



**B. A. PART-II**  
**(SEMESTER-III)**

**ECONOMICS**  
**MACRO ECONOMICS AND**  
**PUBLIC FINANCE**

**UNIT I**

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**Lesson No. :**

- 1.1 : Introduction to Macroeconomics**
- 1.2 : Classical Theory of Employment**
- 1.3 : Say's Law of Market**
- 1.4 : Keynesian Theory of Income and Employment**
- 1.5 : The Consumption Function**
- 1.6 : The Multiplier**
- 1.7 : Investment Function and Factors affecting Investment Decisions**

**INTRODUCTION TO MACROECONOMICS****I. Birth of General Theory**

The Classical economists always assumed a state of full employment in the economy. The normal situation in an economy, according to them, was full employment, equilibrium. Less than full employment, they believed, was an abnormal situation. Classical always held that there are no lapses from full employment equilibrium and even if there are any, there is always a tendency to return to full employment. This belief of the classical economists was based on the views of a French economist J.B. Say (1767-1832) called Say's Law. Briefly stated it means that "Supply creates its own demand". He asserted that there cannot be any general over-production or general unemployment in the economy as whatever is produced is automatically consumed. In other words, every producer who brings goods to the market does so only to exchange them for other goods. Say believed that people did not work for their own sake, but to obtain other goods and services that go to satisfy their wants.

Say, no doubt, admitted that supply of a particular commodity may exceed its demand temporarily on account of the wrong calculations of businessmen, but general over production and hence general unemployment is impossible. He admitted that specific commodities might be overproduced but a general glut in the sense of a general depression was unthinkable, for the very process of production, created the required effective demand necessary to absorb total output.

If, however, due to some mistake over-production comes to exist in respect of a particular industry, it will be corrected automatically when businessmen suffer losses and switch over from the production of good they cannot sell, to the production of goods they can sell. Say was supported in his view by Ricardo and Mill for they also held the view that a general glut of the market could not occur.

However, with the advent of the Great Depression (1929-30), Keynes' faith in the classical scheme of things was rudely shaken as he saw mass unemployment of men and materials, all around. Keynes felt that classical policy of laissez faire or non-intervention could not mend matters. It only deepened the depression as men were found running in search of job; raw materials lay idle along with 'no vacancy' signboards on the factory gates; Keynes was shocked to see this paradox of poverty amidst plenty and wanted to reform capitalism. Actually, Keynes was neither in favour of its abolition nor wanted to part with the basic features of capitalism like-free market and price mechanism, he simply wanted to alert it, so that capitalism could continue to deliver goods under changed circumstances. "To Keynes, the waste of economic resources through unemployment seemed non-sensible and suicidal. He concentrated more of his energies on the solution of this problem than

any other and he had considerable success". (S.E. Harris). Keynes, therefore, wanted two things :

- (a) to reform capitalism according to the changed circumstances by making it more dynamic in content.
- (b) to evolve a theory of employment which could specify the factors which go to determine employment at a particular time.

Classical economists assumed full employment of resources and, thus, ruled out any possibility of unemployment. Assuming the income and employment to be given, the only problem that deserved attention was a better use of existing resources by avoiding, their mal-allocation. The choice, according to the classical economists, was not between employment and unemployment, but between employment here and employment there as the resources were taken to be fully employed. Keynes was, therefore, in search of a theory which could determine the factors on which the level of employment at a time in any economy depends. He was able to evolve such a theory and called his theory a 'general theory'. For it can explain any level of employment whether it be full employment, under employment or over full employment. On the other hand, he treated the classical theory as a special case of this general theory because it pertained to the situation of full employment only. Keynes did not agree with the classical view that employment could be increased by cutting wages.

Keynes' Income Theory is general because it can explain every situation, whether it be one of full employment, under employment or over full employment. Keynes called classical theory as a special theory, applicable only to one of the limiting cases of General Theory. Keynes was of the opinion the under 'laissez faire capitalism' under employment is the rule and full employment, an exception. Moreover, his theory is general in the sense that it explains 'inflation' as readily as it does 'unemployment' because both are linked with effective demand. Inflation is caused by an excess and deflation, by a deficiency of effective demand: Further Keynes' theory is general in the sense that it relates to change in employment and output in the economic system as a whole. Those who feel that it is not general, because it is not applicable any where and everywhere or under all circumstances, or in all types of economies or fails to lay down truths of universal validity would better not waste their time on the 'General Theory', as we know the theory is general by virtue of its treatment of all levels of employment and the factors that go to determine it.

## **II. Significance of General Theory**

For economists of science type, Keynes is, of course, the Keynes of the General Theory. The General theory is a book which has won for Keynes an ever-lasting name in the field of economics: It is his chief work. Within a few years of its publication, the book profoundly influenced the thinking of economists and public policy makers. It can be easily compared to Adam Smith's 'Wealth of Nations' or Karl Marx's 'Das Capital'. If Smith's book is a

ringing challenge to mercantilism, Marx's book is a searching criticism of capitalism, then Keynes book is repudiation of the foundations to laissez-faire."

General theory was concerned with the general factors which go to determine employment at a particular time, may it be full employment, over or under-employment, Keynes' General Theory has had a revolutionary impact on all fields of Economics. His ideas proved helpful-though his practical remedies differed from place to place and from time to time. Keynes because of his General Theory, received more attention than did Ricardo over a period of more than 100 years or Marshall over the last 50 years. P.A. Samuelson believes that the broad significance of the General Theory lies in the fact that it provides a relatively realistic complete system for analysing the level of effective demand and its fluctuations. Since 1936, a large number of economists all over the world have read the General Theory and thousands have carried out its perusal with painstaking care. The General Theory has given birth to hundreds of articles, inspired the writing of many books, for and against. In fact, there are few writings today which are free from the influence of Keynes's General Theory. According to Prof. Samuelson, the General Theory, though badly written and poorly organised, is a work of genius and should be placed in the first rank of classics with those of Adam Smith, Walras and Cournot. Prof. Hazlitt feels that even the book's faults seem somehow to add to its greatness. These in brief are the circumstances in which the General Theory was born.

### **III. Microeconomics and Macroeconomics :**

Modern economic analysis has been divided into 'Microeconomics' and 'Macroeconomics' for the sake of convenience and understanding. For a clear grasp and appreciation of 'Income Theory' the distinction between the two approaches becomes necessary. The terms were coined by Prof. Ragnar Frisch of Oslo University in 1933 and since then adopted widely by other economists so that these are now a part and parcel of economic terminology. Microeconomics is the obverse of macroeconomics. It is the analysis of the economy's constituent element-'micro', of course being Greek for 'small'. As the name suggests, it is not aggregative but elective; it seeks to explain the working for markets of individual commodities and the behaviour of the individual, household, firm or industry or of individual prices, wages or income. In microeconomics, we study the various constituents or parts of the economy and not the economy as a whole. It is in microeconomics that the concept of marginal material analysis assumes special importance, as some of the important laws of microeconomics are based on it. Here we study the economic motives and behaviour of individual consumers and producers and the principles evolved in organising and operating the individual firm or industries. For example, we take an individual consumer and see how he attains the equilibrium; we therefore, need not study consumption of the economy as a whole. In Microeconomics, we study the demand of an individual firm or industry.

Macroeconomics is the study of economic system as a whole. It is that branch of economic analysis which studies the behaviour of not one particular unit, but of all units taken together, like total national income, output and employment, total consumption, saving and investment, aggregate demand, supply and general level of prices. Macroeconomics, thus, becomes the study in aggregates and is often called "Aggregate economics" as it studies the behaviour of these aggregates over time and space. According to Prof. K. Boulding, 'Macroeconomics deals not only with individual quantities as such, but with aggregates of these quantities, not with individual income but with national income, not with individual price but price levels, not with individual outputs but with national outputs'. The study which analyses the determination and fluctuation of various aggregates and average in the economy as a whole is called macroeconomics, 'macro' being the Greek word for 'large'. In short, macroeconomics attempts to answer the truly big questions of economic life such as full employment or unemployment, capacity or undercapacity production, a satisfactory or unsatisfactory rate or growth, inflation or price level stability. The questions which provide the basis of macroeconomics are :

- (a) What determines the magnitude of the total output of a country during some given period of time ?
- (b) What determines the rate at which the output grows ?
- (c) What determines the level of prices ?
- (d) What determines the direction and rate of change of prices ?
- (e) What determines the levels of a country's exports and imports ?

In attempting to answer these questions, we shall be considering the theory of employment, the theory of price level and the theory of economic growth. In other words, we shall be examining such aggregates as output, employment, consumption, investment, supply of money, general price level, exports and imports. Besides; our study will require an appreciation of the role of government in determining the levels of these aggregates and the manner in which it uses its policy instruments for these objectives.

**(a) Distinction between 'Micro' and 'Macro' Economics**

The distinction between micro and macro economics is not very clear cut because what is macroeconomics in one situation or from one view point may become microeconomics in another situation or from another view point. For example, in the case of a closed economy, a study of income, saving, consumption, employment etc. for the whole economy is macroeconomics as it is the study of aggregates. If however, the country has trade relations with other nations then a single country becomes just one unit in the international set-up and the study of its economic entities becomes microeconomics. In this sense, it seems that a microeconomy is an open economy while a macroeconomy is a closed one.

Microeconomic theories are concerned with the analysis of price-output determination

under different market conditions and the allocations of economic resources to particular uses; whereas macroeconomic theories are concerned with the analysis of the level of national product and employment. Microeconomic theory depends upon the technique of partial equilibrium analysis, on the assumption of *ceteris paribus*. It examines the problems of relative prices and changes in these prices. Macro economic theory, on the other hand, depends on the technique of general equilibrium analysis and studies the interdependence between different market prices of output of goods and services produced in the economy.

What microeconomics takes essentially as given—namely, the total output for the economy as a whole—is what macroeconomics takes as the main variable whose size or value is to be determined. Similarly, what macroeconomics takes as given—namely, the distribution of output, employment, expenditure amongst particular goods and services of individual industries and firms, are all variables in microeconomics. Again, microeconomics takes the general price level as given and relative prices as variables, whereas macroeconomics treats general price level as variable and relative prices as given.

**(b) Integration of two Approaches**

Actually, no hard and fast line of demarcation can be drawn between macroeconomic and microeconomic theory. A truly 'general' theory of the economy would clearly embrace both. Microeconomics would explain individual behaviour, output, income and the sums of these individual results would constitute the aggregate with which macroeconomics is concerned. Neither approach by itself is complete without the other. As a matter of fact, no serious student of economic analysis can help studying both the approaches in an unbiased manner. Both micro and macro-approaches are needed for complete understanding and solution of economic problems. What particular approach will be best suited for scientific understanding of a given economic situation depends on the object we have in mind. For example, the 'macro' and 'micro' models of thinking may, at times, lead to conflicting conclusions, but by themselves they are nearly logical tools of analysis and need not come in conflict with each other.

