Principles of Macro Economics

Module 1: Macro Economics and National Income

Macroeconomic Policy: Objectives and Instruments

The key microeconomic goals are the efficient use of resources that are employed and the efficient distribution of output.

But macroeconomic goals are quite different from Micro Economics because the overall response of the economy must not match with the individual units. As macroeconomics looks at the whole, its objectives are aggregative in character.

1. Macroeconomic Policy Objectives:
The macroeconomic policy objectives are the following:
(i) Full employment,

(ii) Price stability,

 (iii) Economic growth,

(iv) Balance of paym ents equilibrium and exchange rate stability, and

(v) Social objectives.

(i) Full employment:
Performance of any government is judged in terms of goals of achieving full employment and price stability. These two may be called the key indicators of health of an economy. In other words, modern governments aim at reducing both unemployment and inflation rates.

Unemployment refers to involuntary idleness of mainly labour force and other productive resources. Unemployment (of labour) is closely related to the economy's aggregate output. Higher the unemployment rate, greater the divergence between actual aggregate output (or GNP/CDP) and potential output. So, one of the objectives of macroeconomic policy is to ensure full employment.

The objective of full employment became uppermost amongst the policymakers in the era of Great Depression when unemployment rate in all the countries except the then socialist country,

the USSR, rose to a great height. It may be noted here that a free enterprise capitalist economy always exhibits full employment.

But, Keynes said that the goal of full employment may be a desirable one but impossible to achieve. Full employment, thus, does not mean that nobody is unemployed. Even if 4 or 5 p.c. of the total population remain unemployed, the country is said to be fully employed. Full employment, though theoretically conceivable, is difficult to attain in a market-driven economy. In view of this, full employment objective is often translated into 'high employment' objective. This goal is desirable indeed, but 'how high' should it be? One author has given an answer in the following way; "The goal for high employment should therefore be not to seek an unemployment level of zero, but rather a level of above zero consistent with full employment at which the demand for labour equals the supply of labour. This level is called the natural rate of unemployment."

(ii) Price stability:
No longer the attainment of full employment is considered as a macroeconomic goal. The emphasis has shifted to price stability. By price stability we must not mean an unchanging price level over time. Not necessarily, price increase is unwelcome, particularly if it is restricted within a reasonable limit. In other words, price fluctuations of a larger degree are always unwelcome.

However, it is difficult again to define the permissible or reasonable rate of inflation. But sustained increase in price level as well as a falling price level produce destabilising effects on the economy. Therefore, one of the objectives of macroeconomic policy is to ensure (relative) price level stability. This goal prevents not only economic fluctuations but also helps in the attainment of a steady growth of an economy.

(iii) Economic growth:
Economic growth in a market economy is never steady. These economies experience ups and downs in their performance. This objective became uppermost in the period following the World War II (1939-45). Economists call such ups and downs in the economic performance as trade cycle/business cycle. In the short run such fluctuations may exhibit depressions or prosperity (boom).

One of the important benchmarks to measure the performance of an economy is the rate of increase in output over a period of time. There are three major' sources of economic growth, viz. (i) the growth of the labour force, (ii) capital formation, and (iii) technological progress. A country seeks to achieve higher economic growth over a long period so that the standards of

living or the quality of life of people, on an average, improve. It may be noted here that while talking about higher economic growth, we take into account general, social and environmental factors so that the needs of people of both present generations and future generations can be met.

However, promotion of higher economic growth is often hampered by short run fluctuations in aggregate output. In other words, one finds a conflict between the objectives of economic growth and economic stability (in prices). In view of this conflict, it is said that macroeconomic policy should promote economic growth with reasonable price stability.

(iv) Balance of payments equilibrium and exchange rate stability:

From a macro- economic point of view, one can show that an international transaction differs from domestic transaction in terms of (foreign) currency exchange. Over a period of time, all countries aim at balanced flow of goods, services and assets into and out of the country. Whenever this happens, total international monetary reserves are viewed as stable.

If a country's exports exceed imports, it then experiences a balance of payments surplus or accumulation of reserves, like gold and foreign currency. When the country loses reserves, it experiences balance of payments deficit (or imports exceed exports). However, depletion of reserves reflects the unhealthy performance of an economy and thus creates various problems. That is why every country aims at building substantial volume of foreign exchange reserves.

Anyway, the accumulation of foreign exchange reserves is largely conditioned by the exchange rate the rate at which one currency is exchanged for another currency to carry out international transactions. The foreign exchange rate should be stable as far as possible. This is what one may call it external stability in price.

External instability in prices hampers the smooth flow of goods and services between nations. It also erodes the confidence of currency. However, maintenance of external stability is no longer considered as the macroeconomic policy objective as well as macroeconomic policy instrument.

It is, however, because of growing inter- connectedness and interdependence between different nations in the globalised world, the task of fulfilling this macroeconomic policy objective has become more problematic.

(v) Social objectives:

The list of objectives that we have referred here is by no means an exhaustive one; one can add more in the list. Even then we have incorporated the major ones.

Macroeconomic policy is also used to attain some social ends or social welfare. This means that income distribution needs to be more fair and equitable. In a capitalist market-based society some people get more than others. In order to ensure social justice, policymakers use macroeconomic policy instruments.

We can add another social objective in our list. This is the goal of economic freedom. This is characterised by the right of taking economic decisions by any individual (rich or poor, high caste or low caste).

2. Macroeconomic Policy Instruments:
As our macroeconomic goals are not typically confined to "full employment", "price stability", "rapid growth", "BOP equilibrium and stability in foreign exchange rate", so our macroeconomic policy instruments include monetary policy, fiscal policy, income policy in a narrow sense. But, in a broder sense, these instruments should include policies relating to labour, tariff, agriculture, anti-monopoly and other relevant ones that influence the macroeconomic goals of a country. Confining our attention in a restricted way we intend to consider two types of policy instruments the two "giants of the industry" monetary (credit) policy and fiscal (budgetary) policy. These two policies are employed toward altering aggregate demand so as to bring about a change in aggregate output (GNP/GDP) and prices, wages and interest rates, etc., throughout the economy.

Monetary policy attempts to stabilise aggregate demand in the economy by influencing the availability or price of money, i.e., the rate of interest, in an economy.

Monetary policy may be defined as a policy employing the central bank's control of the supply of money as an instrument for achieving the macroeconomic goals.

Fiscal policy, on the other hand, aims at influencing aggregate demand by altering tax-expenditure-debt programme of the government. The credit for using this kind of fiscal policy in the 1930s goes to J.M. Keynes who discredited the monetary policy as a means of attaining some of the macro- economic goals—such as the goal of full employment.

As fiscal policy has come into scrutiny in terms of its effectiveness in achieving the desired macroeconomic objectives, the same is true about the monetary policy. One can see several rounds of ups and downs in the effectiveness of both these policy instruments consequent upon criticisms and counter- criticisms in their theoretical foundations.

Meaning and Definition of National Income or National Dividend:

The total income of the nation is called national income. In real terms, national income is the flow of goods and services produced in the economy in a particular period—a year.

The Pigovian Definition:

Marshall's follower, A. C. Pigou has in his definition of national income included that income which can be measured in terms of money. In the words of Pigou—**"National income or National Dividend is that part of objective income of the community including of course income derived from abroad which can be measured in money."**

Fisher's Definition:

Fisher picked up in his study 'Consumption' as the criterion of national income whereas Marshall and Pigou regarded it to be 'production'. According to Fisher—"The national dividend or income consists solely of services as received by ultimate consumers, whether from their material or from the human environments. Thus, a piano, or an overcoat made for me this year is not a part of this year's income, but an addition to the capital, only the services rendered to me during this year by these things are income."

Prof. Simon Kuznet's Definition:

Prof. Simon Kuznets was an expert advisor to the National Income Estimate Committee of India in 1949. He has the practical experience of estimating National Income in India and U.S.A. His view was that the concept of national income may be simple from theoretical point of view whereas most difficult from the practical point of view.

Different Concepts of National Income:

In the measurement of national income there are various situations which we will have to study and they are known as concepts of national income. These concepts have their significance in national income accounting.

Important concepts have been discussed here under:

1. Gross National Income or Product (GNP):

Gross National Product has been defined as the total market value of all final goods and services produced in a year. It is the money value of all the final goods and services which the labour and capital of a country working on its natural resources have produced in a year. It includes not only the part of the production which is brought to the market for sale but also that part of the produce which is kept for self consumption.

Factors to be taken into consideration while studying Gross National Product:

(i) As GNP is the measure of money, so all kinds of goods and services produced in a country during one year are measured in terms of money at current prices and then added together.

(ii) In estimating GNP of the economy, the market price of only the final products should be taken into account. Many of the products pass through a number of stages before they are ultimately purchased by consumers.

(iii) Goods and services rendered free of charge are not included in the GNP, because it is not possible to have a correct estimate of their market prices.

(iv) The transactions which do not arise from the produce of current year or which do not contribute in any way to production are not included in the GNP. The sale and purchase of old goods and of shares, bonds are assets of existing companies are not included in GNP because they do not make any addition to the national product and the goods are simply transferred.

(v) The profits earned or losses incurred on account of changes in capital assets as a result of fluctuations in market prices are not included in the GNP if they are not responsible for current production or economic activity.

(vi) The income earned through illegal activities is not included in the GNP. Although the goods sold in the black-market are priced and fulfill the needs of the people, but as they are not useful from the social point of view, the income received from their sale and purchase is always excluded from the GNP.

2. Net National Product or (NNP):
Net National Product (NNP) refers to the value of the net output of the economy during the year. It is obtained by deducting the value of depreciation or replacement allowance of the capital assets from the GNP.

To put it symbolically:
NNP = GNP – D

where D = depreciation allowances.

This value is measured at current prices, while GNP is expressed at the current market price. Net National Product, in-fact, is the value of total consumption plus the value of net investment of

the community. It is the sum total of net values added by each producer in the productive process of an economy during one year period.

3. Gross Domestic Product (GDP):
Gross Domestic Product is the money value of all goods and services produced annually within the territorial limits of the country.

Gross Domestic Income includes:
(i) Wages and salaries,

(ii) Rents, including imputed house rents,

(iii) Interest,

(iv) Dividends,

(v) Undistributed corporate profits, including surpluses of public undertakings,

(vi) Mixed incomes consisting of profits of unincorporated firms, self-employed persons, partnership etc., and

(vii) Direct taxes.

In the estimation of Gross Domestic Product, no consideration is given to the fact as to whether the gross value of produce is with the combined efforts of only the people of the country with the co-operation of the foreigners. But the product must be produced in the country alone as the net earnings from abroad are excluded.

Therefore, Domestic Income = National Income – Net Income earned from abroad.

Thus, the difference between domestic income and national income is the net income earned from abroad. If we add net income from abroad to domestic income, we get national income.

i.e., National Income = Domestic Income + Net Income earned from abroad.

But the net national income earned from abroad may be positive or negative.

4. Per Capita Income:

Per capita income refers to the average income of an individual in a particular year. It denotes the income received by an individual during a certain year in a country. In order to find per capita income of a country in a certain year, we divide the national income of that country by the population of that country in that year e.g.,

Per-Capita Income = National Income of India in 2002/Population of India in 2002

It is clear that a country having high national income and less population will have higher per capita income. The concept of per capita income helps us in estimating the standard of living of different nations and it also serves as an index of economic development.

5. Personal Income:

Personal income is the aggregate income received by the individuals of a country from all sources before payment of direct taxes in one year. It is derived from national income by deducting undistributed corporate profits, profit taxes and employee's contributions to social security schemes.

These three components are excluded from national income because they do reach individuals. It can never be equal to the national income, because the former includes the transfer payments whereas they are not included in national income.

Business and Government transfer payments and transfer payments from abroad in the form of gifts and remittances, wind-full gains and interest on public debts are a source of income for individuals are added to national income. Thus,

Personal Income = National Income + Transfer Payment + Interest on Public Debt – Undistributed Corporate Profits – Profit Taxes — Social Security Contribution.

Personal Income differs from Private Income in that it is less than the latter because it excludes undistributed corporate profits. Thus

Personal Income = Private Income – Undistributed corporate profits – Profit taxes.

6. Disposable Income or Personal Disposable Income:

Disposable income or personal disposable income is the actual income which can be spend on consumption because it is the income that accrues before direct taxes have actually been paid.

Therefore, in order to obtain the disposable income, direct taxes are deducted from personal income. Thus,

Disposable Income = Personal Income — Direct Taxes.

But it should be remembered while calculating this income that the whole of the disposable income is not spend on consumption and a part of it is saved. Therefore, the disposable income is divided into consumption expenditure and saving. Thus,

Disposable Income = Consumption Expenditure + Savings

The concept of Disposable Income is very useful in computing the real purchasing power of the country. It also gives us an information regarding the personal consumption pattern. It refers to that part of the personal income which is actually available to the consumers. It can be obtained by deducting the amount of personal taxes, fines etc., from personal income. It is at the disposal of the consumers to save or consume or to use it in any way they like.

The following points highlight the eight major difficulties in the measurement of national income.
The difficulties are: 1. Prevalence of Non-Monetized Transactions 2. Illiteracy 3. Occupational Specialisation is Still Incomplete and Lacking 4. Lack of Availability of Adequate Statistical Data 5. Value of Inventory Changes 6. The Calculation of Depreciation 7. Difficulty of Avoiding the Double Counting System 8. Difficulty of Expenditure Method.
Some of the difficulties in measuring national income are as follows:
1. Lack of Reliable Data:
The reliability of data relating to national income estimation is often questioned (in India). National income estimate is made on the basis of primary data relating to incomes and values of goods produced. It is observed that many producers —particularly petty producers and traders— do not maintain any accounts of their incomes and even goods produced. Obviously, the primary data collected from this source is supposed to be vague. The reason behind this is illiteracy. Further, many people are reluctant to cooperate with the data collectors. Above all, data collectors often 'fabricate' data even without approaching the door of producing sectors or economic units. If this information is considered to be the basis of judgement, then the judgement will suffer from inaccuracy.

2. Existence of Non-Monetised Sector:

The soundness of national income estimates is affected badly if there exists a large non-monetised sector. This creates valuation problem. In an LDC, there exists an unorganised barter economy where money is not used for transaction purposes.

Various non-market and domestic activities like child care by mothers and sisters are not taken into account while estimating national income of a country, for the said reasons. In fact, these activities add to production when we engage the services of a lady ayah who takes care of a child against some monetary payments. But these are not considered in view of the difficulties of estimating such income.

Further, in national income estimation, looses or social ills do not get reflected. CO_2 emission from automobile car pollutes the environment resulting in fewer 'outputs' for future generations. Such is not adjusted usually, although attempts are often made to measure 'green GNP'.

3. Difficulties in the Classification of Working Population:

In India, working population is not clearly defined. For instance, agriculturists in India are not engaged in agriculture round the year. Obviously, in offseason they engage themselves in alternative occupations. In such a case, it is very difficult to identify their incomes to a particular occupation.

4. Illegal Income:

Finally, illegal incomes are not reported in national income accounts. In other words, illegal forms of economic activity and illegal activities that are not reported to the authority for the purpose of paying taxes are left out from national income accounts.

The **circular flow of income** or **circular flow** is a model of the economy in which the major exchanges are represented as flows of money, goods and services, etc. between economic agents. The flows of money and goods exchanged in a closed circuit correspond in value, but run in the opposite direction. The circular flow analysis is the basis of national accounts and hence of macroeconomics.

The idea of the circular flow was already present in the work of Richard Cantillon.[3] François Quesnay developed and visualized this concept in the so-called Tableau économique.[4] Important developments of Quesnay's tableau were Karl Marx' reproduction schemes in the second volume of Capital: Critique of Political Economy, and John Maynard Keynes' General Theory of Employment, Interest and Money. Richard Stone further developed the concept for the United Nations (UN) and the Organisation for Economic Co-operation and Development to the system, which is now used internationally.

The **circular flow of income** or **circular flow** is a model of the economy in which the major exchanges are represented as flows
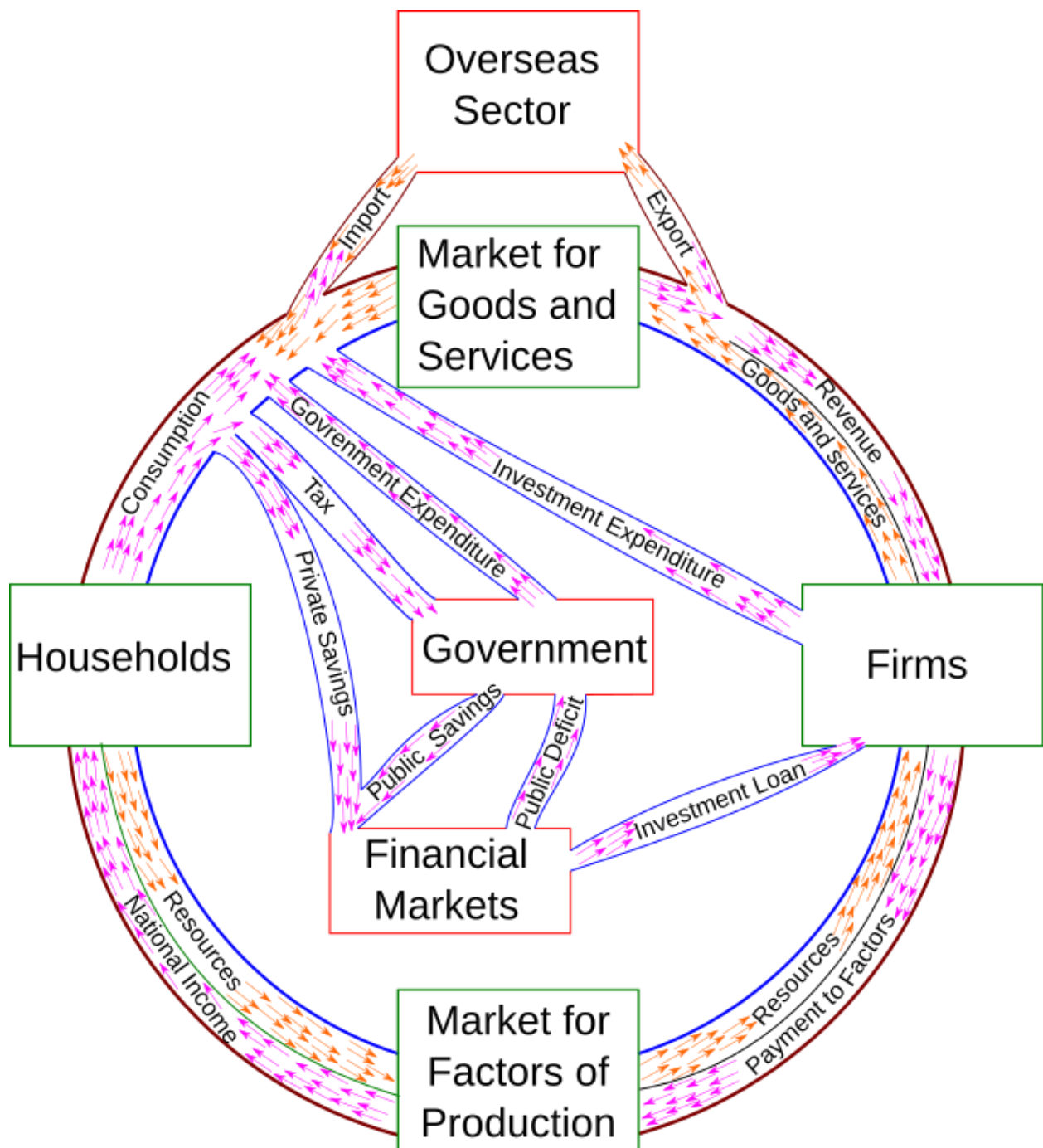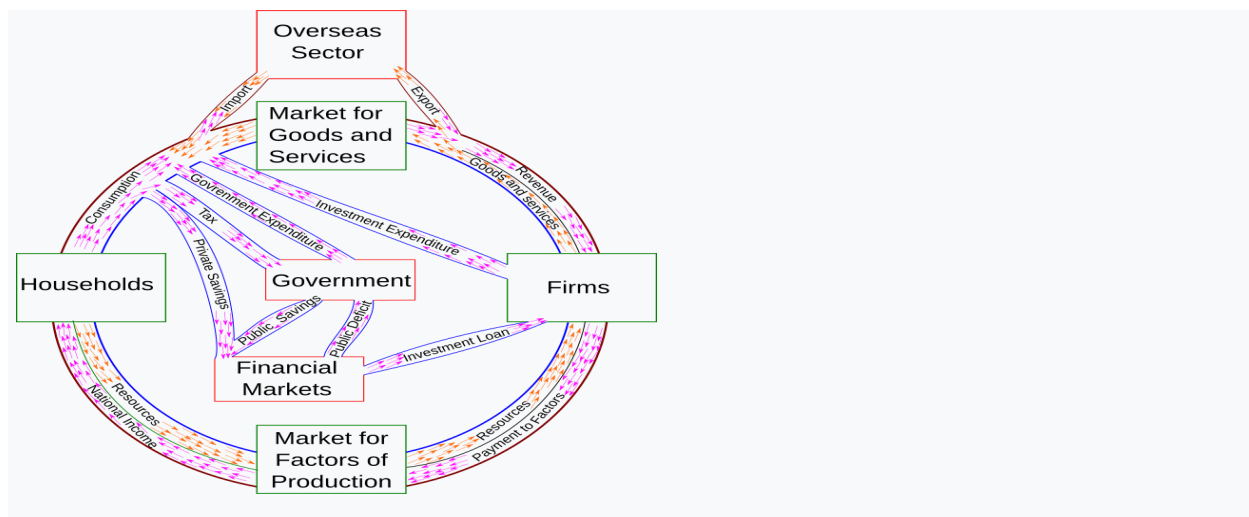
Two-sector model

