe inflation or deflation, money ceases to serve as a standard of deferred payments.

2. Store of value

Money acts as a store of value. Money being the most liquid of all assets is a convenient form in which to store wealth. Thus money is used to store wealth without causing deterioration or wastage. In the past gold was popular as a money material. Gold could be kept safely without deterioration.

Of course, there are other assets like houses, factories, bonds, shares, etc., in which wealth can be stored. But money performs as a different thing to store the value. Money being the most liquid of all assets has the advantage that an individual or a firm can buy with it anything at any time. But this is not the case with other assets. Other assets like buildings, shares, etc., have to be sold first and converted into money and only then they can be used to buy other things. Money would perform the store of value function properly if it remains stable in value.

In short, money has removed the difficulties of barter system, namely, lack of double coincidence of wants, lack of division and lack of measure and store of value and lack of a standard of deferred payment. It has facilitated trade and has made possible the complex division of labour and specialization of the modern economic system.

III. Contingent functions

The important contingent functions of money are;

1. **Basis of credit**

   It is with the development of money market the credit market began to flourish.

2. **Distribution of national income**

   Being a common measure of value, money serves as the best medium to distribute the national income among the four factors of production.

3. **Transfer of value**

   Money helps to transfer value from one place to another.

4. **Medium of compensations**

   Accidents and carelessness cause damage to the property and life. Compensation can be paid to such damages in terms of money.

5. **Liquidity**

   Liquidity means the ready purchasing power or convertibility of money in to any commodity. Money is the most liquid form of all assets.

6. **Money guide in production and consumption.**

   Utility of goods and services can be expressed in terms of money. Similarly, marginal productivity is measured in terms of prices of goods and factors. Thus money become the base of measurement and which directs the production and consumption.

7. **Guarantor of solvency**

   Solvency refers to the ability to pay off debt. Persons and firms have to be solvent while doing the business. The deposits of money serves as the best guarantor of solvency.

Forms of money

Money of account

Money of account is the monetary unit in terms of which the accounts of a country are kept and transactions settled, ie., in which general purchasing power, debts and prices are expressed. The rupee is, for instance, our money of account. Sterling is the money of account if Great Britain and mark that of Germany. Money of account need not, however, be actually circulating in the country. During 1922-24 the mark in Germany depreciated in such an extent that it ceased to be the money of account.

Limited and unlimited legal tender

Money which has legal sanction is called legal tender money. So its acceptance is compulsory. It is an offence to refuse to accept payment in legal tender money. Thus a legal tender currency is one in terms of which debts can be legally paid. *A currency is unlimited legal tender when debts upon any amount can be paid through it. It is limited legal tender when payments only up to a given limit can be made by means of it*. For example, rupee coins and rupee notes are unlimited legal tender in India. Any amount of transaction can be made by using them. But coins of lower amounts like 25 or 50 paisa are only limited legal tender (up to Rs.25/-). One can refuse to receive beyond this amount. When a coin is worn out and become light beyond a certain limit, then it ceases to be a legal tender. When one rupee and half-rupee coins are more than 20% below the standard weight they are no longer legal tender.

Standard money

Standard money is one in which the value of goods as well as all other forms of money are measured. In India prices of all goods are measured in terms of rupees. Moreover, the other forms of money such as half-rupee notes, one rupee notes, two rupee notes, five rupee notes etc. are expressed in terms of rupees. Thus rupee is the standard money of India.

Standard money is always made the unlimited legal tender money. In old days the standard money was a ***full-bodied money***. That is its face value is equal to its intrinsic value (metal value). But now-a-days in almost all countries of the world, even the standard money is only a ***token money***. That is, the real worth of the material contained in it is very much less than the face value written in it.

Token money

Token money is a form of money in which the metallic value of which is much less than its real value (or face value). Rupees and all other coins in India are all token money.

Bank money

Demand deposits of banks are usually called bank money. Bank deposits are created when somebody deposits money with them. Banks also creates deposits when they advance loans to the businessmen and traders. These demand deposits are the important constituent of the money supply in the country.

It is important to note that bank deposits are generally divided into two categories: demand deposits and time deposits. Demand deposits are those deposits which are payable on demand through cheques and without any serving prior notice to the banks. On the other hand, time deposits are those deposits which have a fixed term of maturity and are not withdrawable on demand and also cheques cannot be drawn on them. Clearly, it is only demand deposits which serve as a medium of exchange, for they can be transferred from one person to another through drawing a cheque on them as and when desired by them. However, since time or fixed deposits can be withdrawn by forgoing some interest and can be used for making payments, they are included in the concept of broad money, generally called M3.

Inside money is a term that refers to any debt that is used as money. It is a liability to the issuer. The net amount of inside money in an economy is zero. At the same time, most money circulating in a modern economy is inside money.

Outside money is a term that refers to money that is not a liability for anyone "inside" the economy. It is held in an economy in net positive amounts. Examples are gold or assets denominated in foreign currency or otherwise backed up by foreign debt, like foreign cash, stocks or bonds. Typically, the private economy is considered as the "inside", so government-issued money is also "outside money."

Theories of Demand for money

Why people have demand for money to hold is an important issue in macroeconomics. The level of demand for money not only determines the rate of interest but also the level of prices and national income of the economy. The demand for money arises from two important functions of money. The first is that money acts as a medium of exchange and the second is that it is a store of value. Thus individuals and businesses wish to hold money partly in cash and partly in the form of assets.

What determines the changes in demand for money is a major issue. There are two views. The first is the ‘scale’ view which is related to the impact of the income or wealth levels upon the demand for money. The demand for money is directly related to the income level. The higher the income level, the greater will be the demand for money.

The second is the ‘substitution’ view which is related to relative attractiveness of assets that can be substituted for money. According to this view, when alternative assets like bonds become unattractive due to fall in interest rates, people prefer to keep their assets in cash, and the demand for money increases, and vice versa. The scale and substitution view combined together have been used to explain the nature of the demand for money which has been split into the transactions demand, the precautionary demand and the speculative demand.

Classical economists considered money as simply a means of payment or medium of exchange. In the classical model, people, therefore, demand money in order to make payments for their purchases of goods and services. In other words, they want to keep money for transaction purposes. On the other hand J M Keynes also laid stress on the store of value function of money. According to him, money is an asset and people want to hold it so as to take advantage of changes in the price of this asset, that is, the rate of interest. Therefore Keynes emphasized another motive for holding money which he called speculative motive. Under speculative motive, people demand to hold money balances to take advantage from the future changes in the rate of interest or what means the same thing from the future changes in bond prices.

An essential point to be noted about people's demand for money is that what people want is not 'nominal money' holdings, but 'real money balances'. This means that people are interested in the purchasing power of their money balances, that is, the value of money balances In terms of goods and services which they could buy. Thus people would not be interested in merely nominal money holdings irrespective of the price level, that is, the number of rupee notes and the bank deposits. If with the doubling of price level, nominal money holdings are also doubled, their real money balances would remain the same. If people are merely concerned with nominal money holdings irrespective of price level, they are said to suffer from 'money illusion'.

The demand for money has been a subject of lively debate in economics because of the fact that monetary demand plays an important role in the determination of the price level, interest and income. Till recently, there were three approaches to demand for money, namely, transaction approach of Fisher, cash balance approach of Cambridge economics, Marshall and Pigou and Keynes theory of demand for money. However, in recent years, Baumol, Tobin and Friedman have put forward new theories of demand for money.

FISHER'S QUANTITY THEORY OF MONEY: THE CASH TRANSACTIONS APPROACH

The Quantity Theory of Money states that the quantity of money is the main determinant of the price level or the value of money. Any change in the quantity of money produces an exactly proportionate change in the price level. According to Fisher, "other things remaining the same, as the quantity of money in circulation increases, the price level also increases in direct proportion and the value of money decreases and vice versa". If the quantity of money doubled, the price level also double and the value of money will be one half. On the other hand, if the quantity of money is reduced by one half, the price level will also be reduced by one half and the value of money will be twice.

Fisher has explained his theory in terms of his equation of exchange:

$$MV = PT$$

Where, M=the quantity of money in circulation

V = transactions velocity of circulation

P = average price level.

T = the total number of transactions.

According to Fisher, the nominal quantity of money M is fixed by the Central Bank of the country and is therefore treated as an exogenous variable which is assumed to be given quantity in a particular period of time. Further, the number of transactions in a period is a function of national income; the greater the national income, the larger the number of transactions required to be made. Since Fisher assumed full-employment of resources prevailed in the economy, the volume of transactions T is fixed in the short run.

Fischer extended the equation by including the credit money. That is;

$$PT = MV + M^{I}V^{I}$$

Where, M^{I} = total quantity of credit money

V^{I} = the velocity of circulation of credit money

This equation equates the demand for money (PT) to the supply of money ($MV + M^{I}V^{I}$). The total volume transactions multiplied by the price level represents the demand for money. According to Fischer, $PT = \sum PQ$. In other words, price level (P) multiplied by quantity bought (Q) by the community ($\sum$) gives the total demand for money. This equals the total supply of money in the community consisting of the quantity of total money M and its velocity of circulation V plus the quantity of credit money M^{I} and its velocity of circulation V^{I}. Thus total value of purchases (PT) in a year is measured by $MV + M^{I}V^{I}$. Thus equation of exchange is $PT = MV + M^{I}V^{I}$. In order to find out the effect of the quantity of money on the price level, or the value of money, we write the equation as;

$$P = \frac{MV + MIVI}{T}$$

Fisher points out that the price level (P) varies directly with the quantity of money ($M+M^{I}$), provided the volume of trade (T) and velocity of circulation (V, V^{I}) remain unchanged. This implies that if M and M^{I} doubled, while V, V^{I} and T remain constant, P is also doubled, but the value of money (1/P) is reduced to half.

Criticisms of the theory

Fischer's quantity theory of money has been subjected to the following criticisms.

1. **Truism.** According to Keynes, "the quantity theory of money is a truism". Because, it states that the total quantity of money paid for goods and services ($MV + M^{I}V^{I}$) must equals their value (PT). But it cannot be accepted today that a certain percentage change in the quantity of money leads to the same percentage change in the price level.
2. **Other things not equal.** The assumption of 'other things remaining the same' is not real. In real life, V, V^{I} and T are not constant. Moreover, they are not independent of M, M^{I} and P.
3. **Constants relate to different time.** Prof. Halm criticizes Fisher for multiplying M and V because M relates to a point of time and V to a period of time. The former is a static concept ant the latter is a dynamic concept. Therefore, it is technically inconsistent to multiply these two non-comparable factors.
4. **Fails to measure value of money.** Fisher's equation does not measure the purchasing power of money but only cash transactions, that is, the volume of business transactions of all kinds or what Fisher calls the volume of trade in the community during

a year. But value of money relates to transactions for the purchase of goods and services for consumption. Thus the theory fails to measure the value of money.

5. **Weak theory.** According to Crowther, the quantity theory is weak in many respects. First, it cannot explain 'why' there are fluctuations in the price level in the short run. Second, it gives undue importance to the price level as if changes in prices were the most critical and important phenomenon of the economic system. Third, it places a misleading emphasis on the quantity of money as the principal cause of changes in the price level during the trade cycle. Prices may not rise despite increase in the quantity of money during depression; and they may not decline with reduction in the quantity of money during boom. Further, low prices during depression are not caused by shortage of quantity of money, and high prices during prosperity are not caused by abundance of quantity of money.

6. **Neglects interest rate.** One of the main weaknesses of Fisher's quantity theory on money is that it neglects the role of the rate of interest as one of the causative factors between money and prices. Fisher's equation of exchange is related to an equilibrium situation in which rate of interest is independent of the quantity of money.

Friedman's Restatement of the Quantity Theory of Money

Following the publication of Keynes's General Theory of Employment Interest and Money in 1936, economists discarded the traditional quantity theory of money. But at the University of Chicago the quantity theory continued to be a central and vigorous part of discussion throughout 1930's and 1940's. At Chicago, Milton Friedman, Henry Simons, Lloyd Mints Frank Knight and Jacob Viner taught and developed 'a more subtle and relevant version' of the quantity theory of money in which the quantity theory was connected and integrated with general price theory. The foremost exponent of the Chicago version of the quantity theory of money who led to the so-called "Monetarist Revolution" is Professor Friedman. In his essay "The Quantity Theory of Money – A Restatement" published in 1956, he set down a particular model of quantity theory of money.

Friedman's Theory

In his reformulation of the quantity theory,' Friedman asserts that "the quantity theory is in the first instance a theory of demand for money. It is not a theory of output, or of money income, or of the price level". The demand for money on the part of ultimate wealth holders is formally identical with that of the demand for consumption service. He regards the amount of real cash balances(M/P) as a commodity which is demanded because it yields services to the person who hold it. Thus money is an asset or capital good. Hence the demand for money forms part of capital of wealth theory. a

For ultimate wealth holders, the demand for money, in real terms, is a function primarily of the following variables:

1. *Total wealth*. Individual's demand for money directly depends on his total wealth. - Indeed, the total wealth of an individual represents an upper limit of holding money by an individual and is similar to the budget constraint of the consumer in the theory of demand. According to Friedman income is a surrogate or wealth. The greater the wealth of an individual, the more money he will demand for transactions and other purposes. As a country, becomes richer, its demand for money for transactions and

other purposes will increase. Since as compared to non-human wealth, human wealth is much less liquid, Friedman has argued that as the proportion of human wealth in the total wealth increases, there will be a greater demand for money to make up the liquidity of human wealth.

2. *The division of wealth between human and non-human forms*. The major source of wealth is the productive capacity of human beings which is human wealth. But the conversion of human wealth into non-human wealth or the reverse is subject to institutional constraints. This can be done by using current earnings to purchase non-human wealth or by using non-human wealth to finance the acquisition of skills. Thus the fraction of total wealth in the form of non-human wealth is an additional important variable. Friedman calls this ratio of wealth to income as 'w'.

3. *The expected rates of return on money and other assets*. These rates of return are the counter parts of the prices of a commodity and its substitutes and complements in the theory of consumer demand. The nominal rate of return may be zero as it generally is on currency, or negative as it sometimes is on demand deposits, subject to net service charges, or positive as it is on demand deposits on which interest is paid, and generally on time deposits. The nominal rate of return on other assets consists of two parts: first any currently paid yield or cost, such as interest on bonds, dividends on equities and costs of storage on physical assets, and second, changes in the price of these assets which become especially important under conditions of inflation or deflation.

4. *Other variables*. Variables other than income may affect the utility attached to the services of money which determine liquidity proper. Tastes and preferences of wealth holders, trading in existing capital goods by ultimate wealth holders are other variables determine the demand for money along with other forms of wealth. Such variables are noted as 'u' by Friedman.

   Broadly speaking, total wealth includes all sources of income or consumable services. It average expected yield on wealth during its life time.

   Wealth can be held in five different forms: money, bonds, equities, physical goods, and human capital. Each form of wealth has a unique characteristic of its own and a different yield.

   1. *Money* is taken in the broadest sense to include currency, demand deposits and time deposits which yield interest on deposits. Thus money is a luxury good. It also yields real return in the form of convenience, security, etc. to the holder which is measured in terms of the general price level (P).

   2. *Bonds* are defined as claim to a time stream of payments that are fixed in nominal units.

   3. *Equities* are defied as a claim to a time stream of payments that are fixed in real units.

   4. *Physical goods or non-human goods* are inventories of producer and consumer durable.

   5. *Human capital* is the productive capacity of human beings.

Thus each form of wealth has a unique characteristic of its own and a different yield either explicitly in the form of interest, dividends, wages and salaries, etc. or implicitly in the form of services of money measured in terms of P, and inventories. The present discounted value of these expected income flows from these five forms of wealth constitutes the current value of wealth which can be expressed as;

$$W = \frac{y}{r}$$

Where W is the current value of total wealth, Y is the total flow of expected income from the five forms of wealth, and r is the interest rate. Friedman in his latest empirical study *Monetary Trends in the United States and the United Kingdom* (1982) gives the following demand function for money for an individual wealth holder with slightly different notations from his original study of 1956 as;

$$M/P = f(Y, w, R_m, R_b, R_e, g_p, u)$$

Where M is the total stock of money demanded

P is the price level

Y is the real income

w is the fraction of wealth in non-human form

R_m is the expected nominal rate of return on money

R_b is the expected rate of return on bonds including expected changes in their prices

R_e is the expected nominal rate of return on equities, including in expected changes in their prices.

$g_p = (1/P)\ (dP/dt)$ is the expected rate of change of prices of goods and hence the expected nominal rate of return on physical assets and

u stands for variables other than income that may affect the utility attached to the services of money.

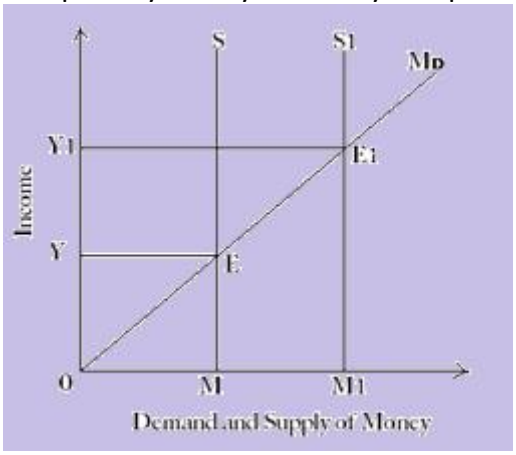
The aggregate demand function for money is the summation of individual demand functions with M and y referring to per capita money holdings and per capita real income respectively, and w to the fraction of aggregate wealth in non-human form.

The demand function for money leads to the conclusion that a rise in the expected yields on different assets reduces the amount of money demanded by a wealth holder, and that an increase in wealth rises the demand for money. The income to which cash balances (M/P) are adjusted is the expected long term level of income rather than the current income being received. Empirical evidence suggests that the income elasticity of demand for money is greater than unity which means that income velocity is falling over the long run. This means that the long run demand for money function is stable. In other words, the interest elasticity of the long run demand function for money is negligible.

In Friedman's restatement of the quantity theory of money, the supply of money is independent of the demand for money. The supply of money is unstable due to the actions

of the monetary authorities. On the other hand, demand for money is stable. It means that money which people want to hold in cash or bank deposits is related in a fixed way to their permanent income. If the central bank increases the supply of money by purchasing securities, people who sell securities will find that their holdings of money have increased in relation to their permanent income. They will therefore, spend their excess holdings of money partly on assets and partly on consumer goods and services. This spending will reduce their money balances and at the same time raise the national income. On the contrary, a reduction in the money supply by selling securities by the central bank will reduce the holdings of money of the buyers of the securities in relation to their permanent income. They will, therefore, raise their money holdings partly by selling their assets and partly by reducing their consumption expenditure on goods and services. This will tend to reduce the national income. Thus in both cases, the demand for money remains stable.

According to Friedman, a change in the supply of money causes a proportionate change in the price level or income or in both. Given the demand for money, it is possible to predict the effect of changes in the supply of money on total expenditure and income. If the economy is operating at less than full employment level, an increase in the supply of money will raise output and employment with a rise in total expenditure. This is possible only in the short run. Friedman's quantity theory of money is explained in terms of the following figure.



In the figure income (Y) is measured on the vertical axis and the demand and supply of money are measured on the horizontal axis. M_D is the demand for money curve which varies with income. MS is the money supply curve which is perfectly inelastic to changes in income. The two curves intersect at E and determine the equilibrium OY. If the money supply rises, the MS curve shifts to the right to M_1S_1. As a result, the money supply is greater than the demand for money which raises which raises the total expenditure until new equilibrium is established at E_1. And the income rises to OY_1.

Thus Friedman presents the quantity theory as the theory of the demand for money and the demand for money is assumed to depend on asset prices or relative returns and wealth or income. He shows how a stable demand for money becomes a theory of prices and output.

KEYNES' THEORY OF MONEY AND PRICES

The classical quantity theory of money maintains that there is a direct and proportionate relationship between the quantity of money and prices. In other words, if money supply is doubled,

the price level will be doubled and the value of money will be halved and vice versa. Keynes in his *General Theory* (1936) criticized the classical theory and advocates the view that there is no direct, simple and predictable relationship between the quantity of money and its value or prices. Keynes provided the causal process by which changes in the quantity of money brings changes in the price level.

Keynes used the term 'Liquidity Preference' for demand for money. How much of his income or resources will a person hold in the form of ready money (cash or non-interest paying bank deposits) and how much will he part with or lend depends upon what Keynes calls his liquidity preference. *Liquidity preference means the demand for money to hold or the desire of the public to hold cash*.

Motives for Liquidity preference

Liquidity preference of a particular individual depends upon several considerations. The question is why should the people hold their resources liquid or in the form of ready cash when they can get interest by lending money or buying bonds?. The desire for liquidity arises because of three motives.

(i) The transactions motive
(ii) The precautionary motive and;
(iii) The speculative motive.
(i) The Transactions motive for money

The transactions motive relates to the demand for money balances for the current transactions of individuals and business firms. Individuals hold cash in order to bridge the interval between the receipt of income and its expenditure. In other words, people hold money for transactions purposes because receipts of money and payments do not coincide. Most of the people receive their incomes weekly, or monthly while the expenditure goes on day by day. A certain amount of ready money, therefore is kept in hand to make current payments. This amount will depend upon the size of individual's income. the individual at which the income is received and the methods of payments prevailing in the society.

The businessmen and the entrepreneurs also have to keep a proportion of their resources in money form in order to meet daily needs of various kinds. They need money all the time in order to pay raw materials and transport, to pay wages and salaries and to meet all other current expenses incurred by any business firm. It is clear that the amount of money held under this business motive will depend to a very large extent on the turnover. The larger the turnover, the larger in general, will be the amount of money needed to cover current expenses. It is worth noting that money demand for transactions motive arises primarily because of the use of money as a medium of exchange.

The demand for money is a demand for real cash balances because people hold money for the purpose of buying goods and services. The higher the price level, the more the money balances a person has to hold in order to purchase a given quantity of goods.

According to Keynes, the transactions demand for money depends only on the real income and is not influenced by the rate of interest. However, in recent years, it has been observed empirically and also according to the theories of Tobin and Baumol transactions demand for money also depends on the rate of interest.

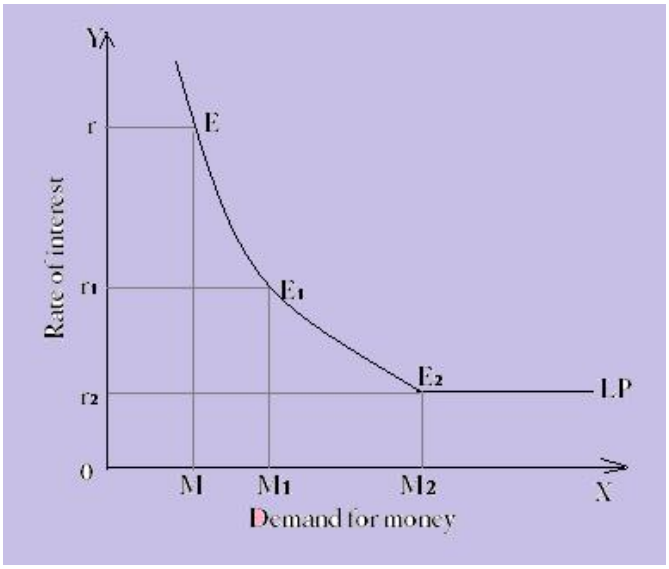
(ii) Precautionary motive for money

Precautionary motive for holding money refers to the desire of the people to hold cash balances for unemployment, sickness, accidents, and the other uncertain perils. The amount of money demanded for this motive will depend on the psychology of the individual and the conditions in which he lives.

(iii) Speculative demand for money

The speculative motive of the people relates to the desire to hold one's resources in liquid form in order to take advantage of market movements regarding the future changes in the rate of interest (or bond prices). The notion of holding money for speculative motive was a new and revolutionary Keynesian idea. Money held under speculative motive serves as a store of value as money held under the precautionary motive does. The cash held under this motive is used to make speculative gains by dealing in bonds whose prices fluctuate. If bonds prices are expected to rise which, in other words, means that the rate of interest is expected to fall, businessmen will buy bonds to sell when their prices actually rise. If, however, the bond prices are expected to fall, ie., the rate of interest is expected to rise, businessmen will sell bonds to avoid capital losses.

Given the expectations about the changes in the rate of interest in future, less money will be held under speculative motive at a current rate of interest and more money will be held under this motive at a lower current rate of interest. Thus demand for money under speculative motive is a decreasing function of the current rate of interest, increasing as the rate of interest falls and decreasing as the rate of interest rises. This is shown in the following figure.



In the figure, X-axis represents speculative demand for money and Y-axis represents the rate of interest. The liquidity preference curve LP is a downward sloping towards the right signifying that the higher the rate of interest, the lower the demand for money for speculative motive, and vice versa. Thus at a high rate of interest 0r a very small amount 0M is held for speculative motive. This is because at a high current rate of interest much money would have been lend out or used for buying bonds and therefore less money would be kept as inactive balances. If the rate of interest falls to $0r_1$

then a greater amount $0M_1$ is held under speculative motive. With the further fall in the rate of interest to $0r_2$ money held under speculative motive increases to 0M2.

Liquidity Trap

It can be seen from the above figure that the liquidity preference curve LP becomes quite flat, i.e., perfectly elastic at a very low rate of interest. It is a horizontal line beyond the point E2 towards the right. This perfectly elastic portion of liquidity preference curve indicates the position of absolute liquidity preference of the people. That is, at very low rate of interest people will hold with them as inactive balances any amount of money they come to have. This portion of liquidity preference curve with absolute liquidity preference is called *liquidity trap*. It is termed as liquidity trap by economists because expansion in money supply gets trapped in this sphere and therefore cannot affect rate of interest and therefore the level of investment. According to Keynes it is because of the existence of liquidity trap that monetary policy becomes ineffective to tide over economic depression.

The Supply of Money

The supply of money is a stock at a particular point of time, though it conveys the idea of a flow over time. The supply of money at any moment is the total amount of money in the economy. There are three alternative views regarding the definitions or measures of money supply. The most common view is associated with the traditional and Keynesian thinking which stresses the medium of exchange function of money. According to this view, money supply is defined as currency with the public and demand deposits with the commercial banks. Demand deposits are savings and current accounts of depositors in a commercial bank. They are the liquid form of money because depositors can draw cheques for any amount lying in their accounts and the bank has to make immediate payment on demand. Demand deposits with the commercial bank plus currency with the public are together denoted as M_1 , the money supply. This is regarded as the narrower definition of the money supply.