The classical economists had always adopted the micro approach. This was a grave mistake on their part, which led to the neglect of the most important problems of income, output and employment in the economy. Microeconomic approach proved quite inadequate for solving the problems of an economy. Comparing neoclassical price theory with neoclassical macroeconomic theory, Keynes noted, "So long as economists are concerned with what is called the theory of value, they have been accustomed to teach that prices are governed by the conditions of supply and demand and in particular, change in the marginal costs and the elasticity of short-period supply have played a prominent part. But when they pass in volume or more often in a separate treatise, to the theory of Money and Prices, we hear no more of these homely but intelligible concepts and move into a world where prices are governed by the quantity of money by its income velocity and little or no attempt

is made to relate the phrases or our former notions of the elasticities of supply and demands." What is, therefore, needed is a harmonious integration of both the approaches, as we cannot entirely depend upon one to the exclusion of the other. If we do so, our conclusions may not only be entirely wrong and misleading, but may also prove highly harmful if adopted for practical policy matters. Just as the right and the left foot are needed for swift walking, we need micro and macro approaches for an efficient analysis of the economic problems of the day. Once a bridge between 'micro' and 'macro' economics is erected, all the theoretical concept and laws of micro theory will help us to understand price level and employment phenomena more clearly.

#### **IV. Importance of Macro economics**

Prof. J.K. Mehta feels that so long as men live in society, the economists cannot afford to neglect the study of macroeconomy. The theoretical and the practical importance of macroeconomics would be clear from the following arguments :

##### **1. Formulation of Economic Policies :**

Macroeconomics is of great help in the formulation of economic policies. The days of 'laissez faire' are over and government intervention in economic matters is an accomplished fact. Government deal not with individuals, but with groups and masses of individuals thereby establishing the importance of macroeconomic studies. For example, during depression, when the machines lie idle, men move from pillar to post in search of employment, macroeconomics helps to analyse the causes leading to depression and unemployment and to the adoption of suitable policies to cope with such a situation.

##### **2. Understanding Microeconomics :**

The study of macroeconomics is essential for the proper understanding of microeconomics. No microeconomic law could be framed without a prior study of the aggregates; for example, the theory of individual firm could not have been formulated with reference to the behaviour pattern of one single firm, howsoever, representative it might have been; the theory is possible only after the behaviour pattern of several firms had been examined and analysed, for example, the forest though an aggregation of trees yet does not exhibit the behaviour and characteristics of individual trees. Microeconomic has been, and to some extent, remains, a jungle of special assumptions, special cases, unsatisfactory measurement and abstract theorising.

##### **3. Functioning of an Economy :**

Macroeconomic analysis is of paramount importance in getting us an idea of the functioning of an economic system. It is very essential for a proper and accurate knowledge of the behaviour pattern of the aggregative variables, as the description of a large and complex economic system is impossible in terms of numerous individual items.

##### **4. Understanding and Controlling Economic Fluctuations :**

Economic fluctuations are characteristic feature for understanding the capitalist form of society. The theory of economic fluctuations can be understood and built up only with the help of macroeconomics, for here we have to take into consideration aggregate

consumption, aggregate saving and investment in the economy. Thus, we are led to analyse the cause of fluctuations in income, output and employment, and make attempts to control them, or at least to reduce their severity.

**5. Study of Economic Development :**

As a result of advanced study in macroeconomics, it has become possible to give more attention to the problem of development of underdeveloped countries. Study of macroeconomics has revealed not only the glaring inequalities of wealth within an economy, but has also shown the vast differences in the standards of living of people in various countries necessitating the adoption of important steps to promote their economic welfare.

**6. Inflation and Deflation :**

Macroeconomic approach is of utmost importance to analyse and understand the efforts of inflation and deflation. Different sections of society are affected differently as a result of changes in the value of money. Macroeconomic analysis enables us to take steps to counteract the adverse influence of inflation and deflation.

**7. Study of National Income :**

It is the study of macroeconomics which has brought forward the immense importance of the national income and social accounts. In microeconomics such a study was relegated to the background. It is the study of national income which enables us to know that three-fourths of the world is living in abject poverty. Without a study of national income, as a result of the development in macroeconomics, it was not possible to formulate correct economic policies.

**8. Performance of an Economy :**

Macroeconomics help us to understand and analyse the performance of an economy. It implies the result oriented study of an economy in terms of actual and factual achievements. Gross National Product (GNP) or National Income (NY) estimates are used to measure the performance of an economy over time by comparing the produce of goods and services in one period with that of the other period. The composition of GNP gives information about the quantum of contribution of each sector of the economy to GNP.

**9. Nature of Material Welfare :**

Macroeconomics enables us to study the nature and size of material welfare of the nation. The problem of measuring social welfare is not easy; even welfare economics does not help us. Those who are interested in the material and social welfare of all must study problems in their macroeconomic setting. This adds to the importance of macroeconomics because when the chief objective of the study of economics is the welfare of entire society, we are concerned only with the study of macroeconomics.

**V. Limitations :**

**1. Excessive Generalizations :**



Despite the immense importance of macroeconomics, there is the danger of excessive generalizations from individual experience to the system as a whole. If an individual withdraws his deposits from the bank, there is no harm in it but if all the people rush to withdraw deposits, the bank would perhaps collapse.

**2. Excessive Thinking in terms of Aggregates :**

Again, macroeconomics suffers from excessive thinking in terms of aggregates, as it may not be always possible to heterogeneous constituents.

Prof. Boulding has pointed out that 2 apples plus 3 apples = 5 apples is a meaningful aggregate, but 2 apples plus 3 oranges = 5 fruits may not be described as fairly meaningful aggregate which brings forth the fallacy of excessive aggregative thinking.

**3. Heterogeneous Elements :**

It may, however, be remembered that macroeconomics deals with such aggregates as consumption, saving, investment and income, all composed of heterogeneous quantities which can be measured only with the help of money. But the value of money itself keeps on changing making economic aggregates immeasurable and incomparable in real terms. As such in the sum or average of heterogeneous individual quantities lies their significance for accurate economic analysis and economic policy.

**4. Difference within Aggregates :**

Under this approach one is likely to overlook the difference within aggregates. For example, during the first decade of planning in India (from 1951-1961) the national income increased by 42%. This, however, doesn't mean that the income of all the constituents i.e., the wage earners or salaried persons increased by as much as that of entrepreneurs or businessmen. Hence it takes no account of differences with aggregates.

**5. Aggregates must be Functionally Related :**

The aggregate forming the main body of macroeconomic theory must be significant and mutually consistent, in other words, these should be functionally related. For example, aggregate consumption and investment expenditures ( $Y = C + I$ ) which form part of the macroeconomic theory would have no importance, if they were not functionally related to the income level, interest and employment. If these aggregates are mutually inconsistent or not functionally related, the study of macroeconomic theory will be of little use.

**5. Limited Application :**

Macroeconomics deals with positive economics in the sense of an analysis of how the aggregate theoretical methods work. These models explain the functioning of an economy and working of thinking in abstract and precise terms. Their abstraction and precision make such models unsuitable for use due to change in significant variables from time to time and from one situation to another.

**VI. Macroeconomic Tools**

In recent years, there has been a greater use of certain terms specially with the

development of post-keynesian ideas on economic growth, these are sometimes described as tools of macroeconomic analysis. Such tools or terms are described below :

**Variables** (Endogenous and Exogenous, Stock and Flow Variables)

A variable is a quantity that varies over a range. In other words, it is a quantity subject to continual increase or decrease, a quantity which may have measurable or scaleable magnitude which varies, and in whose variations we have an interest, partly, because of its direct importance and partly due to its effect on other variables. It is interesting to note that these variables vary a lot, as a result of which a static system becomes dynamic. Though there are a large number and types of variables - continuous, dependent, independent, discrete, random etc. - yet macroeconomics is not interested in studying them all. However, important amongst these are as follows :-

Sometimes these variables belong to a system as its integral parts when they are called **endogenous** variables and sometimes they may be external to the system, when they are described as **exogenous**. Variables explained within the structure of model or system are called endogenous variables. These are the economic variables whose determination is the purpose of the model e.g., if the model provides how national income is determined, then national income is an endogenous variable. Variables which are not explained, but are taken as given outside the model or from outside the system, are called exogenous variables.

Exogenous variables may be either non-economic or economic in nature and determined independently of the system or model. These variables are included in the model to show how changes in them influence the system, but are not themselves determined within the system. For example, if the money stock is assumed to be determined by the monetary authority and its value given to the system implied by the model, then the money stock is an exogenous variable.

**Stock and Flow variables :**

Whether a variable is endogenous or exogenous, it is either a stock or flow. A stock variable has no time dimension, whereas a flow variable has. The weight of a bus is a stock variable and its speed, a flow variable. The magnitude (amount) of the stock has no time dimension, but a flow can only be expressed per unit of time. The speed of the bus, say 80 kms per hour, is a flow concept, while a fleet of 200 buses with Haryana Roadways, plying between Delhi and Chandigarh, is a stock concept. The main distinction between the stock and flow variables depends on the time; a flow variable is a quantity which can be measured only over any given period of time. Stock variables have a time reference associated with them, while flow variables have a time dimension. Although both stock and flow variables are dated, a stock variable is different from a flow variable because a point in time is different from a period of time. The balance sheet or stock statement shows the assets and liabilities of a business firm at a point of time. The profit and loss statement or statements shows the receipts and expenditures incurred

over a period of time.

**Functional Relationships :**

Relationship between variables are described by the term function, e.g. consumption is a function of income. Consumption in this case is a dependent variable, whereas income is an independent variable. To say that something is a function of something else does not specify anything more than a general relationship. Consumption could rise or fall with income; it could be a function of income in either case. The responsiveness of one variable to changes in another is an important feature of macroeconomic models. Major arguments in macroeconomic theory involve such issues as the responsiveness of the demand for money to changes in the interest rates and of consumption to changes in income and prices and of investment expenditure to changes in marginal efficiency of capital and interest rates.

A constant is a magnitude that does not change. When there is a constant attached to a variable, it is often referred to as the coefficient of that variable. However, a coefficient may be symbolic rather than numerical. For example, let the symbol  $a$  stand for a given constant and use the expression ' $a$ '  $P$  in lieu of  $7 P$  in a certain model, in order to attain a higher level of generality. This symbol behaves in a very peculiar way, it is supposed to represent a given constant and yet since we have not assigned any value to it, it can take virtually any value. In short it is a constant that is variable. To identify its special status, we call it as parametric constant (Parameter).

**Tautologies :**

Tautologies are true statements which are true solely by virtue of their truth functional, structural or mode of composition. They are statements that cannot be proved false because there is no empirical or operational way to examine them. Tautologies play an important part in economic thought. There are many tautological statements in Keynes' General Theory, for example, Keynes' 'Multiplier' has been described merely as a tautological concept.