In the basic two-sector circular flow of income model, the economy consists of two sectors: (1) households and (2) firms. (Some sources refer to households as "individuals"or the "public and to firms as "businesses or the "productive sector."[ ) The model assumes that there is no financial sector, no government sector, and no foreign sector. In addition, the model assumes that (a) through their expenditures, households spend all of their income on goods and

services or consumption and (b) through their expenditures, households purchase all output produced by firms. This means that all household expenditures become income for firms. The firms then spend this all of this income on factors of production such as labor, capital and raw materials, "transferring" all of their income to the factor owners (which are households). The factor owners (households), in turn, spend all of their income on goods, which leads to a circular flow of income

Three-sector model

The three-sector model adds the government sector to the two-sector model Thus, the three-sector model includes (1) households, (2) firms, and (3) government. It excludes the financial sector and the foreign sector. The government sector consists of the economic activities of local, state and federal governments. Flows from households and firms to government are in the form of taxes. The income the government receives flows to firms and households in the form of subsidies, transfers, and purchases of goods and services Every payment has a corresponding receipt; that is, every flow of money has a corresponding flow of goods in the opposite direction. As a result, the aggregate expenditure of the economy is identical to its aggregate income, making a circular flow.

Four-sector model

The four-sector model adds the foreign sector to the three-sector model (The foreign sector is also known as the "external sector," the "overseas sector," or the "rest of the world.") Thus, the four-sector model includes (1) households, (2) firms, (3) government, and (4) the rest of the world. It excludes the financial sector. The foreign sector comprises (a) foreign trade (imports and exports of goods and services) and (b) inflow and outflow of capital (foreign exchange). Again, each flow of money has a corresponding flow of goods (or services) in the opposite direction. Each of the four sectors receives some payments from the other in lieu of goods and services which makes a regular flow of goods and physical services. The addition of the foreign sector transforms the model from a closed economy to an open economy!

Five-sector model

The five-sector model adds the financial sector to the four-sector model. Thus, the five-sector model includes (1) households, (2) firms, (3) government, (4) the rest of the world, and (5) the financial sector. The financial sector includes banks and non-bank intermediaries that engage in

borrowing (savings from households) and lending (investments in firms).[19] Money facilitates such an exchange smoothly. Residuals from each market enter the capital market as savings, which in turn are invested in firms and the government sector. Technically speaking, so long as lending is equal to borrowing (i.e., leakages are equal to injections), the circular flow will continue indefinitely. However, this job is done by financial institutions in the economy.

Module 2: Classical and KEYNESIAN Theory of Employment

Introduction to the Classical Theory:
The classical theory assumes over the long period the existence of full employment without inflation.

Given wage-price flexibility, there are automatic competitive forces in the economic system that tend to maintain full employment, and make the economy produce output at that level in the long run.

Thus, full employment is regarded as a normal situation and any deviation from this level is something abnormal since competition automatically pushes the economy toward full employment.

The classical theory of income, output and employment is based on the following assumptions:
1. There is a normal situation of full employment without inflation.

2. There is a laissez faire capitalist economy without foreign trade.

3. There is perfect competition in labour, money and product markets.

4. Labour is homogeneous.

5. Total output of the economy is divided between consumption and investment expenditures.

6. The quantity of money is given. Money is only a medium of exchange.

7. Wages and prices are flexible.

8. Money wages and real wages are directly related and this relationship is proportional.

9. Capital stock and technological knowledge are given in the short run.

Now we study the three pillars of classical theory.

Say's Law of Markets:
Say's Law of Markets is the core of the classical theory of employment. Jean Baptiste Say, an early 19th century French Economist gave the proposition that **"supply creates its own demand."** This is known as Say's Law. In Say's own words, "It is production which creates markets for goods. A product is no sooner created than it, from that instant, affords a market for other products to the full extent of its own value. Nothing is more favourable to the demand of one product, than the supply of another."

In its original form, the law was applicable to a barter economy where goods are ultimately sold for goods. Every good brought to the market creates a demand for some other goods. Say argued that since work is unpleasant, no person will work to make a product unless he wants to exchange it for some other product which he desires.

Therefore, the very act of supplying goods by a large number of small producers implies a demand for them from producers of other goods. In each a situation there cannot be general over-production because supply of goods will not exceed demand as a whole.

Classical conceded that particular good may be overproduced because the producer incorrectly estimates the quantity of the product which others want. But this is a temporary phenomenon for the excess production of particular product can be corrected in time by reducing its production.

The higher is the rate of interest, the higher the savings, and vice versa. On the contrary, the lower the rate of interest, the higher the demand for investment funds, and vice versa. If at any given time, investment exceeds saving, the rate of interest would rise.

Saving would increase and investment would decline till the two are equal at the full employment level. This is because saving is regarded as an increasing function of the interest rate and investment a decreasing function of the rate of interest. This helps establish the equilibrium condition of saving-investment equality.

The process of generation of the equality between saving and investment is shown in Figure 3.1 where SS is the saving curve and II is the investment curve. The two curves intersect at E where the rate of interest gets determined at the level of Or and both saving and investment are equal to OA. If there is an increase in investment, the investment curve shifts to the right and is shown as IT curve.

At the interest rate Or, investment is greater than saving. According to the classical economists, the saving curve SS remains at its original level when there is any increase in investment. To maintain the equality between saving and investment, the rate of interest will rise.

This is shown in the figure to rise from Oe to Or'. At this interest rate, the saving curve SS intersects the investment curve IT at E'. Consequently, both saving and investment equal the quantity shown as OB. Thus whatever is saved gets invested through interest rate flexibility.

The Quantity Theory of Money and Price Level:
The validity of Say's Law in a money economy directly depends on the classical quantity theory of money which states that the general price level changes directly and proportionately to the supply of money. Algebraically stated the theory states that MV = PT where M, V, P and 7′ are the supply of money, velocity of money, price level and the volume of transactions. The equation tells that the total money supply MV equals the total value of output PT in the economy.

Assuming V (the velocity of money) and T (the total output) to be constant, a change in the supply of money (AY) causes a proportional change in the price level (P). This is based on the assumption that money acts only as a medium of exchange.

Wages Flexibility and Employment:
During the days of the Great Depression, Professor A C. Pigou supplied the most logical part of the classical theory of employment. According, to Pigou, under free competition the tendency of the economic system is to automatically provide full employment in the labour market. Unemployment results from rigidity in the wage structure and state interference in the working of the free market economy.

When the state intervenes by recognising trade unions, passing minimum wage laws, etc., and labour adopts monopolistic behaviour, wages are pushed upto unreasonable levels and unemployment results. Prof. Pigou's contention was that if all government interferences are removed and forces of competition are allowed to work freely, the market induced changes of wage rates will lead to full employment. As pointed out by Pigou, "With perfectly free competition……. there will always be at work a strong tendency for wage rates to be so related to demand that everybody is employed." Professor Pigou illustrated his point by using the following equation:

N = q.Y/W

In this equation, N is the number of workers employed, q is the fraction of income earned as wages and salaries, Y is the full employment national income and W is the average money wage rate. If Y is a given, N can be increased only by a reduction in W. Thus, the key to full employment is a reduction in the real wage. To explain his point, Pigou employed a mixture of micro and macro-economics.

This is explained in the adjoining Figure 3.3. In panel (A), Sis the supply curve of labour and D is the demand curve for labour. If the intersection of the two curves at E shows the point of full employment N_f then it is the real wage IV/P at which full employment is secured. If the real wage is maintained at a higher level such as W/P_1 supply exceeds the demand for labour by sd and we find that N_0N_f labour is unemployed.

It is only when the wage is reduced to the level W/P that the unemployment disappears and the level of full employment is attained. This is shown in panel (B) of the figure where MP_1 is the marginal product of labour curve which slopes downward as more labour is employed. Since every worker is paid wages equal to his marginal product, the full employment level AY is reached when the wage rate falls from W/P_1 to W/P level.

The Classical Production Function:

Having analysed the working of the money, capital and labour markets, we are in a position to describe the classical production function for the economy as a whole. The classical argument runs thus: As employment increases, total output also increases till full employment is readied. But when the economy is at the full employment level, total output becomes stable. Thus given the stock of capital, technological knowledge and resources, a price is relation exists between total output and the amount of employment.

Total output is an increasing function of the number of workers. The economy's short run production function is shown in Figure 3.4 as or curve which is labeled as Q =f (K, T, N), that is, total output 0 is a function of the capital stock K. of technological knowledge T, and the number of workers, N.

This production function shows that in the short run the total output is an increasing function of the number of workers, given the capital stock and technological knowledge. We find that the total output curve continues to rise but the rate of rise in total output diminishes as more workers are employed. This implies 'diminishing returns' to the use of labour and capital resources

Complete Classical Model Summarised:

In its simplest form, the classical theory of unemployment is an analysis of output and employment in the interrelated labour, money and goods markets. We can precisely write the classical macro model through the following set of equations:

(1) Q=………………… F (K, T, N) (Production function)

(2) N_s=f_1 (W/P)………. Labour – Supply function

(3) N_d = f_2 (W/P)……… Labour – demand function

(4) S=f_3 (r)……….. Saving is a function of the rate of interest (r)

(5) I =f_4 (r)…………. Investment function

(6) S = I………… Equilibrium of the capital market

(7) MV= PT…………. The general price-level function (Quantity Theory)

(8) N_s = N_d……. The labour market equilibrium.

We take up the relevance of these equations to the figures drawn earlier. In the labour market, the demand for labour and the supply of labour determine the level of employment in the economy. Both are functions of the real wage rate (W/P). It is the point of intersection of the demand and supply curves of labour which determines the equilibrium wage rate and the level of full employment.

The following points highlight the nine grounds on which Keynes criticized the Classical Theory of Employment. The Grounds are: 1. Keynes Rejected the Fundamental Classical Assumption of Normal, Automatic Full Employment Equilibrium in the Economy 2. Keynes Refuted the Say's Law of Markets with the help of his Theory of Effective Demand 3. No Automatic Working of the Price Mechanism and Others.

Ground 1. Keynes Rejected the Fundamental Classical Assumption of Normal, Automatic Full Employment Equilibrium in the Economy:

Ground 2. Keynes Refuted the Say's Law of Markets with the help of his Theory of Effective Demand:

Ground 3. No Automatic Working of the Price Mechanism:

Ground 4. Investment is Equated to Saving by Changes in Income:

Ground 5. Inadequate Analysis of the Demand for Money:

Ground 6. Money Influences Output and Employment:

Ground 7. Keynes refuted Professor Pigou's Contention that a Cut in Money wage could Achieve Full Employment in the Capitalist Economy:

Ground 8. State Intervention is Necessary for Economic Stability:

Ground 9. Importance of the Short-run Problems:

Keynesian Theory of Employment

As per Keynes theory of employment, effective demand signifies the money spent on the consumption of goods and services and on investment.

The total expenditure is equal to the national income, which is equivalent to the national output.

Therefore, effective demand is equal to total expenditure as well as national income and national output.

The theory of Keynes was against the belief of classical economists that the market forces in capitalist economy adjust themselves to attain equilibrium. He has criticized classical theory of employment in his book. Vie General Theory of Employment, Interest and Money. Keynes not only criticized classical economists, but also advocated his own theory of employment.

His theory was followed by several modern economists. Keynes book was published post-Great Depression period. The Great Depression had proved that market forces cannot attain equilibrium themselves; they need an external support for achieving it. This became a major reason for accepting the Keynes view of employment.

The Keynes theory of employment was based on the view of the short run. In the short run, he assumed that the factors of production, such as capital goods, supply of labor, technology, and

efficiency of labor, remain unchanged while determining the level of employment. Therefore, according to Keynes, level of employment is dependent on national income and output.

In addition, Keynes advocated that if there is an increase in national income, there would be an increase in level of employment and vice versa. Therefore, Keynes theory of employment is also known as theory of employment determination and theory of income determination.

The main point related to starting point of Keynes theory of employment is the principle of effective demand. Keynes propounded that the level of employment in the short run is dependent on the aggregate effective demand of products and services.

According to him, an increase in the aggregate effective demand would increase the level of employment and vice-versa. Total employment of a country can be determined with the help of total demand of the country. A decline in total effective demand would lead to unemployment.

As per Keynes theory of employment, effective demand signifies the money spent on the consumption of goods and services and on investment. The total expenditure is equal to the national income, which is equivalent to the national output. Therefore, effective demand is equal to total expenditure as well as national income and national output.

The effective demand can be expressed as follows:
Effective demand = National Income = National Output

Therefore effective demand affects employment level of a country, national income, and national output. It declines due to the mismatch of income and consumption and this decline lead to unemployment.

With the increase in the national income the consumption rate also increases, but the increase in consumption rate is relatively low as compared to the increase in national income. Low consumption rate leads to a decline in effective demand.

Therefore, the gap between the income and consumption rate should be reduced by increasing the number of investment opportunities. Consequently, effective demand also increases, which further helps in reducing unemployment and bringing full employment condition.

Moreover, effective demand refers to the total expenditure of an economy at a particular employment level. The total equal to the total supply price of economy (cost of production of

products and services) at a certain level of employment. Therefore, effective demand refers to the demand of consumption and investment of an economy.

Determination of Effective Demand:

Keynes has used two key terms, namely, aggregate demand price and aggregate supply price, for determining effective demand. Aggregate demand price and aggregate supply price together contribute to determine effective demand, which further helps in estimating the level of employment of an economy at a particular period of time.

In an economy, the employment level depends on the number of workers that are employed, so that maximum profit can be drawn. Therefore, the employment level of an economy is dependent on the decisions of organizations related to hiring of employee and placing them.

The level of employment can be determined with the help of aggregate supply price and aggregate demand price. Let us study these two concepts in detail.

Aggregate supply price refers to the total amount of money that all organizations in an economy should receive from the sale of output produced by employing a specific number of workers. In simpler words, aggregate supply price is the cost of production of products and services at a particular level of employment.

It is the total amount of money paid by organizations to the different factors of production involved in the production of output. Therefore, organizations would not employ the factors of production until they can recover the cost of production incurred for employing them.

A certain minimum amount of price is required for inducing employers to offer a specific amount of employment. According to Dillard, "This minimum price or proceeds, which will just induce employment on a given scale, is called the aggregate supply price of that amount of employment."

If an organization does not get an adequate price so that cost of production is covered, then it employs less number of workers. Therefore the aggregate supply price varies according to different number of workers employed. So, aggregate supply price schedule Id Tut can be prepared as per the total number of workers employed.

Aggregate supply price schedule is a schedule of minimum price required to induce the different quantities of employment. Thus, higher the price required to induce the different quantities of

employment, greater the level of employment would be. Therefore, the slope of the aggregate supply curve is upward to the right.

Aggregate Demand Price:

Aggregate demand price is different from demand for products of individual organizations and industries. The demand for individual organizations or industries refers to a schedule of quantity purchased at different levels of price of a single product.

On the hand, aggregate demand price is the total amount of money that an organization expects to receive from the sale of output produced by a specific number of workers. In other words, the aggregate demand price signifies the expected sale receipts received by the organization by employing a specific number of workers.

Aggregate demand price schedule refers to the schedule of expected earnings by selling the product at different level of employment Mo higher the level of employment, greater the level of output would be.

Consequently, the increase in the employment level would increase the aggregate demand price. Thus, the slope of aggregate demand curve would be upward to the right. However, the individual demand curve slopes downward.

The basic difference between the aggregate supply price and aggregate demand price should be analyzed carefully as both of them seem to be same. In aggregate supply price, organizations should receive money from the sale of output produced by employing a specific number of workers.

However, in aggregate demand price, organizations expect to receive from the sale of output produced by a specific number of workers. Therefore, in aggregate supply price, the amount of money is the necessary amount that should be received by the organization, while in aggregate demand price the amount of money may or may not be received.

Determination of Equilibrium Level of Employment:

The aggregate demand price and aggregate supply price help in determining the equilibrium level of employment.

The aggregate demand (AD) and aggregate supply (AS) curve are used for determining the equilibrium level of employment,

The aggregate demand (AD) and aggregate supply (AS) curve are used for determining the equilibrium level of employment, as shown in Figure-3:

In Figure-3, AD represents the aggregate demand curve, while AS represents the aggregate supply curve. It can be interpreted from Figure-3 that although the aggregate demand and aggregate supply curve are moving in the same direction, but they are not alike. There are different aggregate demand price and aggregate supply price for different levels of employment.