The second definition is broader and is associated with the modern quantity theorists headed by Friedman. Prof. Friedman defines the money supply at any moment of time as "literally the number of dollars people are carrying around in their pockets, the number of dollars they have to their credit at banks or dollars they have to their credit at banks in the form of demand deposits, and also commercial bank time deposits". Time deposits are fixed deposits of customers in a commercial bank. Such deposits earn a fixed rate of interest varying with the time period for which the amount is deposited. Money can be withdrawn before the expiry of that period by paying a penal rate of interest to the bank. So time deposits posse liquidity and are included in the money supply by Friedman. Thus the definition includes M_1 plus time deposits of commercial banks in the supply of money. This wider definition is termed as M_2 in America and M_3 in Britain and India. It stresses the store of value function of money.

The third function is the broadest and is associated with Gurley and Shaw. They include in the money supply, M_2 plus deposits of saving banks, building societies, loan associations, and deposits of other credit and financial institutions.

Measures of Money Supply in India

There are four measures of money supply in India which are denoted by M_1, M_2, M_3, and M_4. This classification was introduced by Reserve Bank of India (RBI) in April, 1977. Prior to this till March, 1968, the RBI published only one measure of money supply, M or M_1 which is defined as

currency and demand deposits with the public. This was in keeping with the traditional and Keynesian views of the narrow measure of money supply.

From April, 1968 the RBI also started publishing another measure of the money supply which is called Aggregate Monetary Resources (AMR). This included M_1 plus time deposits of banks held by the public. This was a broad measure of money supply which was in line with Friedman's view.

Since April, 1977, the RBI has been publishing data on four measures of the money supply which are cited below;

1) **M_1** – The first measure of money supply M_1 consists of:
   - Currency with the public which includes notes and coins of all denominations in circulation excluding cash in hand with banks;
   - Demand deposits with commercial and co-operative banks, excluding inter-bank deposits; and
   - 'Other deposits' with RBI which include current deposits of foreign central banks, financial institutions and quasi-financial institutions such as IDBI, IFCI, etc. RBI characterizes M_1 as narrow money.
2) **M_2** – The second measure of money supply M_2 consists of M_1 plus post office savings bank deposits. Since savings bank deposits commercial and co-operative banks are included in the money supply, it is essential to include post office saving bank deposits. The majority of people in rural and urban have preference or post office deposits from the safety viewpoint than bank deposits.
3) **M_3** – The third measure of money supply in India M_3 consists of M_1 plus time deposits with commercial and cooperative banks, excluding interbank time deposits. The RBI calls M_3 as broad money.
4) **M_4** – The fourth measure of money supply M_4 consists of M_3 plus total post office deposits comprising time deposits and demand deposits as well. This is the broadest measure of money supply.

   Of the four inter-related money supply for which the RBI publishes data, it is M3 which is of special significance. It is M_3 which is taken into account in formulating macroeconomic objectives of the economy every year.

Determinants of Money Supply

In order to explain the determinants of money supply in an economy we shall use the M1 concept of money supply which is the most fundamental concept of money supply. We shall denote it simply by M rather than M1. As seen above this concept of money supply(M1) is composed of currency held by the public (Cp)and demand deposits with the banks (D). Thus;

$$M1 = Cp + D \quad -(1)$$

Where M = Total money supply with the public

Cp = currency with the public

D = demand deposits held by the public.

The two important determinants of money supply as described in equation (1)are;

(a) the amounts of high-powered money which is also called Reserve money by the Reserve Bank of India and;

(b) the size of money multiplier.

1. High-powered money (H)

The high-powered money consists of the currency (notes and coins) issued by the government and the RBI. A part of the currency issued is held by the public, which we designate as Cp and a part is held by the banks as reserves which we designate as R. A part of these currency reserves of the bank is held by them in their own cash vaults and a part is deposited in the Reserve Bank of India in the reserve accounts which banks hold with RBI. Accordingly, the high-powered money can be obtained as sum of currency held by the public and the part held by the banks as reserves. Thus,

$$H = Cp + R \quad –(2)$$

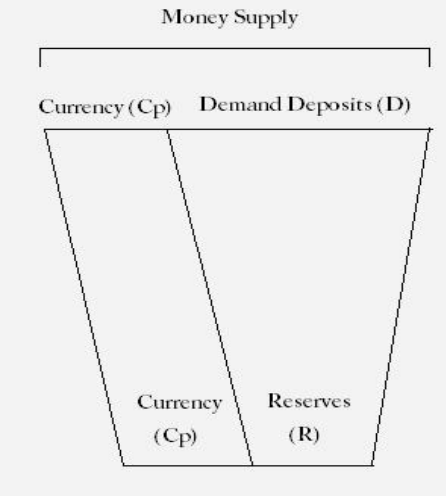
Where H = the amount of high-powered money

Cp = Currency held by the public

R = Cash reserves of currency with the banks.

It is to be noted that RBI and Government are the producers of the high-powered money and the commercial banks do not have any role in producing this high-powered money (H). However, the commercial banks are producers of demand deposits which are also used as money like currency. But for producing demand deposits or credit, banks have to keep with themselves cash reserves of currency which have been denoted by R in equation –(2) above. Since these cash reserves with the banks serve as a basis for the multiple creation of demand deposits which constitute an important part of total money supply in the economy. It provides high poweredness to the currency issued by the Reserve Bank and the Government.

The theory of determination of money supply is based on the supply of and demand for high powered money. Some economists call it 'The H Theory of Money Supply'. However, it is more popularly called 'Money Multiplier Theory of Money Supply' because it explains the determination of money supply as a certain multiple of the high powered money. How the high powered money is related to the total money supply is graphically depicted in the following figure.



The base of the figure shows the supply of high powered money (H) while the top of the figure shows the total stock of money supply. It will be seen that the total stock of money supply is determined by a multiple of the high powered money. It will be further seen that where as currency held the public(Cp) uses the same amount of high powered money, ie, there is one-to-one relationship between currency held by the public and the money supply. In contrast to this, bank deposits are a multiple of the cash reserves of the banks (R) which are part of supply of high powered money. That is, one rupee of high powered money kept as bank reserves give rise to much more amount of demand deposits. Thus the relationship between money supply and the high powered money is determined by the money multiplier.

The money multiplier which we denote by 'm' is the ratio of total money supply (M) to the stock of high powered money. That is;

$$m = \frac{M}{H}$$

The size of money multiplier depends on the preference of the public to hold currency relative to deposits (ie. ratio of currency to deposits which we denote by K)and bank's desired cash reserves ratio to deposits (which we call r)

It follows from above that if there is increase in currency held by the public which is a part of the high powered money, with demand deposits remaining unchanged, there will be direct increase in the money supply in the economy. If currency reserves held by the banks increase, this will not change the money supply immediately but will set in motion a process of multiple creation of demand deposits of the public in the banks. Although banks use these currency reserves held by them, which constitute a part of the high powered money, to give more loans to the businessmen and thus create demand deposits, they do not affect either the amount of currency held by the public or the composition of high powered money. The amount of high powered money is fixed by the RBI by its past actions.

Money Multiplier

As we stated above , money multiplier is the degree to which money supply is expanded as a result of the increase in high powered money. Thus

$$m = \frac{M}{H}$$

Rearranging this we have

$$M = H \cdot m$$

Thus money supply is determined by the size of money multiplier(m) and the amount of high powered money (H).

Module 2
Theories of Inflation and Unemployment

Meaning, Types and Theories of Inflation. - Cost of inflation and sacrifice ratio. - Measurement of Inflation in India - Meaning and types of unemployment. - Cost of unemployment and Oakun's Law - Measurement of unemployment in India. - Concept of Stagflation - Concept of Philips Curve.

2.1 Meaning of Inflation

There has been much disagreement among the economists over the definition of inflation, because it is not easy to give a precise and yet generally accepted definition to inflation. Inflation is highly controversial term and undergoes many modifications since it was first defined by the Neo-classical economists as a monetary phenomenon. Inflation simply means a continuous increase in general price level. It can be described as a decline in the real value of money or a loss of purchasing power in the medium of exchange. When the general price level rises, each unit of currency buys fewer goods and services. Inflation has been defined in several ways by different economists.

According to Coulbourn, "Inflation is too much of money chasing too few goods."

According to Keynes, 'Inflation is the form of taxation which the public finds hardest to evade.'

According to Samuelson, 'Inflation denotes a rise in general level of prices'.

According to Milton Friedman, 'Inflation is always and everywhere a monetary phenomenon.'

According to Brooman, "Inflation is a continuing increase in the general price level."

According to Johnson, "Inflation is a sustained rise in prices".

According to Shapiro, "Inflation is a persistent and appreciable rise in the general level of prices."

According to Crowther, "Inflation is a state in which the value of money is falling i.e. the prices is rising."

According to Ackley, "Inflation as a persistent and appreciable rise in the general level or average of prices."

2.2 Features of Inflation

The characteristics or features of inflation are as follows:-

1. It is a long-term process.
2. It is a state of disequilibrium.
3. It is scarcity oriented.
4. It is dynamic in nature.
5. It is a post full employment phenomenon.
6. It is a purely monetary phenomenon.
7. Inflationary price rise is persistent and irreversible.
8. Inflation is caused by excess demand in relation to supply of all types of goods and services.
9. Inflation involves a process of the persistent rise in prices. It involves rising trend in price level.

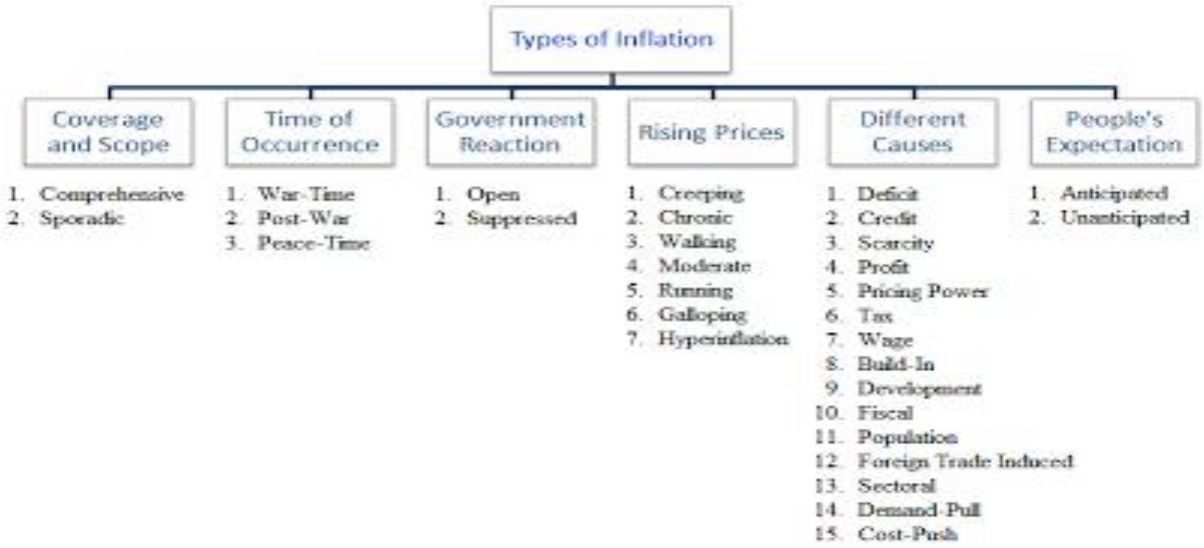
2.3 Terms related to Inflation

The important terms related to inflation are as follows:-

1. **Deflation** is a condition of falling prices. It is just the opposite of inflation. In deflation, the value of money goes up and prices fall down. Deflation brings a depression phase of business in the economy.
2. **Disinflation** refers to lowering of prices through anti-inflationary measures without causing unemployment and reduction in output.
3. **Reflation** is a situation of rising prices intentionally adopted to ease the depression phase of the economy. In reflation, along with rising prices, the employment, output and income also increase until the economy reaches the stage of full employment.
4. **Stagflation**: Paul Samuelson describes Stagflation as the paradox of rising prices with increasing rate of unemployment. It simply means stagnation (unemployment) plus inflation.
5. **Stagnation**: Stagnation in the rate of economic growth which may be a slow or no economic growth at all.
6. **Statflation**: The term 'Statflation' was coined by Dr. P.R. Brahmananda to describe the inflationary situation of India. According to Brahmananda, Rising prices in the middle of a recession is known as Statflation.

2.4 Types of inflation

Inflation can be of different types based on certain important aspects, which is given below.



1. Types of Inflation on Coverage

1. **Comprehensive Inflation**: When the prices of all commodities rise throughout the economy it is known as Comprehensive Inflation. Another name for comprehensive inflation is **Economy Wide** Inflation.
2. **Sporadic Inflation**: When prices of only few commodities in few regions (areas) rise, it is known as Sporadic Inflation. It is sectional in nature. For example, rise in food prices due to bad monsoon (winds bringing seasonal rains in India).

2. Types of Inflation on Time of Occurrence

1. **War-Time Inflation**: Inflation that takes place during the period of a war-like situation is known as War-Time inflation. During a war, scare productive resources are all diverted and prioritized to produce military goods and equipments. This overall result in very limited supply or extreme shortage (low availability) of resources (raw materials) to produce essential commodities. Production and supply of basic goods slow down and can no longer meet the soaring demand from people. Consequently, prices of essential goods keep on rising in the market resulting in War-Time Inflation.
2. **Post-War Inflation**: Inflation that takes place soon after a war is known as Post-War Inflation. After the war, government controls are relaxed, resulting in a faster hike in prices than what experienced during the war.
3. **Peace-Time Inflation**: When prices rise during a normal period of peace, it is known as Peace-Time Inflation. It is due to huge government expenditure or spending on capital projects of a long gestation (development) period.

3. Types of Inflation on Government Reaction or its degree of control

1. **Open Inflation**: When government does not attempt to restrict inflation, it is known as Open Inflation. In a free market economy, where prices are allowed to take its own course, open inflation occurs.
2. **Suppressed Inflation**: When government prevents price rise through price controls, rationing, etc., it is known as Suppressed Inflation. It is also referred as **Repressed** Inflation. However, when government controls are removed, Suppressed inflation becomes Open Inflation. Suppressed Inflation leads to corruption, black marketing, artificial scarcity, etc.

4. Types of Inflation on Rising Prices rate of inflation

1. **Creeping Inflation** : When prices are gently rising, it is referred as Creeping Inflation. It is the mildest form of inflation and also known as a Mild Inflation or Low Inflation. According to R.P. Kent, when prices rise by not more than (upto) 3% per annum (year), it is called Creeping Inflation.
2. **Chronic Inflation** : If creeping inflation persist (continues to increase) for a longer period of time then it is often called as Chronic or Secular Inflation. Chronic Creeping Inflation can be either Continuous (which remains consistent without any downward movement) or Intermittent (which occurs at regular intervals). It is called chronic because if an inflation rate continues to grow for a longer period without any downturn, then it possibly leads to Hyperinflation.
3. **Walking Inflation** : When the rate of rising prices is more than the Creeping Inflation, it is known as Walking Inflation. When prices rise by more than 3% but less than 10% per annum (i.e between 3% and 10% per annum), it is called as Walking Inflation. According to some economists, walking inflation must be taken seriously as it gives a cautionary signal for the occurrence of Running inflation. Furthermore, if walking inflation is not checked in due time it can eventually result in Galloping inflation.
4. **Moderate Inflation** : Prof. Samuelson clubbed together concept of Creeping and Walking inflation into Moderate Inflation. When prices rise by less than 10% per annum (single digit inflation rate), it is known as Moderate Inflation. According to Prof. Samuelson, it is a stable inflation and not a serious economic problem.

5. **Running Inflation** : A rapid acceleration in the rate of rising prices is referred as Running Inflation. When prices rise by more than 10% per annum, running inflation occurs. Though economists have not suggested a fixed range for measuring running inflation, we may consider price rise between 10% to 20% per annum (double digit inflation rate) as a running inflation.
6. **Galloping Inflation** : According to Prof. Samuelson, if prices rise by double or triple digit inflation rates like 30% or 400% or 999% per annum, then the situation can be termed as Galloping Inflation. When prices rise by more than 20% but less than 1000% per annum (i.e. between 20% to 1000% per annum), galloping inflation occurs. It is also referred as Jumping inflation. India has been witnessing galloping inflation since the second five year plan period.
7. **Hyperinflation** : Hyperinflation refers to a situation where the prices rise at an alarming high rate. The prices rise so fast that it becomes very difficult to measure its magnitude. However, in quantitative terms, when prices rise above 1000% per annum (quadruple or four digit inflation rate), it is termed as Hyperinflation. During a worst case scenario of hyperinflation, value of national currency (money) of an affected country reduces almost to zero. Paper money becomes worthless and people start trading either in gold and silver or sometimes even use the old barter system of commerce. Two worst examples of hyperinflation recorded in world history are of those experienced by Hungary in year 1946 and Zimbabwe during 2004-2009 under Robert Mugabe's regime.

5. Types of Inflation on Causes

1. **Deficit Inflation** : Deficit inflation takes place due to deficit financing.
2. **Credit Inflation** : Credit inflation takes place due to excessive bank credit or money supply in the economy.
3. **Scarcity Inflation** : Scarcity inflation occurs due to hoarding. Hoarding is an excess accumulation of basic commodities by unscrupulous traders and black marketers. It is practised to create an artificial shortage of essential goods like food grains, kerosene, etc. with an intension to sell them only at higher prices to make huge profits during scarcity inflation. Though hoarding is an unfair trade practice and a punishable criminal offence still some crooked merchants often get themselves engaged in it.
4. **Profit Inflation** : When entrepreneurs are interested in boosting their profit margins, prices rise.
5. **Pricing Power Inflation** : It is often referred as Administered Price inflation. It occurs when industries and business houses increase the price of their goods and services with an objective to boost their profit margins. It does not occur during a financial crisis and economic depression, and is not seen when there is a downturn in the economy. As Oligopolies have the ability to set prices of their goods and services it is also called as Oligopolistic Inflation.
6. **Tax Inflation** : Due to rise in indirect taxes, sellers charge high price to the consumers.
7. **Wage Inflation** : If the rise in wages in not accompanied by a rise in output, prices rise.
8. **Build-In Inflation** : Vicious cycle of Build-in inflation is induced by adaptive expectations of workers or employees who try to keep their wages or salaries high in anticipation of inflation. Employers and Organisations raise the prices of their respective goods and services in anticipation of the workers or employees' demands. This overall builds a vicious cycle of rising wages followed by an increase in general prices of commodities. This cycle, if continues, keeps on accumulating inflation at each round turn and thereby results into what is called as Build-in inflation.

9. **Development Inflation** : During the process of development of economy, incomes increases, causing an increase in demand and rise in prices.
10. **Fiscal Inflation** : It occurs due to excess government expenditure or spending when there is a budget deficit.
11. **Population Inflation** : Prices rise due to a rapid increase in population.
12. **Foreign Trade Induced Inflation** : It is divided into two categories, viz., (a) Export-Boom Inflation, and (b) Import Price-Hike Inflation.
13. **Export-Boom Inflation** : Considerable increase in exports may cause a shortage at home (within exporting country) and results in price rise (within exporting country). This is known as Export-Boom Inflation.
14. **Import Price-Hike Inflation** : If a country imports goods from a foreign country, and the prices of imported goods increases due to inflation abroad, then the prices of domestic products using imported goods also rises. This is known as Import Price-Hike Inflation. For e.g. India imports oil from Iran at $100 per barrel. Oil prices in the international market suddenly increases to $150 per barrel. Now India to continue its oil imports from Iran has to pay $50 more per barrel to get the same amount of crude oil. When the imported expensive oil reaches India, the Indian consumers also have to pay more and bear the economic burden. Manufacturing and transportation costs also increase due to hike in oil prices. This, consequently, results in a rise in the prices of domestic goods being manufactured and transported. It is the end-consumer in India, who finally pays and experiences the ultimate pinch of Import Price-Hike Inflation. If the oil prices in the international market fall down then the import price-hike inflation also slows down, and vice-versa.
15. **Sectoral Inflation** : It occurs when there is a rise in the prices of goods and services produced by certain sector of the industries. For instance, if prices of crude oil increases then it will also affect all other sectors (like aviation, road transportation, etc.) which are directly related to the oil industry. For e.g. If oil prices are hiked, air ticket fares and road transportation cost will increase.
16. **Demand-Pull Inflation** : Inflation which arises due to various factors like rising income, exploding population, etc., leads to aggregate demand and exceeds aggregate supply, and tends to raise prices of goods and services. This is known as Demand-Pull or Excess Demand Inflation.
17. **Cost-Push Inflation** : When prices rise due to growing cost of production of goods and services, it is known as Cost-Push (Supply-side) Inflation. For e.g. If wages of workers are raised then the unit cost of production also increases. As a result, the prices of end-products or end-services being produced and supplied are consequently hiked.

Difference between Demand pull and Cost push inflation

Demand-Pull Inflation	Cost-Push Inflation
Happen due to demand rise	Happen due to cost rise
Leads to upward shift in aggregate demand	Leads to upward shift in aggregate supply
Here price rise first	Here wage rise first
Price rise is due to excess demand	Price rise is due to rise in cost of production
For this Government is blamed	For this trade unions are blamed
Controlled by fiscal & monetary policies	Controlled with administrative methods

6. Types of Inflation on Expectation or predictability

1. **Anticipated Inflation** : If the rate of inflation corresponds to what the majority of people are expecting or predicting, then is called Anticipated Inflation. It is also referred as Expected Inflation.
2. **Unanticipated Inflation** : If the rate of inflation corresponds to what the majority of people are not expecting or predicting, then is called Unanticipated Inflation. It is also referred as Unexpected Inflation.

2.5 Theories of Inflation

There are different theories related to the concept of inflation.

I. The Quantity Theory of Money

The quantity theory of money is one of the oldest surviving economic doctrines. Simply stated, it asserts that changes in the general level of general prices are determined primarily by changes in the quantity of money in circulation or a direct proportionate relation between price level and demand for money. The quantity theory of money formed the central core of 19^{th} century classical monetary analysis, provided the dominant conceptual framework for interpret in contemporary financial events and formed the intellectual foundation of orthodox policy prescription designed to preserve the gold standard. David Hume (1711-76) provided the first dynamic process analysis of how the impact of a monetary change spread from one sector of the economy to another, altering relative price and quantity in the process. He provided considerable refinement, elaboration and extension to the quantity theory of money

David Ricardo (1772-1823), the most influential of the classical economists, thought such disequilibrium effects ephemeral and unimportant in long-run equilibrium analysis. As leader of the Balloonists, Ricardo charged that inflation in Britain was solely the result of the Bank of England's irresponsible over issue of money, when in 1797, under the stress of the Napoleonic Wars; Britain left the gold standard for an inconvertible paper standard. Ricardo discouraged discussions on possible beneficial output and employment effects of monetary injection.

Irving Fisher (1876-1947) spelled out his famous equation of exchange *viz.* MV=PT. This and other equations, such as the Cambridge Cash Balance Equation (M^d=KPy), which corresponds with the emerging use of mathematics in economic analysis, define precisely the conditions under which the proportional postulate is valid. Fisher and other neo-classical economists, such as Arthur Cecil Pigou (1877- 1959) of Cambridge, demonstrated that monetary control could be achieved in a fractional reserve-banking regime *via* control of an exogenously determined stock of high power money.

II. Monetary theory of inflation

Monetarism refers to the followers of M. Friedman (1912-2006) who hold that “only money matters”, and as such monetary policy is a more potent instrument than fiscal policy in economic stabilization. According to the monetarists, the money supply is the “dominate, though not exclusive” determinant of both the level of output and prices in the short run, and of the level of prices in the long run. The long- run level of output is not influenced by the money supply.

The monetarists emphasized the role of money. Modern quantity theory led by Milton Friedman holds that “inflation is always and everywhere a monetary phenomenon that arises from a more rapid expansion in the quantity of money than in total output”. Its earliest explanation was to be found in the simple quantity theory of money. The monetarists employed the familiar identity of exchange equation of Fisher.

III. Demand pulls theory

John Maynard Keynes (1883-1946) and his followers emphasized the increase in aggregate demand as the source of demand-pull inflation. The aggregate demand comprises consumption, investment and government expenditure. When the value of aggregate demand exceeds the value of aggregate supply at the full employment level, the inflationary gap arises. The larger the gap between aggregate demand and aggregate supply, the more rapid is the inflation.

Keynesian (Keynes and his followers) do not deny this fact that even before reaching full employment production factors and various appearing constraint can cause increase in public price. This inflation constraint that appears quickly during prosperity is originally resulting from non-proportioned section, branches and or various economic resources that are accounted from natural properties of discipline based on market. Therefore, in one period of prosperity it is completely natural.

According to demand-pull inflation theory of Keynes, policy that causes decrease in each component of total demand is effective in reduction of pressure demand and inflation. One of the reductions in government expenditure is tax increase and to control volume of money alone or together, can be effective in reducing effective demand and inflation control. In difficult conditions, e.g. hyperinflation during war that control of volume of money or decrease in general expenditure may not be practical increase in tax can get along with direct action for control on demand.

IV. Cost Push Theory

Cost-push inflation is caused by wage increases enforced by unions and profit increases by employers. The type of inflation has not been a new phenomenon and was found even during the medieval period. But it was reviewed in the 1950s and again in the 1970s as the principal cause of inflation. It also came to be known as “New Inflation”.

The basic cause of Cost-Push inflation is the rise in money wages more rapidly than the productivity of labour. The labour unions press employers to grant wage increases considerably, thereby raising the cost of production of commodities. Employers in turn, raise prices of their products. Higher wages enable workers to buy as much as before, in spite of higher prices. On the other hand, the increase in prices induces unions to demand still higher wages. In this way, the wage-cost spiral countries, thereby, leading to cost-push or wage-push inflation.