**Identities :**

Identities simply specify a relation that holds by definition; for example total demand (or purchases) as the sum of consumption & investment demands or  $Z = C + I$ , or investment equal to saving, by definition as in national income accounting. This is an identity. Identities like ' $MV = PT$ ' and ' $I = S$ ' hardly tell anything fruitful.

**Behavioural Equation :**

A behavioural equation specifies the manner in which a variable behaves in response to changes in other variables. Broadly defined behavioural equations can be used to describe the general institutional setting of a model including the technological and legal aspects. For example :

$$C = 24 + 5Q$$

$$C = 11 + Q$$

Where Q denotes the quantity of output and C is cost here. Since the two equations have different forms, the production condition assumed in each case is obviously different from the other.

**Lags :**

Modern production is based on process which occupies time. For example, if there is an increase in income, it is not necessary that consumption will go up simultaneously; it may take some time for consumption to increase. Thus, the gap or the time involved between the increase in consumption and the increase in income is called 'lag' in macroeconomics.

These lags include consumption- expenditure lags, wage lags, production lags, administrative lags etc. These lags, play a significant role in the theory of income, output and employment. The importance of period analysis lies in the study of the working of lags. In Keynesian theory the lagging adjustment that the economic system makes in response to the introduction of a disturbance is often skipped over. In other words, Keynes ignored the working and influence of lags, and, he broadly took into consideration the instantaneous behaviour of macroeconomic variables. However, post Keynesians took account of the influence of lags on his theoretical tools like consumption and investment function, liquidity preference, multiplier etc.

**Circular Flow :**

There is a continual circular movement of money and goods in the economy. The idea of circular flow of income is a simplification which attempts to illustrate the flow of income and goods from households to business enterprise and to household. We know that the economic activities and money have a circular flow. Circular flow of money means that the money spent must be hoarded and should continue to flow to maintain a certain level of economic activity (income). In order to obtain a clear idea of the relations between the numerous economic units in a country, it is best to reduce them to homogeneous groups. For example, all households may be taken as one whole, because their activities are more or less of the same type. Enterprises and Government agencies too can each be grouped. Through economic activity (production, consumption, capital formation etc.) these groups are linked up not only with each other, but also with the rest of the world by flow of goods and money.

**The Concept of Ex-ante and Ex-Post :**

The concept of ex-ante and ex-post were originated by Gunnar Myrdal in his discussion of monetary theory. These are Latin phrases meaning 'before hand' and 'after ward'. In business cycle theory, ex-ante refers to quantities of investment, saving or consumption defined in terms of action planned at the beginning of the period in question. Ex-ante, thus means anything planned or intended, for example, ex-ante saving is the amount that people intend to save out of their incomes in a particular period. Ex-post refers to quantities of investment, saving or consumption defined in

terms of measurement made at the end of the period in question. Thus it refers to realised saving, investment or consumption, e.g. ex-post results may not necessarily be those planned at the beginning of the period and the divergence between the two affects the future plans.

**Economic Model :**

Economic model is a set of equations or relationship used to summarize the working of the national economy or of a business firm or some other economic unit. Models which vary in complexity, may be used to illustrate theoretical principles or to forecast economic behaviour. Some economic models used in the study of national economic activity comprise several hundred equations. Economic models help understanding the working of an economy. But economic models which, if well devised, identify the influence to be taken into account in the real world and the kind of result to be expected from changes in them.

Economists have resorted to model building because they are liable to conduct controlled experiments. They must, therefore, isolate from real situations the various influences and relationship which are believed to be main determinants of particular results. The different parts, inter-connections and prime-movers of a model help us to analyse the way in which it works. If a model reproduces important features of real life it provides a guide to understanding a basis for predictions.

Model may incorporate individual economic units such as households and firms, often grouped into individual markets and industries and the relationship between them. These are called microeconomic models. They help us to explain such matters as the determination of prices and outputs of particular commodities and payments for individual factors of production. Macroeconomic models have been extensively developed from the construction of total or national income accounts by the late Sir Arthur Bowley, by Clark and late Lord Stamp, and from theoretical work of Keynes and the Swedish economists. These ignore details and build up a system of broad aggregates, such as total consumption, total investment, national income and changes in the general level of prices. Macroeconomic models are used in an effort to explain and predict the performance of the economy as a whole e.g., changes in the level of national income, the level of employment and inflation. The British Treasury uses a macroeconomic model in constructing the annual budget to estimate its likely effects on the performance of the economy. Planning bodies use macroeconomic models when working out the implication of alternative rates of growth.

Both microeconomic and macroeconomic models may be sub-divided into 'equilibrium' and 'process' models. Equilibrium models specify the conditions under which the 'variables' incorporated would have no tendency to change; but they are used to analyse change. First, they sometimes indicate the direction in which adjustment will take place in disequilibrium conditions. Secondly, comparison of equilibrium

within initial condition differing in a single respect may indicate the ultimate effect on the single difference. An important distinction in the case of micro-economic models is between general and partial equilibrium models. General equilibrium models embrace all the variables of the whole economy; their main purpose is to provide a summary chart of the inter-relationship between all parts of the economic system. Partial equilibrium models select a few closely inter-related 'variables' (e.g., the price of a single commodity and quantity of it demanded) and work out the mutual interdependence of these few against a background of assumed fixed values for all other 'variables'. Equilibrium models ignore the difficulty of tracing the way in which movement is made towards the equilibrium position. But the equilibrium itself may be affected by the path followed and the speed with which different variables change. 'Process' models trace out such paths of adjustment indicating the conditions under which movement, oscillation and rebounds from 'ceilings' and 'floors' are to be expected.

**CLASSICAL THEORY OF EMPLOYMENT****Introduction**

As was stated in the last lesson, before Keynesian Economics, there was no coherent body of economic knowledge which could be given the name of a macro economic model. There were some vague and scattered ideas, some of them highly developed, which were studied individually. All pre-keynesian writings are frequently referred to as classical economics, but the macroeconomic writers of the twentieth century are called neo-classical. The best known of the neo-classicals are A.C. Pigou and Alfred Marshall; whereas classical economists included economists like Adam Smith; Ricardo, J.S. Mill, T.R. Malthus and James Mill. Basically, all the pre-Keynesian concepts and analysis have been given by the classical economists; but the neo-classicals refined and extended the classical precepts. It is difficult to generalise the thought of such a diverse group of men, but some comments can be made to indicate their general philosophy, their assumptions, and their approach to basic economic problems.

The classical and neo-classicals, in general, placed great faith in the ability of human beings to analyse and solve problems. If men were presented with accurate information and alternatives, they could make rational choices. These economists believed that men were rational and ultimately it was man's rationality that could solve most of man's problems. It follows that these economists propagated Laissez Faire. Their philosophy was, "that government governs best that intervenes the least." They reached this conclusion by viewing the economy as composed of small, independent firms operating in free and open markets. They assumed pure competition in all markets.

Methodologically, the classical economists were primarily interested in the determination of value (price, wage rate, interest, etc.) and the distribution of output (wages, rents, interest, profits). Thus, they tended to use partial equilibrium analysis. They were more interested in the long run, i.e., how things worked out overtime. It is, therefore, very important to keep in mind the classical emphasis on the long-run for it helps to explain some of their preoccupations and conclusions.

**The Classical Model**

Before classical model is studied in full it is very important to know the direction towards which the model is directed and the aim which this model should fulfill. As in the case of all models of macroeconomics, the classical model also poses the problems of full

employment and economic growth. Economic growth was studied through changes in the national product, but there was a controversy regarding the concept of full employment. Therefore, it is in the fitness of things that the concept of full employment is examined before studying the classical model.

The classicals had a very clear notion about full employment. For them full employment was a normal situation and departures from it were regarded as abnormal. Full employment was defined as a situation when there was no involuntary unemployment. If workers prefer to be voluntarily unemployed, it was not a problem to be tackled by the economy. The classicals accepted the prevalence of frictional and structural unemployment, a short-run phenomenon for the classicals.

Keynes also agreed with classicals that frictional, structural and voluntary unemployment can co-exist with full employment, but he challenged the basic assumption of the classicals that there is always full employment. For Keynes, full employment was a rare phenomenon and hence the purpose of a macroeconomic model was to reach this stage.

The classical theory whose broad outline is described in the lesson is specifically that theory which existed before Keynes' 'General Theory'. This theory through its ingredients has been reformulated or recast by some economists in recent times, for example, the quantity theory of money which is an important part of classical theory has been reformulated by M. Friedman and others. The classical model depends upon two basic functions on the basis of which the equilibrium levels of output and employment are determined.

These functions are :

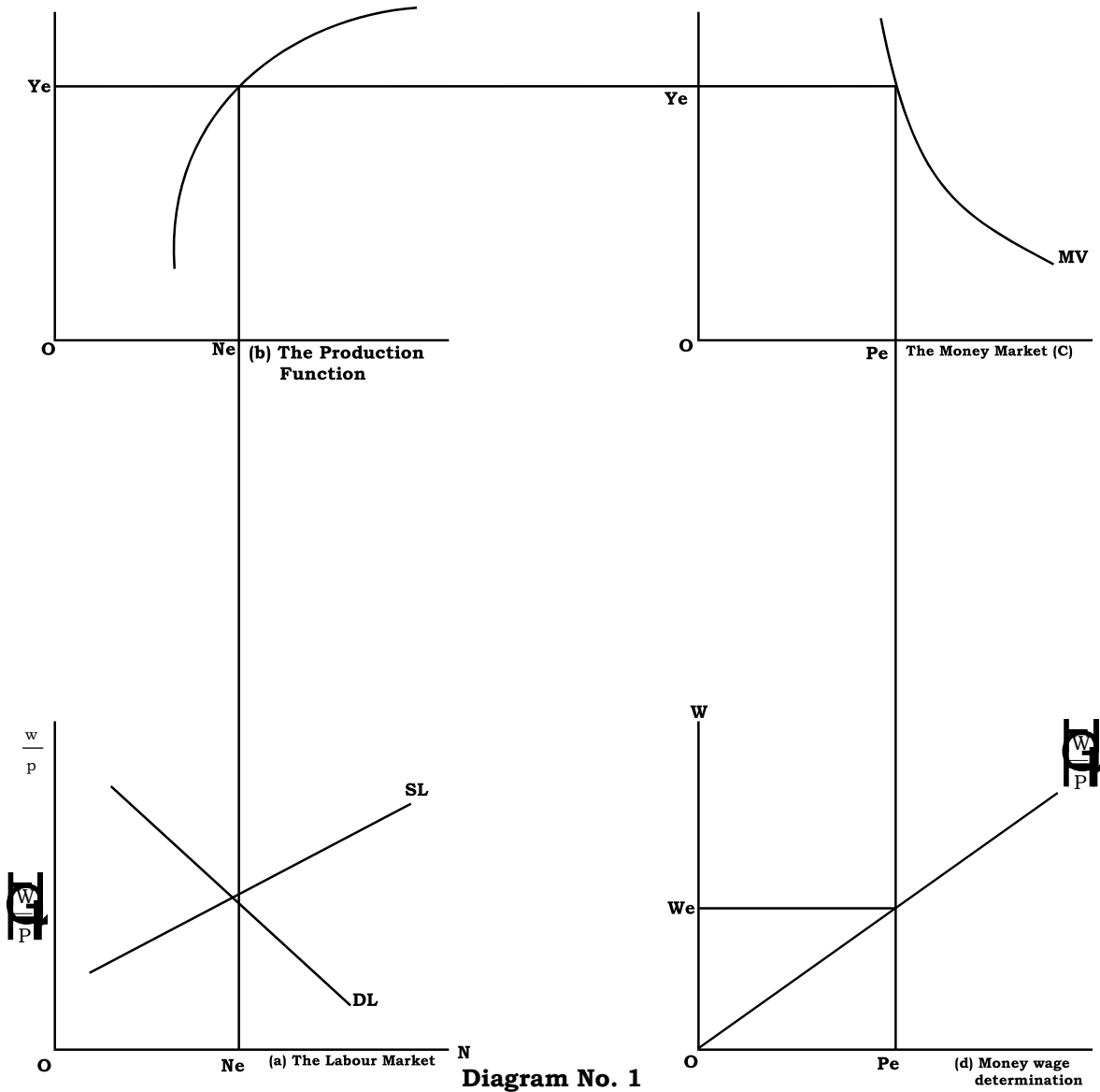
1. The economy's production function from which is determined the demand curve for labour.
2. The supply curve of labour.