For example, in Figure-3, at AS curve, the organization would employ ON_1 number of workers, when they receive OC amount of sales receipts. Similarly, in case of AD curve, the organization would employ ON_1 number of workers with the expectation that they would produce OH amount of sales receipt for them.

The aggregate demand price exceeds the aggregate supply price or vice versa at some levels of employment. For example, at ON_1 employment level, the aggregate demand price (OH) is greater than the aggregate supply price (OC). However, at certain level of employment, the aggregate demand price and aggregate supply price become equal.

At this point, aggregate demand and aggregate supply curve intersect each other. This point of intersection is termed as the equilibrium level of employment. In Figure-3, point E represents the equilibrium level of employment because at this point, the aggregate demand curve and aggregate supply curve intersect each other.

In Figure-3, initially, there is a slow movement in the AS curve, but after a certain point of time it shows a sharp rise. This implies that when a number of workers increases initially, the cost incurred for production also increases but at a slow rate. However, when the amount of sales receipt increases, the organization starts employing more and more workers. In Figure-3, the ON_1 numbers of workers are employed, when OT amount of sales receipts are received by the organization.

On the other hand, the AD curve shows a rapid increase initially, but after some time it gets flattened. This means that the expected sales receipts increase with an increase in the number of workers. As a result, the expectations of the organization to earn more profit increases. As a

22

result, the organization start employing more workers. However, after a certain level, the increase in employment level would not show an increase in the amount of sales receipts.

In Figure-3, before reaching the employment level of ON_2, the employment level keeps on increasing as the organizations want to higher more and more workers to get the maximum profit. However, when the employment level crosses the ON_{21} level, the AD curve is below the AS curve, which shows that the aggregate supply price exceeds the aggregate demand price. As a result, the organization would start incurring losses; therefore would reduce the employment rate. Thus, the economy would be in equilibrium when the aggregate supply price and aggregate demand price become equal. In other words, equilibrium can be achieved when the amount of sales receipt necessary and the amount of sales receipt expected to be received by the organization at a specified level of employment are equal.

Factors Affecting Consumption | Keynes' Psychological Law

What Is the Consumption Function?
The consumption function, or Keynesian consumption function, is an economic formula that represents the functional relationship between total consumption and gross national income. It was introduced by British economist John Maynard Keynes, who argued the function could be used to track and predict total aggregate consumption expenditures.

The following points highlight the twelve objectives factors affecting consumption. The factors are: 1. Income 2. Distribution of Income 3. Financial Policies of Corporations 4. Changes in Expectations 5. Windfall Gains or Losses 6. Fiscal Policy 7. Demographic Factors 8. Terms of Credit on Consumer Durables 9. Wages and Propensity to Consume 10. Wealth and Stock of Money and Others.

Calculating the Consumption Function
The consumption function is represented as:

$C = A + MD$,
where:C=consumer spendingA=autonomous consumptionM=marginal propensity to consumeD= real disposable income

Assumptions and Implications
Much of the Keynesian doctrine centers around the frequency with which a given population spends or saves new income. The multiplier, the consumption function, and the marginal propensity to consume are each crucial to Keynes' focus on spending and aggregate demand.

The consumption function is assumed stable and static; all expenditures are passively determined by the level of national income. The same is not true of savings, which Keynes called "investment," not to be confused with government spending, another concept Keynes often defined as investment.

For the model to be valid, the consumption function and independent investment must remain constant long enough for national income to reach equilibrium. At equilibrium, business expectations and consumer expectations match up. One potential problem is that the consumption function cannot handle changes in the distribution of income and wealth. When these change, so too might autonomous consumption and the marginal propensity to consume.

Relationship between Saving and Investment

Incomes are generated by production and the economic system is said to be in equilibrium when all the incomes earned are returned to the income flow through spending. Keynes' income-expenditure analysis focuses on the relationship between aggregate expenditures and income.

In a two-sector model, equilibrium occurs when income received equals aggregated desired expenditures (i.e., $Y = C + I$). An alternative way of describing how national income is determined is to focus on saving and investment. Here, we consider a simple situation in which all income is disposable income.

Module 3: Demand for and supply of money.

the demand for money: the classical and the Keynesian approach towards money:
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 explains changes in the demand for money? There are two views on this issue. The first is the "scale" view which is related to the impact of the income or wealth level 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. There are three approaches to the demand for money: the classical, the Keynesian, and the post-Keynesian. We discuss these approaches below.

The Classical Approach:

The classical economists did not explicitly formulate demand for money theory but their views are inherent in the quantity theory of money. They emphasized the transactions demand for money in terms of the velocity of circulation of money. This is because money acts as a medium of exchange and facilitates the exchange of goods and services. In Fisher's "Equation of Exchange".

$$MV = PT$$

Where M is the total quantity of money, V is its velocity of circulation, P is the price level, and T is the total amount of goods and services exchanged for money.

The right hand side of this equation PT represents the demand for money which, in fact, "depends upon the value of the transactions to be undertaken in the economy, and is equal to a constant fraction of those transactions." MV represents the supply of money which is given and in equilibrium equals the demand for money. Thus the equation becomes

$$Md = PT$$

This transactions demand for money, in turn, is determined by the level of full employment income. This is because the classicists believed in Say's Law whereby supply created its own demand, assuming the full employment level of income. Thus the demand for money in Fisher's approach is a constant proportion of the level of transactions, which in turn, bears a constant relationship to the level of national income. Further, the demand for money is linked to the volume of trade going on in an economy at any time.

Thus its underlying assumption is that people hold money to buy goods.

But people also hold money for other reasons, such as to earn interest and to provide against unforeseen events. It is therefore, not possible to say that V will remain constant when M is changed. The most important thing about money in Fisher's theory is that it is transferable. But it does not explain fully why people hold money. It does not clarify whether to include as money such items as time deposits or savings deposits that are not immediately available to pay debts without first being converted into currency.

It was the Cambridge cash balance approach which raised a further question: Why do people actually want to hold their assets in the form of money? With larger incomes, people want to make larger volumes of transactions and that larger cash balances will, therefore, be demanded.

The Cambridge demand equation for money is

$Md=kPY$

where Md is the demand for money which must equal the supply to money (Md=Ms) in equilibrium in the economy, k is the fraction of the real money income (PY) which people wish to hold in cash and demand deposits or the ratio of money stock to income, P is the price level, and Y is the aggregate real income. This equation tells us that "other things being equal, the demand for money in normal terms would be proportional to the nominal level of income for each individual, and hence for the aggregate economy as well."

This approach includes time and saving deposits and other convertible funds in the demand for money. It also stresses the importance of factors that make money more or less useful, such as the costs of holding it, uncertainty about the future and so on. But it says little about the nature of the relationship that one expects to prevail between its variables, and it does not say too much about which ones might be important.

One of its major criticisms arises from the neglect of store of value function of money. The classicists emphasized only the medium of exchange function of money which simply acted as a go-between to facilitate buying and selling. For them, money performed a neutral role in the economy. It was barren and would not multiply, if stored in the form of wealth.

This was an erroneous view because money performed the "asset" function when it is transformed into other forms of assets like bills, equities, debentures, real assets (houses, cars, TVs, and so on), etc. Thus the neglect of the asset function of money was the major weakness of classical approach to the demand for money which Keynes remedied.

The Keynesian Approach: Liquidity Preference:
Keynes in his General Theory used a new term "liquidity preference" for the demand for money. Keynes suggested three motives which led to the demand for money in an economy: (1) the transactions demand, (2) the precautionary demand, and (3) the speculative demand.

The Transactions Demand for Money:

The transactions demand for money arises from the medium of exchange function of money in making regular payments for goods and services. According to Keynes, it relates to "the need of cash for the current transactions of personal and business exchange" It is further divided into income and business motives. The income motive is meant "to bridge the interval between the receipt of income and its disbursement."

Similarly, the business motive is meant "to bridge the interval between the time of incurring business costs and that of the receipt of the sale proceeds." If the time between the incurring of expenditure and receipt of income is small, less cash will be held by the people for current transactions, and vice versa. There will, however, be changes in the transactions demand for money depending upon the expectations of income recipients and businessmen. They depend upon the level of income, the interest rate, the business turnover, the normal period between the receipt and disbursement of income, etc.

Given these factors, the transactions demand for money is a direct proportional and positive function of the level of income, and is expressed as

$L_1 = kY$

Where L_1 is the transactions demand for money, k is the proportion of income which is kept for transactions purposes, and Y is the income.

This equation is illustrated in Figure 70.1 where the line kY represents a linear and proportional relation between transactions demand and the level of income. Assuming k= 1/4 and income Rs 1000 crores, the demand for transactions balances would be Rs 250 crores, at point A. With the increase in income to Rs 1200 crores, the transactions demand would be Rs 300 crores at point B on the curve kY.

If the transactions demand falls due to a change in the institutional and structural conditions of the economy, the value of κ is reduced to say, 1/5, and the new transactions demand curve is kY. It shows that for income of Rs 1000 and 1200 crores, transactions balances would Rs 200 and 240 crores at points C and D respectively in the figure. "Thus we conclude that the chief determinant of changes in the actual amount of the transactions balances held is changes in income. Changes in the transactions balances are the result of movements along a line like kY rather than changes in the slope of the line. In the equation, changes in transactions balances are the result of changes in Y rather than changes in k."

Interest Rate and Transactions Demand:

Regarding the rate of interest as the determinant of the transactions demand for money Keynes made the L_T function interest inelastic. But the pointed out that the "demand for money in the active circulation is also the some extent a function of the rate of interest, since a higher rate of interest may lead to a more economical use of active balances." "However, he did not stress the role of the rate of interest in this part of his analysis, and many of his popularizes ignored it altogether." In recent years, two post-Keynesian economists William J. Baumol and James Tobin have shown that the rate of interest is an important determinant of transactions demand for money.

They have also pointed out the relationship, between transactions demand for money and income is not linear and proportional. Rather, changes in income lead to proportionately smaller changes in transactions demand.

Transactions balances are held because income received once a month is not spent on the same day. In fact, an individual spreads his expenditure evenly over the month. Thus a portion of money meant for transactions purposes can be spent on short-term interest-yielding securities. It is possible to "put funds to work for a matter of days, weeks, or months in interest-bearing securities such as U.S. Treasury bills or commercial paper and other short-term money market instruments.

The problem here is that there is a cost involved in buying and selling. One must weigh the financial cost and inconvenience of frequent entry to and exit from the market for securities against the apparent advantage of holding interest-bearing securities in place of idle transactions balances.

Among other things, the cost per purchase and sale, the rate of interest, and the frequency of purchases and sales determine the profitability of switching from ideal transactions balances to earning assets. Nonetheless, with the cost per purchase and sale given, there is clearly some rate of interest at which it becomes profitable to switch what otherwise would be transactions balances into interest-bearing securities, even if the period for which these funds may be spared from transactions needs is measured only in weeks. The higher the interest rate, the larger will be the fraction of any given amount of transactions balances that can be profitably diverted into securities."

The structure of cash and short-term bond holdings is shown in Figure 70.2 (A), (B) and (C). Suppose an individual receives Rs 1200 as income on the first of every month and spends it evenly over the month. The month has four weeks. His saving is zero.

Accordingly, his transactions demand for money in each week is Rs 300. So he has Rs 900 idle money in the first week, Rs 600 in the second week, and Rs 300 in the third week. He will, therefore, convert this idle money into interest bearing bonds, as illustrated in Panel (B) and (C) of Figure 70.2. He keeps and spends Rs 300 during the first week (shown in Panel B), and invests Rs 900 in interest-bearing bonds (shown in Panel C). On the first day of the second week he sells bonds worth Rs. 300 to cover cash transactions of the second week and his bond holdings are reduced to Rs 600.

Similarly, he will sell bonds worth Rs 300 in the beginning of the third and keep the remaining bonds amounting to Rs 300 which he will sell on the first day of the fourth week to meet his expenses for the last week of the month. The amount of cash held for transactions purposes by the individual during each week is shown in saw-tooth pattern in Panel (B), and the bond holdings in each week are shown in blocks in Panel (C) of Figure 70.2.

The modern view is that the transactions demand for money is a function of both income and interest rates which can be expressed as $L_1 = f(Y, r)$.

This relationship between income and interest rate and the transactions demand for money for the economy as a whole is illustrated in Figure 3. We saw above that $L_T = kY$. If y=Rs 1200 crores and k= 1/4, then L_T = Rs 300 crores.

This is shown as Y_1 curve in Figure 70.3. If the income level rises to Rs 1600 crores, the transactions demand also increases to Rs 400 crores, given k = 1/4. Consequently, the transactions demand curve shifts to Y_2. The transactions demand curves Y_1, and Y_2 are interest-inelastic so long as the rate of interest does not rise above r_8 per cent.

As the rate of interest starts rising above r_8, the transactions demand for money becomes interest elastic. It indicates that "given the cost of switching into and out of securities, an interest rate above 8 per cent is sufficiently high to attract some amount of transaction balances into securities." The backward slope of the K, curve shows that at still higher rates, the transaction demand for money declines.

Thus when the rate of interest rises to r_{12}, the transactions demand declines to Rs 250 crores with an income level of Rs 1200 crores. Similarly, when the national income is Rs 1600 crores the transactions demand would decline to Rs 350 crores at r_{12} interest rate. Thus the transactions demand for money varies directly with the level of income and inversely with the rate of interest.

The Precautionary Demand for Money:

The Precautionary motive relates to "the desire to provide for contingencies requiring sudden expenditures and for unforeseen opportunities of advantageous purchases." Both individuals and businessmen keep cash in reserve to meet unexpected needs. Individuals hold some cash to provide for illness, accidents, unemployment and other unforeseen contingencies.

Similarly, businessmen keep cash in reserve to tide over unfavourable conditions or to gain from unexpected deals. Therefore, "money held under the precautionary motive is rather like water kept in reserve in a water tank." The precautionary demand for money depends upon the level of income, and business activity, opportunities for unexpected profitable deals, availability of cash, the cost of holding liquid assets in bank reserves, etc.

Keynes held that the precautionary demand for money, like transactions demand, was a function of the level of income. But the post-Keynesian economists believe that like transactions demand, it is inversely related to high interest rates. The transactions and precautionary demand for money will be unstable, particularly if the economy is not at full employment level and transactions are, therefore, less than the maximum, and are liable to fluctuate up or down.

Since precautionary demand, like transactions demand is a function of income and interest rates, the demand for money for these two purposes is expressed in the single equation LT=f(Y, r)[9]. Thus the precautionary demand for money can also be explained diagrammatically in terms of Figures 2 and 3.

The Speculative Demand for Money:

The speculative (or asset or liquidity preference) demand for money is for securing profit from knowing better than the market what the future will bring forth". Individuals and businessmen having funds, after keeping enough for transactions and precautionary purposes, like to make a speculative gain by investing in bonds. Money held for speculative purposes is a liquid store of value which can be invested at an opportune moment in interest-bearing bonds or securities.

Bond prices and the rate of interest are inversely related to each other. Low bond prices are indicative of high interest rates, and high bond prices reflect low interest rates. A bond carries a fixed rate of interest. For instance, if a bond of the value of Rs 100 carries 4 per cent interest and

the market rate of interest rises to 8 per cent, the value of this bond falls to Rs 50 in the market. If the market rate of interest falls to 2 per cent, the value of the bond will rise to Rs 200 in the market.

This can be worked out with the help of the equation

$V = R/r$

Where V is the current market value of a bond, R is the annual return on the bond, and r is the rate of return currently earned or the market rate of interest. So a bond worth Rs 100 (V) and carrying a 4 per cent rate of interest (r), gets an annual return (R) of Rs 4, that is,

V=Rs 4/0.04=Rs 100. When the market rate of interest rises to 8 per cent, then V=Rs 4/0.08=Rs50; when it fall to 2 per cent, then V=Rs 4/0.02=Rs 200.

Thus individuals and businessmen can gain by buying bonds worth Rs 100 each at the market price of Rs 50 each when the rate of interest is high (8 per cent), and sell them again when they are dearer (Rs 200 each when the rate of interest falls (to 2 per cent).

According to Keynes, it is expectations about changes in bond prices or in the current market rate of interest that determine the speculative demand for money. In explaining the speculative demand for money, Keynes had a normal or critical rate of interest (r_c) in mind. If the current rate of interest (r) is above the "critical" rate of interest, businessmen expect it to fall and bond price to rise. They will, therefore, buy bonds to sell them in future when their prices rise in order to gain thereby. At such times, the speculative demand for money would fall. Conversely, if the current rate of interest happens to be below the critical rate, businessmen expect it to rise and bond prices to fall. They will, therefore, sell bonds in the present if they have any, and the speculative demand for money would increase.

Thus when $r > r_0$, an investor holds all his liquid assets in bonds, and when $r < r_0$ his entire holdings go into money. But when $r = r_0$, he becomes indifferent to hold bonds or money.

Thus relationship between an individual's demand for money and the rate of interest is shown in Figure 70.4 where the horizontal axis shows the individual's demand for money for speculative purposes and the current and critical interest rates on the vertical axis. The figure shows that when r is greater than r_0, the asset holder puts all his cash balances in bonds and his demand for money is zero.

This is illustrated by the LM portion of the vertical axis. When r falls below r_0, the individual expects more capital losses on bonds as against the interest yield. He, therefore, converts his entire holdings into money, as shown by OW in the figure. This relationship between an individual asset holder's demand for money and the current rate of interest gives the discontinuous step demand for money curve LMSW.

For the economy as a whole the individual demand curve can be aggregated on this presumption that individual asset-holders differ in their critical rates r_0. It is smooth curve which slopes downward from left to right, as shown in Figure 70.5.

Thus the speculative demand for money is a decreasing function of the rate of interest. The higher the rate of interest, the lower the speculative demand for money and the lower the rate of interest, the higher the speculative demand for money. It can be expressed algebraically as $Ls = f(r)$, where Ls is the speculative demand for money and r is the rate of interest.

Geometrically, it is shows in Figure 70.5. The figure shows that at a very high rate of interest r_{J2}, the speculative demand for money is zero and businessmen invest their cash holdings in bonds because they believe that the interest rate cannot rise further. As the rate of interest falls to say, r_8 the speculative demand for money is OS. With a further fall in the interest rate to r_6, it rises to OS'. Thus the shape of the Ls curve shows that as the interest rate rises, the speculative demand for money declines; and with the fall in the interest rate, it increases. Thus the Keynesian speculative demand for money function is highly volatile, depending upon the behaviour of interest rates.

Liquidity Trap:
Keynes visualised conditions in which the speculative demand for money would be highly or even totally elastic so that changes in the quantity of money would be fully absorbed into speculative balances. This is the famous Keynesian liquidity trap. In this case, changes in the quantity of money have no effects at all on prices or income. According to Keynes, this is likely to happen when the market interest rate is very low so that yields on bond, equities and other securities will also be low.

At a very low rate of interest, such as r_2, the Ls curve becomes perfectly elastic and the speculative demand for money is infinitely elastic. This portion of the Ls curve is known as the liquidity trap. At such a low rate, people prefer to keep money in cash rather than invest in bonds because purchasing bonds will mean a definite loss. People will not buy bonds so long as the

interest rate remain at the low level and they will be waiting for the rate of interest to return to the "normal" level and bond prices to fall.