Cost-push inflation may be further aggravated by upward adjustment of wages to compensate for rise in cost of living. A few sectors of the economy may be affected by increase in money wages and prices of their products may be rising. In many cases, their products are used as inputs for the production of commodities in other sectors. As a result, cost of production of other sectors will rise and thereby push up the prices of their products. Thus wage-push inflation in a few sectors of the economy may soon lead to inflationary rise in prices in the entire economy. Further, an increase in the price of imported raw materials may lead to cost-push inflation.

Another cause of Cost-Push inflation is profit-push inflation. Oligopolist and monopolist firms raise the price of their products to offset the rise in labour and cost of production to earn higher profits. There being imperfect competition in the case of such firms, they are able to administered price of their products. Profit-push inflation is, therefore called administered-price inflation or price-push inflation.

V. Structural Inflation Theory

About 40 years ago, the concept of structural inflation entered in economic discussion and research. It is related to the effect of structural factors on inflation. Structural analysis attempts to

recognize how economic phenomena and finding the root of the permanent disease and destruction such as inflation that evaluates lawful relationship between the phenomena.

In the economic structural factor causes, supply increase related to demand-push, even if abundant unemployment production factor is impossible or slow. Therefore, reasoning of less developed countries, till the time not successful to change in the form of lagging behind structure or not to make attempt for immediate self-economic growth or should compromise with the inflation that is very severe sometimes.

This inflation, giving the structural improvement, results as a cost in fact that is given for immediate economic growth. Structuralism, even the group that does not fine necessary for changing the present policy foundation for eradicating

inflation, with the control of inflation through government intervention in the market structure and also, by adopting decisive plans for justly division of inflation pressure there is no opposition and in fact stress is done on these arrangement. But, common anti inflation measures especially contraction monetary and budget policy from their point of view, is nothing but only a prescription for stopping the economic growth of non-developing countries, that also through experts that or rationing developed investment countries and world organization under their supremacy (rule) and or by understanding less developed economy features are disabled (crippled).

Rapid and faster growth of the service sector that is related to population growth and immigration is another inflationary factor, which is more emphasized by the structuralism. Remaining structure of distribution network, exclusive quasi and structure some of the developed industry, obstacle structure and heavy cost of works and ten's of other small and big factors additionally to all these structuralism from the aspect of inflationary social policy structure is unaware. It should be noticed that level competition and various society crust for large possession share from National income is one of the main factors of the hidden inflation in the developed investment countries. Structuralism type from this competition in hyperinflation of less developed countries is effective.

Competition specially intensifies in condition of fast economic growth and increase social movement. New social group open its way to political grounds and economic activity and with resorting to inflation, attempt is made to strengthen the power and change distribution of income. From this viewpoint, inflation is manifestation change of economic and society is chosen from the fast dynamic growth of economy.

VI. Rational Expectations Revolution

Macroeconomics in the 1970s is dominated by a revolutionary idea of Rational Expectations economists, such as Lucas, McCallum, Sargent and Hansen. Starting with the monetarist assumptions of continuous market clearing and imperfect information, the RE school, or the first generation of the new classical macroeconomics, argued that people do not consistently make the same forecasting errors as suggested in the adaptive expectations idea. Economic agents form their macroeconomic expectations "rationally" based on all past and current relevant information available, and not only on past information as in the case of backward- looking, or adaptive, price expectations. According to the traditional monetarist approach from the 1960s, the errors in price expectations were related to each other.

The RE approach to the business cycle and prices generated a vertical PC both for the short and the long run. If the monetary authority announces a monetary stimulus in advance, people expect that prices are being raised. In this case, this fully anticipated monetary policy cannot have any real effects even in the short-run as argued by monetarists. Thus, the Central Bank can affect the real output and employment only if it can find a way to create a "price surprise". Otherwise, the "forward-looking" expectation adjustments of economic agents will ensure that their preannounced policy fails.

Similarly, if a policymaker announces a disinflation policy in advance, this policy cannot reduce prices if people do not believe that the government will really carry it out. That is, in the new classical framework, price expectations are closely related to the necessity of policy credibility and reputation for successfully disinflating the economy.

According to monetarist and new classical economists, the growth in the money supply stems typically from the ongoing public sector deficits that are primarily financed by the Central Bank. In the "unpleasant monetarist framework" presented by Sargent and Wallace, the government budget constraint is essential to understand the time path of inflation. Alternative financing methods for current government deficits only determine the timing of unavoidable inflation in the future, under the assumption that fiscal policy dominates monetary policy.

VII. New Neoclassical Synthesis (NNS)

As popularized Paul Samuelson, the Neoclassical Synthesis was advertized as an engine of analysis which offered a Keynesian view of determination of national income and neoclassical principle to guide macroeconomic analysis. The so-called New Neoclassical Synthesis has become a focus of research in the area of monetary policy and is developing into a framework that might establish itself as a standard-model in macroeconomics literature. Since the early 1990s, the sharp difference between the emphasis of new Keynesian and new classical economists on the major origins of business cycles and price movements has been increasingly softening, and a NNS is now on the agenda of macroeconomics.

According to Goodfriend, the new generation of quantitative models of economic fluctuations has two central elements:

1) Systematic application of intertemporal optimization behaviour of firms and households, and rational expectations,

2) Incorporation of imperfect competition and costly short-run price adjustment into dynamic macroeconomics.

In the NNS, monetary, or demand, factors are a key determinant of business cycles, because of the incorporated new Keynesian assumption of price stickiness in the short run. At the same time, however, the NNS assigns a potentially large function to supply shocks in explaining real economic activity, as suggested in the new classical real business cycle theory. The highly complex model of the new neoclassical synthesis allow that Keynesian and real business cycle mechanisms to operate through somewhat different channels. The so-called new IS-LM-PC version of the NNS makes the price level an endogenous variable. In this model, IS refers to Investment and Saving .i.e. equilibrium equation of goods and services market, LM refers to demand for and supply of money .i.e. equilibrium equation of money market and PC refers to Philips Curve. The NNS also views expectations as critical to the inflation process, but accepts expectations as amenable to manage by a monetary policy rule.

The distinguishing characteristic of the New IS-LM model is that its key behavioural relations can be derived from underlying decision-making of households and firms and that these relations consequently involve expectations about the future in a central manner. The IS curve relates expected output growth to the real interest rate, which is a central implication of the modern theory of consumption. The aggregate supply and Phillips curve component of the model
relates inflation today to expect future inflation and output gap. This relationship can be derived from a monopoly pricing decision that is constrained by stochastic opportunities for price adjustment together with a consistent definition of the price level.

VIII. New Political Macroeconomics of Inflation

The major important theories as mentioned above mainly focus on macroeconomic determinants of inflation and simply ignore the role of non- economic factors such as institutions, political process and culture in the process of inflation. Political forces, not the social planner, choose economic policy in the real world. Economic policy is the result of a decision process that balances conflicting interests so that a collective choice may emerge.

The new political economy, literature provides fresh perspectives on the relations between timing of elections, performance of policy maker, political instability, policy credibility and reputation, and the inflation process itself. The case for Central Bank independence is usually framed in terms of the inflation bias (deviation) present in the conduct of monetary policies. However, the theoretical and empirical work suggests that monetary constitutions should be designed to ensure a high degree of Central Bank autonomy. They also overlook the possibility that sustained government deficits, as a potential cause for inflation, may be partially or fully indigenized by considering the effects of the political process and possible lobbying activities on government budgets, and thus, on inflation.

2.6 Costs of Inflation

Low inflation is the main macroeconomic goal for most western countries. This is because there are many economic costs of high inflation. Costs of Inflation Include:

- **International competitiveness:**

A relatively higher inflation rate will make British goods less competitive, leading to a fall in exports. However this may be offset by a decline in the exchange rate. But, if a country is in the Euro (e.g. Greece, Ireland and Spain) they can't devalue. Therefore, high inflation can be very damaging as it leads to a decline in competitiveness.

- **Confusion and Uncertainty:**

When inflation is high people are uncertain what to spend their money on. Also, when inflation is high firms may be less willing to invest because they are uncertain about future profits and costs. This uncertainty and confusion can lead to lower rates of economic growth over the long term.

- **Menu Costs.**

This is the cost of changing price lists. When inflation is high, prices need changing frequently which incurs a cost. However, modern technology has helped to reduce this cost.

- **Shoe leather costs**.

When prices are unstable there will be an increase in search times to discover more about prices. Inflation increases the opportunity cost of holding money, so people make more visits to their banks and building societies (wearing out their shoe leather!). In other words to save on losing interest in a bank people will hold less cash and make more trips to the bank.

- **Income redistribution.**

Inflation will typically make borrowers better off and lenders worse off. Inflation reduces the value of savings, especially if the saving is not index linked. However it does depends on the real rate of interest. e.g. if a saver gets a higher rate of interest than the inflation rate he will not lose out.

- **Boom and Bust Economic Cycles**.

High inflationary growth is unsustainable and is usually followed by a recession. By keeping inflation low it enables a long period of economic growth. E.g. in the UK, low inflation helped economic growth to be more stable in the period 1992-2007. Sustainable, low inflationary, economic growth is highly desirable.

- **Cost of Reducing Inflation:**

High inflation is deemed unacceptable therefore governments feel it is best to reduce it. This will involve higher interest rates to reduce spending and investment. This reduction in Aggregate Demand will lead to a decline in economic growth and unemployment.

- **Fiscal Drag.**

The amount of tax we pay will increase if there is inflation. This is because with rising wages more people will slip into the top income tax brackets.

- low inflation is often seen as harmless or even beneficial because it allows prices to adjust more easily

Inflation Imposes Several Costs on the Society

- **Inflationary growth is unsustainable**. High inflation is often a sign the economy is overheating (demand growing faster than supply). This kind of boom is often followed by a bust (recession) This occurred in UK in Lawson boom of 1980s - inflation rose to 10% due to high growth and when the government tried to rein in inflation, it lead to the 1991 recession and higher unemployment. Therefore, an inflationary boom can lead to a recession. Targeting a low rate of inflation helps to keep economic growth sustainable. Therefore, low inflation can help avoid recession and prevent a sudden rise in unemployment.
- **Inflation discourages investment**. High and volatile rates of inflation can discourage firms from taking long-term investment decisions. This is because of the uncertainty and confusion around future revenues and profits. Therefore, it is argued countries with higher inflation rates tend to have lower growth rates over time. In the post war period, it was often argued Japan and Germany had better growth rates because of their low inflation.
- **Decline in international competitiveness**. High inflation is likely to make your goods and services less competitive leading to a fall in exports and current account deficit. Often this high inflation will be offset by a fall in the exchange rate to restore competitiveness. But, in the case of countries in the Euro, they can't devalue, so inflation and higher wage costs have been very damaging to their economy.
- **Inflation can reduce real incomes.** If inflation is above income growth, we can experience a fall in real incomes. This is an issue in 2011. High cost-push inflation of 5% is above wage growth leading to falling real wages.
- **Inflation can erode savings**. If inflation is higher than interest rates, then inflation can wipe away people's savings. Inflation reduces the value of money, so people who rely on income from savings see a reduction in their living standards. This is often a problem for pensioners who rely on savings. Therefore inflation can cause a redistribution of income in society from old to young and from savers to borrowers.
- **Legacy of Inflation**. If people suffer from inflation, (e.g. lose savings, become worse off) then it will impact their future decisions. For example, people may be reluctant to buy government bonds because they fear the government will effectively default through inflation. People will be more reluctant to save, leaving less room for investment.

2.7 Measures of Inflation:-

Some common measures of Inflation are:-

1) Consumer Price Indices:- A measure of price changes in consumer goods and services such as oil, food, clothing and automobiles. The CPI measures price change from the perspective of the purchaser.

2) Producer Price Indices:- A family of indexes that measure the average change over time in selling prices by domestic producers of goods and services. PPI measures price change from the perspective of the seller.

3) Wholesale Price Index:- It measures the change in price of a selection of goods at wholesale, prior to retail mark ups and sales taxes. These are very similar to the Producer Price Indices.

4) GDP Deflator:- It measures price increases in all assets rather than some particular subset. The term "deflator" in this case means the percentage to reduce current prices to get the equivalent price in a previous period.

GDP Deflator= (Nominal GDP/Real GDP)*100

2.8 Sacrifice Ratio

Sacrifice ratios are commonly estimated from the Phillips Curve relationship between output and inflation in a long time series. The sacrifice ratio is the cost of reducing inflation, the loss of output or unemployment that must be sustained by the economy in order to achieve a reduction in inflation. It is defined as a ratio of the percentage output lose or unemployment for each 1 point reduction in the inflation rate. Economists have paid a lot of attention to estimating sacrifice ratios since this ratio plays a key role in setting monetary policy. The sacrifice ratio varies depending on the time, place and methods used to reduce inflation.

There was a cost to an economy when growth slows or stops in order to combat inflation. The ratio shows the cost for each percentage of decrease in inflation. An economic ratio that measures the costs associated with slowing down economic output to change inflationary trends. The ratio is calculated by taking the cost of lost production and dividing it by the percentage change in inflation, and its quotient gives the loss of output per 1% change in inflation:

$$\text{Sacrifice Ratio} = \frac{\text{Dollar Cost of Production Loss}}{\text{Percentage Change in Inflation}}$$

2.9 Measurement of Inflation in India

For the measurement of inflation in India there are three price indices. They are;

(1) Whole sale Price Index (WPI),
(2) Consumer Price Index (CPI)
(3) GDP Deflator

Wholesale Price Index

The WPI is used for macro level policy making. WPI is the inflation of the economy. The WPI series is compiled, computed and reported on a monthly basis. This index does not cover services and non tradable commodities. The headline inflation in India is measured in terms of Wholesale Price Index and the office of the Economic Adviser, Department of Industrial Policy & Promotion is entrusted with the task of releasing this index. Inflation in India is calculated on a point to point basis. The WPI at the end of a particular month in the current year is compared with the WPI on the same day in the previous year and the percentage change in the WPI over the year is the rate of inflation. For example: The WPI for the month ended March 31,2013 is compared with the WPI for the month ended March 31, 2012 and the percentage change in the WPI is the rate of inflation.

The first WPI in India was commenced for the week January 10, 1942. It was having the week ending August 19, 1939=100.The WPI base year has been revised frequently. They are given below:

i. 1952-53 Base Year (112 Commodities) issued from June 1952.
ii. 1961-62 Base Year (139 Commodities) issued from July 1969.

iii. 1970-71 Base Year (360Commodities) issued from January 1977.

iv. 1981-82 Base Year (447 Commodities) issued from January 1989.

v. 1993-94 Base Year (435 Commodities) issued from July, 1999.

vi. 2004-05 Base Year (676 Commodities) released in September 2010.

The New Series of Wholesale Price Index Number is released on the recommendations of the Working Group for the Revision of Wholesale Price Index Number headed by Prof. Abhijit Sen. Wholesale Price Index of traded goods is in 3 sectors.

1. Primary Articles: It includes food articles, nonfood articles and minerals. The numbers of primary articles are 102, the weight of it is 22.02% and the number of price quotation is 579.

2. Fuel & Power: It includes items like coal, petroleum products and electricity. 19 items are in this category, 14.91% weight is for this item in the WPI and the number of price quotation is 72.

3. Manufactured Products: It include items like sugar, cotton, textiles, chemicals, cement, iron and steel, machinery and tools etc. There are 555 items are in this category.64.97% weight is given to this sector and 5482 price quotations are taken from this sector.

Consumer Price Index

Similar to all countries in the world India also calculate inflation at the consumer level in addition to WPI. The CPI is used for micro level policy making. As the consumers in India show wide differentiation on their choice of consumption, purchasing powers one Consumer Price Index (CPI) has not been possible yet which can encompasses all the Indian consumers. Depending upon the socio economic differentiations among the consumers, India has four different sets of CPI with some differentials in the market basket of commodities allotted to them. The market basket is periodically updated because some new items enter and old items leave consumer budgets. A brief account of the four CPIs is as under:

1. CPI for Industrial Workers (CPI-IW)

It covers 160 items and now its base year is 2001. The first base year is 1958-59.The data is collected at 76 centers with one month's frequency and the index has a time lag of one month. Basically this index specifies the government employees (other than bank's and embassies' personnels). The wages/salaries of the central government employees are revised on the basis of the changes occurring in this index, the Dearness Allowance (DA) is announced twice a year. When the Pay Commissions recommended for pay revision, the base is CPI-IW.

2. CPI for Agricultural Labourers (CPI-AL)

It covers 260 commodities and its base year is 1986-87.The data is collected in 600 villages with monthly frequencies and has three weeks time lag. This index is used for revision of minimum wages for agricultural labourers in different states. The NSSO (61st Round) now proposed to change the base year to 2004-05.

3. CPI for Urban Non-Manual Employees (CPI-UNME)

It covers 365 commodities with base year 1984-85 and the first base year is 1958-59. The data is collected from 59 centres in the country. The data is collected in monthly basis with two weeks' time lag. This index has limited use and is basically used for determining Dearness Allowances (DAs) for employees of some foreign companies operating in India. (Airlines, Communications, Banking, Embassies and other financial services). It is also used to determine the capital gains for deflating selected service sector's contribution to the GDP at factor cost.

4. CPI for Rural Labourers (CPI-RL)

It covers 260 commodities and its base year is 1983. The data is collected in 600 villages with monthly frequencies and has three weeks time lag. The agricultural and the rural labourers in India create an overlap ie; the same labourers work as the rural labourers once the farm sector has either low or no employment scope. Probably due to this reason this index dropped by the government in 2001-02.But after the government change at the centre it was reintroduced.

GDP Deflator

GDP deflator is the ratio of GDP at current prices to GDP at constant Prices.

$$\text{GDP Deflator} = \frac{\text{GDP at Current Prices}}{\text{GDP at Constant Prices}}$$

This measure encompasses the entire spectrum of economic activities including services.GDP Deflator is available only annually with a long lag over one year.

2.9 Decadal Inflation in India

India experiences some sporadic double digit inflation mainly due to supply side short falls caused by droughts, price rise due to crude oil price hike or fund diversion due to wars with our neighbors. The decadal inflation India has been given below.

a) During 1950's: Remained at 1.7 percent.
b) During 1960's: Remained at 6.4 percent
c) During 1970's: Remained at 9.0 percent
d) During 1980's: Remained at 8.0 percent
e) During 1990's: Remained at 9.5 percent
f) During 2000-01 to2011-12: Remained at 4.7 percent

2.10 Healthy Range of Inflation in India

India also started inflation targeting by the early 1970's because India's inflation crossed the mark of 20% in 1973, due the oil price hike and RBI was given new function 'Inflation stabilization' and India entered an era of monetary controls for illation.

With inflation targeting there started a debate concerning the healthy range of inflation for the Indian economy in the mid of 1970's.We have some official and non official versions of the suitable range of inflation pointed out from time to time.

a) **The Chakravarty Committee (1985).** According to this committee 4% inflation is the acceptable for the economy. This is needed for attracting investment and growth of the economy.

b) **The Government of India (1997-98).** The Government of India accepted a 4 to 6 percent range of inflation as acceptable for the economy.

c) **C.Rangarajan (1998)**. Former RBI Governor C.Rangarajan advocated that the inflation rate must come down initially to 6 to 7 percent and to eventually to 5 to 6 percent on an average over the years.

d) **S.S.Tarapore Committee (1997):** S.S.Tarapore Committee on Capital Account Convertibility recommended an acceptable range of 3 to 5 percent inflation for the three years period (1997-98 to 1999-2000).

e) **Government and the RBI (2003).** In the recent years the Government and the RBI has maintained a general policy of keeping inflation below 5 percent mark-at any cost –as if fixing 4 to 5 percent as the healthy range of inflation for the Indian economy. The medium-term objective of the government is to keep inflation in the 4 to 4.5 percent ranges.

2.11 Meaning of Unemployment

Unemployment is a central problem in every modern society. Unemployment is defined as the condition of being unemployed, or, it refers to the number or proportion of people in the working population who are unemployed (have no jobs). An unemployed person is one who is an active member of the labour force and is able to and seeks work, but is unable to find work during a specified reference period (a week or a month or a year).

Unemployment means idleness of man power. It is the state in which labour possesses necessary ability and health to perform a job, but does not get job opportunities. In other words unemployment is the situation in which individuals are available for work, but are not able to find a work.

In order to explain the concept unemployment it is better to distinguish between the concepts like labour force, work force, labour force participation rate, work force participation rate and unemployment rate.

Labour Force (LS)

The labour force refers to the number of persons who are employed plus the number who are willing to be employed. In other words Labour force constitutes all the persons who are either working or employed or seeking or available for work. In India the labour force excludes children below the age 15 and old people above the age 59 and mentally or physically handicapped.

The Work Force (WF)

The work force includes those who are actually employed in economic activity. If we deduct work force from labour force we get the number of unemployment.

The labour force participation rate and work force participation rate can be expressed in percentages and as given below.

The Labour Force Participation Rate (LFPR)

The labour force participation rate is a measure of the proportion of the country's population that is engaged actively in the labour market, either by working or seeking work. It provides an indication of the size of the supply of labour available to engage in the production of goods and services.

Labour Force Participation Rate = Labour Force / Size of the population

Work Force Participation Rate (WFPR)

Work Force Participation Rate is a measure of the proportion of the country's labour force who is engaged in work. It provides information on the availability of the economy to generate employment.

Work Force Participation Rate = Work force / Size of the population

The Unemployment Rate

The unemployment rate means the number of persons unemployed per 1000 persons in the labour force. Unemployment Rate=$\frac{\text{Unemployed}}{\text{Labour Force}}$

2.12 Types of unemployment

In every economy there is unemployment but the nature and magnitude differ according to the economic progress. Following are the important types of unemployment.

1. Voluntary unemployment

This is the main type of unemployment referred by the Classical economists. Voluntary unemployment is happened when people are not ready to work at the prevailing wage rate even if work is available. It is a type of unemployment by choice.

2. Involuntary Unemployment

Keynes analysed this type of unemployment. It is a situation when people are ready to work at the prevailing wage rate but could not find job.

3. Natural rate of Unemployment.

This is postulated by the Post-Keynesians especially Milton Friedman and Edmund Phelps. According to them in every economy there exists a particular percentage of unemployment. It is that type of unemployment which prevails when output and employment are at the full employment level. Natural rate of unemployment consists of frictional and structural unemployment. Natural rate of unemployment can be defined as that rate of unemployment consistent with a steady rate of inflation. The Natural rate of unemployment is also described as the warranted unemployment rate, the normal unemployment rate, the long run unemployment rate and the full employment unemployment rate.

4. Structural unemployment

This type of unemployment is not a temporary phenomenon. It is chronic and is the result of backwardness and low rate of economic development. The structural changes of an economy are the main reason for this type of unemployment. There is a mismatch between the supply of and demand for labour.

5. Disguised Unemployment

When more people are engaged in a job than actually required, then it is called disguised unemployment. If a part of labour is withdrawn and the total production remains unchanged because their marginal product is zero. This is a part of structural unemployment. The disguised unemployment is also known as hidden unemployment. This concept was developed by the famous development economist Prof. Ragner Nurkse.

6. Under Employment

This exists when people are not fully employment ie; when people are partially employed. In other words it is a situation in which a person is does not get the type of work he is capable of doing.

7. Open Unemployment

Mrs. Joan Robinson calls this type of unemployment as ‘Marxian Unemployment’. Open unemployment is a situation where a large labour force does not get work opportunities that may yield regular income to them. It is just opposite to disguised unemployment. It exists when people are ready to work but are not working due to non-availability of work

8. Seasonal unemployment

Generally this type of unemployment is associated with agriculture because the unemployment rate is changed according to the season.

9. Cyclical Unemployment

It is generally witnessed in developed nations. This type of unemployment is due to business fluctuation and is known as cyclical unemployment.

10. Technological Unemployment

When the introduction of a new technology causes displacement of workers it is called technological unemployment.

11. Frictional Unemployment

It is a temporary unemployment which exists when people moved from one occupation to another. It will take time lag in transferring one work to another. The market imperfections are the main reason for this.

2.13 The Costs of Unemployment

Following are the some of the important costs of unemployment

1. Opportunity cost.

   Unemployment represents an opportunity cost because there is a loss of output that workers could have produced had they been employed. The government also spends more on unemployment benefit; hence there is another opportunity cost. The money going on unemployment benefit could be spent on hospitals and schools.

2. Waste of resources.

   Resources not employed are left idle, and this is a waste to an economy – education and training costs are wasted when individuals who have received these benefits do not work.

3. The loss of revenue.

   The unemployed do not pay income tax, and pay less indirect tax as they spend less.

4. Erosion of human capital.

   Many skills are acquired at work, and being unemployed means can mean fewer new skills are acquired, and existing skills are lost.

5. Lower incomes.

   The unemployed have lower personal incomes and lower standards of living. In addition, the unemployed also experience relatively poor physical and mental health.

6. Externalities.

   There are further external costs associated with unemployment, such as increased crime, alcoholism and vandalism.

7. Hysteresis

   When unemployment exists it can become embedded in the economy. For example, even those made temporarily unemployed, because, perhaps, their employer goes out of business, may find it difficult to get back into the labour market. The longer they remain unemployed, the harder it becomes to gain work. This may be because workers lose skills, or because they lose the habit of working. Over time, some workers may become permanently excluded from employment and join the ranks of the long term unemployed (unemployed over 1 year) with little prospects of work.

2.14 Measurement of unemployment in India

The National Sample Survey Organization (NSSO), which provides estimates of the rates of unemployment and employment in India on the basis of its quinquennial surveys on the regular basis since 1972-73. The NSSO has, over time, developed and standardized measures of employment and unemployment. The NSSO collects data on employment and unemployment using three broad measures or approaches:

1. Usual Status;

2. Current Weekly Status; and

3. Current Daily Status.

The Usual Status is further categorized at two levels:

1. Usual Principal Status and

2. Usual Principal and Subsidiary Status.

I. Usual Status Unemployment (US)

In the Usual Status relates to the activity status of a person during the reference period of last 365 days preceding the date of survey. The activity status on which a person spent relatively longer time is considered the Usual Principal Status (UPS). To decide the Usual Principal activity status of a person, a two-stage classification is used to determine the broad activity status, viz., employed, unemployed and out of labour force within which, the detailed activity status is determined depending on the relatively longer time spend in the activities. Besides the usual principal activity status, a person could have pursued some economic activity for a smaller period, not less than 30 days. The status in which such economic activity is pursued is the subsidiary economic activity status of that person. If these two are taken together, the measure of Usual Principal and Subsidiary Status (UPSS) i.e.Usual Status is obtained.