To study the equilibrium level of output and employment, we need four basic and derived functions.



**The Classical Model**

As given in the diagram shown below :



In part (a) of diagram, the labour market is shown with the help of demand and supply curves of labour. In part (b) is shown the aggregate production function. These two parts reproduce the real side of the market. The money market is shown in part (c), where  $M$  is determined by the monetary authorities,  $V$  is assumed to be constant and  $Y$  is given by part (d) of the diagram. Under these conditions, the quantity theory of money determines the price level. In the money market of part (c) the  $MV$  curve is a rectangular hyperbola, meaning that with  $MV$  constant, money market equilibrium is possible with a high  $Y$  and

low  $P$  or with a low  $Y$  and a high  $P$ . A moment's reflection will reveal that if  $Y$  were high, the output could only be sold at a low price level. Thus, in part (C) once  $Y$  is known from the aggregate production function, the price level,  $P$  is determined. Finally, in part (d) the money wages can be determined once the price level is given from part (c). This line  $W/P$  from the origin  $O$  measures constant real wage rate, the slope of the line is equal to  $W/P$ . A higher real wage gives a new line from the origin to the left of the one shown and a lower real wage appear as a line to the right.

In the above figure, starting with part (a) and proceeding to (b), (c) and (d) it is possible to trace the working of the classical model. The results are given with the subscript (e) and the process is summarized below :

<b>Diagram</b>	<b>Part Description</b>	<b>Determines</b>	<b>Given or assumed</b>
(a)	Labour Market	$N$ and $W/P$	Labour Force-Population
(b)	Production Function	$Y_e$	$N$ from the labour market
(c)	Quantity Theory	$P_e$	$M$ from the monetary authority $V$ constant by assumption. $Y$ from production function.
(d)	Money-Wage Determined	$W_e$	$P$ from money market. $W/P$ from labour market.

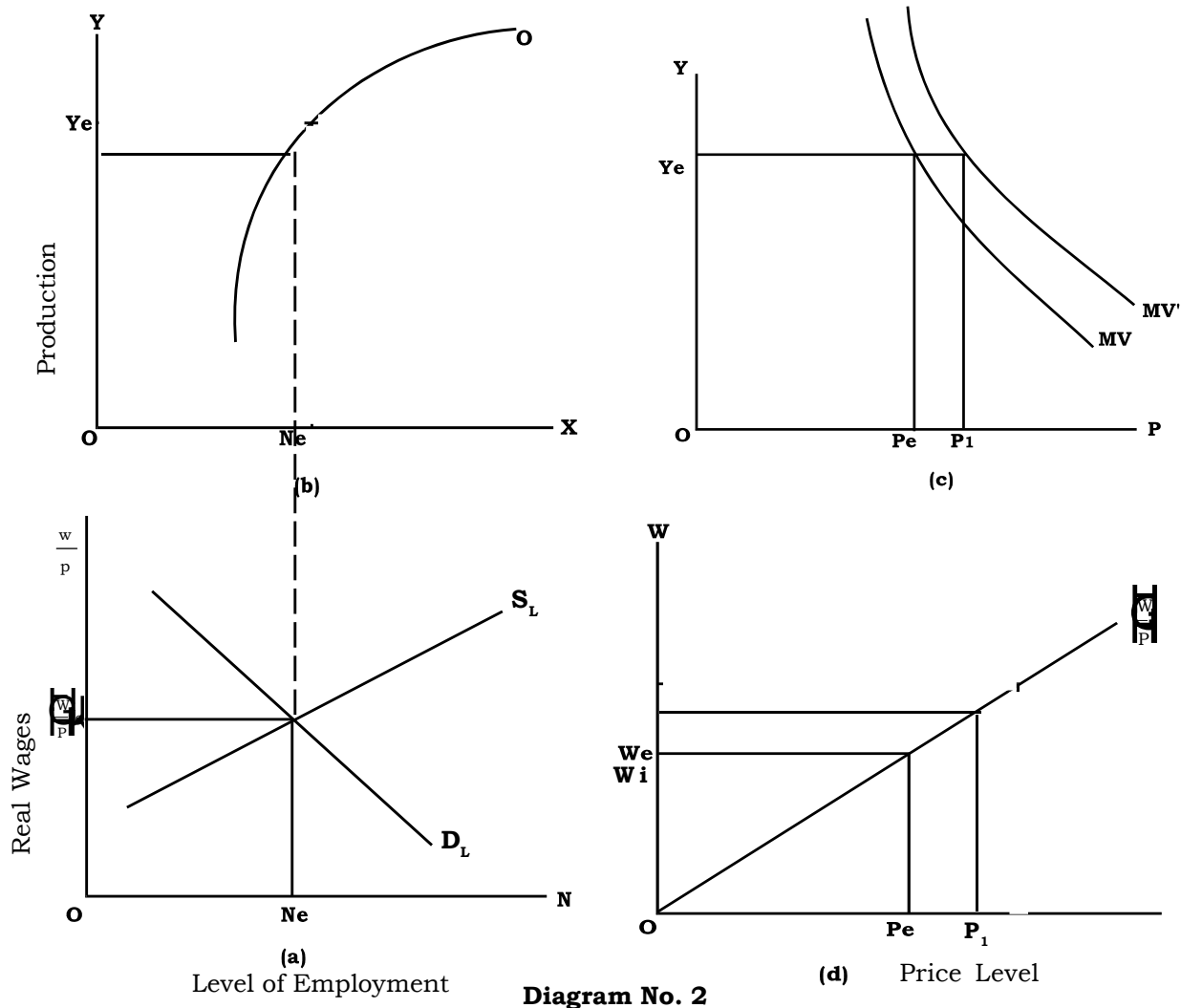
Let us explain this process in terms of the mechanism of the classical system. The interaction of the forces of demand and supply in the labour market determines the level of employment ( $N$ ) and the real wage rate ( $W/P$ ). Since the level of employment ( $N$ ) is determined with the help of production function, we can know the level of ( $Y$ ). This determined level of income ( $Y$ ) can tell us about the price level with the help of  $MV$  curve determined by the quantity theory and in last the price level can tell us about money wage. To increase the understanding of the classical model and its mechanics, it might be useful to examine the model in operation as it reacts to the change in the variables. There are only two independent variables which change exogenously and vigorously and there are changes in money supply and the production function.

### **Change in Money Supply**

Consider first a change in the supply of money. Suppose the supply of money increases. How will the system react ? The first change occurs in the money market as shown in diagram 2 (c). For an increase in  $M$ , the  $MV$  curve shifts upward to the right, meaning

thereby that the new money supply will support a higher level of money income. But no response from the real side and with  $Y$  already at the full employment level, the price level rises. Output being fixed, the increase in spending merely drives up price level. As price rises, there is repercussion in the labour market since the price rise reduces the real wages. The fall in real wage is shown in figure 2 (a) and indicated by  $(W/P)$ . It is clear that at this lower real wage rate, the demand for labour exceeds the supply of labour as firms are in a position to use more labour.

As the firms increase their demand for labour, they have to increase the money wages due to competition in the labour market. They continue to increase the money wage until the shortage is eliminated. This occurs at the old equilibrium real wage  $(W/P)$ .



It follows that an increase in  $M$  does not affect the real side of the economy, but only the money side. The increase in  $M$  result in an equal increase in  $W$  and  $P$  to keep the real

wages constant. All that the change in  $M$  brought about was a proportional change in the price level is exactly what the quantity theory had said.

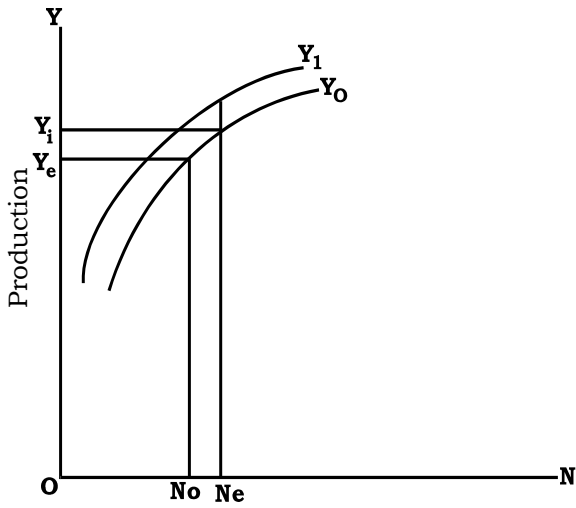
### **Change in Production Function**

There can be two types of changes in the production function. The change can be in a parallel or non-parallel way. The non-parallel change in the production function changes both the average and marginal products of labour. This type of shift in the production function changes the productivity of the labour. But if the production function changes in a parallel manner only the average product of labour is changed. The marginal physical product of the labour does not change with such a change in the production function.