According to Keynes, as the rate of interest approaches zero, the risk of loss in holding bonds becomes greater. "When the price of bonds has been bid up so high that the rate of interest is, say, only 2 per cent or less, a very small decline in the price of bonds will wipe out the yield entirely and a slightly further decline would result in loss of the part of the principal." Thus the lower the interest rate, the smaller the earnings from bonds. Therefore, the greater the demand for cash holdings. Consequently, the Ls curve will become perfectly elastic.

Further, according to Keynes, "a long-term rate of interest of 2 per cent leaves more to fear than to hope, and offers, at the same time, a running yield which is only sufficient to offset a very small measure of fear." This makes the Ls curve "virtually absolute in the sense that almost everybody prefers cash to holding a debt which yields so low a rate of interest."

Prof. Modigliani believes that an infinitely elastic Ls curve is possible in a period of great uncertainty when price reductions are anticipated and the tendency to invest in bonds decreases, or if there prevails "a real scarcity of investment outlets that are profitable at rates of interest higher than the institutional minimum."

The phenomenon of liquidity trap possesses certain important implications.

First, the monetary authority cannot influence the rate of interest even by following a cheap money policy. An increase in the quantity of money cannot lead to a further decline in the rate of interest in a liquidity-trap situation. Second, the rate of interest cannot fall to zero.

Third, the policy of a general wage cut cannot be efficacious in the face of a perfectly elastic liquidity preference curve, such as Ls in Figure 70.5. No doubt, a policy of general wage cut would lower wages and prices, and thus release money from transactions to speculative purpose, the rate of interest would remain unaffected because people would hold money due to the prevalent uncertainty in the money market. Last, if new money is created, it instantly goes into speculative balances and is put into bank vaults or cash boxes instead of being invested. Thus there is no effect on income. Income can change without any change in the quantity of money. Thus monetary changes have a weak effect on economic activity under conditions of absolute liquidity preference.

The Total Demand for Money:

According to Keynes, money held for transactions and precautionary purposes is primarily a function of the level of income, $L_T=f(F)$, and the speculative demand for money is a function of the rate of interest, $Ls = f(r)$. Thus the total demand for money is a function of both income and the interest rate:

$L_T + L_S = f(Y) + f(r)$

or $L = f(Y) + f(r)$

or $L=f(Y, r)$

Where L represents the total demand for money.

Thus the total demand for money can be derived by the lateral summation of the demand function for transactions and precautionary purposes and the demand function for speculative purposes, as illustrated in Figure 70.6 (A), (B) and (C). Panel (A) of the Figure shows OT, the transactions and precautionary demand for money at Y level of income and different rates of interest. Panel (B) shows the speculative demand for money at various rates of interest. It is an inverse function of the rate of interest.

For instance, at r_6 rate of interest it is OS and as the rate of interest falls to r the Ls curve becomes perfectly elastic. Panel (C) shows the total demand curve for money L which is a lateral summation of LT and Ls curves: $L=L_T+L_S$. For example, at r_b rate of interest, the total demand for money is OD which is the sum of transactions and precautionary demand OT plus the speculative demand TD, OD=OT+TD. At r_2 interest rate, the total demand for money curve also becomes perfectly elastic, showing the position of liquidity trap.

High Powered Money

Here is a term paper on 'High Powered Money' especially written for school and banking students.

Term Paper 1. High Powered Money:

High powered money or powerful money refers to that currency that has been issued by the Government and Reserve Bank of India. Some portion of this currency is kept along with the public while rest is kept as funds in Reserve Bank.

H = C + R

Where H = High Powered Money

C = Currency with the public (Paper money + coins)

R = Government and bank deposits with RBI

Thus the sum total of money deposited with the public and the funds of banks is termed as powerful money. It is mainly created by the central bank. Since funds of commercial banks play an important role in the creation of credit, so it is very important to study about funds.

Reserve Fund is of two types:
(i) Statutory Reserve Funds of banks which is with the central bank (RR), and

(ii) Extra Reserve Fund(ER).

Thus H = C + RR + ER

High powered money is also known as secured money (RM) because banks keep with them Reserve Fund(R) and on the bases of this Demand deposits (DD) are created. Since the bases of creation of credit is Reserve Fund (R) and R is obtained as a part of high powered money (H) Security fund so high powered money is termed as Base money.

Term Paper # 2. Components of High Powered Money:
The following are the important components which determine high power money:
1. Currency with the public

2. Other Deposits with RBI

3. Cash with Banks

4. Banker's Deposits with RBI.

High powered Money (H) includes currency with Public (C), important reserves of Commercial banks and other reserve (ER).

Thus we get the equation:

H = C + RR + ER

Supply of money (M) includes bank deposits (D) and currency with public (C).

Thus,

M = C + D

The digram clears that if supply of high powered money increases ΔH then Hs_1 curve jumps up to Hs_1 demand and supply of high powered money is in equilibrium condition on E. supply of money is ON when supply of high powered money goes to Hs_1 then new point of equilibrium is E_1 and supply of money in these two OM_1. From the enclosed figure it is also clear that when high powered money increases ΔH then supply of money increases to ΔM.

Term Paper 3. Sources of High Powered Money:
The following are the sources of High Powered Money:
(1) Claims of Reserve Bank of India:
Reserve Bank also provides loans to the government. This loan is in the form of investment in government securities by the Reserve Bank. After deducting the deposits of government from quantity of loan of Reserve Bank quantity of net bank credit to government is calculated. It is also a source of High Powered Money.

(2) Net Foreign Exchange Assets of Reserve Bank:
It is the work of Reserve Bank to make arrangement for foreign exchange funds. When, Reserve Bank purchases foreign securities by paying the money of the country, then the quantity of foreign exchange increases which increases high powered money. On the contrary, when Reserve Bank sells foreign securities, then the quantity of foreign exchange with the central bank of the country decreases. It results decrease in high powered money.

(3) Government's Currency Liabilities to the Public:
Finance Ministry of the Indian Government is responsible for printing one rupee note and also for coinage. This function is done through the government for completing money related responsibilities towards the public. Thus with the increase in these liabilities, quantity of supply of money will increase and the quantity of High Powered money will also increase.

(4) Net Non-Monetary Liabilities of Reserve Bank:

The non-monetary liability of Reserve Bank is in the form of capital introduced in national fund and statutory fund. Its main items are-Paid-up Capital, Reserve Fund, Provided Fund and pension fund of the employees of Reserve Bank of India.

Non-monetary liabilities of Reserve Bank are inversely proportional to high Powered Money i.e. with the increase in non-monetary liabilities, there will be a decrease in the quantity of new high powered money.

Thus,

$$H = 1 + 2 + 3 - 4$$

From the above discussion we get information about the source of High Powered Money but it is also necessary to know that with the changes in these sources or factors, what changes takes place in the supply of money etc. In fact supply of money is the result of H. Size of H depends upon the ratio between reserve fund and deposits, and the ratio between time deposits and demand deposit.

Term Paper 4. Importance of High Powered Money:
The following are the importance of High Powered Money:
(1) Base Money:
Deposit of Public in a bank and expansion of credit is the base of supply of money. That is why some economists considered it as base money.

(2) Source of Changes:
The direction in which change in the high power money takes place is powered to the direction of change in the supply of money. Thus from this point of view High Powered Money is also important.

(3) Money Multiplier:
What will be money multiplier (M) is declared in economy on the bases of High Powered Money because supply of money is far more than high power money.

(4) Monetary Control:
A Special attention is paid by the central bank of any country on High Powered Money at the time of monetary control. Because, it is a big part of total supply of money in a country.

Various measures of money supply published by the Reserve Bank of India!

Money is something measurable. Once we have settled on a theoretical definition of money, we can identify empirically the things that serve as money in an economy. Then, the total stock of moneys of various kinds at a particular point of time can be computed. By repeated measurements at different points of time, a whole time series of money supply can be constructed.

This will show the time behaviour of money supply. Coupled with other data and helped by theory, this information can be used to throw light on the effect of changes in the supply of money on several key variables such as income, prices, wages, employment, rate of interest, balance of payments, etc., and how to control changes in the supply of money to attain certain policy goals.

At the outset, we must note two things about any measure of money supply. First that, the supply of money refers to its stock at any point of time. This is because money is a stock variable in contrast with a flow variable, such as real income, which refers to its rate per unit time (say, per year). It is the change in the stock of money (say) per year, which is a flow.

Second, the stock of money always refers to the stock of money held by the public. This is always smaller than the total stock of money in existence. The term public is defined to include all economic units (households, firms and institutions) except the producers of money (such as the government and the banking system). For the most common definition of money, the government means the Central Government plus all state governments: the banking system means the RBI plus all banks which accept demand deposits.

This means that the word public is inclusive of all local authorities, non-bank financial institutions, and non-departmental public-sector undertakings (such as Hindustan Steel. Indian Airlines, etc.) and even the foreign central banks and governments and the International Monetary Fund who hold a part of Indian money in India in the form of deposits with the RBI. In other words, in the standard measures of money, money held by the government and the banking system is not included.

The primary reason for measuring the stock of money in this way is that this separates the producers or the suppliers of money from the holders or the demanders of it. For both monetary analysis and policy formulation, such a separation is essential.

The measurement of money supply is an empirical matter. We study the various measures of money supply published by the RBI. Till 1967-68 the RBI used to publish only a single measure of money supply (M) defined as the sum of currency and demand deposits, both held by the public.

Following convention, we call it the narrow measure of money supply. From 1967-68 the RBI started publishing additionally a 'broader' measure of money supply, called 'aggregate monetary resources' (AMR). It was defined empirically as money narrowly defined plus the time deposits of banks held by the public. From April 1977 yet another change was introduced. Since then the RBI has been publishing data on four alternative measures of money supply in place of the earlier two. The new measures are denoted by M_1, M_2, M_3 and M_4. The two earlier measures were represented by M and AMR.

The respective empirical definitions of these measures are given below:

M or M_1 = C + DD + OD.

M_2 = M_1+ savings deposits with post office savings banks,

AMR or M_3 = M_1+net time deposits of banks,

M_4 = M_3 + total deposits with the Post Office Savings Organization (excluding National Savings Certificates).

C = currency held by the public,

DD = net demand deposits of banks,

OD = 'other deposits' of the RBI.

The contents of each of the components of M to M_4 are explained briefly below:

Currency consists of paper currency as well as coins. Paper currency is predominant in the form of Reserve Bank of India currency notes of the denomination of rupees two and above (rupees five, ten, twenty, fifty, and one hundred notes). In addition, we also have small amounts of Government of India rupee one notes.

Though made of paper, they are counted as rupee one coins. Together with rupee one coin and other small coins, they constitute the small-corns component of money supply. They are direct monetary liability of the Government of India. However, they are put into circulation by the RBI as the agent of the Central Government. The RBI does this by holding stocks of government

currency on hand and by maintaining full convertibility of this currency into the rest of the country's currency and vice versa.

We have already explained in the previous section the meaning, nature and the composition of demand deposits. What get included in any measure of money supply are the net demand deposits of banks, and not their total demand deposits. This is because we have defined money (and any one of its components) as something held by the 'public' only and total deposits include both deposits from the public and inter-bank deposits.

The latter are deposits which one bank holds with others. Since they are not held by the public, they are netted out of the total demand deposits to arrive at net demand deposits. We may remind the readers that demand deposits comprise the current- account deposits and the demand deposit portion of savings deposits, all held by the public.

'Other deposits' of the RBI are its deposits other than those held by the government (the Central and state governments), banks, and a few others. They include demand deposits of quasi-government institutions (like the IDBI), foreign central banks and governments, the IMF and the World Bank, etc. Empirically, whatever the measure of money supply, these 'other deposits' of the RBI constitute a very small proportion (less than one per cent) of the total money supply. Therefore, no harm will be done, if in our future discussion we ignore these 'other deposits.'

The following additional points about the new measures of money-supply vis-a-vis the old measures need to be noted:
(1) M is only a revised measure of M the RBI's old measure of money supply. The revision is not conceptual, but only in terms of coverage. The new series gives a better coverage of the co-operative banking sector. Formerly, only the demand liabilities of the State co-operative banks were included in money supply.

Other tiers of the co-operative banking sector were neglected on account of the non-availability of data. In the new series net (i.e., excluding inter-bank) demand deposits of State co-operative banks. Central co-operative banks and a segment of primary co-operative banks consisting of (i) urban co-operative banks and (ii) salary earners' credit societies are included. Similarly, M_3 is the revised version of the series on AMR with extended coverage for the co-operative banking sector.
(2) The new series M_2 and M_4 have been devised to accommodate Post Office deposits. We have already explained the nature of these deposits in the previous section.

(3) The RBI views the four new measures of money stock to represent different degrees of liquidity. It has specified them in the descending order of liquidity, M_1 being the most liquid and M4 the least liquid of the four measures.

Which of the alternative measures of money supply to choose and why? We cannot attempt an answer here, as it will involve going into questions to monetary theory, policy, and empirical testing. It should suffice to say at this state that the most common measure of money supply is that provided by M or M_1.

Till 1978 the RBI also used to concentrate most of its accounting analysis on this narrow measure of money supply. But things have changed since. Due to the introduction of a change in 1978 in the division of savings deposits of banks as between demand deposits and time deposits, the data on M_1 for post-1978 years are no longer comparable with those for the previous years.

So, the RBI has shifted its accounting analysis of changes m money supply in terms of M_3. But whatever the measure of money supply used, one thing clearly stands out about its time profile in India that its rate of growth has accelerated over time. Thus in the case of M_1 (narrow definition), the annual average rate of growth was 3.6% during the 1950s, 7.6% during the 1960s, 11.75% in the 1970s and 13.16% in the 1980s. The corresponding rates of growth for M3 (broad definition of money) were 6%, 8.9%, 14.7% and 14.7%, respectively.

At this stage we do not have any basis to either explain the sources of increase in M (or M_1) or AMR (or M3) or to evaluate such increases as socially beneficial or injurious.

Module 4: Inflation and business cycle

1. Meaning of Inflation:

Inflation is often defined in terms of its supposed causes. Inflation exists when money supply exceeds available goods and services. Or inflation is attributed to budget deficit financing. A deficit budget may be financed by the additional money creation. But the situation of monetary expansion or budget deficit may not cause price level to rise. Hence the difficulty of defining 'inflation'.

Inflation may be defined as 'a sustained upward trend in the general level of prices' and not the price of only one or two goods. G. Ackley defined inflation as 'a persistent and appreciable rise in the general level or average of prices'. In other words, inflation is a state of rising prices, but not high prices.

It is not high prices but rising price level that constitute inflation. It constitutes, thus, an overall increase in price level. It can, thus, be viewed as the devaluing of the worth of money. In other words, inflation reduces the purchasing power of money. A unit of money now buys less. Inflation can also be seen as a recurring phenomenon.

While measuring inflation, we take into account a large number of goods and services used by the people of a country and then calculate average increase in the prices of those goods and services over a period of time. A small rise in prices or a sudden rise in prices is not inflation since they may reflect the short term workings of the market.

Inflation may be defined as 'a sustained upward trend in the general level of prices' and not the price of only one or two goods. G. Ackley defined inflation as 'a persistent and appreciable rise in the general level or average of prices'. In other words, inflation is a state of rising prices, but not high prices.

It is not high prices but rising price level that constitute inflation. It constitutes, thus, an overall increase in price level. It can, thus, be viewed as the devaluing of the worth of money. In other words, inflation reduces the purchasing power of money. A unit of money now buys less. Inflation can also be seen as a recurring phenomenon.

While measuring inflation, we take into account a large number of goods and services used by the people of a country and then calculate average increase in the prices of those goods and services over a period of time. A small rise in prices or a sudden rise in prices is not inflation since they may reflect the short term workings of the market.

ADVERTISEMENTS:

It is to be pointed out here that inflation is a state of disequilibrium when there occurs a sustained rise in price level. It is inflation if the prices of most goods go up. Such rate of increases in prices may be both slow and rapid. However, it is difficult to detect whether there is an upward trend in prices and whether this trend is sustained. That is why inflation is difficult to define in an unambiguous sense.

Let's measure inflation rate. Suppose, in December 2007, the consumer price index was 193.6 and, in December 2008, it was 223.8. Thus, the inflation rate during the last one year was

223.8- 193.6/ 193.6 x 100 = 15.6

A. On the Basis of Causes:

(i) Currency inflation:

This type of inflation is caused by the printing of currency notes.

(ii) Credit inflation:

Being profit-making institutions, commercial banks sanction more loans and advances to the public than what the economy needs. Such credit expansion leads to a rise in price level.

(iii) Deficit-induced inflation:

The budget of the government reflects a deficit when expenditure exceeds revenue. To meet this gap, the government may ask the central bank to print additional money. Since pumping of additional money is required to meet the budget deficit, any price rise may the be called the deficit-induced inflation.

(iv) Demand-pull inflation:

An increase in aggregate demand over the available output leads to a rise in the price level. Such inflation is called demand-pull inflation (henceforth DPI). But why does aggregate demand rise? Classical economists attribute this rise in aggregate demand to money supply. If the supply of money in an economy exceeds the available goods and services, DPI appears. It has been described by Coulborn as a situation of "too much money chasing too few goods."

Keynesians hold a different argument. They argue that there can be an autonomous increase in aggregate demand or spending, such as a rise in consumption demand or investment or government spending or a tax cut or a net increase in exports (i.e., $C + I + G + X - M$) with no

increase in money supply. This would prompt upward adjustment in price. Thus, DPI is caused by monetary factors (classical adjustment) and non-monetary factors (Keynesian argument).

DPI can be explained in terms of Fig. 4.2, where we measure output on the horizontal axis and price level on the vertical axis. In Range 1, total spending is too short of full employment output, Y_F. There is little or no rise in the price level. As demand now rises, output will rise. The economy enters Range 2, where output approaches towards full employment situation. Note that in this region price level begins to rise. Ultimately, the economy reaches full employment situation, i.e., Range 3, where output does not rise but price level is pulled upward. This is demand-pull inflation. The essence of this type of inflation is that "too much spending chasing too few goods."

Cost-push inflation:

Inflation in an economy may arise from the overall increase in the cost of production. This type of inflation is known as cost-push inflation (henceforth CPI). Cost of production may rise due to an increase in the prices of raw materials, wages, etc. Often trade unions are blamed for wage rise since wage rate is not completely market-determinded. Higher wage means high cost of production. Prices of commodities are thereby increased.

A wage-price spiral comes into operation. But, at the same time, firms are to be blamed also for the price rise since they simply raise prices to expand their profit margins. Thus, we have two important variants of CPI wage-push inflation and profit-push inflation.

B. On the Basis of Speed or Intensity:
(i) Creeping or Mild Inflation:

If the speed of upward thrust in prices is slow but small then we have creeping inflation. What speed of annual price rise is a creeping one has not been stated by the economists. To some, a creeping or mild inflation is one when annual price rise varies between 2 p.c. and 3 p.c. If a rate of price rise is kept at this level, it is considered to be helpful for economic development. Others argue that if annual price rise goes slightly beyond 3 p.c. mark, still then it is considered to be of no danger.