The usual status gives an idea about long- term employment (or chronic and open employment) during the reference year. A person is considered unemployed on Usual Status basis, if he/she was not working, but was willing to work for the major part of the reference year (more than 183 days) but did not get work for even 183 days. Dividing the usual status unemployment by the size of the labour force, we get unemployment rate by usual status. This measure is more appropriate to those in search of regular employment (educated and skilled persons) who may not accept casual work.

Usual Principal and Subsidiary Status Unemployment (UPSS): Here person is considered unemployed, if besides UPS, those available but unable to find work on a subsidiary basis during a year.

II. Current Weekly Status Unemployment (CWS)

Here the reference period is one week. A person is considered unemployed by Current Weekly Status, if he/she had not worked even for one hour during the week, but was seeking or was available for work. The estimates are made in terms of the average number of persons unemployed per week. The Current Weekly Status approach gives an idea about temporary unemployment (or chronic plus temporary unemployment) during the reference week. Current Weekly Status is used by the agencies like Inter National Organisations (ILO) to estimate employment and unemployment rates based on weekly reference period for international comparison. Dividing the weekly status unemployment by the size of the labour force, we get unemployment rate by weekly status.

III. Current Daily Status Unemployment (CDS)

Here the reference period is each of the 7 days, preceding the date of survey in each of these days. It records the activity status of a person for each day of the 7 days preceding the survey i.e. persons who did not find work on a day or some days during the survey week. The Current daily status approach gives a composite or comprehensive measure of unemployment, i.e., it is a measure of chronic and temporary unemployment as well as under employment. Dividing the current daily status unemployment by the size of the labour force, we get unemployment rate by usual status.

The UPS and UPSS measure reflect only long term unemployment spells. The CWS measure captures shorter unemployment spells, but ignores unemployment for less than a week. The CDS measure is the most inclusive, capturing both open as well as partial unemployment.

2.15 Magnitude of unemployment in India

A comparison between different estimates of unemployment in 2009-10 indicates that the CDS estimate of unemployment is the highest (Table 4.8). The higher unemployment rates according to the CDS approach compared to the weekly status and usual status approaches indicate a high degree of intermittent unemployment. Interestingly, urban unemployment was higher under both the usual principal and subsidiary status (UPSS) and current weekly status (CWS) but rural unemployment was higher under the CDS approach. This possibly indicates higher intermittent or seasonal unemployment in rural than urban areas, something that employment generation schemes like the MGNREGA need to pay attention to. However, overall unemployment rates were lower in 2009-10 under each approach vis-a-vis 2004-05.

Table 2.1: All-India NSS 66th Round Rural and Urban Unemployment Rates

Si No	Estimates	Rural (2009-10)	Urban (2009-10)	Total (2009-10)	Total (2004-05)
1	UPSS	1.6	3.4	2.0	2.3
2	CWS	3.3	4.2	3.6	4.4
3	CDS	6.8	5.8	6.6	8.2

Source: NSSO

Labour force participation rates (LFPR) under all three approaches declined in 2009-10 compared to 2004-05 (Table 4.2). However, the decline in female LFPRs was larger under each measure in comparison with male LFPRs which either declined marginally (UPSS), remained constant (CWS), or increased marginally (CDS).

Table 2.2 All-India Employment and Unemployment Indicators (per 1000)

Indicators	NSS 66th Round (2009-10)			NSS 61st Round (2004-05)		
	Male	Female	Total Person	Male	Female	Total persons
UPSS						
LFPR	557	233	400	559	294	430
Work Participation Rate	546	228	392	547	287	420
Unemployment Rate	20	23	20	22	26	23
CWS						
LFPR	550	207	384	550	257	407
Work Participation Rate	532	198	370	527	244	389
Unemployment Rate	33	43	36	42	50	44
CDS						
LFPR	540	179	365	538	215	381
Work Participation Rate	507	164	341	496	195	350
Unemployment Rate	61	82	66	78	92	82

Source: Key Indicators of Employment and Unemployment in India, 2009-10, NSSO.

2.16 Okun's Law

Yale professor and twentieth-century economist, Arthur Okun, was born in November 1928 and passed away in March 1980 at the relatively young age of 51. The American Economist Arthur Okun in 1962 posited an empirical relationship between the change in the unemployment rate and real output growth. Since then, the media, policymakers, pundits, and intermediate macro students have used the so-called Okun's law as a rule of thumb to relate changes in unemployment to changes in output growth. It states that when unemployment falls by 1%, GNP rises by 3%. In other words three percent drop in the ratio of actual GNP to the full capacity GNP causes about one percent increase in unemployment.

Okun's law is more accurately called "Okun's rule of thumb" because it is primarily an empirical observation rather than a result derived from theory. Okun's law is approximate because factors other than employment (such as productivity) affect output. In Okun's original statement of his law, a 3% increase in output corresponds to a 1% decline in the rate of unemployment. The relationship varies depending on the country and time period under consideration.

In its most basic form, Okun's law investigates the statistical relationship between a country's unemployment rate and the growth rate of its economy. There is a negative relationship between

output and unemployment. Okun's Law is, in essence, a rule of thumb to explain and analyze the relationship between jobs and growth.

Other version of Okun's Law focus on a relationship between unemployment and GDP, whereby a percentage increase in unemployment causes a 2% fall in GDP. The relationship between an economy's unemployment rate and its Gross National Product (GNP).

The percentage by which GNP changes when unemployment changes by 1% is called the "Okun coefficient".

The law has indeed "evolved," or changed over time to fit the current economic climate and employment trends at the time. One version of Okun's law has stated very simply that when unemployment falls by 1%, GNP rises by 3%. Another version of Okun's Law focuses on a relationship between unemployment and GDP, whereby a percentage increase in unemployment causes a 2% fall in GDP.

There are several reasons why GDP may increase or decrease more rapidly than unemployment decreases or increases. As unemployment increases,

- a reduction in the multiplier effect created by the circulation of money from employees
- unemployed persons may drop out of the labor force (stop seeking work), after which they are no longer counted in unemployment statistics
- employed workers may work shorter hours
- labor productivity may decrease, perhaps because employers retain more workers than they need

One implication of Okun's law is that an increase in labor productivity or an increase in the size of the labour force can mean that real net output grows without net unemployment rates falling (the phenomenon of "jobless growth")

2.17. Concept of Stagflation

Iain Macleod, British politician who is usually recognized as the creator of the term, stagnation and coined the phrase in his speech to Parliament in 1965, defined stagflation as “not just inflation on the one side or stagnation on the other, but both of them together” But the term was popularized in the 1970s when the United States began experiencing inflation in the midst of a recession. Many blame the economic policies of Richard Nixon for the economic downturn. Not wanting to run for re-election while the economy was tanking, Nixon encouraged the Federal Reserve to increase the money supply at the same time he was imposing a series of wage and price controls. While the moves were initially successful, a rapid increase in oil prices sent the economy spiraling. The combination of the fiscal and monetary policies with the rising oil prices resulted in double-digit inflation rates in 1973 and 1974 and unemployment rates jumping from 5 to 9 percent, all while the economy slowed to a crawl. Stagflation continued through both the Gerald Ford and Jimmy Carter administrations. It wasn't until 1981 that the situation began to improve. It was then that President Ronald Regan instituted his plan for dealing with stagflation –Reagananomics – which focused on increasing government spending while also cutting taxes. That was the last time the United States was faced with stagflation. The last country to experience a full-fledged stagflation was Zimbabwe in 2004.

Stagnation or *Slump-inflation* is the combination stagnation and inflation. Thus it is a paradoxical situation where an economy experiencing stagnation or unemployment along with a high

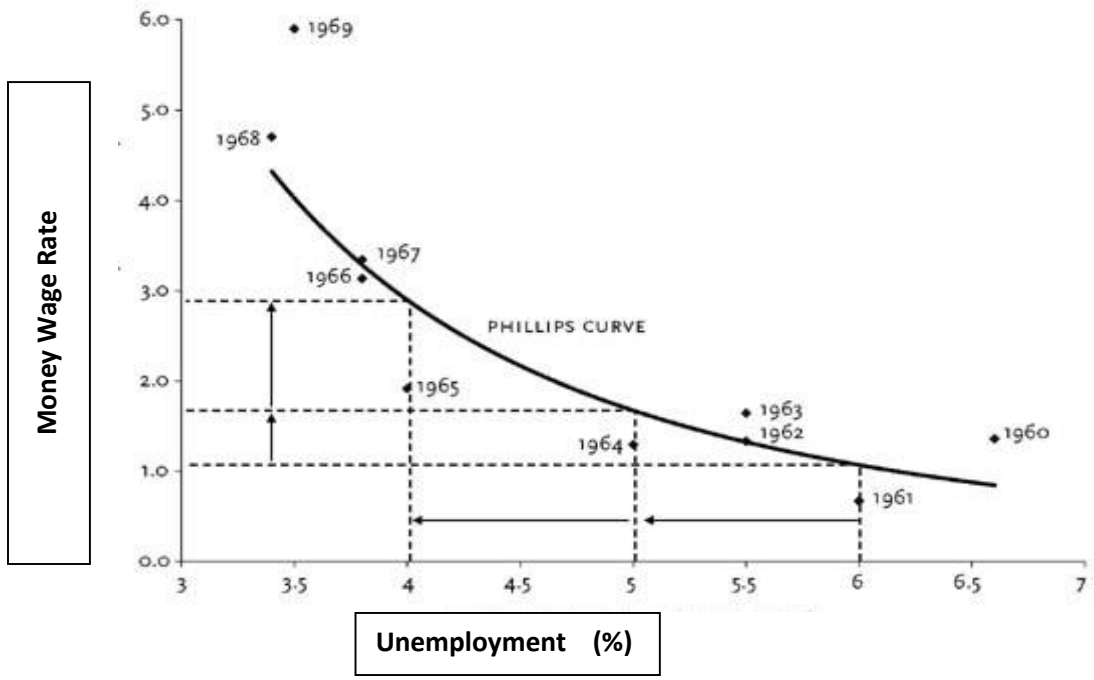
rate of inflation.ie there is the coexistence of inflation and involuntary unemployment. In short we can say that the simultaneous occurrence of inflation and unemployment is called Stagflation. This situation is also called as *inflationary recession*. Fall in productive capacity hence a rise in cost of production and inappropriate macroeconomic policies are the main reasons for this type of inflation. Therefore a proper blend of selective credit controls, differential interest rates, reduction in personal and business taxes, differential taxation, income policy, easy availability of industrial inputs and dynamic export policy etc are some of the effective policy matters to curb stagflation.

2.18. Concept of Phillips curve

In 1958, a New Zealand born British Economist A.W. Phillips published a careful empirical study titled *The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957*, which was published in the quarterly journal Economica examining wage behaviour in the United Kingdom over a period extending from 1861 to 1957 and then plotted them on a scatter diagram. In the 1920s an American economist Irving Fisher noted this kind of Phillips curve relationship. However, Phillips' original curve described the behavior of money wages.

Figure 1 shows a typical Phillips Curve fitted to data for the United States from 1961 to 1969. The data appeared to demonstrate an *inverse* and *stable* relationship between wage inflation and unemployment.

Figure: 1 Phillips Curve



According to Phillips the relationship between inflation and money wage rate is inverse and non linear. The inverse character is due to the following reasons.

a) Relative bargaining strength of trade unions and management

b) Generalised excess demand for labour

c) Imbalances between supply and demand in labour market.

When economists from other countries undertook similar research, they also found very similar curves for their own economies. In the years following Phillips' 1958 paper, many economists in the advanced industrial countries believed that his results showed that there was a permanently stable relationship between inflation and unemployment. One implication of this for government policy was that governments could control unemployment and inflation with a Keynesian policy. They could tolerate a reasonably high rate of inflation as this would lead to lower unemployment – there would be a trade-off between inflation and unemployment. For example, monetary policy and/or fiscal policy could be used to stimulate the economy, raising GDP and lowering the unemployment rate. Moving along the Phillips curve, this would lead to a higher inflation rate, the cost of enjoying lower unemployment rates.

Modified Phillips curve

Later economists substituted *price inflation* for *wage inflation* and the Phillips curve was born. The modified Phillips curve shows an inverse relation between inflation and unemployment. According to this an economy can achieve a lower rate of inflation by accepting a higher rate of unemployment. The economy cannot obtain a low rate of unemployment simultaneously with a low rate of inflation.

Long run Phillips Curve or Expectation Augmented Phillips Curve

At the height of the Phillips curve's popularity as a guide to policy, Milton Freidman and Edmund Phelps independently challenged its theoretical underpinnings. They argued that well-informed, rational employers and workers would pay attention only to real wages—the inflation-adjusted purchasing power of money wages. In their view, real wages would adjust to make the supply of labour equal to the demand for labour, and the unemployment rate would then stand at a level uniquely associated with that real wage—the "natural rate" of unemployment. The Long Run Phillips Curve is known as Expectation Augmented Phillips Curve which is vertical and developed by Milton Freidman and Edmund Phelps. According to them there is no long run trade off between inflation and unemployment and the hence we have a vertical Phillips curve. Different Phillips cure exists because of at each level of inflation expectations.

When actual inflation is equal to expected inflation then output and unemployment remain at the equilibrium level. This is the situation when economy reaches at Natural rate of unemployment. Natural rate of unemployment is the rate of unemployment corresponding to full employment. If inflation expectations increase, then the Phillips curve shifts upwards, while a decrease in inflation expectations leads to down ward shift.

Friedman's and Phelps's analyses provide a distinction between the "short-run" and "long-run" Phillips Curve. So long as the average rate of inflation remains fairly constant, as it did in the 1960s, inflation and unemployment will be inversely related. But if the average rate of inflation changes, as it will when policymakers persistently try to push unemployment below the natural rate, after a period of adjustment, unemployment will return to the natural rate. That is, once workers' expectations of price inflation have had time to adjust, the natural rate of unemployment is compatible with any rate of inflation.

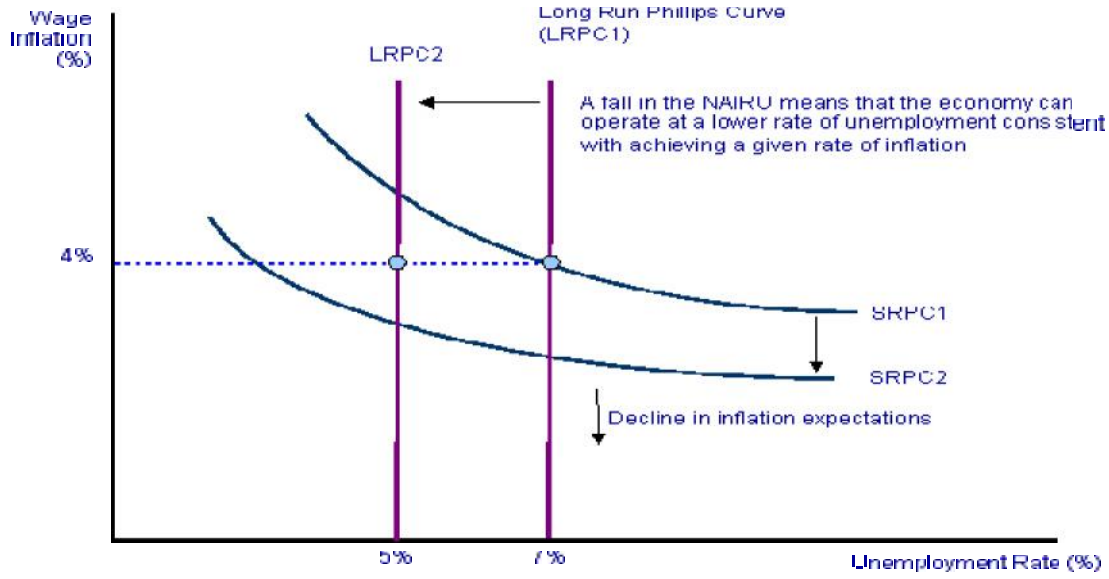
By the mid 1970s, it appeared that the Phillips Curve trade off no longer existed - there no longer seemed a stable pattern. The stable relationship between unemployment and inflation appeared to have broken down. It was possible to have a number of inflation rates for any given unemployment rate. American economists Friedman and Phelps offered one explanation - namely that there is not one Phillips curve, but a series of *short run Phillips Curves* and a *long run Phillips Curve*, which exists at the *Natural Rate of Unemployment* (NRU). Indeed, in the long-run, there is no trade-off between unemployment and inflation.

Most economists now accept a central tenet of both Friedman's and Phelps's analyses: there is some rate of unemployment that, if maintained, would be compatible with a stable rate of inflation. Many, however, call this the "Non Accelerating Inflation Rate of Unemployment" (NAIRU) because, unlike the term "natural rate," NAIRU does not suggest that an unemployment rate is socially optimal, unchanging, or impervious to policy.

The NAIRU

Milton Friedman, who criticized the basis for the original Phillips Curve in a speech to the American Economics Association in 1968, introduced the concept of the **NAIRU**. The **NAIRU** is defined as the rate of unemployment when the rate of wage inflation is stable. The NAIRU assumes that there is imperfect competition in the labour market where some workers have collective bargaining power through membership of trade unions with employers. And, some employers have a degree of monopsony power when they purchase labour inputs. According to proponents of the concept of the NAIRU, the equilibrium level of unemployment is the outcome of a **bargaining process** between firms and workers. New Keynesians explain the breakdown of the simple Phillips curve in terms of the *Non-Accelerating Inflation Rate of Unemployment* which exists at the Long Run Phillips Curve, is the rate of unemployment at which inflation will stabilize - in other words, at this rate of unemployment, prices will rise at the *same rate* each year. The long run Phillips Curve is normally drawn as vertical – but the long run curve can shift inwards over time

An inward shift in the long run Phillips Curve might be brought about by supply-side improvements to the economy – and in particular a reduction in the natural rate of unemployment. For example labour market reforms might be successful in reducing frictional and structural unemployment – perhaps because of improved incentives to find work or gains in the human capital of the workforce that improves the occupational mobility of labour.



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MODULE 3

MACRO ECONOMIC INSTABILITY AND POLICY

Business cycle: Meaning, types and phases – Monetary, Fiscal and Income policy – Meaning and instruments.

BUSINESS CYCLES

Many capitalist countries of the world such as USA and Great Britain have registered rapid economic growth during the last two centuries. But economic growth in these countries has not followed steady and smooth upward trend. There has been a long-run upward trend in Gross National Product (NP), but periodically there have been large short-run fluctuations in economic activity, that is, changes in output, income, employment and prices around this long-term trend. The period of high income, output and employment has been called the period of expansion, upswing or prosperity, and the period of low income, output and employment has been described as contraction, recession, downswing or depression. The economic history of the free market capitalist countries has shown that the period of economic prosperity or expansion alternates with the period of contraction or recession. These alternating periods of expansion and contraction in economic activity has been called business cycles. The business cycle is defined as a fluctuation of aggregate economic activity. There are recurrent but not periodic movements of aggregate activity, with many variables moving in the same direction at the same time (co movement). Increases in aggregate economic activity are expansions, while reductions in aggregate economic activity are contractions, or recessions. Both expansions and contractions exhibit persistence, so once an expansion or contraction begins, it tends to last some time.

Meaning of Business Cycle

The alternating periods of expansion and contraction in economic activity has been called as trade cycles or business cycles. Thus, trade cycles are recurrent fluctuations in aggregate employment, income, output and price level. Broadly speaking, business cycles are a kind of fluctuations which occur in business activity with certain degree of regularity and periodicity. Business cycles are wave like movements found in the aggregate economic activity of a nation. They are called cycles because they are periodic and occur regularly although perfect regularity has not been observed. The duration of a trade cycle vary from 2 to 12 years.

Clement Juglar was perhaps the first economist who stimulated much theorizing on cyclical fluctuations after he established statically the Omni-presence of business cycles in the latter half of the 19th century. Since then extensive research has been conducted on them but academicians have not yet completely succeeded in steering clear of multitude of complexities surrounding this phenomenon. In respect of its very definition, there has been much difference of opinion among the economists. However, the National Bureau of Economic Research in the U.S.A., which has been associated with business cycle studies, has adopted the definition given by Wesley C. Mitchell and Arthur F. Burns. According to them: "Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities followed by similarly general recessions, contractions and revivals which merge into the expansion phase of the next cycle; this sequence of change is recurrent but not periodic; in duration business cycles vary from more than one year to ten or twelve years: they are not divisible into shorter cycles with amplitudes approximating their own".

This definition brings out the following points:

a) Business cycles occur in the organized communities.

b) Cyclical fluctuation is a characteristic of those economics in which private enterprise is predominant. Little information is available, if these are fond in totalitarian economies.

c) Business cycles refer to the fluctuation in the aggregate economic activity. The variations in the individual activities do not constitute an over-all business cycle.

d) The expansions, recessions, contractions and revivals occur and recur in an unchanged sequence.

e) The cyclical fluctuation may be recurrent but not periodic in the sense that there is no specific standard duration of a business cycle.

According to J.M.Keynes, "A trade cycle is composed of periods of good trade characterized by rising prices and low unemployment percentages with periods of bad trade characterized by falling prices and high unemployment percentages."Myron Ross has stated in a similar tone, "The business cycle refers to the inexorable succession of good and bad times." Robert Aaron Gordon has provided a definition of business cycles which is not only comparable to that accepted by the United States National Bureau of Economic Research but goes even a step ahead of that. In the words of Gordon, "Business cycles consist of recurring alternations of expansion and contraction in aggregate economic activity, the alternating movements in each direction being self-reinforcing and pervading virtually all parts of the economy." This definition has a distinct feature in that it lays emphasis on the fact that business fluctuations are self-reinforcing or cumulative in character.

Jan Tinbergen considers the cyclical fluctuations are the "interplay between erratic shocks and an economic system's ability to perform cyclical adjustment movement to such shocks". Ragnar Frisch has echoed the same expression in the following works, "Impulses from outside operate upon the economy causing it to move in a wave-like manner, just as an external shock will set a pendulum swinging." The length of the wave movement is, however, determined by the "inner structure of the swinging system. Frisch recognizes that" the variation of the system may have a high degree of regularity, even though the impulses which set it going are quite irregular in their behavior". A.H. Hansen has defined the business cycle as a "Manifestation of the industrial segment of the economy from which prosperity or depression is redistributed to other groups in the highly interrelated modern society." Through this definition, Hansen has pointed out that the cyclical variations get transmitted from one sector or group of industries to the others in a system. Similarly, the prosperity or depression in one economy may be transmitted to the other until business cycle becomes a global phenomenon in a world system where every economy is related to all the other economies.

A noteworthy feature about these fluctuations in economic activity is that they are recurrent and have been occurring periodically in a more or less regular fashion. Therefore, these fluctuations have been called business cycles. It may be noted that calling these fluctuations as 'cycles' mean they are periodic and occur regularly, through perfect regularity has not been observed. The duration of a business cycles has not been of the same length; it has varied from a minimum of two years to a maximum of ten to twelve years, though in the past it was often assumed that fluctuations of output and other economic indicators around the trend showed repetitive and regular pattern of alternating periods of expansion and contraction. However, actually there has been no clear evidence of very regular cycles of the same definite duration. Some business cycles have been very short lasting for

only two to three years, while others have lasted for several years. Further, in some cycles there have been large swings away from trend and in others these swings have been of moderate nature.

A significant point worth noting about business cycles is that they have been vey costly in the economic sense of the word. During a period of recession or depression many workers lose their jobs and as a result large-scale unemployment, which causes loss of output that could have been produced with full-employment of resources, come to prevail in the economy. Besides, during depression many businessmen go bankrupt and suffer huge losses. Depression causes a lot of human sufferings and lowers the levels of living of the people. Fluctuations in economic activity create a lot of uncertainty in the economy which causes anxiety to the individuals about their future income and employment opportunities and involve a great risk for long-run investment in projects. Who does not remember the great havoc caused by the great depression of the early thirties of the present century? Even boom when it is accompanied by inflation has its social costs. Inflation erodes the real incomes of the people and makes life miserable for the poor people. Inflation distorts allocation of resources by drawing away scarce resources from productive uses to unproductive ones. Inflation redistributes income in favour of the richer sections and also when inflation rate is high, it impedes economic growth. About the harmful effects of the business cycles Crowther writes, "On the one hand, there is the misery and shame of unemployment with all the individual poverty and social disturbances that it may create. On the other hand, there is the loss of wealth represented by so much wasted and idle labour and capital.

Characteristics of a Business Cycle

The definitions of the business cycle given above display the following important characteristics of this economic phenomenon: Though different business cycles differ in duration and intensity they have some common features which we explain below:

A business cycle is 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 sector 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, prosperity spreads through various linkages of input-output relations or demand relations between various industries, and sectors. Whenever the process of fluctuations gets initiated in any sector or group of industries, it is not possible to restrict the fluctuations exclusively to that sector or group of industries. The rest of economic activities in a country are bound to be affected by the cyclical phenomenon and thus all the sectors or industries in the system do experience almost simultaneous expansions or contractions.

A business cycle exhibits a wave-like variation in economic activity: the system moves from one extreme to another like a pendulum. The expansion or prosperity is followed by contraction and vice-versa.

The business fluctuations are recurrent in nature: If a period of good trade is followed by a period of bad trade, it does not mean that the system will thereafter suffer continuously from the effects of low sales, low prices and incomes. A cyclical change is recurrent. There will alternately be the expansions and contractions in the economic activities.

Another important feature of business cycles is that investment and consumption of durable consumer goods such as cars, houses, and refrigerators are affected most by the cyclical fluctuations. As stressed by J.M. Keynes, investment is greatly volatile and unstable as it depends on profit expectations of private entrepreneurs. These expectations of entrepreneurs change quite often

making investment quite unstable. Since consumption of durable consumer goods can be deferred, it also fluctuates greatly during the course of business cycles.

Thirdly, 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.