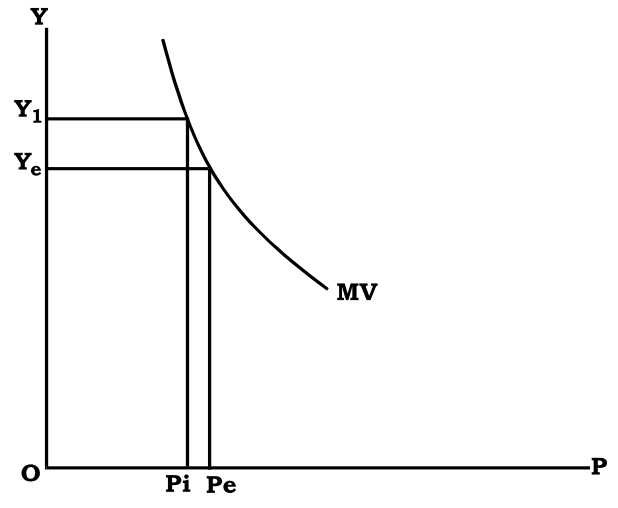
Let us consider, first a change in production function in a non-parallel way. The shift in diagram 3 (b) is of this kind. The shift in the production function makes labour more productive and, thus, increases the demand for labour to  $D_L$ . We know that the demand curve of labour is drawn from the production function. When the production function changes there will be a new demand curve for labour. Firms demand more labour now that is more productive because at the old price more profit can be made as output expands. The firms soon find, however, that with the supply of labour fixed, they must pay higher real wage  $W/P_1$  in order to induce the additional labour required ( $N_1 - N_e$ ) to work. As a result of employment of more labour, output expands as shown in part (b). This output increases both because more labour is employed and because labour becomes more productive now. With the new higher level of output  $Y_1$ , the price level must fall to  $P_1$ . This is because nothing else has changed in the money market and with a constant  $M$  and  $V$ , the additional output can only be sold at a lower price level. The given money supply can only support a certain money income so that as  $Y$  increases,  $P$  must fall. In figure 3 (d), it is clear that real wage must rise in order to draw the additional labour as shown in part (a).

From part (c) of the diagram it is clear that the price level falls. When price level falls, that real wage rate must increase. The interesting thing is that money wage rate in part (d) also increases. Since money rate is increasing and the price level is falling, automatically the real wages are increasing. This is a possibility even in the case when the money wage is constant.

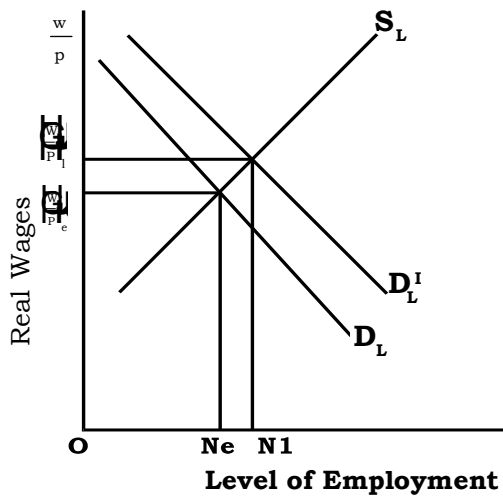
The classical model with a change in production function.



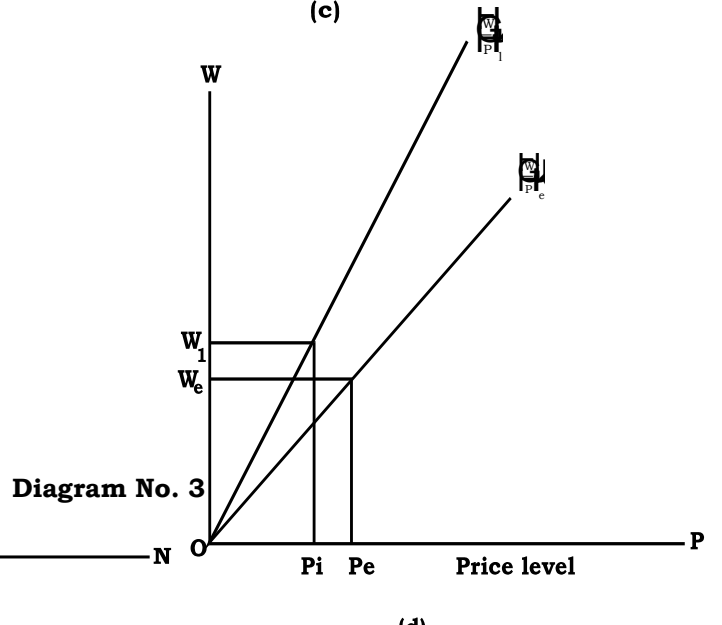
(b)



(c)



(a)

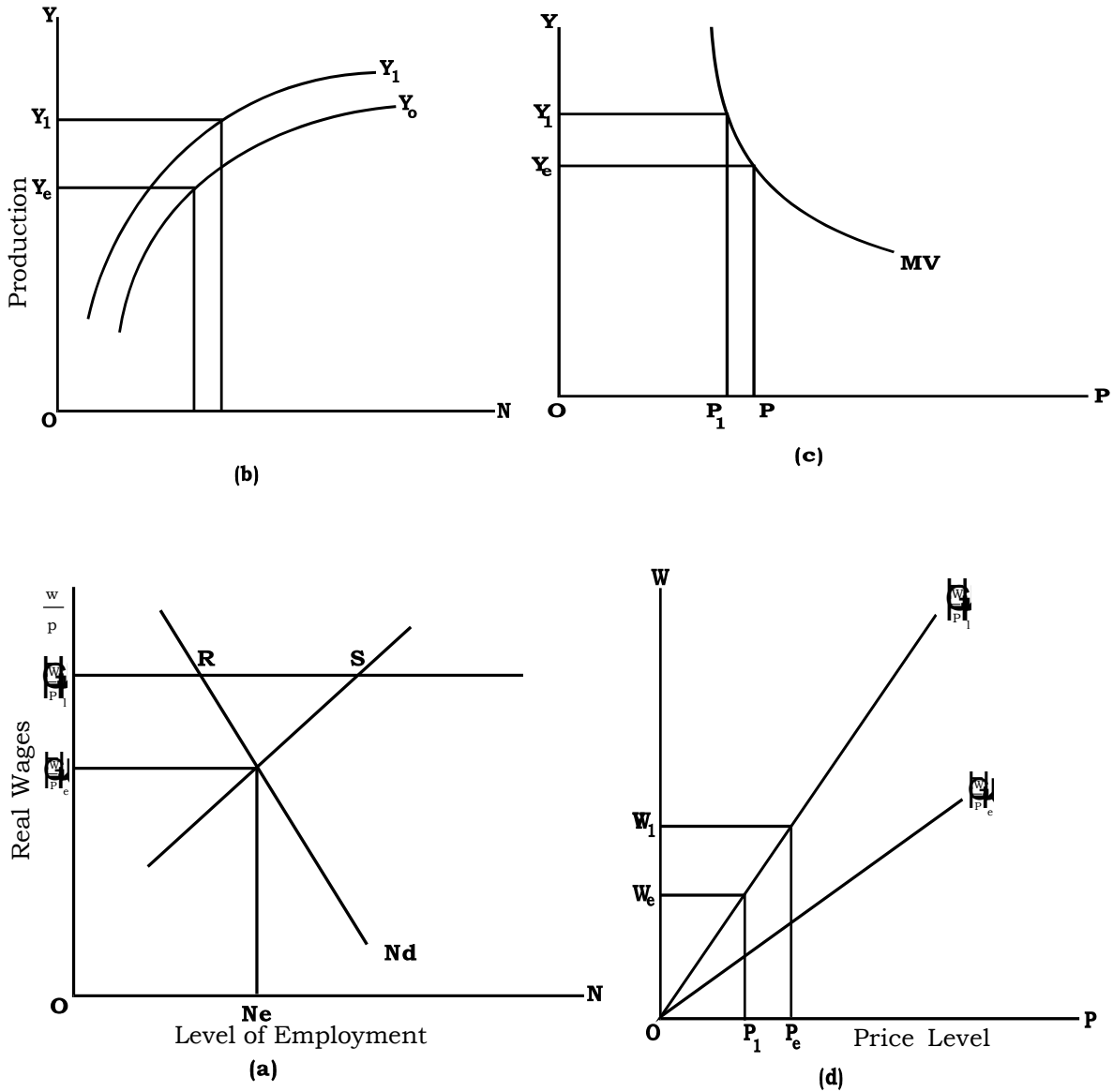


(d)

Diagram No. 3

Some interesting results follow if the production function shifts upward in a parallel way. This kind of technological change alters the average product of labour keeping its marginal product constant. The parallel shift in the production function does not shift the demand curve of labour. Figure 4 (b) shows the parallel shift in the production function from  $Y_0$  to  $Y_1$  and output shift from  $Y_e$  to  $Y_1$ . As output increases, with the money variables constant, the price level to the output  $Y_1$  must fall. In fact, in fig. 4 (c) the price level falls to  $P_1$ . Since the price level falls, the real wage increases say to  $(W/P_1)$ . The rising real wages, if maintained would lead to unemployment equal to the distance RS in part (a).

**Parallel Shift in the Production Function**



**Diagram No. 4**

According to the classicals, there is a competition among the unemployed also and this competition would drive the money wage  $W^1$  down restoring the old real wage and eliminating the unemployment. But as per this interpretation of the classicals, the labour cannot remain contented for a long period with constant or decreasing money wages. Although, in the above analysis, the real wages are increasing with falling price level, but labour is guided more by money illusions. But then, if money wages are rigid, they

cannot be reduced, and the result will be unemployment in the classical system. But then the classical have an assumption of perfect competition and so far as competition is perfect, wage rates cannot be rigid. If we make the assumption of an imperfect labour market where wages are rigid downward, there is no self-correcting mechanism that can restore full employment. Without competition money wages do not fall when there is unemployment. Therefore, the conditions remain-unemployment in the labour market and consequently a reduced output at increased prices.

We can conclude that in a classical system without competition, a rigid money wage leads to unemployment and that unemployment is essentially voluntary.

**Flexibility of Interest Rates :**

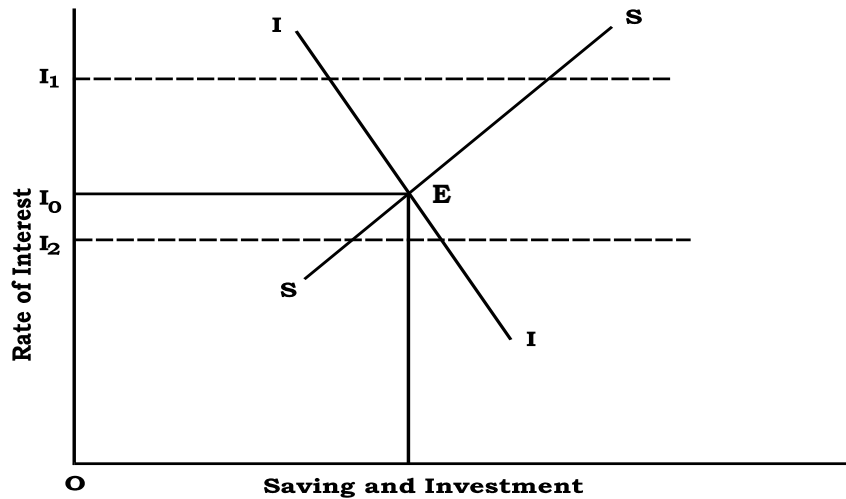
The classical model discussed above has covered the determination of income, output and employment. It has also considered the role of money supply and change in the production function. But this model is over simplified. We have considered only the aggregate demand; but we have not taken aggregate demand to be composite of demand for consumption goods and capital goods, meaning thereby that the process of saving and investment has not been studied. In the last lesson, we studied three main principles of classical economics viz. Say's Law of Markets, Quantity Theory of Money and Rate of Interest. The first two principles have been fully considered and treated in the classical model explained above. The basic conclusions reached above are based upon the belief that there would never be a lack of aggregate demand and therefore, unemployment.