(ii) Walking Inflation:

If the rate of annual price increase lies between 3 p.c. and 4 p.c., then we have a situation of walking inflation. When mild inflation is allowed to fan out, walking inflation appears. These two types of inflation may be described as 'moderate inflation'.

Often, one-digit inflation rate is called 'moderate inflation' which is not only predictable, but also keep people's faith on the monetary system of the country. Peoples' confidence get lost once moderately maintained rate of inflation goes out of control and the economy is then caught with the galloping inflation.

(iii) Galloping and Hyperinflation:
Walking inflation may be converted into running inflation. Running inflation is dangerous. If it is not controlled, it may ultimately be converted to galloping or hyperinflation. It is an extreme form of inflation when an economy gets shattered."Inflation in the double or triple digit range of 20, 100 or 200 p.c. a year is labelled "galloping inflation".

(iv) Government's Reaction to Inflation:
Inflationary situation may be open or suppressed. Because of anti-inflationary policies pursued by the government, inflation may not be an embarrassing one. For instance, increase in income leads to an increase in consumption spending which pulls the price level up.

If the consumption spending is countered by the government via price control and rationing device, the inflationary situation may be called a suppressed one. Once the government curbs are lifted, the suppressed inflation becomes open inflation. Open inflation may then result in hyperinflation.

3. Causes of Inflation:
Inflation is mainly caused by excess demand/ or decline in aggregate supply or output. Former leads to a rightward shift of the aggregate demand curve while the latter causes aggregate supply curve to shift leftward. Former is called demand-pull inflation (DPI), and the latter is called cost-push inflation (CPI). Before describing the factors, that lead to a rise in aggregate demand and a decline in aggregate supply, we like to explain "demand-pull" and "cost-push" theories of inflation.

(i) Demand-Pull Inflation Theory:
There are two theoretical approaches to the DPI—one is classical and other is the Keynesian.

According to classical economists or monetarists, inflation is caused by an increase in money supply which leads to a rightward shift in negative sloping aggregate demand curve. Given a situation of full employment, classicists maintained that a change in money supply brings about an equiproportionate change in price level.

That is why monetarists argue that inflation is always and everywhere a monetary phenomenon. Keynesians do not find any link between money supply and price level causing an upward shift in aggregate demand.

According to Keynesians, aggregate demand may rise due to a rise in consumer demand or investment demand or government expenditure or net exports or the combination of these four components of aggreate demand. Given full employment, such increase in aggregate demand leads to an upward pressure in prices. Such a situation is called DPI. This can be explained graphically.

Just like the price of a commodity, the level of prices is determined by the interaction of aggregate demand and aggregate supply. In Fig. 4.3, aggregate demand curve is negative sloping while aggregate supply curve before the full employment stage is positive sloping and becomes vertical after the full employment stage is reached. AD_1 is the initial aggregate demand curve that intersects the aggregate supply curve AS at point E_1.

The price level, thus, determined is OP_1. As aggregate demand curve shifts to AD_2, price level rises to OP_2. Thus, an increase in aggregate demand at the full employment stage leads to an increase in price level only, rather than the level of output. However, how much price level will rise following an increase in aggregate demand depends on the slope of the AS curve.

(ii) Causes of Demand-Pull Inflation:

DPI originates in the monetary sector. Monetarists' argument that "only money matters" is based on the assumption that at or near full employment excessive money supply will increase aggregate demand and will, thus, cause inflation.

An increase in nominal money supply shifts aggregate demand curve rightward. This enables people to hold excess cash balances. Spending of excess cash balances by them causes price level to rise. Price level will continue to rise until aggregate demand equals aggregate supply.

Keynesians argue that inflation originates in the non-monetary sector or the real sector. Aggregate demand may rise if there is an increase in consumption expenditure following a tax cut. There may be an autonomous increase in business investment or government expenditure. Government expenditure is inflationary if the needed money is procured by the government by printing additional money.

In brief, increase in aggregate demand i.e., increase in $(C + I + G + X - M)$ causes price level to rise. However, aggregate demand may rise following an increase in money supply generated by the printing of additional money (classical argument) which drives prices upward. Thus, money

plays a vital role. That is why Milton Friedman argues that inflation is always and everywhere a monetary phenomenon.

There are other reasons that may push aggregate demand and, hence, price level upwards. For instance, growth of population stimulates aggregate demand. Higher export earnings increase the purchasing power of the exporting countries. Additional purchasing power means additional aggregate demand. Purchasing power and, hence, aggregate demand may also go up if government repays public debt.

Again, there is a tendency on the part of the holders of black money to spend more on conspicuous consumption goods. Such tendency fuels inflationary fire. Thus, DPI is caused by a variety of factors.

(iii) Cost-Push Inflation Theory:
In addition to aggregate demand, aggregate supply also generates inflationary process. As inflation is caused by a leftward shift of the aggregate supply, we call it CPI. CPI is usually associated with non-monetary factors. CPI arises due to the increase in cost of production. Cost of production may rise due to a rise in cost of raw materials or increase in wages.

However, wage increase may lead to an increase in productivity of workers. If this happens, then the AS curve will shift to the right- ward not leftward—direction. We assume here that productivity does not change in spite of an increase in wages.

Such increases in costs are passed on to consumers by firms by raising the prices of the products. Rising wages lead to rising costs. Rising costs lead to rising prices. And, rising prices again prompt trade unions to demand higher wages. Thus, an inflationary wage-price spiral starts. This causes aggregate supply curve to shift leftward.

This can be demonstrated graphically where AS_1 is the initial aggregate supply curve. Below the full employment stage this AS curve is positive sloping and at full employment stage it becomes perfectly inelastic.
Intersection point (E_1) of AD_1 and AS_1 curves determine the price level (OP_1). Now there is a leftward shift of aggregate supply curve to AS_2. With no change in aggregate demand, this causes price level to rise to OP_2 and output to fall to OY_2. With the reduction in output, employment in the economy declines or unemployment rises. Further shift in AS curve to

AS_3 results in a higher price level (OP_3) and a lower volume of aggregate output (OY_3). Thus, CPI may arise even below the full employment (Y_F) stage.

(iv) Causes of Cost-Push Inflation:

It is the cost factors that pull the prices upward. One of the important causes of price rise is the rise in price of raw materials. For instance, by an administrative order the government may hike the price of petrol or diesel or freight rate. Firms buy these inputs now at a higher price. This leads to an upward pressure on cost of production.

Not only this, CPI is often imported from outside the economy. Increase in the price of petrol by OPEC compels the government to increase the price of petrol and diesel. These two important raw materials are needed by every sector, especially the transport sector. As a result, transport costs go up resulting in higher general price level.

Again, CPI may be induced by wage-push inflation or profit-push inflation. Trade unions demand higher money wages as a compensation against inflationary price rise. If increase in money wages exceed labour productivity, aggregate supply will shift upward and leftward. Firms often exercise power by pushing prices up independently of consumer demand to expand their profit margins.

Fiscal policy changes, such as increase in tax rates also leads to an upward pressure in cost of production. For instance, an overall increase in excise tax of mass consumption goods is definitely inflationary. That is why government is then accused of causing inflation.

Finally, production setbacks may result in decreases in output. Natural disaster, gradual exhaustion of natural resources, work stoppages, electric power cuts, etc., may cause aggregate output to decline. In the midst of this output reduction, artificial scarcity of any goods created by traders and hoarders just simply ignite the situation.

Inefficiency, corruption, mismanagement of the economy may also be the other reasons. Thus, inflation is caused by the interplay of various factors. A particular factor cannot be held responsible for any inflationary price rise.

4. Effects of Inflation:

People's desires are inconsistent. When they act as buyers they want prices of goods and services to remain stable but as sellers they expect the prices of goods and services should go up. Such a happy outcome may arise for some individuals; "but, when this happens, others will be getting the worst of both worlds."

When price level goes up, there is both a gainer and a loser. To evaluate the consequence of inflation, one must identify the nature of inflation which may be anticipated and unanticipated. If inflation is anticipated, people can adjust with the new situation and costs of inflation to the society will be smaller.

In reality, people cannot predict accurately future events or people often make mistakes in predicting the course of inflation. In other words, inflation may be unanticipated when people fail to adjust completely. This creates various problems.

One can study the effects of unanticipated inflation under two broad headings:
(a) Effect on distribution of income and wealth; and

(b) Effect on economic growth.

(a) Effects of Inflation on Distribution of Income and Wealth:
During inflation, usually people experience rise in incomes. But some people gain during inflation at the expense of others. Some individuals gain because their money incomes rise more rapidly than the prices and some lose because prices rise more rapidly than their incomes during inflation. Thus, it redistributes income and wealth.

Though no conclusive evidence can be cited, it can be asserted that following categories of people are affected by inflation differently:
(i) Creditors and debtors:
Borrowers gain and lenders lose during inflation because debts are fixed in rupee terms. When debts are repaid their real value declines by the price level increase and, hence, creditors lose. An individual may be interested in buying a house by taking loan of Rs. 7 lakh from an institution for 7 years.

The borrower now welcomes inflation since he will have to pay less in real terms than when it was borrowed. Lender, in the process, loses since the rate of interest payable remains unaltered as per agreement. Because of inflation, the borrower is given 'dear' rupees, but pays back 'cheap' rupees. However, if in an inflation-ridden economy creditors chronically loose, it is wise not to advance loans or to shut down business.

Never does it happen. Rather, the loan-giving institution makes adequate safeguard against the erosion of real value. Above all, banks do not pay any interest on current account but charges interest on loans.

(ii) Bond and debenture-holders:

In an economy, there are some people who live on interest income—they suffer most. Bondholders earn fixed interest income: These people suffer a reduction in real income when prices rise. In other words, the value of one's savings decline if the interest rate falls short of inflation rate. Similarly, beneficiaries from life insurance programmes are also hit badly by inflation since real value of savings deteriorate.

(iii) Investors:

People who put their money in shares during inflation are expected to gain since the possibility of earning of business profit brightens. Higher profit induces owners of firm to distribute profit among investors or shareholders.

(iv) Salaried people and wage-earners:

Anyone earning a fixed income is damaged by inflation. Sometimes, unionised worker succeeds in raising wage rates of white-collar workers as a compensation against price rise. But wage rate changes with a long time lag. In other words, wage rate increases always lag behind price increases. Naturally, inflation results in a reduction in real purchasing power of fixed income-earners.

On the other hand, people earning flexible incomes may gain during inflation. The nominal incomes of such people outstrip the general price rise. As a result, real incomes of this income group increase.

(v) Profit-earners, speculators and black marketers:

It is argued that profit-earners gain from inflation. Profit tends to rise during inflation. Seeing inflation, businessmen raise the prices of their products. This results in a bigger profit. Profit margin, however, may not be high when the rate of inflation climbs to a high level.

However, speculators dealing in business in essential commodities usually stand to gain by inflation. Black marketers are also benefited by inflation.

Thus, there occurs a redistribution of income and wealth. It is said that rich becomes richer and poor becomes poorer during inflation. However, no such hard and fast generalisation can be made. It is clear that someone wins and someone loses during inflation.

These effects of inflation may persist if inflation is unanticipated. However, the redistributive burdens of inflation on income and wealth are most likely to be minimal if inflation is anticipated

by the people. With anticipated inflation, people can build up their strategies to cope with inflation.

If the annual rate of inflation in an economy is anticipated correctly people will try to protect them against losses resulting from inflation. Workers will demand 10 p.c. wage increase if inflation is expected to rise by 10 p.c.

Similarly, a percentage of inflation premium will be demanded by creditors from debtors. Business firms will also fix prices of their products in accordance with the anticipated price rise. Now if the entire society "learn to live with inflation", the redistributive effect of inflation will be minimal.

However, it is difficult to anticipate properly every episode of inflation. Further, even if it is anticipated it cannot be perfect. In addition, adjustment with the new expected inflationary conditions may not be possible for all categories of people. Thus, adverse redistributive effects are likely to occur.

Finally, anticipated inflation may also be costly to the society. If people's expectation regarding future price rise become stronger they will hold less liquid money. Mere holding of cash balances during inflation is unwise since its real value declines. That is why people use their money balances in buying real estate, gold, jewellery, etc. Such investment is referred to as unproductive investment. Thus, during inflation of anticipated variety, there occurs a diversion of resources from priority to non-priority or unproductive sectors.

(b) Effect on Production and Economic Growth:
Inflation may or may not result in higher output. Below the full employment stage, inflation has a favourable effect on production. In general, profit is a rising function of the price level. An inflationary situation gives an incentive to businessmen to raise prices of their products so as to earn higher volume of profit. Rising price and rising profit encourage firms to make larger investments.

As a result, the multiplier effect of investment will come into operation resulting in a higher national output. However, such a favourable effect of inflation will be temporary if wages and production costs rise very rapidly.

Further, inflationary situation may be associated with the fall in output, particularly if inflation is of the cost-push variety. Thus, there is no strict relationship between prices and output. An

increase in aggregate demand will increase both prices and output, but a supply shock will raise prices and lower output.

Inflation may also lower down further production levels. It is commonly assumed that if inflationary tendencies nurtured by experienced inflation persist in future, people will now save less and consume more. Rising saving propensities will result in lower further outputs.

One may also argue that inflation creates an air of uncertainty in the minds of business community, particularly when the rate of inflation fluctuates. In the midst of rising inflationary trend, firms cannot accurately estimate their costs and revenues. That is, in a situation of unanticipated inflation, a great deal of risk element exists.

It is because of uncertainty of expected inflation, investors become reluctant to invest in their business and to make long-term commitments. Under the circumstance, business firms may be deterred in investing. This will adversely affect the growth performance of the economy.

However, slight dose of inflation is necessary for economic growth. Mild inflation has an encouraging effect on national output. But it is difficult to make the price rise of a creeping variety. High rate of inflation acts as a disincentive to long run economic growth. The way the hyperinflation affects economic growth is summed up here. We know that hyper-inflation discourages savings.

A fall in savings means a lower rate of capital formation. A low rate of capital formation hinders economic growth. Further, during excessive price rise, there occurs an increase in unproductive investment in real estate, gold, jewellery, etc. Above all, speculative businesses flourish during inflation resulting in artificial scarcities and, hence, further rise in prices.

Again, following hyperinflation, export earnings decline resulting in a wide imbalances in the balance of payment account. Often galloping inflation results in a 'flight' of capital to foreign countries since people lose confidence and faith over the monetary arrangements of the country, thereby resulting in a scarcity of resources. Finally, real value of tax revenue also declines under the impact of hyperinflation. Government then experiences a shortfall in investible resources.

Thus economists and policymakers are unanimous regarding the dangers of high price rise. But the consequence of hyperinflation are disastrous. In the past, some of the world economies (e.g., Germany after the First World War (1914-1918), Latin American countries in the 1980s) had been greatly ravaged by hyperinflation.

The German inflation of 1920s was also catastrophic:

During 1922, the German price level went up 5,470 per cent. In 1923, the situation worsened; the German price level rose 1,300,000,000 (1.3 billion) times. By October of 1923, the postage in the lightest letter sent from Germany to the United States was 200,000 marks. Butter cost 1.5 million marks per pound, meat 2 million marks, a loaf of bread 200,000 marks, and an egg 60,000 marks! Prices increased so rapidly that waiters changed the prices on the menu several times during the course of a lunch!! Sometimes, customers had to pay the double price listed on the menu when they observed it first!!! A photograph of the period shows a German housewife starting the fire in her kitchen stove with paper money and children playing with bundles of paper money tied together into building blocks!

Currently (September 2008), Indian economy experienced an inflation rate of almost 13 p.c.—an unprecedented one over the last 16 or 17 years. However, an all-time record in price rise in India was struck in 1974-75 when it rose more than 25 p.c. Anyway, people are ultimately harassed by the high dose of inflation. That is why, it is said that 'inflation is our public enemy number one.' Rising inflation rate is a sign of failure on the part of the government.

Phillips Curve

What is the Phillips Curve?

The Phillips curve is an economic concept developed by A. W. Phillips stating that inflation and unemployment have a stable and inverse relationship. The theory claims that with economic growth comes inflation, which in turn should lead to more jobs and less unemployment. However, the original concept has been somewhat disproven empirically due to the occurrence of stagflation in the 1970s, when there were high levels of both inflation and unemployment.

- The Phillips curve states that inflation and unemployment have an inverse relationship. Higher inflation is associated with lower unemployment and vice versa.
- The Phillips curve was a concept used to guide macroeconomic policy in the 20th century, but was called into question by the stagflation of the 1970's.
- Understanding the Phillips curve in light of consumer and worker expectations, shows that the relationship between inflation and unemployment may not hold in the long run, or even potentially in the short run.

The Phillips Curve and Stagflation

Stagflation occurs when an economy experiences stagnant economic growth, high unemployment and high price inflation. This scenario, of course, directly contradicts the theory behind the Philips curve. The United States never experienced stagflation until the 1970s, when rising unemployment did not coincide with declining inflation. Between 1973 and 1975, the U.S. economy posted six consecutive quarters of declining GDP and at the same time tripled its inflation.

What Is Deflation – Definition, Causes & Effects

Many people accept inflation as a fact of life. However, under certain economic situations, the opposite phenomenon actually takes place, and is known as "deflation."

Deflation is the reduction of prices of goods, and although deflation may seem like a good thing when you're standing at the checkout counter, it's not. Rather, deflation is an indication that economic conditions are deteriorating. Deflation is usually associated with significant unemployment, which is only corrected after wages drop considerably. Furthermore, businesses' profits drop significantly during periods of deflation, making it more difficult to raise additional capital to expand and develop new technologies.

"Deflation" is often confused with "disinflation." While deflation represents a decrease in the prices of goods and services throughout the economy, disinflation represents a situation where inflation increases at a slower rate. However, disinflation does not usually precede a period of deflation. In fact, deflation is a rare phenomenon that does not occur in the course of a normal economic cycle, and therefore, investors must recognize it as a sign that something is severely wrong with the state of the economy.

What Causes Deflation?

Deflation can be caused by a number of factors, all of which stem from a shift in the supply-demand curve. Remember, the prices of all goods and services are heavily affected by a change in the supply and demand, which means that if demand drops in relation to supply, prices will have to drop accordingly. Also, a change in the supply and demand of a nation's currency plays an instrumental role in setting the prices of the country's goods and services.

Although there are many reasons why deflation may take place, the following causes seem to play the largest roles:

1.   Change   in   Structure   of   Capital   Markets
When many different companies are selling the same goods or services, they will typically lower their prices as a means to compete. Often, the capital structure of the economy will change and companies will have easier access to debt and equity markets, which they can use to fund new businesses or improve productivity.

There are multiple reasons why companies will have an easier time raising capital, such as declining interest rates, changing banking policies, or a change in investors' aversion to risk. However, after they have utilized this new capital to increase productivity, they are going to have to reduce their prices to reflect the increased supply of products, which can result in deflation.

2.   Increased   Productivity
Innovative solutions and new processes help increase efficiency, which ultimately leads to lower prices. Although some innovations only affect the productivity of certain industries, others may have a profound effect on the entire economy.