Although business cycles are recurrent, they are not periodic: Though they do not show same regularity, they have some distinct phases such as expansion, peak, contraction or depression and trough. Further the duration of cycles varies a good deal from minimum of two years to a maximum of ten to twelve years. Some trade cycles may last only two or three years, while others may last for a longer period of say, six or eight or even larger number of years. The actual experience of the business world has clearly shown that no fixed periodicity can be contemplated for a complete cycle.

The cyclical fluctuations are self-reinforcing and cumulative: Once the cyclical movement starts in one direction, it continues to feed on itself and as a result the rate of change becomes more and more accelerated. Over the contraction phase, the initial decline in sales or production may be very small but as the time passes, it assumes more and more catastrophic proportions. A similar pattern is exhibited by the expansion phase also.

The cyclical movements are generally asymmetrical: The movement from trough (minimum point) to peak may be slow and halting but the downward movement may occur with a sudden and catastrophic pace. Thus expansion may last longer than contraction. But the reverse cannot also be denied. It is always a matter of empirical circumstance that will determine whether prosperity or depression will last longer in the economic system.

The impact of a cycle is differential: It I true those economic cycles are all-pervasive, yet the impact of fluctuations upon different industries and sectors in a country is usually differential. Some industries are more sensitive to fluctuations than others and they may be affected disproportionately more than many others. For instance, the capital-goods industries or construction industries are relatively much more sensitive than the other industries.

The business cycles may be international in character: The cyclical changes in the advanced countries generally get transmitted to the other countries of the world, since most of the countries in the present day world economy are mutually inter-dependent in the matters of international trade and payments. The conditions of prosperity or depression in one country affect, by a larger or smaller degree, the economic activities in the rest of the countries. The international transmission of cyclical fluctuations may not take pale, if a particular economic system is fully insulated from the effects of the forces of trade and payments. Lastly, business cycles are international in character. That is, one started in one country they spread to other countries through trade relations between them.

The above characteristics tend to impress that the behavior pattern of the business cycles is generally the same. But we must remember that no two individual cycles are exactly similar. The differences may exist in respect of their periodicity, causes and intensity. In this context Pigou observes: "A typical cycle constructed by making, as it were, a composite photograph of all the recorded cycles would not materially differ in form very widely from any one of them. But this typical cycle is not an exact replica of any individual cycle. The rhythm is rough and imperfect. All the recorded cycles are members of the same family, but among them there are no twins."

Costs of Trade Cycles

The occurrence of business cycles causes a lot of uncertainty for businessmen and makes it difficult to forecast the economic conditions. During the depression period profits may even become

negative and many businesses go bankrupt. In a free market economy profits are justified on the ground that they are necessary payments if the entrepreneurs are to be induced to bear uncertainty. The dangers of business cycles are:

During recession or depression, workers lose jobs, loss of output due to unemployment and business man will become bankrupt and suffer losses. It reduces levels of living of the people and results in human suffering.

Fluctuations Create uncertainty and this clauses anxiety to the individuals about their future income and employment. There is lot of risks for investment.

Boom or inflation erodes the real incomes of people and make life miserable for the poor. Inflation also distorts resource allocation from productive to unproductive uses. It also redistributes income in favour of the richer sections of the society.

TYPES OF BUSINESS CYCLES

Major and Minor Cycles

We have already studied that business cycles never extend over a fixed period. The length of the cyclical fluctuations varies between a wide range of 2 years and 54 years. All types of fluctuations in economic activities have been placed into two broad categories – major and minor cycles. Hansen has defined major cycles as those which, "from trough to trough vary in length from a minimum of six years to a maximum of thirteen years." The minor cycles can be termed as those which measured from trough to trough range over a minimum of two years to a maximum of five years.

The pioneering study concerning this problem was made much earlier in 1860, by Joseph Clement Juglar. He investigated the cyclical movements in the United States, France and England on the basis of statistics relating to discounts and advances of the banks, notes in circulation, gold reserves and bank deposits. Juglar suggested that the average length of a cycle was about 10 years. The Swedish economist Cassel believed that the period between two points of recognized crises in Germany during the last quarter of the 19^{th} century varied between eight to ten years. The statistical records clearly reveal that the major cycles are interrupted by a number of minor upswings or downsings.

Types of Business Cycles

There are different types of business cycles mentioned in the literature and the most important among them are briefly explained below.

1. Kitchin Cycle

Joseph Kitchin discovered a cycle in 1920s and according to him the duration of a trade cycle is 40 months and it emerges as a result of time lags in information movements in taking decisions. According to him, boom occurs when commercial situation improves firms increase output. They use fixed capital assets fully. So within a short period of time (a few months quantity demanded will be more than quantity supplied and hence results in excess supply. Depression occurs when demand decreases due to a fall in prices and the produced commodities get accumulated in inventories. This informs the entrepreneurs to reduce output and commodities get accumulated as inventories.

Thus, Joseph Kitchin found a cycle on the basis of the statistical data pertaining to bank clearings, wholesale prices and interest rate during the years 1890-1922 found that there had been a strong tendency towards a minor cycle averaging 40 months ($3\frac{1}{3}$ years) in Brittain and the United States. Thus, Kitchin cycle is a short business cycle of about 40 months discovered in the 1920s by Joseph Kitchin. This cycle is believed to be accounted for by time lags in information movements

affecting the decision making of commercial firms. Firms react to the improvement of commercial situation through the increase in output through the full employment of the extent fixed capital assets. As a result, within a certain period of time (ranging between a few months and two years) the market gets 'flooded' with commodities whose quantity becomes gradually excessive. The demand declines, prices drop, the produced commodities get accumulated in inventories, which informs entrepreneurs of the necessity to reduce output. However, this process takes some time. It takes some time for the information that the supply exceeds significantly the demand to get to the businessmen. Further it takes entrepreneurs some time to check this information and to make the decision to reduce production, some time is also necessary to materialize this decision (these are the time lags that generate the Kitchin cycles). Another relevant time lag is the lag between the materialization of the above mentioned decision (causing the capital assets to work well below the level of their full employment) and the decrease of the excessive amounts of commodities accumulated in inventories. Yet, after this decrease takes place one can observe the conditions for a new phase of growth of demand, prices, output, etc.

2. Juglar Cycle

Clement Juglar (French Physician and Statistician) explored economic cycles in 1860.According to him the periodicity of cycle ranges between 8 to 11 years.. He explained fluctuations in economic activity theoretically, statistically and on historical basis. According to him credits and banks are responsible for fluctuations. It is the credit cycles with speculative behavior that results in alternating periods of crisis and prosperity. Speculation followed by easy credit. Emergence of new markets, speculative investments, credit creation by banks are all responsible the emergence of crisis. According to him, crisis is rooted in the prosperity period. According to Juglar, development of capitalism was the source of fluctuations and no industrial development is possible without crisis. He believed that development and diffusion of innovation and development of technology are the reasons behind the trade cycles.

Juglar cycle is a fixed investment cycle of 7 to 11 years identified in 1862 by Clement Juglar. He investigated the cyclical movements in the United States, France and England on the basis of statistics relating to discounts and advances of the bam\nks, notes in circulation, gold reserves and bank deposits. Jurglar suggested that the average length of a cycle was about 10 years. Within the Juglar cycle one can observe oscillations of investments into fixed capital and not just changes in the level of employment of the fixed capital (and respective changes in inventories), as is observed with respect to Kitchin cycles. The recent research employing spectral analysis has confirmed the presence of Juglar cycles in the world GDP dynamics up to the present time. According to Juglar, trade cycles cannot be avoided and so, he suggested that we should understand them, forecast and accelerate their process to recover prosperity at the earliest.

3. Kuznests Cycle

A cycle of economic activity lasting between 15 and 20 years that acquired the name of the first economist to study it, Nobel Prize laureate Simon Kuznets. The Kuznets cycle is attributed to investment in housing and building construction and is well know among professionals in the real estate market. This is one of four separate cycles of macroeconomic activity that have been documented or hypothesized. The other three are Kitchin cycle, Juglar cycle, and Kondratieff cycle. A cycle of economic activity lasting between 15 and 20 years that acquired the name of the first economist to study it, Nobel Prize laureate Simon Kuznets. The Kuznets cycle is attributed to investment in housing and building construction and is well know among professionals in the real estate market. This is one of four separate cycles of macroeconomic activity that have been documented or hypothesized. The other three are Kitchin cycle, Juglar cycle, and Kondratieff cycle

4. Kondratieff Cycle

Russian Economist, Nikolai D Kondratief (1892-1938) found a cycle in prices and the theory is based on a 19th century study about price behaviour, wages, interest rates and raw materials. There will be an expansion of capital goods in capitalist economy. According to him, the most relevant cause is demographics. Birth rate fluctuations affect the age distribution of population. Lumps of people with similar ages until they die of old age results in boom. According to him, the birth rate is very low during depression. When the economy is stable, the birth rate will be higher. Post war, there was a baby boom. Impact of population on age distribution of people results in fluctuations. When population reach the ages between 15 to 25, they get jobs, cas, houses and household equipments and hence the capital formation increases and expenses will be higher which results in a boom. Kontratief has attached much importance to the long waves and has advanced the hypothesis that they are inherent constituents of the capitalistic process rather than the result of random factors. For his study, he relied upon the statistical data concerning wages, interest rates, wholesale prices, exports, imports and production in Britain, France and the United States.

Phases of Business Cycles

Business cycles have shown distinct phases and the study of which is useful to understand their underlying causes. These phases have been called by different names by different economists. Generally, the following phases of business cycles have been distinguished and they are Expansion (Boom, Upswing or Prosperity), Peak (upper turning point), Contraction (Downswing, Recession or Depression) and Trough (lower turning point). Thus, the four phases of business cycles have been shown in the below figure (Figure 3.1) where we start from trough or depression when the level of economic activity i.e, level of production and employment is at the lowest level. With the revival of economic activity the economy moves into the expansion phase, but due to the causes explained below, the expansion cannot continue indefinitely, and after reaching peak, contraction or downswing starts. When the contraction gathers momentum, we have a depression. The downswing continues till the lowest turning point which is also called trough is reached. In this way cycle is complete. However, after remaining at the trough for some time the economy revives and again the new cycle starts. Haberler in his important work on business cycles has named the four phases of business cycles as (1) Upswing, (2) Upper turning point, (3) Downswing, and (4) Lower turning point.

There are two types of patterns of cyclic changes. One pattern is shown in the figure where fluctuations occur around a stable equilibrium position as shown by the horizontal line. It is a case of dynamic stability which depicts change but without growth or trend. The second patterns of cyclical fluctuations are shown in the figure where cyclical changes in economic activity take place around a growth path (i.e., rising trend). J.R. Hicks in his model of business cycles explains such a pattern of fluctuations with long-run rising trend in economic activity by imposing factors such as autonomous investment due to population growth and technological progress causing economic growth on the otherwise stationary state.

We briefly explain below various phases of business cycles.

Expansion and Prosperity:- In its expansion phase, both output and employment increase till we have full-employment of resources and production is at the highest possible level with the given productive resources. There is no involuntary unemployment and whatever unemployment prevails is only of frictional and structural types. Thus, when expansion gathers momentum and we have prosperity, the gap between potential GNP and actual GNP is zero, that is, the level of production is at the maximum production level. A good amount of net investment is occurring and demand for durable consumer goods is also high. Prices also generally rise during the expansion phase but due to high level of economic activity people enjoy a high standard of living. Then something may occur,

whether banks start reducing credit or profit expectations change adversely and businessmen become pessimistic about future state of the economy that bring an end to the expansion or prosperity phase. As shall be explained below, economists differ regarding the possible causes of the end of prosperity and start of downswing in economic activity. Monetarists have argued that contraction in bank credit may cause downswing. Keynes have argued that sudden collapse of expected rate of profit (which he calls marginal efficiency of capital, MEC) caused by adverse changes in expectations of entrepreneurs lowers investment in the economy. This fall in investment, according to him, causes downswing in economic activity.

The **features of prosperity** are**:-** High level of output and trade. High level of effective demand.High level of income and employment. Rising interest rates. Inflation.Large expansion of bank credit.Overall business optimism. A high level of MEC (Marginal efficiency of capital) and investment. Due to full employment of resources, the level of production is Maximum and there is a rise in **GNP** (Gross National Product). Due to a high level of economic, it causes a rise in prices and profits. There is an upswing in the economic activity and economy reaches its **Peak**. This is also called as a **Boom Period**.

Contraction and Depression:-As stated above, expansion or prosperity is followed by contraction or depression. During contraction, not only there is a fall in GNP but also level of employment is reduced. As a result, involuntary unemployment appears on a large scale. Investment also decreases causing further fall in consumption of goods and services. At times of contraction or depression prices also generally fll due to fall in aggregate demand. A significant feature of depression phae is the fall in rate of interest. With lower rate of interest people's demand for money holdings increases. There is a lot of excess capacity as industries producing capital goods and consumer goods work much below their capacity due to lack of demand. Capital goods and durable consumer goods industries are especially hit hard during depression. Depression, it may be noted, occurs when there is a severe contraction or recession of economic activities. The depression of 1929-33 is still remembered because of its great intensity which caused a lot of human suffering.

The turning point from prosperity to depression is termed as Recession Phase. During a recession period, the economic activities slow down. When demand starts falling, the overproduction and future investment plans are also given up. There is a steady decline in the output, income, employment, prices and profits. The businessmen lose confidence and become pessimistic (Negative). It reduces investment. The banks and the people try to get greater liquidity, so credit also contracts. Expansion of business stops, stock market falls. Orders are cancelled and people start losing their jobs. The increase in unemployment causes a sharp decline in income and aggregate demand. Generally, recession lasts for a short period.

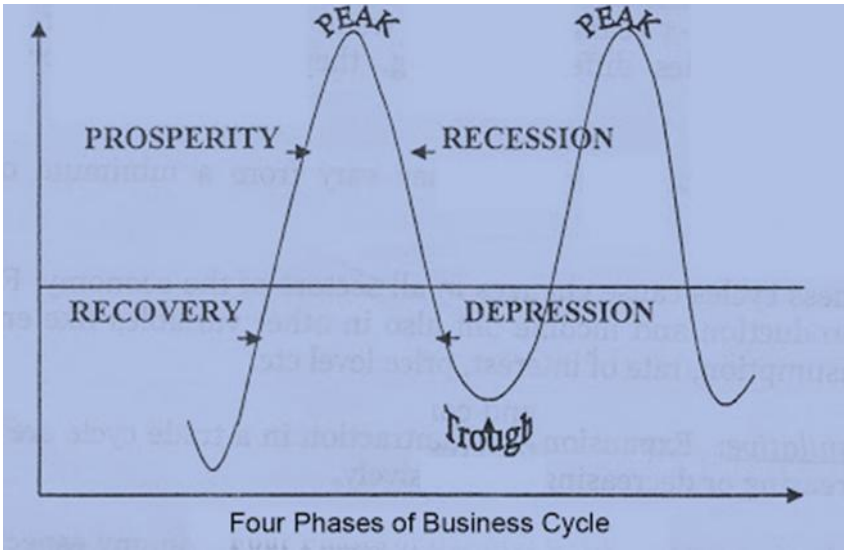
When there is a continuous decrease of output, income, employment, prices and profits, there is a fall in the standard of living and depression sets in. The **features of depression** are**:-**Fall in volume of output and trade.Fall in income and rise in unemployment. Decline in consumption and demand. Fall in interest rate.Deflation.Overall business pessimism.Fall in MEC (Marginal efficiency of capital) and investment.In depression, there is under-utilization of resources and fall in GNP (Gross National Product). The aggregate economic activity is at the lowest, causing a decline in prices and profits until the economy reaches its **Trough** (low point).

The turning point from depression to expansion is termed as Recovery or **Revival** Phase. During the period of revival or recovery, there are expansions and rise in economic activities. When demand starts rising, production increases and this causes an increase in investment. There is a steady rise in output, income, employment, prices and profits. The businessmen gain confidence and become optimistic (Positive). This increases investments. The stimulation of investment brings about the revival or recovery of the economy. The banks expand credit, business expansion takes place and

stock markets are activated. There is an increase in employment, production, income and aggregate demand, prices and profits start rising, and business expands. Revival slowly emerges into prosperity, and the business cycle is repeated. Thus we see that, during the expansionary or prosperity phase, there is inflation and during the contraction or depression phase, there is a deflation.

Trough and Revival:- There is a limit to which level of economic activity can fall. The lowest level of economic activity, generally called trough, lasts for some time. Capital stock is allowed to depreciate without replacement. The progress in technology makes the existing capital stock obsolete. If the banking system starts expanding credit or there is a spurt in investment activity due to the emergence of scarcity of capital as a result of non-replacement of depreciated capital and also because of new technology coming into existence requiring new types of machines and other capital goods. The stimulation of investment brings about the revival or recovery of the economy. The recovery is the turning point from depression into expansion. As investment rises, this causes induced increase in consumption. As a result industries start producing more and excess capacity is now put into full use due to the revival of aggregate demand. Employment of labour increases and rate of unemployment falls. With this the cycle is complete.

FIGURE 3.1 Phases of business cycle



We can also explain the phases of a business cycle as follows:

Economic Contraction

An economic contraction means the national economy is shrinking as a whole. This often means the national unemployment rate is rising as businesses begin to reduce output. As people begin to lose their jobs, consumer spending often decreases causing overall retail sales in the country to decline. During times of economic contraction, the Federal Reserve Board or the Fed may reduce interest rates to boost business and consumer spending in an effort to prevent further economic contraction and attempt to avoid a recession.

Trough

The trough phase of the business cycle is transition phase between economic contraction and expansion and usually indicates a recession. Economic output is the lowest and unemployment is generally the highest they have been in recent years. During this phase, the Gross Domestic Product, or GDP, which is the total value of goods and services produced in the country, is negative. A positive GDP is an indicator that the economy is coming out of a trough and moving into expansion, the next phase of the business cycle. However, if GDP growth is positive for one or two quarters and then becomes negative again, it is an indicator of a "double-dip" recession. A double dip recession is when the economy recovers for a short period during a recession but not for long enough to indicate economic growth.

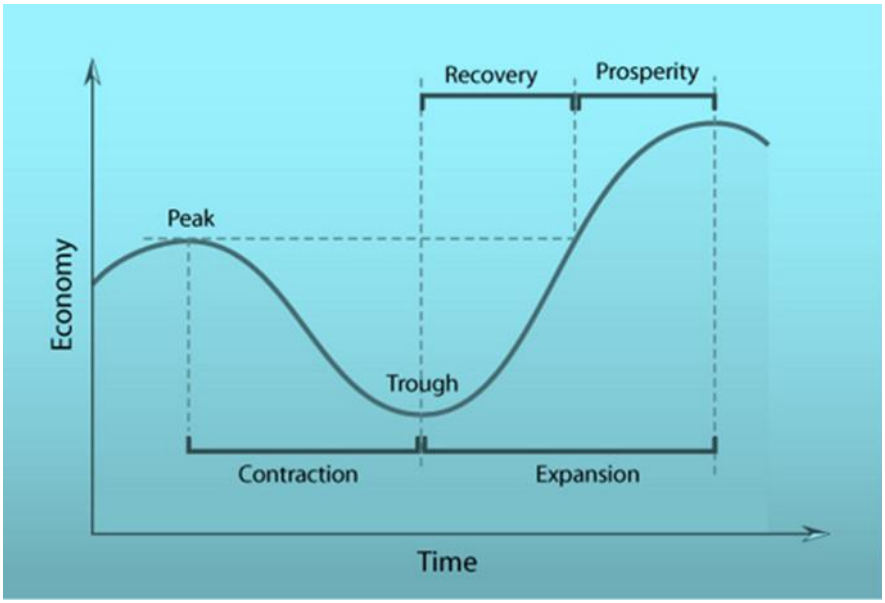
Expansion

When the economy experiences two to three consecutive quarters of economic growth, it indicates that the economy is coming out of the trough or recessionary phase of the business cycle and moving into the expansion phase. During this time, businesses begin to grow, increasing jobs and decreasing unemployment. Output begins to increase and GDP growth is positive. During expansion personal income is also often on the rise, leaving people with more disposable income. This then often leads to an increase in consumer spending.

Peak

The peak phase of the business cycle is the transition between economic expansion and contraction. An economic peak is when economic output and unemployment are generally at the highest levels they have been in recent years and the GDP continues along a positive growth pattern. Economists do not view peaks as a positive events and see them as an economy that is growing too quickly. When the economy expands or grows too rapidly, inflation rates rise and the value of the dollar falls. A peak is often an indicator of an upcoming economic contraction.

Figure 3.2



Phases of Business Cycle

Theories of Business Cycles

No other problem in the capitalist countries has haunted more the theoreticians, statesmen has haunted more the theoreticians, statement and the general public than tht of business cycles. There is no unanimity of opinion among the economists regarding the causes of this complex phenomenon. Their explanations range widely from the natural influences to the technological and other exogenous forces. In the present chapter, a study will be attempted not only about the nature and phases of business cycles but also about the principal theories of business cycles. Business cycle theories can be classified as monetary and non-monetary theories. The important non-monetary theories of trade cycles are meteorological (Sun spot) theory, Psychological theory, Overproduction theory, Over saving theory, Innovation theory, and Cobweb theorem. We may explain these theories briefly.

Sun Spot Theory

This is the oldest theory of business cycle and it is associated with the name of W.Stanley Jevons, a British economist. According to him, the magnitude and frequency of sunspots determines the fluctuations of business activity. At definite intervals, certain dark spots appeared on the face of the sun which affected the transmission of heat to the earth. This affects the agricultural crops which in turn influences the level of business activity in the economy. When the agricultural crops failed due to sun spots, the entire economy would face a depression as the agricultural was an important branch of production. The depression in the agricultural sector soon spreads to other sectors, and the entire economy will have a depression. On the other hand, if spots did not appear on the face of the sun and the rainfall was good, there might be excellent harvests in the country giving rise to a period of prosperity for the people. The variations in the rainfall were so regular that periods of poor harvests often alternated with periods of good harvests. As a result, a period of depression was often followed by a period of boom.

Though the sun spot theory contains an element of truth about fluctuations in economic activity, they do not offer an adequate explanation of business cycles. Therefore, much reliance is not placed on the sun spot theory by modern economists. Nobody can say with certainty about the nature of these sunspots and the degree to which they affect rain although climate is an important factor affecting agricultural production.

Hawtrey's Monetary Theory (The Purely Monetary Theory)

This theory of business cycle is developed by R.G. Hawtrey. According to him, trade cycle is a purely a monetary phenomenon. Changes in the flow of money are the sole and sufficient cause of changes in economic activity. The flows of money are approximately equal to consumer outlays which may be termed as MV, if V is the income velocity of circulation of money. If the quantity of money and credit are expanded, demand exceeds anticipations, stocks decrease and larger orders are placed for replenishment of stocks. This brings about a rise in prices, production, employment and factor incomes. In an opposite situation, a reduction in the quantity of money causes a contraction in demand. Stocks will accumulate and prices decline. This will cause losses. Production will fall; unemployment will swell; and agonizing downward movement will gather force. However, Hawtrey has not altogether ignored the impact of non-monetary factors like earth quakes, wars, and strikes, which can cause a general impoverishment.

The expansion or upswing in the economic system has been attributed to the driving force of credit expansion. Banks faced with the accumulation of excess reserves liberalise the terms of credit. The borrowing may be stimulated in various ways. The banks may apply a less strict standard to the

security offered. They may extend the maximum period for which they are willing to lend. No discrimination may be made about purposes for which the loans are to be utilized. The main instrument for encouraging borrowing by the businessmen is the reduction of the discount rate. Thus, under the circumstances of easy bank credit, a process of cumulative expansion of productive activity is set in. The bank finances make the wholesalers place larger orders to the manufactures for raising their stocks of goods. This induces additional productionand employment and the money created by the banks is received by the factors of production as incomes. The increased personal incomes will raise the monetary demand (consumer's expenditure) which will give further momentum to the economic activity. This results in a cumulative expansion of productive activity. As the cumulative expansion proceeds, the prices are quoted higher and higher. When prices rise, dealers have a further inducement to borrow, since the rising prices affect the business activity in the same manner as a fall in interest rates.

Prosperity stops when credit restraints are imposed by banks. Extension of credit is stopped and pressure is applied up on the business firms for the recovery of outstanding loans. This results in the emergence of contraction. The credit restrictions and insistence of repayment of loans by banks will force the firms to dispose of the stocks which results in a fall in prices. As the prices fall, losses appear and the producers curtail production, workers are laid off; factor incomes decline; and there is a decline in consumer outlays which depresses the sales, causing stocks to accumulate and the resultant losses continue to aggravate the downward tendencies. Thus, it is evident that the critical factor in precipitating the downturn is the contraction of bank credit.

Under-Consumption Theory

Under consumption theory was propounded by Sismondi, Hobson and Karl Marx. Actually this is not a theory of recurring business cycles. They made an attempt to explain how a free enterprise economy could enter a long run economic slowdown. A crucial aspect of Sismondi and Hobson's under consumption theory is the distinction they made between the rich and the poor. According to them, the rich sections in the society receive large part of their income from returns on financial assets and real property owned by them. Further they assume that the rich have a large propensity to save. That is they save relatively a large proportion of their income and therefore, consume relatively smaller proportion of their income. On the other hand poorer segments of the society obtain most of their income from work (wages from labour) and have a lower propensity to save. Therefore, these poorer people spend a relatively less proportion of their income on consumer goods and services. According to Sismondi and Hobson, saving increases during the expansion phase which leads to more investment expenditure on capital goods which enables the economy to produce more consumer goods and services. However, as society's propensity to consume falls, consumption demand is not enough to absorb the increased production of consumer goods. In this way lack of demand for consumer goods or under consumption emerges in the economy which halts the expansion of the economy. Thus, when under consumption appears, production of goods becomes unprofitable. Firms cut their production resulting in recession or contraction in economic activity.

According to Karl Marx also under consumption emerge under capitalism which results in the collapse of capitalism. According to Marx, business cycle is due to the ever increasing inequalities and concentration of wealth and economic power in the hands of the few capitalists who own the means of production. As a result the poor workers lack purchasing power to purchase goods and services produced by the capitalists resulting in the under consumption or overproduction. With the capitalist producers lacking market for their goods, capitalist economy plunges into depression. He predicted that capitalism would move periodically through expansion and contraction with each peak higher than its previous peak and each crash (depression) deeper than the last. Ultimately, according to Marx, in a state of acute depression when the cup o f misery of working class is full, they will

overthrow the capitalist class which exploits them and in this way the new era of socialism would come into existence.