But, we must remember that the whole of income is not spent on consumption. That part of income which is not spent on consumption is saved. The model given above, does not allow for savings. It is not possible that savings result in insufficiency of aggregate demand and, thus, upset such comfortable conclusions. The classical economists had another instrument to ensure that there would not be lack of demand and this was the flexible rate of interest.

The classical treated savings as dependent on the rate of interest. The higher the rate of interest, the higher is the savings. Of extreme importance is the idea that any saving that occurs is done in such a way that the funds become available to someone else to spend. There is no hoarding of funds. This follows from the Say's Law of Market. No one is foolish enough to hold balances over and above those needed for transaction purpose. To make people forego present consumption, there must be some compensation paid. Some of the theories of interest get rather mystical, but the major point is clear: any saving that occurs is made available for someone else to spend. The rate of interest is some kind of reward.

In the classical system, the investment function is also dependent upon the rate of interest. They are inversely related to each other. These two functions, savings and investment, ensure some equilibrium rate of interest that makes saving equal to investment. Thus,

rate of interest clears the market to ensure that all saving is invested and that an insufficiency of aggregate demand never develops. Diagram given below depicts saving and investment segment of the classical model.



These functions are drawn on the classical assumption that both S and I are interest elastic. Furthermore, the intersection of the schedule always occurs in the positive quadrant; that is, the rate of interest is always positive and no matter how low, would equate saving and investment. The capital market was also assumed to be competitive and supposed to work like any other market. For instance, at  $I_1$  saving is more than investments. The competition among savers would drive the interest rate down. The surplus saving is eliminated with no threat to aggregate demand. At  $I_2$  investment is more than saving and the shortage of funds would cause investors to bid up the rate of interest and the market would ration the available funds.

To sum up the conclusions of the classical model; there is always a tendency towards full employment as perfectly competitive markets work through flexible wages, prices, and rates of interest to ensure that aggregate demand is always sufficient to purchase the full employment output. Rigidities in the system alter the result, but not the fundamental ideas about the working of economic system. For some, the classical model retains much of its explanatory power.

#### **Classical Model - A Critical Appreciation**

The great depression of the thirties gave a severe blow to the classical model. There are very few people, who still maintain that there is a tendency of automatic adjustment due to perfect flexibility in the variables that determine the level of output and employment. The basic assumption of the classical model is that there is always full employment, has also been shattered due to persistent unemployment in all types of economies of the world.

After the Great Depression, people started doubting the classical prescriptions. Keynes came out with an alternative theory of employment, challenging the basic assumptions



of the classicals and their policy implications. Keynes himself was a classical economist and was a pupil of Marshall. Even after depression he maintained that logically the classical system was perfect but since it is based upon certain assumptions, it cannot be adopted, Keynes criticised the classical model on the following grounds :

### **1. Full Employment**

Keynes gave a rude shock to the classicals by challenging their fundamental assumptions of full employment. According to Keynes, full employment was only a rare phenomenon and this is what an economy strives for. Booms and depressions occur very frequently and the aggregate demand normally falls short of the required level. In fact, unemployment is a common feature of free market capitalist economies. The classicals assumed that there is no wastage of resources; they are fully employed, the only problem before an economy is of allocation of these resources. But Keynes did not agree to this proposition. He maintained that wastage of resources was a common feature of a free enterprise economy and hence there is no question of assuming full employment always. Keynes gave us a new concept of "less than full employment equilibrium". He asserted that there can be equilibrium in the economy even at less than full employment level. He called this situation as that of under-employment equilibrium.

### **2. Money Illusion**

In the classical system as we have seen above, a great emphasis is placed on flexibility of wage rates. We were able to reduce real wages by reducing money wages. According to Keynes, workers suffer from money illusion. They are very sensitive to reduction in money wage. As Keynes himself has said, "Whilst workers will usually resist a reduction of money wages, it is not their practice to withdraw their labour whenever there is a rise in the price of wage goods." This implies that if there is an increase in the price level, but the money wages remain constant, people will ignore it. They will offer the same amount of labour for employment as before. Thus, Keynes rejected the classical theory of employment which, in his view, asserted that (1) wage bargain determines the wage rate and (2) the real wage rate, thus, determined will fix the amount of employment.

### **3. Role of Money**

Keynes was basically a monetary economist and he tried to link the theory of employment and money with the theory of income. He rejected the classical theory labelling it as a partial analysis of only value and distribution. Money in the Keynesian system is link between present and future. He took strong exception to the veil attitude of the classicals and denied that money is an illusion. The store of value function of money was placed at the top position by Keynes. People try to store value in the form of money as this is the most convenient form of storing wealth.

### **4. Say's Law**

Say's Law is also one of the fundamental postulate of the classicals that was attacked by Keynes. The assertion that 'supply creates its own demand' can be held valid only if there is no storage in aggregate demand. But all income is not automatically spent. Some part

of it is saved. According to Keynes, this part, which is not consumed is directly responsible for creating unemployment. Keynes also did not agree to the Pigovian formulation of Say's law that wage cuts can cure unemployment. Wage reduction was no remedy to reduce or abolish unemployment as this will also reduce the effective demand which is the primary cause of unemployment.

#### **5. Rate of Interest**

The classical model assumes that the rate of interest brings about automatic adjustment in saving and investment. This is possible if saving and investment are a function of rate of interest. Keynes challenged this functional relationship between rate of interest and saving and investment. According to him, the functional equality between saving and investment is brought about by changes in income.

He asserted that (1) investment was not so sensitive to change in the rate of interest. It depends more on the marginal efficiency of capital and (2) saving depends upon the level of income and people save not to earn interest, but for some other motives like transaction, precaution and speculation.

#### **6. State Intervention**

The classical scheme of the working of the economy is that everything is automatic and does not need any interference from any outside agency. Since supply creates its own demand and aggregate demand never falls short of the supply, there is no need of any interference, but this is not the fact. Aggregate demand normally falls short of the required level. Some part of income is withdrawn from the consumption stream. To fill this gap in the consumption stream, there is a strong need for the government to interfere and maintain the flow of aggregate demand.

Moreover, to achieve the level of full employment or to create more employment opportunities heavy investment through deficit financing is necessary. He, therefore, favoured government intervention and viewed government spending, taxation and borrowing as the most important weapons against unemployment.

#### **Conclusion**

Classical model, although criticised very severely and rejected practically, has its own place in the history of economic thought. Keynes, the greatest critic of the system also has his roots in the classical and neo-classical system.

In an article which appeared after his death, Keynes paid tribute to the classicals and warned the young Keynesians saying, "I find myself moved, not for the first time, to remind contemporary economists that the classical teaching embodied some permanent truths of great significance."

His gratitude to the classicals is further strengthened, when he borrowed some of the assumptions like free market system and law of diminishing returns from the classicals. We, thus, reach the conclusion that as far as the logical content of Keynes theory goes, no revolution has taken place. General theory, no doubt, marks a milestone, but not break in the development of economic theory.

**SAY'S LAW OF MARKET**

Before Keynes gave us his General Theory, there was perhaps no coherent body of knowledge which could be called 'Macroeconomics' No writer before Keynes in this field has a complete model that could be considered representative of accumulated thought. The common name frequently used for pre-keynesian writers in this field is classical, which cover several economists from Adam Smith to the neo-classical writers of the twentieth century like Marshal & Pigou. The best known of the neo-classical economists is A.C. Pigou, who best explained the economic thought of his times and whose work was frequently referred by Keynes.

It was Karl Marx, who used the term 'classical' first of all. These economists belonged to various groups and had entirely different background. Some of the distinguished classicals were Adam Smith, David Ricardo, T.R. Malthus, J.S. Mill and James Mill. The neoclassical economists included Edgeworth, Marshall and Pigou who refined and extended the classical percepts. Though it is very difficult to generalise the thoughts of such a vast and varying group of economists, still some comments can be made to indicate their general philosophy, their basic assumptions, their fundamental ideas and their accepted methodology to approach various economic problems. As Hansen has put in his A Guide to Keynes, "It is safe to say that any economic doctrine long accepted by considerate group of competent economists was never wholly without merit. Though discarded such doctrine often afforded as a first approximation significant insights into the functioning of the economic system." Before the study of classical or pre-Keynesian models of employment it is desirable that one should have adequate knowledge about the underlying principles of classical economics. Basically there are three main principles viz. the Say's Law of Markets, the Quantity Theory of Money and the Rate of Interest, which provide a connecting link to weave the classical theory of employment. In the present lesson, we will study these principles.

**Say's Law of Markets**

The classicals always believed in the state of full employment. They never imagined a situation of less than full employment. According to them, full

employment was the rule and less than full employment, an exception. This most fundamental classical proposition was based on the Say's Law of Market, which can be summed up in one line as a law stating that supply creates its own demand. In other words, there cannot be any situation of disequilibrium between supply and demand of goods meaning thereby that over-production or gluts in the economy are impossible. Whatever is produced and offered for sale (supplied) is automatically and immediately exchanged for money (demanded).

Basically Say's Law is a description of a free exchange market. So conceived, it illuminates the truth that the main source of demand is the flow of factor incomes generated from the process of production itself. The employment of unemployed resources pay its own way since it enlarges the income stream by an amount equivalent to the amount taken out of the income stream through the sale of its product. A productive process, by paying out income to the employed factors of production creates demand at the same time that it adds to supply.<sup>1</sup>

J.B. Say (1757-1832) himself explained his market mechanism by noting down that a product is no sooner created that it, from that instant, affords a market for other products to the full extent of its value. When the producer has put the finishing hand to his product, he is most anxious to sell it immediately; lest the value should vanish in his hand. Nor is he less anxious to dispose of the money he may get for it, for the value of money is also perishable. But the only way of getting rid of money is the purchase of some product or other. Thus, the mere circumstances of the creation of one product immediately opens a vent for other products."<sup>2</sup>

The law can more elaborately be explained with the help of an example of the production of any product. The manufacturing of a motor car, for example, also creates an equal amount of purchasing power to the labourers, land, entrepreneurs and the financial institutions in the form of wages, rent, profit and interest. This purchasing power is ultimately used to affect purchase. If we assume that there is only one product being produced in the economy, the production of this product will create purchasing power equal to the price of this product and this product shall be purchased. This mechanism of exchange can easily be extended to the multi-product economies also. Hence, there cannot be any over-production in the economy because whatever is produced is consumed by way of utilization of the purchasing power created by the

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1. Hansen, A.H. : "A Guide to Keynes" Page 3, chap. 1.