For example, after the Soviet Union collapsed in 1991, many of the countries that formed as a result struggled to get back on track. In order to make a living, many citizens were willing to work for very low prices, and as companies in the United States outsourced work to these countries, they were able to significantly reduce their operating expenses and bolster productivity. Inevitably, this increased the supply of goods and decreased their cost, which led to a period of deflation near the end of the 20th century.

3.   **Decrease**   **in**   **Currency**   **Supply**
As the currency supply decreases, prices will decrease so that people can afford goods. How can currency supplies decrease? One common reason is through central banking systems.

For instance, when the Federal Reserve was first created, it considerably contracted the money supply of the United States. In the process, this led to a severe case of deflation in 1913. Also, in many economies, spending is often completed on credit. Clearly, when creditors pull the plug on lending money, customers will spend less, forcing sellers to lower their prices to regain sales.

4.   **Austerity**   **Measures**
Deflation can be the result of decreased governmental, business, or consumer spending, which means government spending cuts can lead to periods of significant deflation. For example, when Spain initiated austerity measures in 2010, preexisting deflation began to spiral out of control.

5.   **Deflationary**   **Spiral**
Once deflation has shown its ugly head, it can be very difficult to get the economy under control for a number of reasons. First of all, when consumers start cutting spending, business profits decrease. Unfortunately, this means that businesses have to reduce wages and cut their own purchases. In turn, this short-circuits spending in other sectors, as other businesses and wage-earners have less money to spend. As horrible as this sounds, it continues to get worse and the cycle can be very difficult to break.

Effects of Deflation

Deflation can be compared to a terrible winter: The damage can be intense and be experienced for many seasons afterwards. Unfortunately, some nations never fully recover from the damage caused by deflation. Hong Kong, for example, never recovered from the deflationary effects that gripped the Asian economy in 2002.

Deflation may have any of the following impacts on an economy:

1.   **Reduced**   **Business**   **Revenues**
Businesses must significantly reduce the prices of their products in order to stay competitive. Obviously, as they reduce their prices, their revenues start to drop. Business revenues frequently fall and recover, but deflationary cycles tend to repeat themselves multiple times.

Unfortunately, this means businesses will need to increasingly cut their prices as the period of deflation continues. Although these businesses operate with improved production efficiency, their profit margins will eventually drop, as savings from material costs are offset by reduced revenues.

2.   Wage   Cutbacks   and   Layoffs
When revenues start to drop, companies need to find ways to reduce their expenses to meet their bottom line. They can make these cuts by reducing wages and cutting positions. Understandably, this exacerbates the cycle of inflation, as more would-be consumers have less to spend.

3.   Changes   in   Customer   Spending
The relationship between deflation and consumer spending is complex and often difficult to predict. When the economy undergoes a period of deflation, customers often take advantage of the substantially lower prices. Initially, consumer spending may increase greatly; however, once businesses start looking for ways to bolster their bottom line, consumers who have lost their jobs or taken pay cuts must start reducing their spending as well. Of course, when they reduce their spending, the cycle of deflation worsens.

4.   Reduced   Stake   in   Investments
When the economy goes through a series of deflation, investors tend to view cash as one of their best possible investments. Investors will watch their money grow simply by holding onto it. Additionally, the interest rates investors earn often decrease significantly as central banks attempt to fight deflation by reducing interest rates, which in turn reduces the amount of money they have available for spending.

In the meantime, many other investments may yield a negative return or are highly volatile, since investors are scared and companies aren't posting profits. As investors pull out of stocks, the stock market inevitably drops.

5.   Reduced   Credit
When deflation rears its head, financial lenders quickly start to pull the plugs on many of their lending operations for a variety of reasons. First of all, as assets such as houses decline in value, customers cannot back their debt with the same collateral. In the event a borrower is unable to make their debt obligations, the lenders will be unable to recover their full investment through foreclosures or property seizures.

Also, lenders realize the financial position of borrowers is more likely to change as employers start cutting their workforce. Central banks will try to reduce interest rates to encourage customers to borrow and spend more, but many of them will still not be eligible for loans.

Tools to Fix Deflation

Fortunately, it is possible to reduce the impact of deflation. However, fighting deflation requires a disciplined approach, as it will not fix itself. Prior to the Great Depression, it was

commonly believed that deflation would eventually run its course. However, economists suggested government intervention was necessary to break a deflationary spiral.

During the Great Depression, the government attempted different methods to fight deflation, most of which proved ineffective. For example, President Franklin D. Roosevelt believed that deflation was caused by an oversupply of goods and services, so he attempted to reduce the supply of resources on the market. One way he tried to do this was to purchase farmland so farmers could not produce as many crops to sell in the marketplace. However, these kinds of "solutions" only further damaged the economy, possibly worsening the deflationary spiral.

Central banks have a considerable influence over the direction of inflation and deflation by changing the nation's monetary supply. For example, the Federal Reserve has engaged in quantitative easing as a means to prevent deflation. Although increasing the nation's monetary supply too much could create excessive inflation, a moderate expansion in the nation's monetary base could be an effective means of fighting deflation.

The central banks' efforts to fight deflation are effective in some instances, but not in others. The biggest limitation with central bank policies is that they can only decrease interest rates until they are near 0%. After reducing interest as much as possible, central banks no longer have a large bevy of solutions available to them. In fact, there still exists no clear-cut, foolproof way to address deflation.

Historical Examples of Deflation

Although deflation is a rare occurrence in the course of an economy, it is a phenomenon that has occurred a number of times throughout history. Among others, these are incidences in which deflation has occurred:

1.   Expansion   of   Industrial   Revolution
During the late 19th century, manufacturers took advantage of new technology that allowed them to increase their productivity. As a result, the supply of goods in the economy increased substantially, and consequently, the prices of those goods decreased. Although the increase in the level of productivity after the Industrial Revolution was a positive development for the economy, it also led to a period of deflation.

2.   Great   Depression
The Great Depression was the most financially trying time in American history. During this dark era in history, unemployment spiked, the stock market crashed, and consumers lost much of their savings. Also, employees in high production industries such as farming and mining were producing a great amount, but not getting paid accordingly. As a result, they had less money to spend and were unable to afford basic commodities, even in spite of how much vendors were forced to reduce prices.

Business Cycles: Meaning, Phases and Features

Meaning of Business Cycle:

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. They are also known as trade cycles. J.M. Keynes writes, "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."

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' means they are periodic and occur regularly, though perfect regularity has not been observed.

The duration of a business cycle 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 very 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 creates 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."

Phases of Business Cycles:

Business cycles have shown distinct phases 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:

1. Expansion (Boom, Upswing or Prosperity)

2. Peak (upper turning point)

3. Contraction (Downswing, Recession or Depression)

4. Trough (lower turning point)

The four phases of business cycles have been shown in Fig. 13.1 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 Fig. 13.1 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 pattern of cyclical fluctuations is shown in Fig. 13.2 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 brings an end to the expansion or prosperity phase. 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 has 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.

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 fall due to fall in aggregate demand. A significant feature of depression phase 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.

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.

Features of Business Cycles:

Though different business cycles differ in duration and intensity, they have some common features which we explain below:

1. Business cycles occur periodically. 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.

2. Secondly, business cycles are synchronic. That is, they do not cause changes in any single industry or sector but are of all-embracing character. For example, depression or contraction occur simultaneously in all industries or sectors of the economy.

Recession passes from one industry to another and chain reaction continues till the whole economy is in the grip of recession. Similar process is at work in the expansion phase, prosperity spreads through various linkages of input-output relations or demand relations between various industries, and sectors.

3. 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.

4. Another important feature of business cycles is that investment and consumption of durable consumer goods such as cars, houses, 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.

5. An important feature of business cycles is that consumption of non-durable goods and services does not vary much during different phases of business cycles. Past data of business cycles reveal that households maintain a great stability in consumption of non-durable goods.

6. The immediate impact of depression and expansion is on the inventories of goods. When depression sets in, the inventories start accumulating beyond the desired level. This leads to cut in production of goods. On the contrary, when recovery starts, the inventories go below the desired level. This encourages businessmen to place more orders for goods whose production picks up and stimulates investment in capital goods.

7. Another important feature of business cycles is that profits fluctuate more than any other type of income. 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.

8. Lastly, business cycles are international in character. That is, once started in one country they spread to other countries through trade relations between them. For example, if there is a recession in the USA, which is a large importer of goods from other countries, it will cause a fall in demand for imports from other countries whose exports would be adversely affected causing recession in them too. Depression of 1930s in USA and Great Britain engulfed the entire capital world.

Module 5: Vital Macroeconomic statistics

Present Indian Statistical system: Organisation

- The Indian Statistical System presently functions within the overall administrative framework of the country. The Indian federal structure has influenced the organisation of the statistical system as well. The division of administrative functions between the Government of India and the State Governments is on the basis of the subject classifications under the Union, State and Concurrent Lists as detailed in the Constitution of India. At the Centre, the responsibilities are further divided amongst the various ministries and departments, according to the Allocation of Business Rules, 1961 that are amended from time to time. The collection of statistics on any subject generally vests in the authority (Central Ministry or Department or State Government Department) that is responsible for that subject according to its status in the Union, State or Concurrent Lists. By and large, the flow of statistical information emanates from the States to the

Centre except in cases where the State-level operations are an integral part of Centrally-sponsored schemes or data are collected through national sample surveys.

- **Statistical System at the Centre**
- o The collection of statistics for different subject-specific areas, like agriculture, labour, commerce, industry, etc. vests with the corresponding administrative ministries. More often than not, the statistical information is collected as a by-product of administration or for monitoring the progress of specific programmes. Some of the ministries, like Agriculture, Water Resources, Health, etc. have full-fledged statistical divisions, while most others have only a nucleus cell. Large-scale statistical operations like the Population Census, Annual Survey of Industries, Economic Census, etc. are generally centralised, and these cater to the needs of other ministries and departments, as well as State Governments. In important ministries, officers of the Indian Statistical Service (ISS) and subordinate statistical staff perform the statistical functions. The Central Statistical Organisation (CSO) in the Ministry of Statistics and Programme Implementation (MoS&PI) is the nodal agency for a planned development of the statistical system in the country and for bringing about coordination in statistical activities among statistical agencies in the Government of India and State Directorates of Economics and Statistics. Further details about the coordinating role of CSO along with its other activities have been given in the Report elsewhere.

- **Statistical System in the States**
- o The Statistical System in the States is similar to that at the Centre. It is generally decentralised laterally over the Departments of the State Government, with major Departments, such as, agriculture or health, having large statistical divisions for the work of departmental statistics. At the apex level is the Directorate (formerly Bureau) of Economics and Statistics (DES), which is formally responsible for the coordination of statistical activities in the State. The DESs have large organisations at the headquarters, with statistical offices in the districts and, in some cases, in the regions of the State. The statistical activity of the DESs is more or less uniform. They publish statistical abstracts and handbooks of the States, annual economic reviews or surveys, district statistical abstracts, and State budget analysis; work out the estimates of the State Domestic Product and Retail Price Index Numbers and engage in such other statistical activities as is relevant to the State. Most of them participate at least on a matching sample basis in the national Sample Survey Programme, and some of them carry out an Annual Survey of Industries for factories not covered by the ASI of the NSSO. Generally, the States do not have a common statistical cadre.

- **System Flow**.
- o The flow chart given below attempts to depict a simplified version of the present Indian Statistical System, the flow of Administrative Statistics, and the links between different statistical offices and the strength of those links. The unshaded part of the chart shows the system that existed long before the State Directorates of Economics and Statistics and the Central Statistical Organisation (CSO) at the Centre were created, and which exists even now. It is a system built upwards from district offices of formerly Provincial and now State Government departments, to the level of these departments, and from there to the corresponding ministries at the Centre. This is its true representation: a collection of State-level systems forming a National system. In the current context, making the National system the starting point, from the perspective of an inverted view the system can be described as laterally decentralised among the Ministries of the Government of India (GOI), and in every one of them, vertically decentralised,

between the Centre and the States. The bond between the State departments and the Central Ministries in the field of statistics has always been strong.

o The main features of the Indian Statistical System can be thus summarised as:
▪ The Administrative Statistics System is its major component;
▪ It is laterally and vertically decentralised;
▪ In it, not only data collection but also compilation, processing and preparation of results are carried out by the States for most of the sectors; and
▪ It is the State-wise results, which flow to the Centre, and statistics at the all-India level are obtained as the aggregates of State-level statistics.

Indian Statistical System Historical Perspective India has a federal structure of Government. There is a division of responsibility for administration between the Central Government and the State Governments. Under the Indian Constitution, the responsibility is divided on the basis of the three-fold classification of all subjects, viz., the Union List, the State List and the concurrent list, the last category representing the areas where both the Union and the State Governments can operate. There is a further division of responsibility at the Central and State levels, by subjects or groups of subjects among the different Central Ministries and among the State Government Departments respectively. There has been marked improvement in the system of official statistics in India since 1947. With the appointment of Professor P.C. Mahalanobis as Honorary Statistical Adviser to the Cabinet in 1949, the urgent need for the proper statistical organisation was brought to the fore and the organisation began to take shape. To start with, a nucleus statistical unit was set up at the Centre in the Cabinet Secretariat in 1949 which developed into the Central Statistical Organisation (CSO) in 1951. The main role of the CSO is to lay down standards, to advise on methodology and to coordinate the statistical activities in the country with main areas of work in national accounts, industrial statistics, economic census and surveys, training, price statistics and statistical intelligence. The National Sample Survey, a multi-purpose fact-finding body, was created in 1950. This was reorganized as National Sample Survey Organisation (NSSO) in 1970. the Indian Statistical Institute (founded by Prof. P.C. Mahalanobis) was declared as an institution of national importance in 1959. In 1961, a full-fledged Department of Statistics was created. The Computer Centre providing service of electronic data processing facilities was set up as an attached office of the Department of Statistics in 1966. To ensure effective coordination of planning and statistical activities, the Department of Statistics was transferred to the Ministry of Planning in 1973 (now called Ministry of Statistics and Programme Implementation) with effect from 1999. Statistical offices, units or divisions have also come up during the period in many other Ministries. Among the old statistical institutions, mention may be made of the Directorate General of Commercial Intelligence and Statistics (DGCI&S) set up in 1871 and the statistical organisation for population census (Office of the Registrar General, India) in 1948. The Indian Council of Agricultural Research was set up in 1931 with a statistical branch (which developed into an

autonomous Indian Agricultural Statistics Research Institute (IASRI) in 1970. The Directorate of Industrial Statistics was set up in 1944, and the Directorate of Economics and Statistics under the Ministry of Agriculture (DES-Ag) in 1947. Statistical System at the Centre The collection of statistics for different subject-specific areas, like agriculture, labour, commerce, industry etc. vests with the corresponding administrative ministries. More often than not, the statistical information is collected as a by-product of administration or for monitoring the progress of specific programmes. Some of the ministries, like Agriculture, Water Resources, Health etc. have full-fledged statistical divisions, while most others have only a nucleus cell. Large-scale statistical operations like the Population Census, Annual Survey of Industries, Economic Census, etc. are generally centralized, and these cater to the needs of other ministries and departments, as well as State Governments. In important ministries, officers of the Indian Statistical Service (ISS) and subordinate statistical staff perform the statistical functions. The Central Statistical Organisation (CSO) in the Ministry of Statistics and Programme Implementation (MoS&PI) is the nodal agency for a planned development of the statistical system in the country and for bringing about coordination in statistical activities among statistical agencies in the Government of India and State Directorates of Economics and Statistics. Central Statistical Organisation The Central Statistical Organisation (CSO) was set up in May 1951 with the purpose of coordination of statistical activities of the different Ministries of the Government of India and the State governments and for promotion of statistical standards. Since then the CSO has been coordinating the Statistical activities in the country, including laying down and maintenance statistical norms and standards and providing liaison with Central, State and International statistical agencies. The CSO also shoulders the responsibility of preparation of National Income Accounting, conduct of Annual Survey of Industries, Economic Censuses, compilation of Index of Industrial Production, Consumer Price Indices for Urban Non-Manual Employees, Human Development Statistics and Gender Statistics, imparting training in Official Statistics, Five Year Plan Work relating to Development of Statistics in the States and Union Territories, Dissemination of Statistical Information, work relating to Trade, Energy, Construction and Environment Statistics, revision of National Industrial Classification, etc. In fulfilling its coordinating role, the CSO participates in the inter-departmental meetings of the Working Groups, Technical Advisory Committees, Standing Committees constituted by the Central Ministries/ Departments in subject areas of their concern with a view to ensuring adoption of statistical standards, minimizing duplication of efforts and for promoting quality and timeliness of data. The CSO also participates in the meetings of the high-level statistical coordination committees of the State Governments, which review activities related to statistical data generation and dissemination. National Sample Survey Organisation The need for developing a sound database in respect of various fields was keenly felt by Late Pandit Jawaharlal Nehru, the

first Prime Minister of free India as early as in 1948. It was, at his instance and on the recommendations of the National Income Committee chaired by Late Professor P.C.Mahalanobis, a large scale sample survey agency known as NSS (National Sample Survey) came into existence in 1950.While instituting the NSS, the Government of India turned to the Indian Statistical Institute for providing technical direction to the surveys. The work relating to finalization of sampling design, schedules of enquiries, writing of instructions, training of field staff, processing of data and writing of reports was all entrusted to the Indian Statistical Institute. The Directorate of NSS, Government of India was assigned the job of conducting the fieldwork. 2 In March 1970, the NSS was reorganized and all aspects of its work were brought under a single Govt. organisation, namely the National Sample Survey Organisation (NSSO) under the overall technical guidance of Governing Council to impart objectivity and autonomy in the matter of collection, processing and publication of the NSS data. The responsibility of NSSO is to fill the data gaps. The Governing Council consists of a non-official chairman who is a man of eminence in either of the fields of economics, statistics and social sciences. Members of the Council are five academicians, five data users from Central as well as State Governments and senior Statistical Officers of the Ministry of Statistics and Programme Implementation. The Director General and Chief Executive Officer (DG&CEO) of NSSO is the Member-Secretary to the Council and is responsible for coordinating and supervising all activities of the organisation. NSSO has been conducting multi-subject integrated household sample surveys since 1950. The subject coverage of the socio-economic surveys conforms to a welldefined cycle of the surveys extending over a period of 10 years. Surveys on consumer expenditure and employment & unemployment, social consumption (health, education etc.), manufacturing enterprises and service sector enterprises in the unorganised sectors are covered once in five years, while subjects like land holdings & livestock holdings and debt & investment are covered once in 10 years. Thus, out of a cycle of 10 years, pre-assigned subjects are allocated for nine years while one year is kept as a open round to cover special topics of current interest to meet the demand of the data users. The data on consumer expenditure and employment and unemployment are also collected in every round from a small sample of households along with the main survey of enquiry. These socio-economic surveys are conducted in the form of rounds, the period of a round being normally a year. Office of the Registrar General and Census Commissioner The Population Census of India, conducted every ten years, is the most comprehensive source of information on the size, distribution, living conditions and demographic characteristics of the population. It is also an important source of the religious, linguistic and cultural profiles of the people. It serves therefore, both as a tool of the State polices and as a means for understanding the socio-economic transformation of the society, economy and polity of the nation. In India, a census over different parts at different time points was first conducted during the period 1867-72,