Overinvestment Theory (Hayek's Monetary Version)

F.A.Hayek believed that monetary forces cause fluctuations in investment which are prime cause of business cycles. According to him, over issue of bank credit at artificially low interest rates is responsible for the operation of the business cycle. He has developed the theory made by Wicksell. Hayek explained the emergence of trade cycles in terms of natural rate of interest and market rate of interest. So long as the market rate of interest coincides with the natural rate of interest, there is no trouble and the economy remains in equilibrium. However, when the market rate of interest is less than natural rate of interest, the demand for funds for purposes of investment will exceed the available supply of savings. The gap between the demand for and supply of savings shall be filled I by the expansion of bank credit. The additional bank credit increases the supply of money which in turn increases the price level, resulting in inflation or boom. On the other hand, if the market rate of interest is more than the natural rat of interest, the demand for funds for purposes of investment will now be less than the available supply of savings. Bank credit will contract. The supply of money in circulation will be reduced, which in turn will decrease the price level, resulting in deflation or depression.

Keynes's Theory of Business Cycle

J.M.Keynes has made an important contribution to the analysis of the causes of business cycles and according to him, the level of income, output or employment is determined by the level of aggregate effective demand. A higher level of aggregate demand will result in greater output, income and employment and a lower level of aggregate demand will result in smaller amount of goods and services. Hence, the changes in the level of aggregate demand will bring about fluctuations in the level of income, output and employment. As such according to Keynes, the fluctuations in economic activity are due to the fluctuations in aggregate effective demand. Thus, a fall in aggregate effective demand will create the conditions of recession or depression. If the aggregate demand is increasing, economic expansion will take place. According to Keynes, the aggregate demand is composed of demand for consumption goods and demand for investment goods. Thus, aggregate demand depends on the total expenditure of the consumers on consumption goods and entrepreneurs on investment goods. According to Keynes, the propensity to consume is almost stable in the short run and fluctuations in aggregate demand is primarily due to the fluctuations in investment demand..Hence, it is fluctuations in investment demand that brings business cycles in the economy and fluctuations in investment are due to fluctuations in the marginal efficiency of capital (M.E.C). The volume of private investment depends upon (i) the rate of interest and (ii) the marginal efficiency of capital. The rate of interest is more or less stable and hence the M.E.C is the real strategic variable which determines the volume of private investment. Hence, it is the fluctuations in marginal efficiency of capital that cause fluctuations in the investment and fluctuations in income, output or employment. Keyens has shown that changes in investment will have its effect on output, income or employment. This is explained in terms of multiplier which shows that there will be a manifold change in income as a result of an initial change in investment. As such, changes in investment will get magnified when multiplier is working in during the upswing or downswing of a business cycle.

Innovation Theory of Business Cycle

The innovation theory is associated with the name of Joseph A.Schumpeter. Schumpeter believes that the fluctuations are inherent in the economic process of industrial change. Innovations are different from inventions as invention is the discovery of something new, whereas an innovation is the actual introduction (application) of something new. Innovations consist of the commercial

exploitation of new techniques, new materials and new methods of organization. Thus, the introduction of a new product, the introduction of a new method of production, the opening up of a new market, a new source of raw materials and the new organization of an industrial structure are all innovations according to Schumpeter. According to Schumpeter, innovations are the cause of cyclical fluctuations in a capitalist economy. Innovations may be of two types and they are 1.greater waves of innovations and 2. smaller waves of innovations. The greater waves cause s long business cycles (long waves), while the smaller waves leads to short business cycles (short waves). Thus, Schumpeter explain the upswing and downswing of the business cycle I terms of innovations. According to him, innovations cause disequilibrium in the economic system and the disequilibrium continues till there is readjustment at some new equilibrium position.

According to Schumpeter, when there is full employment in the economy where all the productive factors are fully employed, innovations by a new product causes upswing in the economy. Thus, upswing is started when entrepreneurs bring innovations by making new investments. At first, innovations may be introduced by a few entrepreneurs and in course of time, attracted by the increased profits of new innovators, others entrepreneurs will also initiate innovations. As a result, there will be an increase in investment and business activities flourish which may result in a rapid increase in new products, output and employment.

As the product of the new industry competes with the products of the old industries, the consumers will buy the new product and this will reduce the demand for old products. The prices of these industries will fall. At the same time the new firms will start to repay the loan which they had borrowed from the banks. This reduces the supply of bank credit which has a deflationary effect on the economy. In view of the decline in demand, the firms in the old industries begin to reduce their output by laying off workers and other factors of production which may result in large scale unemployment. Unemployment reduces the income and purchasing power of these people which in turn reduces the demand for products of old and new firms. Further decreases in demand take place in the economy and ultimately the economy experiences the downswing of the business cycle.

Samuelson's Theory of Business Cycle (Multiplier-Accelerator Interaction Model)

Prof. Samuelson has developed a model of Multiplier-Accelerator interaction model of trade cycle assuming one period lag and different values for marginal propensity to consume (α), and accelerator (β) . So, multiplier - accelerator interaction result in changes in income. He explains five different types of fluctuations. According to Samuelson, fluctuations in investment cause instability and instability increases due to the interaction of multiplier-accelerator. When consumption, income and output increase due to multiplier effect, they induce further changes in investment. The extent of induced investment in capital goods industries depends on capital output ratio. So multiplier-accelerator interaction can produce trade cycles. The pattern of trade cycle differs depending upon the magnitudes of marginal propensity to consume and capital

output ratio. According to Samuelson, if we know the national income for two periods, the national income for the following period ca be derived. This is by taking a weighted sum and the weighted sum depend up on the values chosen for the marginal propensity to consume (mpc) and accelerator. Assuming the value of mpc greater than zero and less than one, ($0 < \alpha < 1$), and accelerator greater than zero ($\beta > 0$), Samuelson explains 5 types of cyclical (behaviuor) fluctuations. Samuelson's case one shows a cycle less path because it is based only on the multiplier effect, the accelerator playing no part in it. Case 2nd shows damped cyclical path fluctuating around the static multiplier level. Case 3rd depicts cycles of constant amplitude, repeating themselves around the multiplier level.4th case reveals anti-damped or explosive cycles whereas case 5 relates to a cycle less explosive upward path eventually approaching a compound interest rate of growth. Of the 5 cases explained, only 3cases (2,

3, and 4 are cyclical in nature. But they can be reduced to 2 because case 3 pertaining to a cycle of constant amplitude has not been experienced.

MONETARY, FISCAL AND INCOMES POLICY FOR STABILISATION

An economy may experience fluctuations in economic activity and may result in booms and depressions which are very harmful to the economy and society. The classical economists believed that an automatic mechanism works to restore stability in the economy; recession would cure itself and inflation will be automatically controlled. However, there are evidences that no such automatic mechanism works to bring stability in the economy. The two important tools of macroeconomic policy for stabilization are fiscal policy and monetary policy. In addition incomes policy is also used to stabilize the economy during times of instability. There are diverse opinion regarding the effectiveness of alternative policies among economists for bringing stability and according to Keynes, monetary policy was ineffective to lift the economy out of depression and he believed that fiscal policy is more effective in bringing stability in the economy. In addition to the monetary and fiscal policies, incomes policies are also used by economists to stabilize the economy.

Goals of Macroeconomic Policy

The three important objectives of macroeconomic policy are Economic Stability at a high level of output and employment, Price Stability and Economic growth. We will briefly examine the role of Monetary, Fiscal and Incomes policy for stabilizing the economy.

Meaning of Monetary Policy

Monetary policy is an important instrument to achieve the objectives of macroeconomic policy. The monetary policy is formulated and implemented by the Central Bank of a country. In some countries such as India the Central Bank (the Reserve Bank is the Central Bank of India) works on behalf of the Government and acts according to its directions and broad guidelines of the government. Howeve, in some countries such as the USA the Central Bank (i.e., Federal Reserve Bank System) enjoys an independent status and pursues its independent policy.

Monetary policy is concerned with changing the supply of money stock and rate of interest for the purpose of stabilizing the economy at full-employment or potential output level by influencing the level of aggregate demand. More specifically, at times of recession, monetary policy involves the adoption of some monetary tools which tend the increase the money supply and lower interest rates so as to stimulate aggregate demand in the economy. On the other hand, at times of inflation, monetary policy seeks to contract the aggregate spending by tightening the money supply or raising the rate of interest. As stated above the broad objectives of monetary policy are to achieve full-employment level of output, to ensure price stability and to promote economic growth of the economy. It may however be noted that in a developing country such as India, in addition to achieving equilibrium at full employment or potential output level, monetary policy has also to promote and encourage economic growth both in the industrial and agricultural sectors of the economy.

Objectives of Monetary Policy

The three important objectives of monetary policy are:

To ensure economic stability at full-employment or potential level of output;

To achieve price stability by controlling inflation and deflation; and

3. To promote and encourage economic growth in the economy.

In line with the above goals of monetary policy, growth with price stability is the goal of monetary policy of the Reserve Bank of India. The role of monetary policy in achieving economic stability at a higher level of output and employment is discussed below.

Instruments of Monetary Policy

There are four major tools or instruments of monetary policy which can be used to achieve economic and price stability by influencing aggregate demand or spending in the economy. They are:

Open market operations;

Changing the bank rate;

3. Changing the cash reserve ratio; and
4. Undertaking selective credit controls.

We shall explain how these various tools can be used for formulating a proper monetary policy to influence levels of aggregate output, employment and prices in the economy. In times of recession or depression, expansionary monetary policy (easy money policy) is adopted which raises aggregate demand and thus stimulates the economy. On the other hand, in times of inflation and excessive expansion, contractionary monetary policy (tight money policy) is adopted to control inflation and achieve price stability through reducing aggregate demand in the economy. We discuss below both these policies.

Monetary Policy to Control Depression (Recession)

When the economy is experiencing recession (involuntary unemployment), which is due to a fall in aggregate demand, the central bank intervenes to cure such a situation. Central bank (Monetary Authority) will expand the money supply in the economy to lower the rate of interest with a view to increase the aggregate demand to stimulate the economy. The following three monetary policy measures are adopted as a part of an expansionary monetary policy to cure recession and to establish the equilibrium of national income at full employment level of output.

1. The central bank undertakes open market operations and buys securities in the open market. Buying of securities by the central bank, from the public and from commercial banks will lead to the increase in reserves of the commercial banks and amount of currency with the general public. With greater reserves, commercial banks can issue more credit to the investors and businessmen for undertaking more investment. More private investment will cause aggregate demand curve to shift upward. Thus buying of securities will have an expansionary effect on output and employment in the economy and the depression can be avoided.

2. The Central Bank may lower the bank rate (Discount rate), which is the rate of interest charged by the central bank of a country on its loans to commercial banks. At a lower bank rate, the commercial banks will be induced to borrow more from the central bank and will be able to issue more credit at the lower rate of interest to businessmen and investors. This will not only make credit cheaper but also increase the availability of credit or money supply in the economy. The expansion in credit or money supply will increase the investment demand which will tend to raise aggregate output and income and will avoid depression.

Thirdly, the central bank may reduce the Cash Reserve Ratio (CRR) to be kept by the commercial banks. In countries like India, this is a more effective and direct way of expanding credit and increasing money supply in the economy by the central bank. With lower reserve requirements, a large amount of funds is released for providing loans to businessmen and

investors. As a result, credit expands and investment increases in the economy which has an expansionary effect on output and employment.

Similar to the Cash Reserve Ratio (CRR), in India there is another monetary instrument, namely, Statutory Liquidity Ratio (SLR) used by the Reserve Bank to change the lending capacity and therefore credit availability in the economy. According to the Statutory Liquidity Ratio, in addition to the Cash Reserve Ratio (CRR), banks have to keep a certain minimum proportion of their deposits in the form of some specified liquid assets such as Government securities. To increase the lendable resources of the banks, Reserve Bank can lower this Statutory Liquidity Ratio (SLR). Thus, when Reserve Bank of India lowers statutory liquidity Ratio (SLR), the credit availability for the private sector will increase.

It may be noted that the use of all the above tools of monetary policy leads to an increase in reserves or liquid resources with the banks. Since reserves are the basis on which banks expand their credit by lending, the increase in reserves raises the money supply in the economy. Thus, appropriate monetary policy at times of recession or depression can increase the availability of credit and also lower the cost of credit. This leads to more private investment spending which has an expansionary effect on the economy. From the above analysis, it is clear that monetary policy can play an important role in stimulating the economy and ensuring stability at full employment level. But it is worth mentioning that there are several weak links in the full chain of increase in money supply achieving a significant expansion in economic activity. Keynes was of the view that monetary policy is not an effective instrument in bringing about revival of the economy from the depressed state. In fact, he laid stress on the adoption of fiscal policy to overcome depression.

Limitations of Monetary Policy to Cure Depression

Keynes and his followers doubted the effectiveness of monetary policy in avoiding depression from the economy. They, therefore, emphasised the role of fiscal policy for fighting severe recession. According to Keynes, during severe recession, people have a high elastic demand for money at low rates of interest. At low rates of interest, banks and people will keep all the money with them. Hence, during times of depression, the rate of interest may fall so low that most of the people expect the interest rate to rise in future and therefore they hold on their money with them. This makes the demand for money absolutely elastic at a low rate of interest and there emerges a liquidity trap. Thus, a liquidity trap occurs during times of depression when people hold all the increments in the stock of money so that demand for money becomes absolutely elastic and therefore money demand curve takes a horizontal shape.

Monetary Policy to Control Inflation (Boom)

To control inflation or boom, a contractionary monetary policy (tight monetary policy) is to be adopted. Contractionary monetary policy is one which reduces the availability of credit and raises the rate of interest. A tight monetary policy to control inflation involves the following measures.

The Central Bank (monetary authority) sells the securities to commercial banks and public through open market operations. This will reduce the reserves with the banks and money with the public. This will reduce the lending capacity of banks and money supply in the economy will shrink which will reduce the severity of inflation in the economy.

The Central Bank will raise the bank rate which in turn increases the lending rate of commercial banks. This will raise the interest rate and hence reduces the liquidity of commercial banks. This will result in the reduction in spending and help to control the inflationary pressure in the economy.

The Central Bank will raise Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) which results sin the contraction of credit in the economy.

Central Bank will use the qualitative credit control by which the Central Bank will ask commercial banks to raise the minimum margins for obtaining loans from banks against the stocks of commodities. This will reduce the availability of credit in the economy and helps to reduce the rate of inflation.

Fiscal Policy for Economic Stabilisation

The economy does not always work smoothly and there are fluctuations in the level of economic activity. At times the economy finds itself in the grip of recession when levels of national income, output and employment are far below their full potential levels. During recession, there is a lot of idle or unutilized productive capacity. As a result, unemployment of labour increases along with the existence of excess capital stock. At other times, inflation (i.e. rising prices) occurs in the economy. Thus, in a free market economy there is a lot of economic instability. The classical economists believed that an automatic mechanism works to restore stability in the economy; recession would cure itself and inflation will be automatically controlled. However, the empirical evidence during the 1930s when severe depression took place in the Western capitalist economies and also the evidence of post Second World II period amply shows that no such automatic mechanism works to bring about stability in the economy. That is why Keynes argued for intervention by the Government to cure depression and inflation by adopting appropriate tools of macroeconomic policy. The two important tools of macroeconomic policy are fiscal policy and monetary policy. Here, we shall explain the role of fiscal policy for stabilizing the economy. According to Keynes, monetary policy was ineffective to lift the economy out of depression and hence, he emphasized the role of fiscal policy as an effective tool to lift the economy.

Meaning of Fiscal Policy

Fisc means treasury and hence fiscal policy is the use of taxation, public expenditure and public borrowing either for economic development or for economic stability. In the words of Arthur Smithies, fiscal policy is a policy under which the government uses its expenditure and revenue programmes to produce desirable effects and to avoid undesirable effects on the national income, production and employment.

Objectives of Fiscal Policy

The three important goals or objectives of fiscal policy are:

Economic stability at a high level of output and employment, Price stability and Economic Growth

We shall discuss the role of fiscal policy in achieving economic stability at full employment level and in controlling inflation and deflation and thus attaining price stability.

Instruments of Fiscal Policy

The major instruments of Fiscal policy are Taxation, Public Expenditure and Public borrowing. The government (fiscal authority) uses these instruments for economic stability or for economic development. Some times, the term budgetary policy is also used to represent fiscal policy.

Fiscal Policy for Stabilisation

Fiscal policy is an important instrument to stabilize the economy, that is, to overcome recession and control inflation in the economy. Fiscal policy is the policy of the government in which government uses tax, expenditure and borrowing policies to stabilize the economy. Thus, by fiscal policy, we mean deliberate change in the government expenditure and taxes to influence the level of national output and prices. Fiscal policy generally aims at managing aggregate demand for goods and services. At the time of recession the Government increases its expenditure and reduces

tax rates. On the other hand, to control inflation the government reduces its expenditure and raises taxes. In other words, to cure recession expansionary fiscal policy and to control inflation contractionary fiscal policy is adopted. It is worth mentioning that fiscal policy aims at changing aggregate demand by suitable changes in government spending and taxes. Thus, fiscal policy is mainly a policy of demand management. It should be further noted that when the government adopts expansionary fiscal policy to cure recession, it raises its expenditure without raising taxes or cuts down taxes without changing expenditure or increases expenditure and cuts down taxes as well. With the adoption of expansionary fiscal policy, Government will have deficit in its budget. Thus, expansionary fiscal policy to cure recession and unemployment will involve a deficit budget. On the other hand, to control inflation, Government reduces its expenditure and increases taxes and will have a surplus budget. Thus, policy of budget surplus is adopted to remedy inflation. We will briefly discuss the fiscal policy to cure recession (boom) and to control inflation (boom).

Fiscal Policy during Recession (Depression)

During recession, the economy experiences a decrease in aggregate demand due to a fall in private investment. Private investment may fall when businessmen become highly pessimistic about making profits in future, resulting in decline in marginal efficiency of investment. As a result of fall in private investment expenditure, aggregate demand curve shifts down creating deflationary (recessionary) gap. It is the task of the government (fiscal policy) to close this gap by increasing government expenditure or by reducing taxes. Thus there are two fiscal methods to get the economy out of recession and they are an Increase in Government Expenditure and a Reduction of Taxes.

During times of recession, the Government has to increase its expenditures. Government may increase expenditure by starting public works, such as building roads, dams, ports, telecommunication links, irrigation works, electrification of new areas etc. For these public works, Government buys various types of goods and materials and employs workers. The effect of this increase in expenditure increases incomes of those who sell materials and supply labour for these projects. The output of these public works also goes up together with the increase in incomes. Keynes showed that an increase in government expenditure produces a multiplier effect. Those who get more incomes spend them further on consumer goods depending on their marginal propensity to consume. As during the period of recession there exists excess capacity in the consumer goods industries, the increase in demand for them brings about expansion in their output which further generates employment and incomes for the unemployed workers and so the new incomes are spent and respent further and the process of multiplier goes on working till the economy recovers from depression. The amount of expenditure needed to establish full employment equilibrium depends on the magnitude of GNP gap caused by deflationary gap on the one hand and the size of multiplier on the other. It may be recalled that the size of the multiplier depends on the marginal propensity to consume. It may also be further noted that increase in Government expenditure without raising taxes (and therefore the policy of deficit budgeting) will fully succeed in curing recession if rate of interest remains unchanged. Increased Government expenditure should not be by raising taxes because rise in taxes would reduce disposable incomes and consumers demand for goods. As a matter of fact, rise in taxes would offset the expansionary effect of rise in Government spending. Therefore, proper fiscal policy for stabilization during times of recession is to be by a budget deficit by borrowing from the public or by the creation of new money. By creating new money to finance the deficit, the crowding out of private investment can be avoided and full expansionary effect of rise in Government expenditure can be realised. Thus, creation of new money for financing budget deficit (monetization of budget deficit) will have a greater expansionary effect than that of public borrowing.

Alternative fiscal policy measure to overcome recession and to achieve expansion in output and employment is reduction of taxes. The reduction in taxes increases the disposable income of the society and causes the increase in consumption spending by the people. Thus reduction in taxes will

cause an upward shift in the consumption function. If along with the reduction in taxes, the government expenditure is kept unchanged, aggregate demand curve will shift upward due to rise in consumption function curve. This will have an expansionary effect and the economy will be lifted out of recession. The national income and employment will increase and as a result unemployment will be reduced.

It is worth noting that reduction in taxes has only an indirect effect on expansion and output through causing a rise in consumption function. But, like the increase in government expenditure, the increase in consumption achieved through reduction in taxes will have a multiplier effect on increasing income, output and employment.

Fiscal Policy during Inflation

When there are large increases in consumption demand by the households or investment expenditure by the entrepreneurs or an increase in Government expenditure, the aggregate demand increases beyond full employment level results in inflationary pressures (boom) in the economy. This inflationary situation can also arise if too large an increase in money supply in the economy occurs. In these circumstances inflationary gap occurs which tend to bring about rise in prices. An alternative way of looking at inflation is to view it from the angle of business cycles. After recovery from recession, when during upswing an economy finds itself in conditions of boom and prices start rising rapidly. Under such circumstances anti-cyclical fiscal policy calls for reduction in aggregate demand. Thus, fiscal policy measures to control inflation are (1) reducing Government expenditure and (2) increasing taxes. If in the beginning the government is having balanced budget, then increasing taxes while keeping Government expenditure constant will yield budget surplus. The creation of budget surplus will cause downward shift in the aggregate demand curve and will therefore help in easing pressure on prices. If there is a balanced budget to begin with and the Government reduces its expenditure, say on defence, subsidies, transfer payments, while keeping taxes constant, this will also create budget surplus and result in removing excess demand in the economy. It is important to mention that in the developing countries like India, the main factor responsible for inflationary pressures is heavy budget deficit of the Government for the last several years resulting in excess demand conditions. Rate of inflation can be reduced not necessarily by planning for budget surplus which is in fact impracticable but by trying to take steps to reduce budget deficits. It has been estimated that the aim should be to reduce fiscal deficit 2 to 3 per cent of GNP to achieve price stability in the Indian economy.

INCOME POLICY

There is a controversy regarding the effectiveness of monetary and fiscal policy between monetarists and fiscalists. Keynesian model rejected the importance of money supply and treated money as a veil and argued that fiscal policy is more effective in bringing stability especially saving an economy from depression. On the other hand, the monetarists under Friedman insisted that money alone matters and monetary policy is more effective in bringing stability in the economy. When there is a financial or economic disaster, the Keynesians watch the employment rate and the monetarists watch money supply for bringing stability. Yet, the post-Keynesians question the validity of both approaches because fiscal policy or monetary policy alone cannot bring stability in the economy. As such the post Keynesian solution to inflation is incomes policy rather than monetary or fiscal policies. Hence, in addition to fiscal and monetary policies, we have a number of other measures for bringing stability and for promoting full employment and growth. Among other measures, Incomes policy is an important measure to stabilise the economy at full employment level of output.

Meaning of Incomes Policy

The concept of "Incomes Policy" has gained currency in recent years as a means to fight demand pull and cost push inflation. Income Policy attempts to halt the increasing prices by

preventing money wages from rising faster than productivity. Thus, the objective of income policy is to prevent the factor incomes from rising at rates which are too fast to be compatible with price stability. The central objective of this policy is to reconcile economic growth and price stability. The price stability is to be ensured by restraining increases in wages and other incomes from outstripping the growth of real national product. Incomes Policy seeks to concentrate on curbing the private consumption expenditure in an effort to reduce the pressure of aggregate demand on aggregate supplies. This concentration on restraining the private consumption expenditure is due to the fact that private consumption expenditure accounts for about two thirds or three fourths of the total aggregate demand. In other words, incomes policy implies deliberate intervention by the authorities in the process of price formation for labour and products aimed at preventing gross money incomes from rising excessively in relation to the growth of national output in real terms.

Thus, Incomes policies are generally defined as action taken by the government with a view to restraining wage increases and thus curbing inflation without increasing unemployment. Given this definition which excludes self imposed restraint on the part of wage earners, incomes policy can be seen as one element in governments overall economic policy. Thus, incomes policy consisted of limiting wages and food prices. If real wage growth fails to keep pace with productivity growth, there is a lasting and insurmountable constraint on the expansion of domestic demand and employment creation. As wages have decoupled from productivity growth, wage earners can no longer afford to purchase the growing output, and the resultant stagnating domestic demand is causing further downward pressure on prices and wages, thus threatening to bring about a deflationary spiral. Thus, incomes policies in economics mean economy wide-wage and price controls, most commonly instituted as a response to inflation, and usually below market level. Incomes policies vary from "voluntary" wage and price guidelines to mandatory controls like price/wage freezes. One variant is "tax-based incomes policies" (TIPs), where a government fee is imposed on those firms that raise prices and/or wages more than the controls allow. Thus, incomes policy is used to maintain stability for averting deflation and to decrease inflation in an economy.

Some economists agree that a incomes policy would help prevent inflation. Some economists argue that incomes policies are less expensive than recessions as a way of fighting inflation, at least for mild inflation. Yet others argue that controls and mild recessions can be complementary solutions for relatively mild inflation. Other economists argue that inflation is essentially a monetary phenomenon, and the only way to deal with it is by controlling the money supply, either directly or by means of interest rates. They argue that price inflation is only a symptom of previous monetary inflation caused by central bank money creation. This view holds that without a totally planned economy the incomes policy can never work, because the excess money in the economy will greatly distort areas which the incomes policy does not cover.

Instruments of Incomes Policy

The important instruments of incomes policy are price controls and price freeze, wage controls and wage freeze and food subsidies etc. When the price of a good is lowered artificially, it creates less supply and more demand for the product, thereby creating shortages. Hence, these instruments enable collective negotiation and monitoring of the wage and price agreements and are used to stabilize the economy to avoid inflation and deflation in an economy.

However, incomes policy would have other effects. By arbitrarily interfering with price signals, they provide an additional bar to achieving economic efficiency, potentially leading to shortages and declines in the quality of goods on the market, while requiring large government bureaucracies for their enforcement. There are evidences that the wage and price controls were effective in some countries during some periods.