2. Say, J.B. : "Treatise on Political Economy" pp. 76-79.

process of production. There can be over-production (or less demand) in some particular industry, but it is matched by less production in some other industry. In other words, possibility of general over-production in the economy is ruled out.

Many a times, the classical economists expressed this idea in the form of an identity. We can take Ricardo's statement of this law to illustrate this point. Ricardo observes, "No man produces but with a view to consume or sell, and he never sells but with an intention to purchase some other commodity, which may be immediately useful to him or which may contribute to further production. By producing, then he necessarily becomes either the consumer of his own goods or the purchaser and consumer of the goods of some other person," Hence there will be no underemployment of factors and no over-production.

### **Say's Law and Money Market**

A careful examination of Ricardo's statement given above tells us that it can be valid only in a barter system. Incidentally, this revelation compels us to conclude that classical system of employment was a real one and not the monetary one. In this version, at least, if it is to be applied to a monetised economy, money is assumed to function only as veil-a-medium of exchange. Hence money is supposed to be neutral.

This identity of Say's Law, as suggested by Ricardo and others, can also be explained in terms of Walras Law. When money is not demanded for its own sake but is spent as soon as it is received, the economy, despite the use of money, is a barter economy, in which the total value of all goods demanded is always identically equal to the total value of goods supplied.

$$\text{Then} \quad \sum_{i=1}^{n-1} p_i d_i = \sum_{i=1}^{n-1} p_i s_i$$

The above analysis rules out any possibility of aggregate supply of all goods exceeding their aggregate demand. However, if money is assumed to act not only as a 'unit of account alone, but also a medium of exchange, the Walras law tells us that when there is a demand for holding money and if aggregate demand for all (n-1) goods (the nth being money itself) has to equal the aggregate supply of all (n-1) goods, the demand for money must also be equal to supply of money, Symbolically, if.

$$\text{Then } \sum_{i=1}^{n-1} p_i d_i = \sum_{i=1}^{n-1} p_i s_i$$

$$d_n = s_n$$

Where  $n-1$  is the number of real goods and the  $n$ th good is money.

Hence when money acts as a medium of exchange also, Say's identity implies that money market is always in equilibrium, because regardless of prices, people supply commodities only to use the money so received to demand other goods immediately, no matter how short the time period. Mark Blaug observes that it is a very strong assumption because it implies that a change in the level of prices in no way disturbs the relation between the commodity markets and the money markets.

Another basic interpretation of Say's Law is his belief that people work not for the sake of work, but to purchase other things as a result of their working and getting remuneration. To be employed simply means 'to work in the fields or to start a shop or to sell one's own product in the market. The market was so simple that people spent their purchasing power either on tools or consumer goods. Saving and investment were not separate processes. The producer sold his product and not his labour. Products were exchanged for products.

### **Basic Assumptions of Say's Law**

The basic formulation of Say's Law was set in terms of a simple economy which is more or less a thing of the past. In such an economy, producers were mainly self employed. Things were produced to effect exchange and not to influence the aggregate variables of the economy. Basically, a free market economy was assumed and the basic characteristics of a free economy become the assumptions of Say's Law of Market. Some of the assumptions of Say's Law of Markets are given below :

1. There is no need of any government intervention.
2. The extent of the market is unlimited. It is capable of expansion up to any degree and new producers enter the market without dislodging the other producers.
3. To make the market mechanism absolutely flexible, interest rates were assumed to be flexible to adjust to the requirements of the economy.

### **Say's Law-Formulation by Pigou**

A.C. Pigou gave another shape to Say's Law of Markets in terms of employment. According to Pigou, if all the assumptions of Say's Law are accepted, there can never be unemployment. When a free enterprise and free exchange

economy is assumed, where any producer can join the process of production, there is no scope of involuntary unemployment. Since it is a free enterprise economy, there is competition also.

In a competitive set-up, you can sell more by reducing the price. In the same way, by accepting lower wage rates, any number of persons can be employed and hence there cannot be unemployment, i.e., if the supply of labour exceeds its demand at any given time, the market wage should fall down to absorb the surplus labour force. Classicals, therefore, held the view that if unemployment persists for a long period, it was due to wage rigidity (frictional unemployment) on account of the imperfections of labour market.

### **Critical Evaluation of Say's Law**

Nobody questioned the validity of Say's Law till 1929. It was working perfectly. There was no over-production, no unemployment and the market mechanism was working smoothly as envisaged in the Say's Law.

The depression of 1929 raised many brows over the working of Say's Law. As the depression deepened, many economists started questioning the basic postulates of classical economics, thereby directing a very severe attack on Say's Law. In 1936, J.K. Keynes, a reputed monetary economist worked a virtual revolution and rejected Say's Law without qualification on the ground that aggregate demand need not always be equal to aggregate supply.

Keynes' attack on Say's Law in 1936 was not the first attempt to criticise the classical system. In the literature of 1900 to 1936, we find numerous efforts to challenge the prevailing orthodox theory of automatic adjustment. The most valiant effort was made by Hobson, but he failed because his tools of criticism were inadequate for the task. In France, in 1909, Aftalion openly attacked Say's Law by giving us some econometric models of business cycles. In the U.S., J.M. Clark also challenged the capacity of the economic system to make automatic adjustments, needed to ensure full employment. He doubted that flexibility of prices, wages and interest rates could be relied upon to ensure full use of productive resources.

But all these economists could not challenge the working of this law in a well-knit body of arguments. It was only Keynes who in 1936 gave the severest blow to the economic system advocated by the classicals. According to Paul Sweezy, "Historians fifty years from now may record that Keynes' greatest achievement was the liberation of Anglo-American economics from tyrannical dogma (Say's Law).

Say's Law of Markets is criticised on the following fundamental grounds by Keynes :

1. Say's Law implies that we earn only to spend. All that is earned

by way of selling the product of a producer is either consumed or spent on tools etc. This was however, not supported by actual facts. Keynes pointed out that aggregate demand could be less than the income earned by the factors of production. The basic logic behind this argument was that money is a store of value also. Out of the total income money acts as earned, some part of it is saved for individual's personal holding. And all that is saved is not necessarily invested.

2. The depression of 1929 gave another big blow to Say's Law. If supply can create its own demand, there was no reason of stocks piling up in factories for want of demand. During the period of piling up stocks, and mounting unemployment, Say's Law stood practically discredited.
3. Full employment through wage-cuts was another fallacy which was criticised heavily. Keynes argued that wage is a double-edged weapon. If it is a cost to the employers and products, it is also an income to the labourers. By reducing wages, we also reduce the purchasing power of the labourers which reduces the aggregate demand.
4. Flexibility of interest rates was also not accepted to be the guiding force for making investments.  
According to Say, savings could not pile up as increased savings decrease the rate of interest and people become interested in investing. Saving, actually depended on the level of income and not the rate of interest.
5. Then the basic assumption of classical system, the free market economy, is also not real. In the product as well as factor market there is an element of monopoly or imperfect competition. These imperfections hinder the working of Say's Law of Markets.

### **Say's Law in the Modern Setting**

The criticism of Say's Law given above forcefully makes us condemn this law as completely impracticable. Modern economists have completely given it up because modern conditions do not provide the framework in which it works. Barter economies are a thing of the past. Free enterprise and free exchange is totally missing. Wages have become rigid. Rates of interest have become sticky. These days, when production is based on anticipation of demand, Say's Law has little validity. This law may have some validity at the micro level. In aggregate terms supply cannot and does not create its own demand.



J.A. Schumpeter has, however, defined the law by saying that Say never meant what is said about the law. He never gave the sweeping statement that all supply creates its own demand. What he actually meant was that a good deal of production was always meant to be consumed and the rest, if saved, is likely to be invested generally. Even Keynesian dictum that  $Y = C + I$  shows the general validity of Say's Law though he never accepted Say's Law explicitly. Secondly, the automatic process of adjustment between supply and demand thought over by Say is not acceptable to the modern economists. There is always a deficiency of aggregate demand which has to be made by some other forces like Government.

To sum up, Say's Law was not an exercise in vain. Its spirit is still alive. To quote J.A. Schumpeter again, most people misunderstood it, some of them liking, others disliking what it was they made of it. And a discussion that reflects little credit to all parties concerned dragged on to this day when people armed with superior technique, still keep chewing the same old cud each of them opposing his own misunderstanding of the law to the misunderstanding of other fellow, all of them contributing to make a bogey of it."<sup>1</sup>

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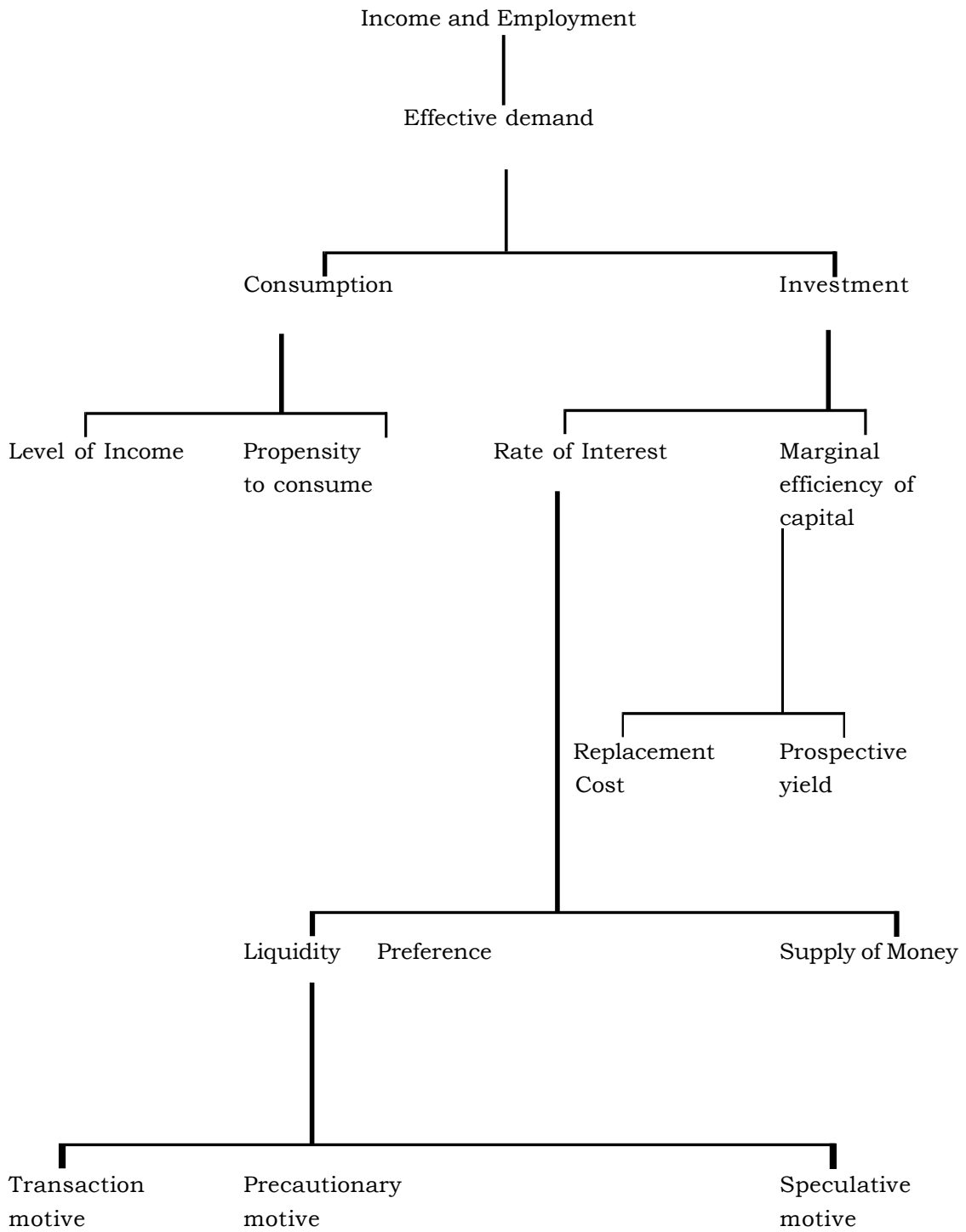
**LESSON NO. 1.4**