being known as the Census of 1872. However, since 1881 a Population Census is being conducted in the country regularly every ten years and the Census 2001 is the 14th and the latest in the series. With each census the scope and the coverage has been enlarged, particularly since the Census 1961, in order to provide meaningful information for developmental planning as also to make it more responsive to the present day requirements. The provisional totals of the Census 2001 conducted during February-March 2001 have been released on 26 March 2001 and have placed India's population at 1027 million on 1 March 2001. Provisional totals of the population at the district level, by sex, in broad age categories 0 to 6 and 7+, literate and illiterates among men and women aged 7 and above are already available for all the States and UTs. 3 Directorate of Economics and Statistics, Ministry of Agriculture Agriculture plays a vital role in the Indian economy. Over 70 per cent of the rural households depend on agriculture as their principal means of livelihood. Agriculture along with fisheries and forestry accounts for one-third of the nation's Gross Domestic Product (GDP) and is its single largest contributor. Agricultural exports constitute a fifth of the total exports of the country. In view of the predominant position of the Agricultural Sector, collection and maintenance of Agricultural Statistics assume great importance. India has a well-established and internationally acknowledged Agricultural Statistics System. It is a decentralised system with the State Governments – State Agricultural Statistics Authorities (SASAs) to be more specific – playing a major role in the collection and compilation of Agricultural Statistics at the State level while the Directorate of Economics and Statistics, Ministry of Agriculture (DESMOA) at the Centre is the pivotal agency for such compilation at the all-India level. The other principal data-gathering agencies involved are the National Sample Survey Organisation (NSSO), and the State Directorates of Economics and Statistics (DESs). The Agricultural Statistics System is very comprehensive and provides data on a wide range of topics such as crop area and production, land use, irrigation, land holdings, agricultural prices and market intelligence, livestock, fisheries, forestry, etc. It has been subjected to review several times since independence so as to make it adaptive to contemporary changes in agricultural practices. Ministry of Health and Family welfare Health is a State subject and vital and public Health Statistics are traditionally the responsibility of State Health Directorates. However, in a few States vital statistics have been the responsibility of State Directorates of Economics and Statistics. Presently, the Central Ministry of Health & Family Welfare (H&FW) consists of three Departments namely, Department of Health, Department of Family Welfare and Department of Indian System of Medicines & Homeopathy (ISM&H). The Directorate General of Health Services (DGHS) is the technical advisory wing of Ministry of Health & Family Welfare and is responsible for running the various national disease control/eradication programmes. At the national level, a small Bureau existed since 1937, which was organised in 1961 into the Central Bureau of Health Intelligence (CBHI) in the DGHS, Ministry of Health & Family Welfare, to

coordinate and advise on the development of health information in the country. At the national level, it is the sole organisation dealing with collection, compilation, analysis and dissemination of health data for the country as a whole. Ministry of Human Resources Development The Educational Statistics System in India dates back to the pre-independence period. Annual Educational Statistics began to be collected from 1913-14 followed by elaborate quinquennial reviews. Prior to 1947, the Directorate General of Commercial 4 Intelligence collected Educational Statistics. The activity was taken over by the Ministry of Education (MOE) after independence when the Government was required to plan for Universalisation of Elementary Education (UEE). To assess the status and to prepare a plan to this effect, the MOE conducted the first All-India Educational Survey (AIES) in 1957. Since then, five more AIESs have been conducted by NCERT from time to time, the last one in 1993. These surveys have become an integral part of the system of Educational Statistics in India. Ministry of Labour The main agency involved in the collection and compilation of Labour Statistics mainly in the organised sector is the Labour Bureau in the Ministry of Labour. The Labour Bureau collects statistics through statutory and voluntary returns under different Labour Acts. The State Governments compile such statistics at the State level; the Bureau in turn consolidates them for the country as a whole covering all States and sectors of the economy and brings out periodical reports. It also conducts occasional surveys concerning labour in specific geographic areas or for some specific section of labour. Essentially, these are either to study the socio-economic conditions of labour with a view to formulating policy measures or to assess the impact of labour enactments. The Labour Bureau also undertakes compilation and maintenance of CPI numbers for industrial, agricultural and rural workers. Directorate General of Employment and Training The Directorate General of Employment and Training (DGE&T) in the Ministry of Labour, in its administration of various provisions of the Employment Exchanges (such as Compulsory Notification of Vacancies) Act, 1959 has been collecting statistics on employment and the likely vacancies to occur for the organised sector of economy under the Employment Market Information Programme (EMIP) which covers: (a) all establishments in the public sector (except defence establishments and armed forces, however, the programme covers civilian employees in defence establishments), (b) nonagricultural establishments in the private sector, employing 25 or more persons on a compulsory basis, and establishments having 10-24 workers on a voluntary basis. Central Water Commission The Central Water Commission (CWC), which is the nodal agency for water resource development in the country, is responsible for statistics of water resources pertaining to major and medium irrigation projects. The River Management Wing of CWC is engaged in hydrological data collection relating to all the important river systems in the country with the help of as many as 877 hydrological observation sites. The Information System Organisation (ISO) in the CWC is involved in planning, implementing, monitoring and

coordinating all aspects of activities associated with information-gathering activities, analytical studies and computerisation. Statistical System in the States The Statistical System in the States is similar to that at the Centre. It is generally decentralized laterally over the Departments of the State Governments, with major Departments, such as, Agriculture or Health, having large statistical divisions for the work of departmental statistics. At the apex level is the Directorate (formerly Bureau) of Economics and Statistics (DES), which is formally responsible for the coordination of statistical activities in the State. The DESs have large organizations at the headquarters, 5 with statistical offices in the districts and, in some cases, in the regions of the State. The statistical activity of the DESs is more or less uniform. They publish statistical abstracts and handbooks of the States, annual economic reviews or surveys, district statistical abstracts, and State budget analysis; work out the estimates of the State Domestic Product and Retail Price Index Numbers and engage in such other statistical activities as is relevant to the State. Most of them participate at least on a matching sample basis in the national Sample Survey Programme, and some of them carry out an Annual Survey of Industries for factories not covered by the ASI of the NSSO. Generally, the States do not have a common statistical cadre. Some of the states have made common Statistical cadre. (Position as on May 26, 2005)

Agriculture statistics

- **Crop Area Statistics (Para**
  - o As the data from a 20 per cent sample is large enough to estimate crop area with a sufficient degree of precision at the all-India, State and district levels, crop area forecasts and final area estimates issued by the Ministry of Agriculture should be based on the results of the 20 per cent Timely Reporting Scheme (TRS) villages in the temporarily settled States and Establishment of an Agency for Reporting Agricultural Statistics (EARAS) scheme villages in the permanently settled states. In the case of the North-Eastern States, Remote Sensing methodology should be used for this purpose after testing its viability.
  - o The patwari and the supervisors above him should be mandated to accord the highest priority to the work of the girdawari and the patwari be spared, if necessary, from other duties during the period of girdawari.
  - o The patwari and the primary staff employed in Establishment of an Agency for Reporting Agricultural Statistics (EARAS) should be imparted systematic and periodic training and the fieldwork should be subjected to intensive supervision by the higher-level revenue officials as well as by the technical staff.
  - o For proper and timely conduct of the girdawari, the concerned supervisory staff should be made accountable.
  - o Timely Reporting Scheme (TRS) and Establishment of an Agency for Reporting Agricultural Statistics (EARAS) scheme should be regarded as programmes of national importance and the Government of India at the highest level should prevail upon the State Governments to give due

priority to them, deploy adequate resources for the purpose and ensure proper conduct of field operations in time.

- **Crop Production (Para 4.3.12)**

o In view of the importance of reliable estimates of crop production, the States should take all necessary measures to ensure that the crop cutting surveys under the General Crop Estimation Survey (GCES) are carried out strictly according to the prescribed programme.

o Efforts should be made to reduce the diversity of agencies involved in the fieldwork of crop cutting experiments and use as far as possible agricultural and statistical personnel for better control of field operations.

o A statistical study should be carried out to explore the feasibility of using the Improvement of Crop Statistics (ICS) data for working out a correction or adjustment factor to be applied to official statistics of crop area to generate alternative estimates of the same. Given the past experience of the Land Utilisation Surveys of the NSS and the controversies they created, the Commission is of the view that the objective of redesigning of the ICS, at present, should be restricted to working out a correction factor.

o The two series of experiments conducted under the National Agricultural Insurance Scheme (NAIS) and the General Crop Estimation Survey (GCES) should not be combined for deriving estimates of production as the objectives of the two series are different and their merger will affect the quality of general crop estimates.

o Crop estimates below the level of district are required to meet several needs including those of the National Agricultural Insurance Scheme (NAIS). Special studies should be taken up by the National Statistical Office to develop appropriate "small area estimation" techniques for this purpose.

- **Crop Forecasts (Para 4.4.8)**

o The Ministry of Agriculture and the National Crop Forecasting Centre (NCFC) should soon put in place an objective method of forecasting the production of crops.

o The National Crop Forecasting Centre (NCFC) should be adequately strengthened with professional statisticians and experts in other related fields.

o The programme of Forecasting Agricultural output using Space, Agro-meteorology and Land based observations (FASAL), which is experimenting the approach of Remote Sensing to estimate the area under principal crops should be actively pursued.

o The States should be assisted by the Centre in adopting the objective techniques to be developed by the National Crop Forecasting Centre (NCFC).

- **Production of Horticultural Crops (Para 4.5.7)**

o The methodology adopted in the pilot scheme of "Crop Estimation Survey on Fruits and Vegetables" should be reviewed and an alternative methodology for estimating the production of horticultural crops should be developed taking into account information flowing from all sources including market arrivals, exports and growers associations. Special studies required to establish the feasibility of such a methodology should be taken up by a team comprising representatives from Indian Agricultural Statistics Research Institute (IASRI), Directorate of Economics and Statistics, Ministry of Agriculture (DESMOA), Field Operations Division of National Sample Survey Organisation (NSSO (FOD)) and from one or two major States growing horticultural

crops. The alternative methodology should be tried out on a pilot basis before actually implementing it on a large scale.

o A suitable methodology for estimating the production of crops such as mushroom, herbs and floriculture needs to be developed and this should be entrusted to the expert team comprising representatives from Indian Agricultural Statistics Research Institute (IASRI), Directorate of Economics and Statistics, Ministry of Agriculture (DESMOA), Field Operations Division of National Sample Survey Organisation (NSSO (FOD)) and from one or two major States growing these crops.

- **Land Use (Para 4.7.7)**

o The nine-fold classification of land use should be slightly enlarged to cover two or three more categories such as social forestry, marshy and water logged land, and land under still waters, which are of common interest to the centre and States, and which can easily be identified by the patwari through visual observation.

o State Governments should ensure that computerisation of land records is completed expeditiously.

- **Irrigation Statistics (Para 4.8.15)**

o In view of wide variation between the irrigated area generated by the Ministry of Agriculture and the Ministry of Water Resources, the State Governments should make an attempt to explain and reduce the divergence, to the extent possible, through mutual consultation between the two agencies engaged in the data collection at the local level.

o The State Directorates of Economics and Statistics (DESs) should be made the nodal agencies in respect of irrigation statistics and they should establish direct links with the State and Central agencies concerned to secure speedy data flow.

o Statistical monitoring and evaluation cells with trained statistical personnel should be created in the field offices of the Central Water Commission (CWC) in order to generate a variety of statistics relating to water use.

o The Central Statistical Organisation (CSO) should designate a senior level officer to interact with the Central and State irrigation authorities in order to promote an efficient system of water resources statistics and oversee its activities.

- **Land Holdings and Agricultural Census (Para 4.9.13)**

o The Agricultural Census should henceforth be on a sample basis and the same should be conducted in a 20 per cent sample of villages.

o There should be an element of household enquiry (besides re-tabulation) in the Agricultural Census in the temporarily settled States.

o Computerisation of land records should be expedited to facilitate the Agricultural Census operations.

o There should be adequate provision for effective administrative supervision over the fieldwork of Agricultural Census and also a technical check on the quality of data with the help of the State statistical agency.

o The post of the Agricultural Census Commissioner of India at the Centre should be restored and should be of the level of Additional Secretary to be able to interact effectively with the State Governments. Further, this post should be earmarked for a senior statistician.

o The Census Monitoring Board should be revived to oversee the Agricultural Census operations.

- **Agricultural   Prices   (Para   4.10.10)**

  o The Ministry of Agriculture should prepare a well-documented manual of instructions on collection of wholesale prices of agricultural commodities.

  o The agricultural price collectors should be given thorough training in the concepts, definitions and the methods of data collection, and the training courses should be repeated periodically.

  o Workshops and training courses should be made an integral part of quality improvement. The quality of data should be determined on the basis of systematic analysis of the price data of agricultural commodities both by the Centre and the States.

  o Latest tools of communication technology like e-mail should be availed of to ensure timely data flow of agricultural prices.

  o A system should be developed to secure a simultaneous data flow of agricultural prices from lower levels to the State as well as the Centre.

  o The State agencies at the district level and below should follow up cases of chronic non-response relating to collection of data on agricultural prices.

  o The number of essential commodities for which agricultural prices are collected should be reduced to an absolute minimum, especially the non-food crops, in consultation with Ministry of Consumer Affairs and Cabinet Committee on Prices.

  o The centres of agricultural price collection should, as far as possible, be the same for the essential commodities as those for wholesale prices.

- **Agricultural   Market   Intelligence   (Para   4.11.4)**

  o The functions, activities and the staff requirements of the Agricultural Market Intelligence Units should be re-evaluated and appropriate measures taken to streamline the units.

-
  Cost of Cultivation of Principal Crops (Para 4.12.6)

  o In view of the importance of the Cost of Cultivation Studies in the price administration of agricultural commodities and several studies relating to farm economy, the present programme should continue.

  o Focused attention should be paid to the proper organisation and management of the Cost of Cultivation Studies.

  o A review of the number of centres, methodology, sample size, the existing schedule and questionnaire, etc. of the Cost of Cultivation Studies should be undertaken.

  o The Directorate of Economics and Statistics, Ministry of Agriculture (DESMOA) should minimise the delay in bringing out the results of the Cost of Cultivation Studies.

- **Livestock   Numbers   (Para   4.13.7)**

  o The quinquennial Livestock Census should henceforth be taken in a 20 per cent sample of villages instead of a cent per cent coverage.

  o The Livestock Census should include some minimum information about the household (size, occupation, etc.) in addition to the head count for more meaningful analysis of the census data.

  o There should be a concerted effort towards better organisation and management of the Livestock Census operation through comprehensive training of the field staff and regular supervision over their work by both administrative and technical personnel.

  o Information Technology tools should be used at various stages of the Livestock Census for rapid processing and preparation of the final reports as well as improving the quality of the data.

- **Integration of Livestock and Agricultural Censuses (Para 4.14.3)**

  o The Livestock and Agricultural Censuses should be integrated and taken together in a 20 per cent sample of villages.
  o Before effecting the integration of Livestock and Agricultural Censuses a limited pilot investigation be undertaken to firm up the procedures of integration.
  o The periodical National Sample Survey Organisation's survey on land and livestock holdings be synchronised with Agricultural and Livestock Censuses in order to supplement as well as help in the crosscheck of information from the two sources.
- **Livestock Products (Para 4.15.6)**

  o The Integrated Sample Surveys should be continued and efforts should be made to fill up the existing data gaps.
  o The Indian Agricultural Statistics Research Institute (IASRI) should be entrusted with the task of developing appropriate methodologies for filling up the remaining data gaps relating to estimates of mutton, pork, poultry meat, and meat by-products.
- **Fisheries Statistics (Para 4.16.10)**

  o The survey design for estimating production of marine fisheries should be modified taking into account the current distribution of landing sites and the volume of catch at different sites. The field staff engaged in collection of data should be imparted regular training and their work should be adequately supervised.
  o The survey methodology for estimating production of inland fisheries especially with regard to running water sources (rivers and canals) should receive urgent attention and the Indian Agricultural Statistics Research Institute (IASRI) along with the Central Inland Fisheries Research Institute (CIFRI) should be provided with adequate support to develop this programme on a priority basis.
  o The States should improve the recording of area under still water by appropriate modification of land use statistics.
  o The discrepancies between the two sources of data namely, Livestock Census and State reports with regard to data on fishermen, fishing craft and gear should be reconciled by adoption of uniform concepts and definitions and review of these statistics at the district and State levels.
- **Forestry Statistics (Para 4.17.10)**

  o Remote Sensing techniques should be extensively used to improve and develop forestry statistics.
  o The State Forest Departments should be adequately supported by the establishment of appropriate statistical units to oversee the collection and compilation of forestry statistics from diverse sources on forest products including timber and non-timber forest products.
  o Arrangements should be made for storage and speedy transmission of forestry data through Information Technology devices.
  o In view of the unavoidable nature of the divergence between statistics from the two sources – land records and State Forest Departments – because of different coverage and concepts, the two series should continue to exist; but the reasons for divergence should be clearly indicated to help data users in interpreting the forestry statistics.

- o A Statistics Division in the Ministry of Environment and Forests with adequate statistical manpower should be created for rationalisation and development of proper database on forestry statistics.
- **Marketable Surplus and Post-Harvest Losses (Para 4.18.4)**

- o The existing methodology in conducting the surveys on marketable surplus and post-harvest losses of food grains should continue in future surveys of this type.
- o The agencies designated for the collection of information on marketable surplus and post-harvest losses of food grains should be provided additional manpower, wherever necessary, for the conduct of these surveys.
-
- **Market Research Surveys (Para 4.19.4)**

- o The Directorate of Marketing and Inspection (DMI) should establish a Statistical Cell either independently or within Market Research and Planning Cell (MRPC) with sufficiently trained statistical personnel to undertake comprehensive analysis of survey data and aid the decision-making process.
- o
- o The Statistical Cell of Directorate of Marketing and Inspection (DMI) should identify the problems and deficiencies in the market research surveys carried out by different institutions and develop a standard methodology for uniform adoption.
- **Index Numbers in Agriculture (Para 4.20.8)**

- o A review of the item basket for the construction of Index Numbers of Area, Production and Yield should be undertaken immediately.
- o The item basket for the construction of Index Numbers of Area, Production and Yield should be different for different States.
- o The present arrangements for the construction and release of Index of Terms of Trade should continue.
- **Recording of Area under Mixed Crops (Para 4.21.5)**

- o The rates used to apportion the areas of constituent crops of major crop mixtures should be fixed for the recognised mixtures at sub-district and district levels and updated periodically.
- o Data available from surveys conducted under schemes like Improvement of Crop Statistics (ICS) over the years should be used for deciding the crop mixtures and their ratios.
- **Input Statistics (Para 4.22.8)**

- o The Directorate of Economics and Statistics, Ministry of Agriculture (DESMOA) should collect, compile and maintain a complete database on State-wise production, sale of tractors, power tillers, harvesters and other agricultural implements, density of such implements per hectare, investment made, level of mechanisation, adoption of water saving devices, etc.
- o A Farm Management Survey on an all-India basis should be conducted on a regular basis preferably at an interval of five years.
- o The Directorate of Plant Protection Quarantine and Storage (PPQ&S) being the apex body for plant protection should act as a depository of information on plant protection. Efforts should be

made to design, develop and maintain a comprehensive database on plant protection for effective long-term uses.

o The Statistics and Computer Unit of the Directorate of Plant Protection, Quarantine and Storage (PPQ&S) should be strengthened both in terms of statistical and computer personnel as well as computer equipment.

o Information collected through General Crop Estimation Survey (GCES) and the scheme for Improvement of Crop Statistics (ICS) should be compiled to generate estimates on various inputs such as fertilisers, pesticides, multiple cropping, etc.