Module 4

Open Economy Macro Economics:

Foreign trade multiplier - Four sector macroeconomic model Using IS-LM-Balance of Payment Schedule

4.1 The Concept of Multiplier

The theory of multiplier occupies an important role in the modern theory of income and employment. The concept multiplier was first developed by Prof.R.F.Khan in 1931. But Keynes later further refined it. R.F.Khan developed the concept of multiplier with reference to the increase in employment, direct as well as indirect, as a result of initial increase in investment. Keynes, however, propounded the concept of multiplier with reference to the increase in total income, direct as well as indirect, as a result of original increase in investment.

Therefore, Khan's multiplier is known as *employment multiplier* and Keynes's multiplier is known as *investment multiplier* or *income multiplier*.

The essence of the multiplier is that total increase in income, output or employment is manifold the original increase in investment.

4.2 Foreign Trade Multiplier

The foreign trade multiplier also known as the export multiplier operates like the investment multiplier of Keynes. It may be defined as the amount by which the national income of a nation will be raised by a unit increase in domestic investment on exports. As exports increase, there is an increase in the income of all persons associated with export industries. These in turn create demand for goods. But this is dependent upon their marginal propensity to save (MPS) and the marginal propensity to import (MPM). The smaller these two marginal propensities are, the larger will be the value of multiplier and vice versa.

The formula to calculate the foreign trade multiplier is

$$Kf = \frac{1}{MPS+MPM}$$

Where,

$$MPS = \frac{\Delta S}{\Delta Y} \quad \text{and} \quad MPM = \frac{\Delta M}{\Delta Y}$$

Postulations

The foreign trade multiplier is based on the following:

1. There is full employment in the domestic economy
2. There is a direct link between domestic and foreign country in exporting and importing goods and the country is small with no foreign country
3. It is on a fixed exchange rate system The multiplier is based on instantaneous process without time lag and the domestic Investment (Id) remains invariable
4. There is no accelerator and the analysis is applicable to only two countries
5. There are no tariff barriers and exchange controls
6. The government expenditure is constant.

Illustration-1

Let us assume the following:

MPS = 0.4

MPM = 0.4

Δ X = $ 2,000 millions

Where MPS is Marginal Propensity to Save and MPM is Marginal Propensity to Import. Calculate the foreign trade multiplier

Solution

The formula to calculate the foreign trade multiplier is

$$Kf = \frac{1}{MPS+MPM}$$

Where,

$$MPS = \frac{\Delta S}{\Delta Y} \quad \text{and} \quad MPM = \frac{\Delta M}{\Delta Y}$$

$$\Delta Y = \frac{1}{MPS + MPM} \Delta X$$

$$= \frac{1}{0.4 + 0.4} \times 2{,}000$$

$$= \frac{1}{0.8} \times 2{,}000$$

$$= \mathbf{2{,}500}$$

It shows that an increase in exports by $ 500 millions has raised national income though the foreign trade multiplier to $ 2,500 millions, given the values of MPS and MPM.

Illustration-2

An economy is characterised by the following equations:

Consumption	C	=	120 + 0.9Yd
Investment	I	=	20
Government Expenditure	G	=	20
Tax	T	=	0
Exports	X	=	40
Imports	M	=	20 + 0.05 Y

1. What is the equilibrium income?
2. Calculate trade balance
3. What is the value of foreign trade multiplier?

Solution

1. National Income

$$Y = C + I + G + Nx$$
$$= 120 + 0.9Yd + 20 + 20 + 40 – (20 – 0.05Y)$$
$$= 120 + 0.9 (Y – T) + 20 + 20 + 40 – 20 – 0.05Y$$
$$= 120 + 0.9Y – 0 + 60 – 0.05Y$$
$$Y = 180 + 0.85Y$$
$$Y – 0.85Y = 180$$
$$0.15Y = 180$$
$$Y = 180 / 0.15$$
$$\mathbf{Y = 1,200}$$

2. Trade Balance

$$X – M$$
$$= 40 – (20 + 0.05Y)$$

Substituting the value of Y, we have

$$\text{Trade balance} = 40 – [20 + 0.5(1,200)]$$
$$= 40 – 20 – 60$$
$$\mathbf{= - 40}$$

Trade balance is in deficit.

3. Value of foreign trade multiplier $= \frac{1}{1 – b + m}$

Where b is marginal propensity to consumer and m is marginal propensity to import.

$$\text{Foreign Trade Multiplier} = \frac{1}{1 – 0.9 + 0.05}$$
$$= \frac{1}{0.15}$$
$$\mathbf{= 6.67}$$

4.3 Two Sector IS-LM Model

As a classic work, General Theory is capable of several interpretations. The academic interest immediately after the publication of General Theory was to elicit the crucial features of the fundamental 'model' of Keynes and its relation to the previous orthodoxy. This culminated in the standard IS-LM and Neo-classical Synthesis model of Hicks-Hansen-Modigliani—Patinkin. The IS-LM model was originally developed by J.R.Hicks in his Article "Mr. Keynes and the Classics: A Suggested Interpretation" published in Econometrica in April 1937 as an interpretation to General theory. Roy Harrod, John R. Hicks, and James Meade all presented papers describing mathematical models attempting to summarize John Maynard Keynes' General Theory of Employment, Interest, and Money. Hicks, who had seen a draft of Harrod's paper, invented the IS--LM model (originally using the abbreviation "LL", not "LM").

The IS-LM model was basically used to determine simultaneously both the rate of interest and the level of income. The IS-LM Model is actually a Neoclassical –Keynesian Synthesis. The IS-LM Model is basically a two sector model containing both the goods market (Real Sector) and money market (Financial Market). The Simple ISLM model considers a closed economy without any government intervention. The ISLM model comes in Keynesian and Neoclassical versions depending on whether prices are assumed fixed or flexible. In the Neoclassical version prices and costs are assumed flexible.

4.4 Meaning of IS Curve

IS is the curve which shows the various combinations of points where investment is equal to saving. It is a negatively sloped curve. It represents the equilibrium in the goods market ie; equilibrium in the real sector. *I* represents investment and *S* represents saving.

4.5 The Goods Market Equilibrium (Real Sector)

The real market or the goods market is in equilibrium when desired saving and investment are equal or the aggregate demand for goods just equals the aggregate supply. If the amount of saving exceeds investment or the aggregate supply is greater than the aggregate demand, the level of income in the economy will decline. On the other hand, if the volume of investment exceeds saving or the aggregate demand for goods is greater than their aggregate supply, the level of income tends to expand. We know that saving is a direct function of the level of income which can be represented as:

$$S = f(y) \qquad (1)$$

Or

$$S = a + by \qquad (2)$$

Since saving function is the counter part to the consumption function and we can rewrite the equation into;

$$S = -a + sy \qquad (3)$$

Where '*s*' is Marginal Propensity to Save

We know that investment is a decreasing function of the interest rate which can be represented as:

$$I = f(r) \qquad (4)$$

Remember that in the in the IS-LM model expectations and price of capital goods are taken to be constant where as the rate of interest is endogenous. The investment function which enters in the IS-LM model is;

$$I = I_{(i)} \quad \text{where } dI/di < 0 \qquad (5)$$

In other words, the investment function denotes an inverse relationship between the volume of investment and the rate of interest while the saving function expresses a direct relationship between the amount of saving and the level of income. The equilibrium condition postulates equality between saving and investment in the state of equilibrium is:

$$S=I \qquad (6)$$

There are now two endogenous variables to solve in the model namely the real level of national output and the rate of interest. For the goods market to be in equilibrium, planned investment must equal planned saving. Substituting equation (3) and equation (5) into equation (6) we obtain

$$-a + sy = I_{(i)} \qquad (7)$$

$$Y = \frac{a+I(i)}{s} \qquad (7a)$$

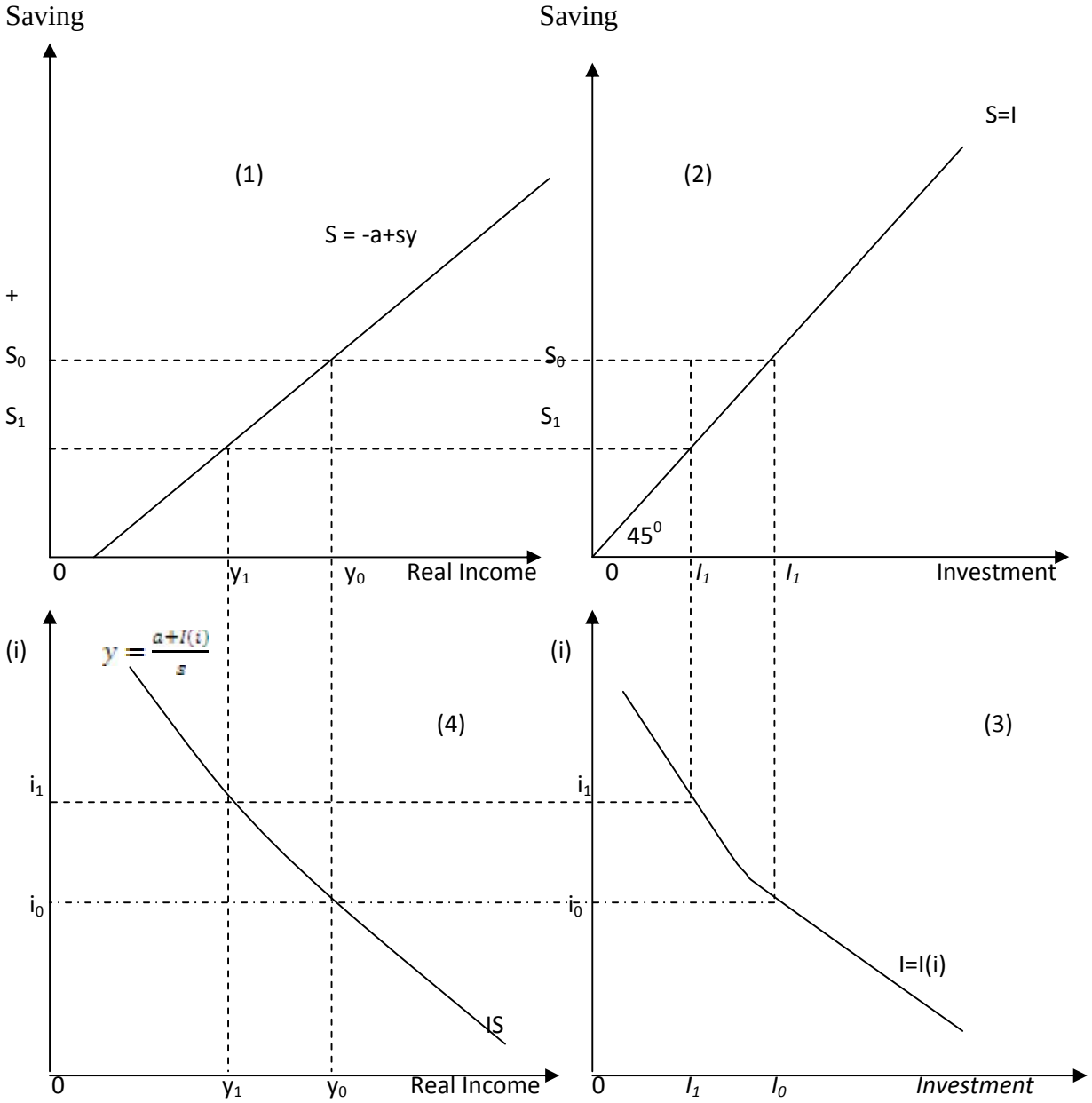
The IS schedule reflects the equilibrium of the goods market. It shows the combinations of interest rate and income levels where saving-investment equality takes place so that the goods market of the economy is in equilibrium. It is also known as —real sector equilibrium.

4.6 The geometrical Derivation of the IS Curve

Turning to the quadrant-1 we see that when income is y_0 the desired amount of saving is S_0, which is transferred on the vertical axis in quadrant-2. The 45^0 line in quadrant-2 converts any distance along the vertical axis into an equal distance on the horizontal axis. Investment must equal I_0 for it to equal saving when income is y_0. The investment schedule in quadrant-3 shows that given a particular state of expectations and price of capital goods the rate of interest must be i_0 to result in a level of investment of I_0.

The co-ordinate of i_0 and y_0 is then plotted in quadrant-4. We then have one combination of income y_0 and interest rate i_0 for which saving equals investment. The same process is repeated for income level y_1 to obtain an interest rate of i_1 which makes saving, when income is y_1 equal to the level of investment. In this way we can obtain a large number of interest rates and output levels for which investment equals saving, and by joining them obtain the locus of all such points which is the IS schedule. This geometric derivation of the IS schedule is identical to the process we went through to obtain the IS function algebraically. What we have done here geometrically is to substitute equations (3) and (5) into derive equation (7a)

Figure 1: Derivation of the IS Curve



4.7 The Slope of the IS Curve

Quadrant- 4 shows that the IS curve slopes downward from left to right. This negative slope reflects the increase in investment and income as the rate of interest falls. The *IS* curve may be flat or steep depending on the sensitiveness of investment to changes in the rate of interest, and also on the size of the multiplier.

4.8 Shifts in the IS Curve

The IS shifts to the right	The IS shifts to the left
1. Increase in Government expenditure. 2. Tax cut 3. Consumers become more optimistic about the future. They increase C for a given level of disposable income. 4. Business firms become more optimistic. Then they will increase I for a given level of the real interest rate.	1. Decrease in Government expenditure. 2. Tax hike 3. Consumers and business firms become more concerned about the future

The *IS* function shifts to the right with a reduction in saving. Reduction in saving may be the result of one or more factors leading to increase in consumption. Consumers may like to buy a new product even by reducing saving. The community's wealth may increase due to government's policy and the wealth holders do not like to save the same amount than before. Consumers may start buying more in anticipation of shortages or price rise thereby reducing saving.

4.9 Meaning of LM Curve

LM is the curve which shows the various combinations of points where liquidity preference ie; demand for money equals to supply of money. It is a positively sloped curve. It represents the equilibrium in the money market ie; equilibrium in the financial sector. At any points on the LM curve demand for money will be equal to supply of money.

4.10 The Money Market Equilibrium

Equilibrium in the money market implies equality between the demand and supply of money. That is $M^d = M^s$. If the demand for money is greater than its supply, the rate of interest has a tendency to increase under the pressure of increased selling of the bonds in the stock market for cash. On the Contrary, an excess of supply of money over its demand will make the investors utilize their surplus cash for the purchase of bonds. This will push up the bond prices and will set a falling tendency in the rate of interest. Thus equilibrium in the financial sector requires that the demand for money equals the stock of money and the demand to hold bonds also equals the stock of bonds supplied.

Denoting M^d for money demand and M^s for money supply, in equilibrium $M^d = M^s$. The money supply function for this situation is plotted on the same graph as the liquidity preference function. The money supply is determined by the central bank decisions and willingness of commercial banks to loan money. Though the money supply is related indirectly to interest rates in the very short run, the money supply in effect is perfectly inelastic with respect to nominal interest rates (assuming the central bank chooses to control the money supply rather than focusing directly on the interest rate). Thus the money supply function is represented as a vertical line - money supply is a constant, independent of the interest rate, GDP, and other factors. Mathematically, the LM curve is defined by the equation $M^s / P = L (i,Y)$, where the supply of money is represented as the real amount

M^s/P (as opposed to the nominal amount M), with P representing the price level, and L being the real demand for money, which is some function of the interest rate i and the level Y of real income. The LM curve shows the combinations of interest rates and levels of real income for which money supply equals money demand—that is, for which the money market is in equilibrium.

The demand for money *L = L1 + L3* where *L1* is the transactions demand for money which is a direct function of the level of income, *L1 = f (Y). L3* is the speculative demand for money which is a decreasing function of the rate of interest, *L3 = f (r)* . Thus in money market equilibrium, *M=L1 (Y) + L3 (r).* For a given level of income, the intersection point between the liquidity preference and money supply functions implies a single point on the LM curve: specifically, the point giving the level of the interest rate which equilibrates the money market at the given level of income. Recalling that for the LM curve, the interest rate is plotted against real GDP (whereas the liquidity preference and money supply functions plot interest rates against the quantity of cash balances), an increase in GDP shifts the liquidity preference function rightward and hence raises the interest rate. Thus the LM function is positively sloped.

For the LM curve, the independent variable is income and the dependent variable is the interest rate. The LM curve shows the combinations of interest rates and levels of real income for which the money market is in equilibrium. It is an upward-sloping curve representing the role of finance and money. The initials LM stand for "Liquidity preference and Money supply equilibrium". As such, the LM function is the set of equilibrium points between the liquidity preference or Demand for Money function and the money supply function (as determined by banks and central banks).

Each point on the LM curve reflects a particular equilibrium situation in the money market equilibrium diagram, based on a particular level of income. In the money market equilibrium diagram, the liquidity preference function is simply the willingness to hold cash balances instead of securities. For this function, the nominal interest rate (on the vertical axis) is plotted against the quantity of cash balances (or liquidity), on the horizontal. The liquidity preference function is downward sloping. Two basic elements determine the quantity of cash balances demanded (liquidity preference) and therefore the position and slope of the function:

4.11 Deriving the LM Curve

In our analysis we consider the simple case and assume that:

$$m^d = m_t + msp \qquad (1)$$

Where m_t = Transaction demand for money balance.

Msp= Speculative demand for money balance.

Also by definition:

$$m^s = M^s/P \qquad (2)$$

Where M^s= Nominal supply of money.

P = General price level.

Note that the implicit assumption in equation (1) is that the transaction demand for money is not a function of the rate of interest. In addition, we assume initially that:

$$M^s \neq f(i) \qquad (3)$$

$$\text{and that } P=P_0 \text{ (a constant)} \qquad (4)$$

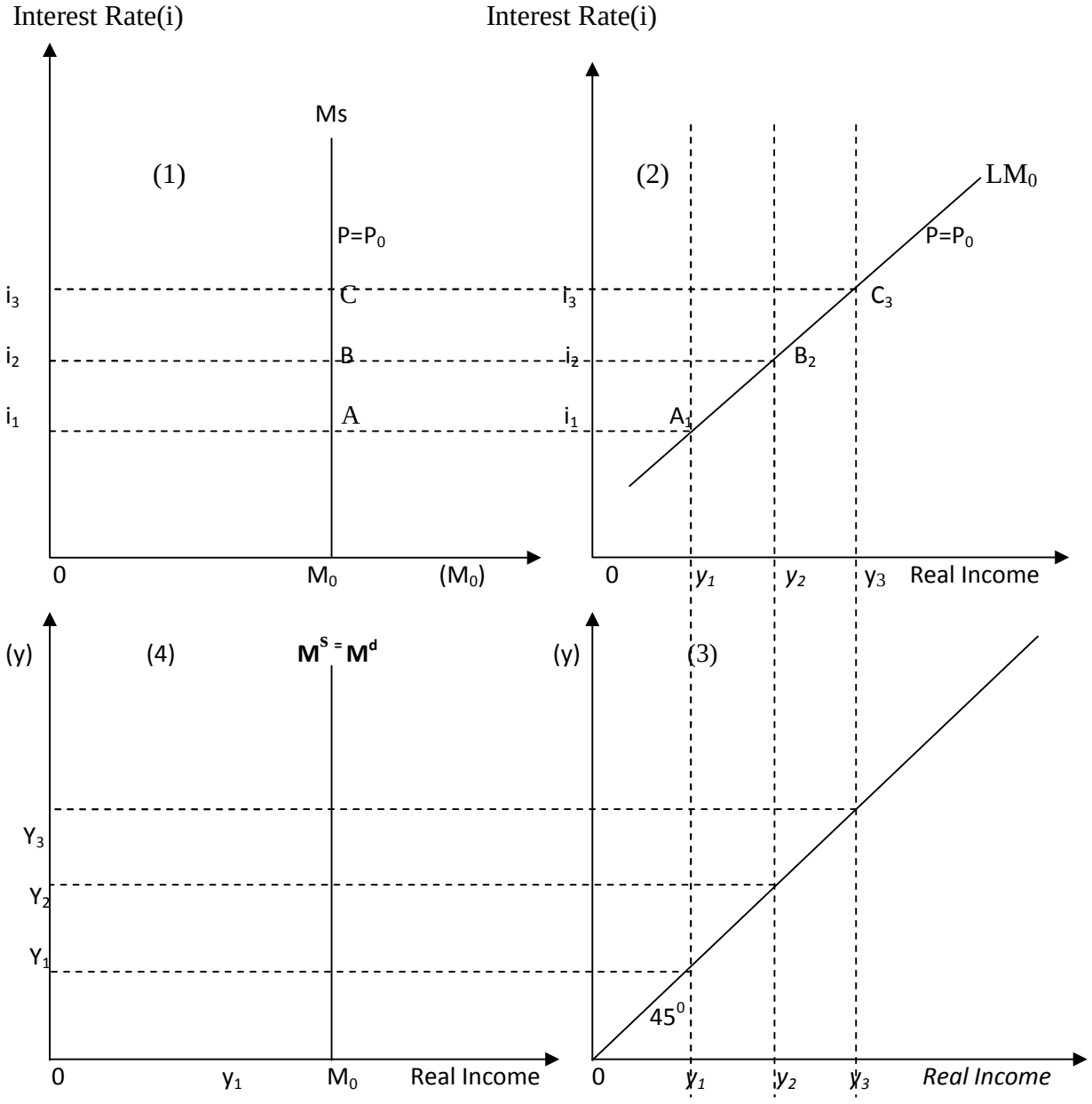
Equation -3 simply states that the nominal money supply is not a function of the rate of interest or in other words, that the nominal money supply curve plotted against the interest rate is a vertical line. Hence the supply curve for real money (m^s) is also a vertical line. The figure given below is working with these equations.

The first quadrant shows the total money demand curves (One for each level of real income). By equation-3 the real money supply, m_s at price level P_0 is a constant at M_0. Equilibrium in the money market dictates that,

$$m_s=m_d=m_0 \qquad (5)$$

This occurs in quadrant-1 at points A, B and C where each equilibrium points correspond to a different rate of interest and level of income. Because we know that the money market is in equilibrium at (y_1 i_1),(y_2 i_2) and (y_3 i_3), we can construct a curve that shows all possible combinations of y and i consistent with equilibrium in the money market. This curve, generally referred to as the LM curve derived in figure-2 in the following manner. Quadrant-2 depicts a curve showing the level of income that must accompany the equilibrium quantities of money. In this model there is only one equilibrium quantity of money, m_0, because the money supply is assumed to be interest inelastic; therefore the curve in quadrant-2 is vertical. Figure in quadrant-3 is simply a geometric device that permits us to rotate the axis. In quadrant-4 the points ($y_1 i_1$), (y_2 i_2) and (y_3 i_3) are located by transferring the income levels that correspond to the equilibrium quantity of money via; quadrant-3 to the horizontal axis in quadrant-4 and then plotting this income levels against the corresponding interest rate. In this illustration the three points are labeled A_1, B_1 and C_1. The LM curve LM_0 is constructed by drawing a smooth curve through these points. The slope of the LM curve is positive because the quantity of money demanded is directly related to the income level and inversely to the rate of in interest. Because the quantity of money supplied at price level P_0 is constant, as income increases the rate of interest must rise to maintain money market equilibrium.

Figure 2: Derivation of the LM Curve



4.12 The Slope of the LM Curve

The *LM* curve slopes upward from left to right because given the supply of money, and increase in the level of income increases the demand for money which leads to higher rate of interest. This, in turn, reduces the demand for money and thus keeps the demand for money equal to the supply of money. The smaller the responsiveness of the demand for money to income, and the larger the responsiveness of the demand for money to the rate of interest, the flatter will be the *LM* curve. This means that a given change in income has a smaller effect on the interest rate.

The *LM* curve is steeper, if a given change in income has a larger effect on the rate of interest. In this situation, the responsiveness of the demand for money to income is larger and is smaller for the interest rate. If the demand for money is insensitive to the interest rate, the *LM* curve is vertical

that is, it is perfectly inelastic. In this case, a large change in the interest rate is accompanied by almost no change in the level of income to maintain money market equilibrium. If the demand for money is very sensitive to the rate of interest, the *LM* curve is horizontal. The *LM* curve is perfectly elastic in relation to the rate of interest. In other words, a small change in the interest rate is accompanied by a large change in the level of income to maintain the money market equilibrium. This portion of the *LM* curve at the extreme left is equivalent to the Keynesian liquidity trap.

Shifts in the *LM* Curve

The LM shifts to the right	The LM shifts to the left
1. Increase in Money Supply (expansionary monetary policy)	1. Decrease in Money supply. (contractionary monetary policy)
2. Reduction in money demand – Due to ATMs or credit cards (financial innovation)	2. Increase in money demand – Due to uncertainty

The *LM* function shifts to the right with the increase in the money supply given the demand for money, or due to the decrease in the demand for money, given the supply of money. If the central bank follows an expansionary monetary policy, it will buy securities in the open market. As a result, money supply with the public increases for both transactions and speculative purposes. This shifts the *LM* curve to the right.

A decrease in the demand for money means a reduction in the quantity of balances demanded at each level of income and interest rate. Such a decrease in the demand for money balances creates an excess of the money supplied over the money demanded. This is equivalent to an increase in money supply in the economy which has the effect of shifting the *LM* curve to the right.

This is depicted in Figure 4.4. With the increase in the money supply the *LM1* curve shifts to the right as *LM2* which moves the economy to a new equilibrium point *E2*. The increase in the money supply brings down the interest rate to *R2* in the money market. This, in turn, increases investment thereby raising the level of income to *Y2*. Thus the effect of the increase in money supply is to shift the *LM* curve to the right and a new equilibrium is established at a lower interest rate, *R2* and higher income level, *Y2*. Contrariwise, a decrease in the money supply or an increase in the demand for money will shift the *LM* function to the left such that a new equilibrium is established at a higher interest rate and lower income level. This case can be explained by assuming *LM2* as the original curve.

4.13 General Equilibrium of Goods and Money Market

So far we have analysed the conditions that have to be satisfied for the general equilibrium of the product and money markets in terms of the *IS* and *LM* functions. The IS/LM model tool that demonstrates the relationship between interest rates and real output in the goods and services market and the money market. The intersection of the IS and LM curves is the "General Equilibrium" where there is simultaneous equilibrium in both markets. Now we study how these markets are brought into simultaneous equilibrium. Equilibrium income and the real interest rate are determined by simultaneous equilibrium in the goods market and the money market. It is only when the equilibrium pairs of interest rate and income of the *IS* curve equal the equilibrium pairs of interest rate and income

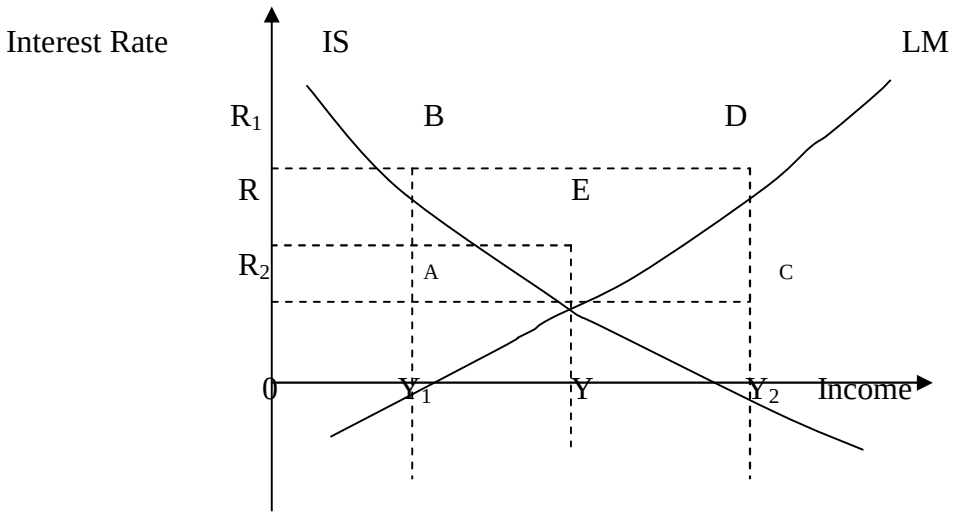
of the LM curve that the general equilibrium is established. In other words, when there is a single pair of interest rate and income level in the product and money markets that the two markets are in equilibrium.

Such an equilibrium position is shown in Figure 5.7 where the IS and LM curves intersect each other at point *E* relating *Y* level of income to R interest rate. This pair of income level and interest rate leads to simultaneous equilibrium in the real or goods (saving investment) market and the money (demand and supply of money) market. This general equilibrium position persists at a point of time, given the price level. If there is any deviation from this equilibrium position, certain forces will act and react in such a manner that the equilibrium will be restored.

Consider point *A* on the *LM* curve where the money market is in equilibrium at *Y1* income level and *R2* interest rate. But the product market is not in equilibrium. In the product market, the interest rate *R2* is lower. The product market can be in equilibrium at *Y1* income level only at a higher interest rate *R1* corresponding to point *B* on the *IS* curve. Consequently at point *A*, there is excess of investment over saving since point *A* lies to the left of the *IS* curve. The excess of I over S indicates excess demand for goods which raises the level of income. As the level of income rises, the need for transactions purposes increases. In order to have more money for transactions purposes, people sell bonds. This tends to raise the interest rate. This moves the *LM*-equilibrium from point *A* upward to point *E* where a combination of higher interest rate *R* and higher income level *Y* exists. On the other hand, rising interest rate reduces investment and an increasing income raises saving. This helps to bring about the equality of *I* and *S* at point E where the general equilibrium is re-established by the equality of *IS* and *LM*.

The model can be presented as a graph of two intersecting lines in the first quadrant. The horizontal axis represents national income or real gross domestic product and is labelled Y. The vertical axis represents the real interest rate, i. Since this is a non-dynamic model, there is a fixed relationship between the nominal interest rate and the real interest rate (the former equals the latter plus the expected inflation rate which is exogenous in the short run); therefore variables such as money demand which actually depend on the nominal interest rate can equivalently be expressed as depending on the real interest rate. The point where these schedules intersect represents a short-run equilibrium in the real and monetary sectors (though not necessarily in other sectors, such as labour markets): both the product market and the money market are in equilibrium. This equilibrium yields a unique combination of the interest rate and real GDP. Equilibrium income and the real interest rate are determined by simultaneous equilibrium in the goods market and the money market. Change in autonomous forces and the price level will lead to a shift in the IS or LM curve leading to a change in equilibrium income

Figure 3: Equilibrium of Goods and Money Market



Now consider point *C* on the IS curve in Figure 5.7 where the product market is in equilibrium at *R2* interest rate and *Y2* income level. The money market is not in equilibrium. It can be in equilibrium at *Y2* income level only at a higher interest rate *R1* corresponding to point *D* on the *LM* curve. At point *C*, the demand for money (*L*) is greater than the supply of money (*M*) because point *C* reflects lower rate of interest *R2* than is required for the equality of *L* and *M*. Thus there is excess demand for money at *R2* interest rate, the excess demand for money leads people to sell bonds but there is less demand for bonds which tends to raise the interest rate. When the rate of interest begins to raise the product market is thrown into disequilibrium because investment falls. Falling investment leads to falling income which in turn reduces saving. This process ultimately brings the equilibrium of the product market when $I = S$ at point *E*. On the other hand, falling income reduces the transactions demand for money and ultimately brings about the equality of *LM* at point *E* where the equilibrium is re-established by the equality *IS* and *LM* curves, at *R* interest rate and *Y* income level.

4.14 Weaknesses or Limitations of ISLM Model

The popularity of ISLM model undoubtedly lies in its ability to present macroeconomics in terms of a model with exactly the same structure and mechanics as the model of supply and demand. Though the ISLM model is a fundamental model of macroeconomics, seldom do macroeconomists try to estimate the parameters of the model and use it to predict the future course of GDP. The fact that economists have not used the ISLM model in their attempts to numerically predict the effects of policy suggests that ISLM has weaknesses. Following are the major weaknesses of ISLM model.

1. The model is comparative static. Throughout it has been used to compare short run equilibrium positions and no attempt has been made to explain how the system moves from one equilibrium position to another.

2. The model assumes the absence of international trade. This assumption restricts its usefulness for the study of policy problems.

3. The model treats the price level as an exogenously given variable.

4. This model does not provide a detailed explanation of the working of the monetary system.

5. This model also ignores the time lags involved in the variables and the expectorations about future.

6. The ISLM model fails to consider the labour market.

7. The ISLM predicts the equilibrium can be at any level because it assumes, as does the simple income-expenditure model, a passive supply. Sellers produce whatever is demanded, and all adjustment to changes in demand are in the form of changes in output and none of the adjustment is in the form of changes in prices. Adjustment cannot be in the form of price changes because the price level does not enter the model. Since changes in prices are the primary way markets adjust in microeconomic theory, the failure of ISLM to say anything about prices is a serious weakness.

8. If meant as a short-run model, the model is severely limited because it does not incorporate the rate of inflation. Inflation creates a difference between real and nominal interest rates. The nominal rate is the visible rate that people pay and receive, and the real interest rate is what is happening in terms of purchasing power.

9. The distinction between real and nominal interest rates is important in ISLM because investment spending should respond to the real interest rate and money demand to the nominal interest rate. Investment will remain constant if the real interest rate does not change; change in nominal rates will not change investment if it does not change the real rate.

10. To keep the demand for money constant, the nominal interest rate must remain constant. When people hold cash balances for transactions; they are concerned with purchasing power. If all prices double, the amount of money people want to hold will double, but the amount of purchasing power they want will remain constant.

11. The interest rate is a cost of holding purchasing power. If the rate of inflation increases, and the rate of interest with it, holding money becomes more expensive and people will want to hold smaller amounts of purchasing power. Thinking of the demand for money in terms of purchasing power lets us ignore price level and is the key to seeing the effects of the rate of interest. It is the nominal rate, not the real rate that matters.

Given these serious weaknesses, a major reason behind the use of ISLM as a framework for so much macroeconomic thinking is that no other simple model gives as much insight. ISLM suggests that economic disturbances can arise in either the money market or the goods market, a conclusion that predates ISLM. Economists want a simple model that concludes this. Also, ISLM can be expanded and made more complex in an effort to overcome its limitations.

4.15 Three Sector Model

Even though the basic ISLM model is a two sector closed model, by adding the government sector along the real sector and money sector of the basic ISLM model we can extent it to a three sector model. Again this three sector model is extended to a four sector model by adding the foreign sector and we have an open economy model. For this we add BP schedule along the IS-LM schedule. This four sector open economy model recognise the role of exchange and BOP in determining the flow of currency in the domestic economy and its consequent effects on rate of interest and level of income.

4.16 The Basic IS-LM-BP Model in Equilibrium: The Mundell-Fleming Model

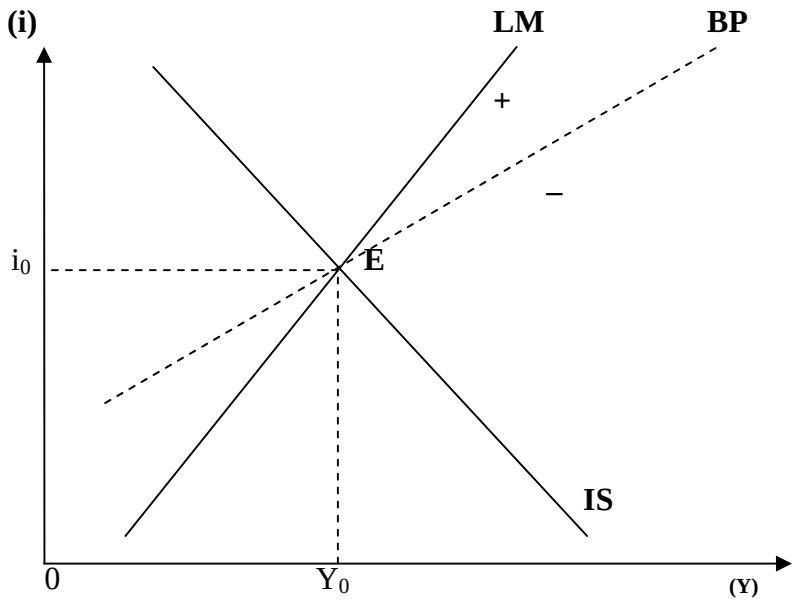
The Mundell–Fleming model, also known as the IS-LM-BoP model, is an economic model first set forth (independently) by Robert Mundell and Marcus Fleming. The model is an extension of the IS-LM Model. Whereas the traditional IS-LM Model deals with economy under autarky (or a closed economy), the Mundell–Fleming model describes an open economy. The so-called Mundell-Fleming model is simply the IS-LM model adapted to the open economy. To extend the traditional IS-LM model to the open economy, Robert Mundell and Marcus Fleming added one further element

to the analysis, the balance of payments equilibrium, $BP = 0$. The closed economy IS-LM model thus turned into the open economy Mundell-Fleming model, allowing for an effective discussion of the effects of various economic policies in the open economy.

The Mundell–Fleming model portrays the short-run relationship between an economy's nominal exchange rate, interest rate, and output (in contrast to the closed-economy IS-LM model, which focuses only on the relationship between the interest rate and output). The Mundell–Fleming model has been used to argue that an economy cannot simultaneously maintain a fixed exchange rate, free capital movement, and an independent monetary policy. This principle is frequently called the "impossible trinity," "unholy trinity," "irreconcilable trinity," "inconsistent trinity" or the "Mundell–Fleming trilemma." At point E, the goods markets (IS), the financial markets (LM), and the foreign exchange market (BP) are all in equilibrium as in the figure 4.

Equilibrium is at the intersection if *IS* and *LM*. With a pegged exchange rate this may lie off the *BP* curve, indicating a BOP in surplus (+) above or deficit (-) below. With a floating exchange rate, a secondary adjustment of the exchange rate, equilibrium must move the three curves so as to intersect in one place, in order to get equilibrium in the exchange market. From the diagram, one can read the following effects of exogenous changes, for the case shown (which assumes relatively mobile capital and sterilisation of exchange market intervention)

Figure 4: Showing the Four sector IS-LM-BP Equilibrium



4.17 The BP curve

Every point on the BP schedule shows a combination of domestic income and rate of interest for which the overall balance of payments is in equilibrium. At points to the left of the BP schedule the overall balance of payments is in surplus because for a given amount of capital flows the current account is better that that required for equilibrium as the level of income is lower. Conversely, to the right of the BP schedule the overall balance of payments is in deficit as the income level is higher than that compatible with overall equilibrium.
At this point it is worth noting that the slope of the BP schedule is determined by the degree of capital mobility internationally. Higher the degree of capital mobility, the flatter the BP schedule. They are given in the following table.

Slope of BP curve on the basis of capital mobility

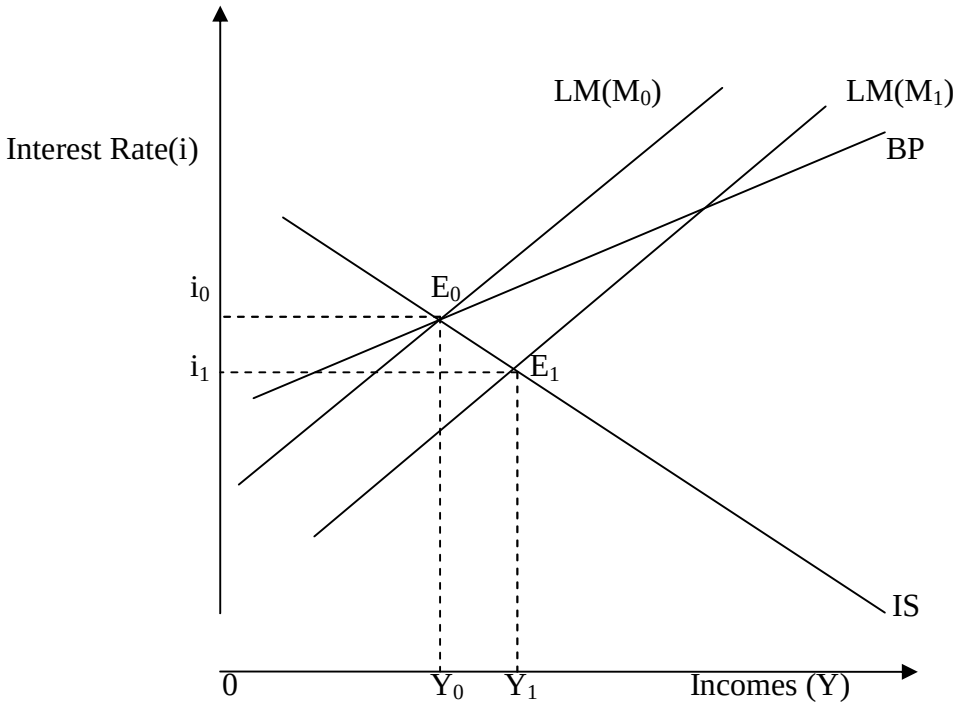
Capital Mobility	Shape of BP curve
1. Zero or No capital mobility	1.The BP line is vertical
2. Low capital mobility	2.The BP line is steeper than the LM
3. Perfect capital mobility	3.The BP line is flatter than the LM
4. High capital mobility	4.The BP line is horizontal

4.18 Factors shifting the BP schedule:

An autonomous increase in exports or an autonomous decrease in imports will lead to an improvement in the current account requiring a rightward shift of the BP schedule and a depreciation/devaluation of the exchange rate also. Now that we have developed the basic model, we can analyze the impact of monetary and fiscal policy on output under various degrees of capital mobility. Since we assume fixed exchange rates, we can also use the model to investigate how devaluation or a revaluation would affect the economy. Recall that a devaluation/revaluation is a decision by the central bank to change the price of the domestic currency with respect to foreign currencies for some specific reason or goal, so it is a deliberate policy decision; we thus investigate so-called exchange rate policy. Finally, we will examine the most important aspect of the model for policy makers: how to use it to determine the right mix of fiscal and monetary policy to achieve full employment while maintaining the external balance.

4.19 Monetary Policy under Fixed Exchange Rate

Consider the effect of an expansionary monetary policy action, an increase in money stock from M_0 to M_1as illustrated in the figure 5.



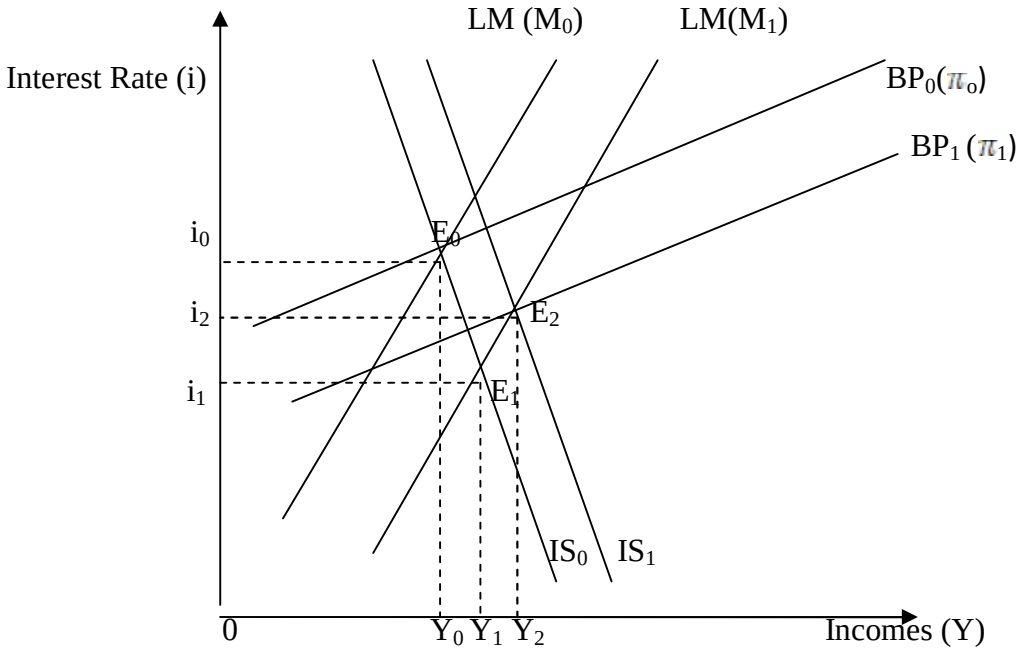
(Figure 5: Monetary policy with a fixed exchange rate)

The increase in the money stock from M_o to M_1 shift the LM curve to the right from LM (M_0) to LM (M_1).The equilibrium point shift from E_0 to E_1 with a fall in the interest rate from i_0 to i_1 and an increase in income from Y_0 to Y_1. Note that all points below the BP curve are points of BOP deficit, while above are BOP surplus. The expansionary monetary policy increases income, which stimulates imports and lowers the interest rate which causes a capital outflow. At point E1 there will be a deficit in the BoPs, and with limited exchange reserve , such a situation cannot be indefinitely maintained.

4.20 Monetary Policy under Flexible Exchange Rate

Under flexible exchange rate system there is no official intervention and exchange rate adjusts to equate the supply and demand in the foreign exchange market. Consider the expansionary monetary policy as illustrated in figure 6. The increase in the money stock from M_o to M_1 shift the LM curve to the right from LM (M_0) to LM (M_1).The equilibrium point shift from E_0 to E_1 with a fall in the interest rate from i_0 to i_1 and an increase in income from Y_0 to Y_1. And we move to the point below the BP curve and there is a BoP deficit. In the flexible exchange rate system the exchange rate will rise (From π_o to π_1) to clear the foreign exchange market. The rise in exchange rate will shift the

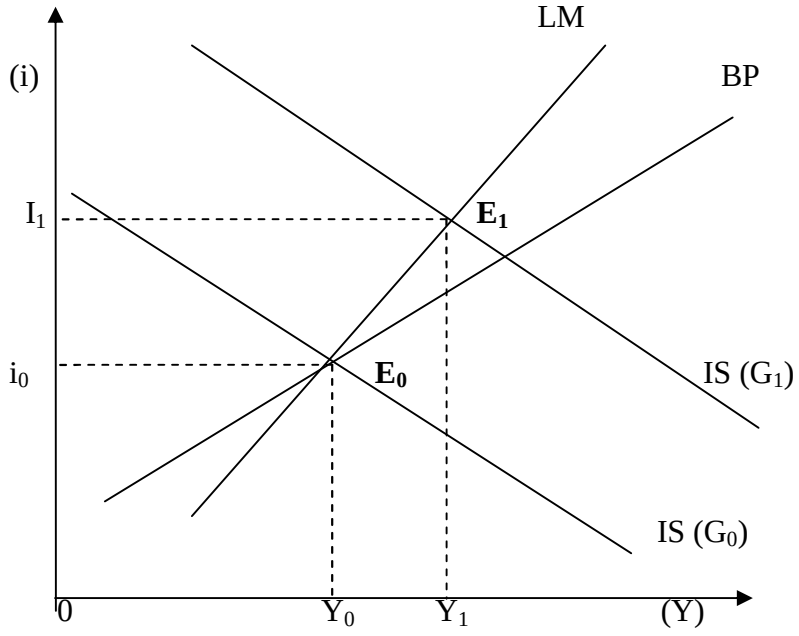
BP curve to right. The rise in exchange rate also causes the IS curve to the right because export rise and import fall shift with an increase in exchange rate.



(Figure 6: Monetary policy with a Flexible exchange rate)

Here we know that expansionary monetary policy is recommendable under flexible exchange rate system than fixed exchange rate system.

4.21 Fiscal Policy under Fixed Exchange Rate



(Figure 7:Fiscal policy with Fixed exchange rate)

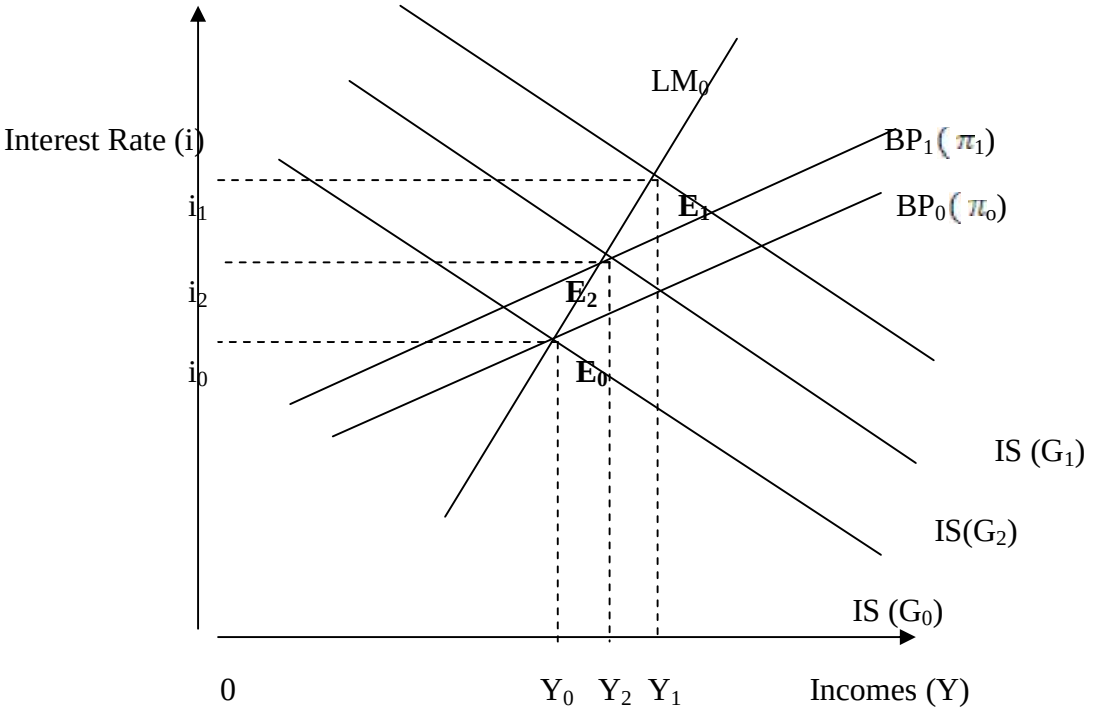
Under fiscal policy an increase in government spending shifts the IS curve to the right from IS (G_0) to IS (G_1) and the equlibrium point moves from E_0 to E_1in the figure given above. Income rises from Y_0 to Y_1 and interest rate from i_0 to i_1. In the new equlibrium point the BP cuve is above the equlibrium point and therfore there is BoP surplus. This is given figure 7.

4.22 Fiscal policy under Flexible exchange Rate

Under fiscal policy an increase in government spending shifts the IS curve to the right from IS (G_0) to IS (G_1) and the equlibrium point moves from E_0 to E_1in the figure 8.Income rises from Y_0 to Y_1 and interest rate from i_0 to i_1. In the new equlibrium point the BP cuve is above the equlibrium point and therfore there is BoP surplus.BP curve is more flatter than the LM curve.The exchange rate must fell from π_o to π_1 and clear the forign exchange market. The BP curve shift to the left .The IS curve also shift to the left because of the fall in exchange rate lower the level of exports and stimulate the import demand. The equlibrim point will be at Y_2 which is above Y_0 but below Y_1 .

Thus it is clear that expansionary fiscal policy action has a larger effect on income than it would have in the fixed exchange rate system.

(Figure 8: Fiscal policy with Flexible exchange rate)



4.23 Limitations of the Mundell-Fleming Model

1. The Marshall-Lerner condition is assumed to be correct even though in the short- term it is least likely to be true. (MF model is that absolute values of elasticities of demand for exports and demand for imports is >1.

2. Interaction of stocks and flows. Capital inflows do mean at some time that repayments plus interest must be paid back. It cannot count on the world to continue indefinitely financing the national debt through capital inflows.
3. Neglect of long-run budget constraints. The government over time has to balance it budgets eventually.
4. Wealth effects. Fall in foreign assets associated with a current account deficit.
5. Neglect of supply-side factors. There is an implicit assumption that supply adjusts in accordance with changes in demand.
6. Treatment of capital flows. Capital inflows are a function of the change in the interest differential rather than the differential itself. Portfolio allocation changes but does not continually change unless the interest rates changes again to change the portfolio allocation.
7. Exchange-rate expectations assume that "static exchange-rate expectations" are zero.
8. Flexibility of policy instruments.

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