- When more than one crop is sown simultaneously (i.e. crops are sown in mixtures), the fieldwise recording of area becomes challenging. To estimate the area under various crops, it is necessary to apportion the crop mixture area into the various component crops. The area can be apportioned by eye estimation or by means of a more objective method. Apportioning the area by eye estimation depends on the experience and judgement of the enumerator; this method may therefore introduce bias and lead to erroneous estimations. Apportioning area using objective methods such as measuring plant density, the row ratio (row intercropping), the width ratio (strip cropping) or the physical area occupied by each crop is therefore preferable, although expensive and time-consuming. For diagrams and examples of these cropping practices, see the Global Strategy's Working Paper titled Synthesis of Literature and Framework – Research on Improving Methods for Estimating Crop Area, Yield and Production under Mixed, Repeated and Continuous Cropping2 . The objective methods are potentially capable of accurately reflecting the importance of each component crop in mixture, provided that the plant density of each of the component crops is sufficient. For example, in India, crops covering less than 10 per cent of the area in the mixture are ignored and the entire area is allocated to the main crop. This percentage threshold may vary from country to country

- Industrial Statistics

- The Industrial Sector is one of the important sectors of the economy both in terms of its spread over the economy and its contribution to the generation of income, employment, and foreign exchange earnings. Statistics relating to this sector, therefore, assume a crucial importance for policy-making by the Government and for choice of suitable strategies by the Corporate Sector. Ever since India launched its development programme with the Five-Year Plan's framework, the importance of these statistics has been duly recognised. The emergence of a highly competitive environment, both at the national and global levels, has further increased the imperatives of ensuring the availability of adequate and reliable statistics. With the recent shift in policies from a framework of controls, permits and licenses towards a system of liberalisation and free flow of market forces through the process of economic reforms, a review of the erstwhile statistical system had become necessary. Further, with the growing erosion of discipline in the data generating system of the Government, the reliability, adequacy and timeliness of statistical data had been adversely affected. The Commission reviewed in this context the different aspects of Industrial Statistics in the country, such as the quality of statistics, institutional machinery for data collection and dissemination, the problem of marginalisation of the Statistical Wings of the

different ministries, decline in the compliance profile of the respondents, and conceptual and methodological problems of data collection.

- The Annual Survey of Industries (ASI) has been the principal source for most of the basic statistics of the Industrial Sector. However, the frame of factories, which the ASI uses for conducting the survey, is based on the list of factories maintained by the Chief Inspectors of Factories (CIF). A large number of units, which are qualified for inclusion in the CIF's list, have not been included and at the same time many defunct units have not been removed. The data generated by the ASI system based upon this deficient ASI frame do not therefore depict the true situation of organised Industrial Sector. Urgent steps should, therefore, be taken for making the ASI frame more comprehensive by including in it all units that are eligible for registration with the CIF, followed by an appropriate updating mechanism. With the objective of generating reliable benchmark estimates at the disaggregated level, of providing an efficient weighting diagram for revision of the base year of Index of Industrial Production and also of updating the ASI frame, the Commission has recommended a one-time census of units eligible for registration.

- The estimates of different variables of Industrial Statistics derived by the ASI are often associated with large sampling and non-sampling errors. To enhance the credibility and utility of these estimates, sampling errors need to be published along with the estimates of important survey characteristics. Further, a periodic review of the sampling design and of the sample size in the ASI must be undertaken with the objective to improve the precision of the estimates at the industry-group levels.

- Estimates of the growth rates of industrial production based upon the Index of Industrial Production (IIP) are extensively used for policy-making at various levels in the Government and also for decision-making in the banking and Corporate Sectors. The importance of IIP is further increased due to the fact that it is the only indicator generated every month and disseminated on a wide scale. Concern has been expressed over the large divergence between the quick and the final estimates of the IIP. The IIP is compiled and released by the Central Statistical Organisation (CSO) within six weeks as per Special Data Dissemination Standards (SDDS) norms of International Monetary Fund, based on the data received from different agencies. The Commission has made a critical appraisal of the quality of the monthly IIP as an economic indicator of the general level of the industrial activity in the economy. The functioning of the source agencies providing the primary data of industrial production to the CSO is afflicted with a number of serious deficiencies. The product coverage of IIP and the administrative and institutional framework for primary data collection are much below the desirable standards. In the new policy regime of liberalisation of the Industrial Sector, the Governmental machinery's ability to induce a good response from the industrial units for providing statistics on a monthly basis has been considerably eroded. The available legal backing by the Industrial Development and Regulation Act has also not yielded the desired response. The Commission therefore recommends that the quality of the IIP must be improved by toning-up the statistical wings of the source agencies, in particular, within the Department of Industrial Policy and Promotion (DIPP) of the Ministry of Industry, which has a considerable share in the weighting diagram. Further, the Commission has recommended exploring the possibilities of constructing an additional IIP based on bigger units, for which collection of data could be streamlined in a more effective manner than in the case of the entire Industrial Sector.

- The need for harmonisation of the activity, product and trade data has been evident for quite some time, as this would enable a cross-classification of activity and product data. At present,

there is no uniformity in the codes being used by the organisations dealing with the collection and processing of product-level data, compelling the user to refer to different documents. In this context, the Commission has recommended an urgent finalisation of the unique coding system developed by the Central Board of Excise and Customs (CBEC) based on the Harmonised System and emphasised its simultaneous adoption by all the producer and user organisations concerned with product-level data. To give wide publicity, the information on coding structure should also be made available on an extensive basis through websites and publications. The use of national classification would eliminate the multiplicity of product-level coding systems and would also enable a study of the flow of output through various economic systems apart from a cross-classification of activity and product data.

Industrial Statistics in India : Industrial growth in the country has, in terms of long run trend, remained aligned with the growth rate of gross domestic product (GDP). Trends in performance of Industrial sector are primarily monitored through Index of Industrial Production (IIP) (monthly) and Annual Survey of Industries, ASI. Whereas enterprise surveys pursuant to Economic Census provide an idea about the dynamics of unorganized sector. Ministry of Statistics & PI, through active involvement of both Central Statistics Office & National Sample Survey Office , is the backbone of Industrial Statistics in India even though various Ministries/Departments (Department of Industrial Policy & Promotion, Ministry of Commerce & Industry , Ministry of Micro Small & Medium Enterprises, Ministry of Corporate Affairs, Indian Bureau of Mines, Ministry of Mines, Office of Textile Commissioner, Coffee/ Tea Boards etc) maintain their own statistics. 14.2 Central Statistics Office , MOSPI, besides compiling information on Industrial Statistics in form of IIP and ASI results has also been responsible for updation of industrial classification and development of new classifications in harmony with the worldwide developments to enable comparability. National Industrial Classification (NIC)-2008 is the latest Industrial classification developed by CSO on the lines of International Standard Industrial Classification (ISIC)Rev 4. The structure of NIC- 2008 is identical to the structure of ISIC Rev.4 up to 4-digit level 'class'. The index of industrial production (IIP), released each month by CSO, MOSPI , is the key indicator of industrial performance. The new IIP series with 2004-05 as base was released in June 2011 replacing the earlier IIP series with base 1993- 4. Recent industrial growth, measured in terms of IIP, shows fluctuating trends though the trajectory of manufacturing sector mirrors growth in overall IIP. 14.3 Annual Survey of Industries The Annual Survey of Industries (ASI) is the principal source of organized manufacturing statistics in India. It provides statistical information to assess and evaluate, objectively and realistically, the changes in the growth, composition and structure of organised manufacturing sector comprising activities related to manufacturing processes, repair services, gas and water supply and cold storage. The Survey is conducted annually under the statutory provisions of the Collection of Statistics Act 1953, and the Rules framed there-under in 1959, except in the State of Jammu & Kashmir where it is conducted under the State Collection of Statistics Act, 1961 and the rules framed there-under in 1964. The ASI extends to the entire country except the States of Arunachal Pradesh, Mizoram, Sikkim and Union Territory of Lakshadweep. It covers all factories registered under sections 2m (i) and 2m (ii) of the Factory Act, 1948. The survey also covers bidi and cigar manufacturing establishments registered under

Bidi and Cigar Workers (Condition of Employment) Act, 1966 and employing 10 or more workers using power and 20 or more workers not using power. Although the scope of the ASI was extended to all registered manufacturing establishments in the country, establishments under the control of the Defence Ministry, oil storage and distribution units, restaurants and cafes and technical training institutions not producing anything for sale or exchange were kept outside the coverage of the ASI. The latest available results of ASI pertains to year 2014-15. 14.4 Micro, Small, and Medium Enterprises (MSMEs) Micro, Small and Medium Enterprises (MSME) sector has emerged as a highly vibrant and dynamic sector of the Indian economy over the last five decades. MSMEs not only play crucial role in providing large employment opportunities at comparatively lower capital cost than large industries, but also help in industrialization of rural & backward areas, thereby, reducing regional imbalances, assuring more equitable distribution of national income and wealth. MSMEs are complementary to large industries as ancillary units and this sector contributes enormously to the socio-economic development of the country. The MSME sector in India constitutes enterprises with investment in Plant & Machinery less than Rs ten Crore in case of manufacturing (Rs 25 Lakh but Rs 5 Cr but Rs 10 Lakh but Rs 2 Cr but

Annual Survey of Industries

Annual Survey of Industries

Annual Survey of Industries (ASI) is conducted by National Sample Survey Office (NSSO). ASI is principal source of industrial statistics in India. ASI, an annual event, not only facilitates suitable data collection based on appropriate sampling techniques but also ensures timely dissemination of statistical information to asses and evaluate the dynamics in composition, growth and structure of organized manufacturing sector.The structure and function of the industrial sector is an important perspective of Indian Economy. It is imperative for industries to grow both qualitatively and quantitatively to boost the economy. The well-being of the industries depends truly on the formulation and promotion of industrial policies framed by the policy makers. To frame suitable industrial policies the policy makers need to be aware about the quantified aspect of the existing scenarios in the industries in the country. This is where the Annual Survey of Industries (ASI) is conducted by National Sample Survey Office,Government of India.

Annual Survey of Industries
Introduction
1. The industrial sector is one of the important sectors of the Indian economy and hence compilation of industrial statistics assumes a crucial importance, both for research and policy-making. The Annual Survey of Industries (ASI) is the principal source of Industrial Statistics in

India. Till ASI 2009-10, the survey was conducted annually under the statutory provisions of the Collection of Statistics Act 1953 and Rules framed there under in 1959 except in the State of Jammu & Kashmir where it is conducted under the Jammu& Kashmir Collection of Statistics Act 1961 and Rules framed there under in 1964.

2. From ASI 2010-11 onwards, the survey is being conducted annually under the statutory provisions of the Collection of Statistics (COS) Act, 2008 and the rules framed there-under in 2011except in the State of Jammu & Kashmir where it is being conducted under the J&K Collection of Statistics Act, 2010 and rules framed thereunder in 2012. The Collection of Statistics Act, 2008 has been amended in 2017 as Collection of Statistics (Amendment) Act, 2017 which extends the coverage to All India. Presently, ASI 2017-18 is being conducted under this amendment.

Scope and Coverage
3. The ASI extends to the entire country. It covers all factories registered under Sections 2(m)(i) and 2(m)(ii) of the Factories Act, 1948, where the manufacturing process is defined under Section 2(k) of the said Act. The survey also covers Bidi and cigar manufacturing establishments registered under the Bidi and Cigar Workers (Conditions of Employment) Act 1966. All electricity undertakings engaged in generation, transmission and distribution of electricity, not registered with the Central Electricity Authority (CEA) are also covered under ASI. However, defence establishments, oil storage and distribution depots, departmental units such as railway workshops, RTC workshops, Govt. Mints, sanitary, water supply, gas storage etc. are excluded from the purview of the survey.

4. As per the decision taken by the Standing Committee on Industrial Statistics (SCIS), the coverage of ASI may be extended beyond the purview of the Section 2m (i) and 2m (ii) of the Factories Act, 1948 and the Bidi& Cigar Workers (Conditions of Employment) Act, 1966. Accordingly, the units with 100 or more employees not registered under Section 2m (i) and 2m (ii) of the Factories Act, 1948but registered under any of the seven Acts / Board / Authority viz., Companies Act. 1956, Factories Act. 1948, Shops and Commercial Establishment Act, Societies Registration Act, Cooperative Societies Act, Khadi and Village Industries Board, Directorate of Industries (District Industries Center) in the Business Register of Establishments (BRE) prepared and maintained by the State Governments are also considered for selection.

5. The primary unit of enumeration in the survey is a factory in the case of manufacturing industries, a workshop in the case of repair services, an undertaking or a licensee in the case of electricity, gas and water supply undertakings and an establishment in the case of bidi and cigar industries.

ASI Frame
6. The ASI frame is based on the lists of registered factories / units maintained by the Chief Inspector of Factories in each State and those maintained by registration authorities in respect of bidi and cigar establishments and electricity undertakings. The frame is revised/ updated every year by the Field Operations Division of NSSO in consultation with the Chief Inspector of Factories in the States online through the ASI Web Portal.

7. For the purpose of frame, only those establishments, which are employing 10 or more workers with power or 20 or more without power, are to be entered in the frame in consonance with the

Section 2m(i) & 2m(ii) of Factories Act. The above definition is slightly modified due to the amendment of the Factories Act, 1948 for the State of Maharashtra and Rajasthan, as below, which is applicable from ASI 2015-16 onwards:

"Section 2m (i) has been modified, i.e., from 10 or more workers with power to 20 or more workers with power and also Section 2m (ii), i.e., from 20 or more workers without power to 40 or more workers without power." Persons who are "home workers" as per the Act are not to be included in ASI Frame. While revising the Biri& Cigar frame, all the establishments not fulfilling the above criteria (i.e. 10 or more workers with power or 20 or more without power) are not to be included in the frame.

8. The collection and dissemination of ASI data, on a regular basis, is of vital importance. It provides data on various vital aspects of the registered factories for use in the estimation of National Income, studies of industrial structure and policy formulation. Some of the important indicators generated based on ASI are number of factories, employment, wages, invested capital, capital formation, input, output, depreciation and value added on an annual basis.

9. For ASI, the factories in the frame are classified into two sectors, viz. the Census sector and the sample sector. The factories are selected for an annual survey with a set selection procedure. The survey is conducted from October to June for these selected factories.

Price:

A **price** is the quantity of payment or compensation given by one party to another in return for one unit of goods or services.[1] A price is influenced by both production costs and demand for the product. A price may be determined by a monopolist or may be imposed on the firm by market conditions.

In modern economies, prices are generally expressed in units of some form of currency. (For commodities, they are expressed as currency per unit weight of the commodity, e.g. euros per kilogram or Rands per KG.) Although prices could be quoted as quantities of other goods or services, this sort of barter exchange is rarely seen. Prices are sometimes quoted in terms of vouchers such as trading stamps and air miles. In some circumstances, cigarettes have been used as currency, for example in prisons, in times of hyperinflation, and in some places during World War II. In a black market economy, barter is also relatively common.

In many financial transactions, it is customary to quote prices in other ways. The most obvious example is in pricing a loan, when the cost will be expressed as the percentage rate of interest. The total amount of interest payable depends upon credit risk, the loan amount and the period of the loan. Other examples can be found in pricing financial derivatives and other financial assets. For instance the price of inflation-linked government securities in several countries is quoted as the actual price divided by a factor representing inflation since the security was issued.

"Price" sometimes refers to the quantity of payment requested by a seller of goods or services, rather than the eventual payment amount. This requested amount is often called the asking price or **selling price**, while the actual payment may be called the **transaction price** or **traded price**. Likewise, the bid price or **buying price** is the quantity of payment offered by a buyer of goods or services, although this meaning is more common in asset or financial markets than in consumer markets.

Economic price theory asserts that in a free market economy the market price reflects interaction between supply and demand: the price is set so as to equate the quantity being supplied and that being demanded. In turn these quantities are determined by the marginal utility of the asset to different buyers and to different sellers. Supply and demand, and hence price, may be influenced by other factors, such as government subsidy or manipulation through industry collusion.

When a commodity is for sale at multiple locations, the law of one price is generally believed to hold. This essentially states that the cost difference between the locations cannot be greater than that representing shipping, taxes, other distribution costs and more.

In economics, **market price** is the economic price for which a good or service is offered in the marketplace. It is of interest mainly in the study of microeconomics. Market value and market price are equal only under conditions of market efficiency, equilibrium, and rational expectations.

On restaurant menus, "market price" (often abbreviated to m.p. or mp) is written instead of a specific price, meaning "price of dish depends on market price of ingredients, and price is available upon request", and is particularly used for seafood, notably lobsters and oysters.

Transport:

Transport in India consists of transport by land, water and air. Public transport remains the primary mode of road transport for most Indian citizens, and India's public transport systems are among the most heavily used in the world.

India's road network is the second-largest and one of the busiest in the world, transporting 8.225 billion passengers and over 970 million tonnes of freight annually, as of 2015. India's rail network is the fourth largest and second busiest in the world, transporting 8.107 billion passengers and over 1.108 billion tonnes of freight annually, as of 2017. Aviation in India, broadly divided into military and civil aviation, is the fastest-growing aviation market in the world (IATA data) and Bangalore with 65% national share is the largest aviation manufacturing hub of India. India's waterways network in the form of rivers, canals, backwaters and creeks, is the ninth largest waterway network in the world. Freight transport by waterways is highly under-utilised in India with the total cargo moved (in tonne kilometres) by inland waterways being 0.1 percent of the total inland traffic in India. Roads in India are maintained by (NHAI)-National Highway Authority Of India.

In total, about 21 percent of households have two wheelers whereas 67.7 percent of households in India have cars/vans as per the 2011 Census. The automobile industry in India is currently rapidly growing with an annual production of over 4.6 million vehicles, with an annual growth rate of 10.5% and vehicle volume is expected to rise greatly in the future.

The number of deaths caused by traffic is among the highest in the world and increasing. The demand for transport infrastructure and services has been rising by around 10% a year[1] with the current infrastructure being unable to meet these growing demands. According to Goldman Sachs, India will need to spend US$1.7 trillion on infrastructure projects over the next decade to increase economic growth.

References:

1.Ahuja H.L.: Macro Economic Theory and Policy.

2.Branson W.H.: Macr Economic Theory and Policy

3.Brooman F.S.: Macro Economics

4.Dorn bursch,Fischeri,Startz: Macro Economics

5.Dwivedi D.N.: Macro Economic Theory and Policy

6.Lewis C Solmon: Macro Economics

7.Rana K.C. and Verma K.M.: Macro Economic Analysis

8.Seth M.L.: Macro Economics.

9. "India Transport Sector". World Bank.