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**KEYNESIAN THEORY OF INCOME AND EMPLOYMENT**

General Theory of employment, Interest and Money, the epoch-making book written by Lord Keynes, was published in 1936. It is an important landmark in the history of economics. Lord Keynes has elucidated his theory of Income and Employment in this work. When this book were being written there was widespread unemployment in all countries of the world which was passing through a severe wave of depression. The level of income had reached the lowest points and the people had to face great hardships. Keynes observed this critical and distressing situation and thought of finding some solution to this problem. He was very much clear about it that if policies based on classical economics were adopted, the situaton would further deteriorate. He repudiated the old or classical theory and propounded a new theory which completely revolutionised the economic theory. Keynesian theory marks a revolution in economic thinking. In a way, it is a product of conditions prevailing at that time. Keynes has used the terms 'Output and Employment' in the same sense. When employment increases, production increases and as a result of it there is a rise in the level of income.

Keynes makes use of the amount of labour employed as a measuring yardstick of output as a whole, since there is no other satisfactory measure for output. When output increases, employment also increases and vice versa.

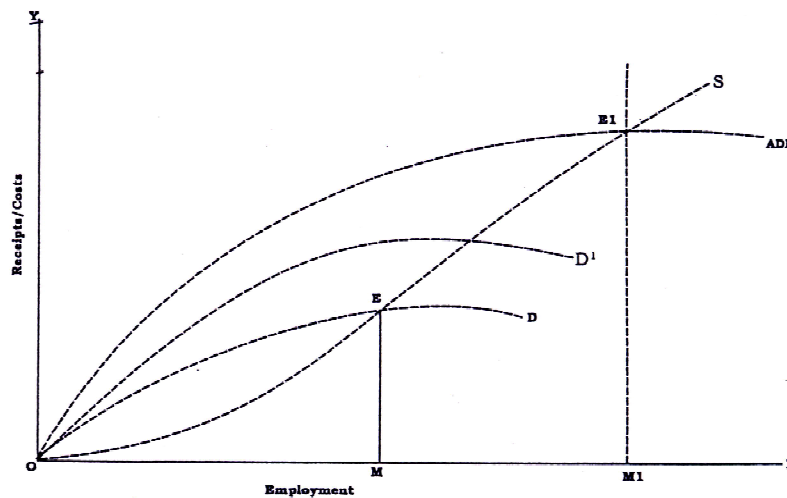


The concept of effective demand is aggregative in nature. It depends upon the aggregate demand function and aggregate supply function. It is determined by the point of intersection of the two functions.

Aggregate demand function is a schedule of the various amounts of money which the entrepreneurs in an economy expect from the sale of their output at varying levels of employment. Aggregate supply function is a schedule of the various amounts of money which the entrepreneurs in an economy must receive from the sale of their output at varying levels of employment.

Aggregate demand function, thus, represents the receipts of the entrepreneurs which they expect at varying levels of employment, while aggregate supply function represents the costs. If receipts remain less than the costs, an employment will go on employing more and more labour. He will stop at the point where costs and receipts are equalised.

The whole of this proposition can be stated like this. Employment depends upon effective demand and effective demand, in turn, is determined by the aggregate demand function and aggregate supply function. Effective demand is the point where these two functions are balanced against each other. This can be illustrated by the following diagram:



In diagram employment is measured along X-axis and receipts and costs are measured on Y-axis. The curve OD represents aggregate demand function, while OS represents aggregate supply function.

The level of effective demand is indicated by that point where these two functions intersect each other. Equilibrium is reached at point E because here A.D.F. and A.S.F. receipts are greater than costs, producers would go on employing more men because they stand to gain thereby. They will stop employing more men at that point where the two become

equal to each other.

Although there is equilibrium at point E, yet this does not necessarily mean that equilibrium is at the level of full employment. The equilibrium between A.D.F. and A.S.F. can and often does take place at a point of less than full employment. The equilibrium between A.D.F. and A.S.F. can take place at full employment level, but the condition is that investment demand should be high enough to fill the gap between. Income and consumption corresponding to full employment. According to Keynes, investment demand is generally inadequate to fill the gap between the two. Suppose in the diagram given above, the conditions of full employment prevails when  $OM_1$  of labour is employed. In order to achieve this level of employment in the economy OD curve has to be shifted upwards. So equilibrium at point  $E^1$  depicts equilibrium at the level of full employment. Keynesian economics deals only with the short period. In the short period costs generally remain the same. Thus, Keynes assumes aggregate supply function to be given. He, therefore, devotes more attention to aggregate demand function.

Aggregate demand function is determined by two factors. One is consumption expenditure and the other is investment expenditure. So far as demand for consumption goods is concerned is relatively stable.

There are no sudden changes in it as it is determined by long established customs and traditions of the community. So, the main determinant of effective demand is investment. If more employment is to be offered, expenditure on investment goods has to be increased.

We can express this with the help of the following equation :

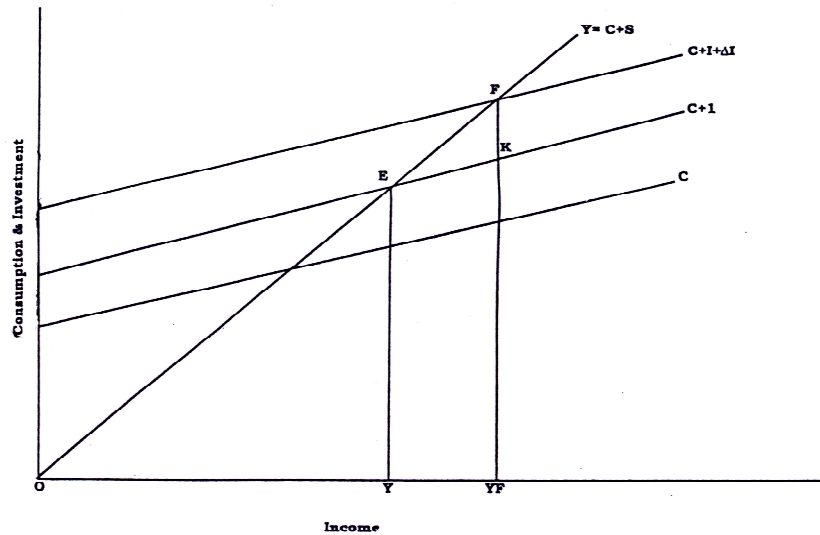
Effective demand = Consumption (it remains fairly stable) + Investment  
(it fluctuates).

Investment, in its turn, is determined by the rate of interest and the marginal efficiency of capital. Out of these two, the rate of interest is more or less sticky. Thus, the marginal efficiency of capital becomes the crucial determinant of investment. The M.E.C. is the expected rate of profit. When the marginal efficiency of capital increases, more funds are invested in productive activities. This leads to increase in income and employment. So, if we are to increase employment, the marginal efficiency of capital is to be raised.

The M.E.C. is determined by two factors. One is the supply price or replacement cost of any particular capital asset and the other is prospective yield which is expected to acquire from that asset during its life time. The first factor is known and is a definite quantity. The second factor is highly uncertain and indefinite. Thus, the expectations of the investor about the prospective yield are of crucial importance. The preceding discussion points out that if income and employment are to be increased such step should be taken as make the businessmen, producers and entrepreneurs hopeful about the prospective yield from the installation of new capital assets.

Determination of equilibrium level of employment by Aggregate and Aggregate Supply Functions.

Economic Theory revolves around two basic forces i.e., demand and supply. In order to see the equilibrium level of employment and income, we shall have to see the equilibrium point of aggregate demand and aggregate supply. Equilibrium level of employment will be determined at the point where aggregate demand curve and aggregate supply curve intersect each other. This is clear from the diagram given below :



In the above diagram income is measured along the X-axis and consumption and investment along the Y-axis. The 45° line or  $C + S$  line is the aggregate supply curve.  $C$  is consumption curve and  $C + S$  represents aggregate demand (demand for consumption goods and demand for investment goods) curve. Aggregate demand and aggregate supply lines intersect each other at point, E.

The equilibrium point is the point of effective demand.  $OY$  is the equilibrium level of income, if the level of income and employment is determined by the intersection of aggregate demand curve and aggregate supply curve. In other words, the level of income and employment is determined by effective demand.

But it is not necessary that equilibrium will always take place at the level of full employment. According to the classical economists, an economy always functions at the level of full employment. But Keynes points out that it is not true. According to him, most of the economies usually operate at less than full employment level. So, if  $OY$ , represents the income level corresponding to full employment then equilibrium at  $OY$  level of income is at less than full employment. If we want equilibrium to be established at the level of full employment then investment expenditure must be increased by  $FK$ . If investment is increased by  $FK$  then given the propensity to consume (as shown by curve  $C$ ), the aggregate

demand curve will be  $C + I + \Delta I$  cuts the aggregate supply curve  $C + S$  at F which corresponds to full employment income OY.

The difference between income and consumption is called savings and whatever the level of income, if this leakage from the income stream is not made good by investment, income cannot be maintained at the level. Now savings and investment are done by different persons in the economy and for different reasons. Savings are largely governed by income, while investment is determined by the marginal efficiency of capital and the rate of interest.

Investment so determined may not fill the savings gap corresponding to full employment income and consumption. Thus, there is every possibility that equilibrium may be established at a point much below the level of full employment. Special steps would, thus, be necessary to increase investment in order to achieve full employment.

The Keynesian scheme of income and employment is presented here in a tabular form. A survey of it reveals the factors which determine the level of income and employment.

#### **1. Difference between Keynesian and Classical Economics**

- (i) Classical economics asserted that an economy is always at the level of full employment. It might depart from full employment equilibrium only for a short period, but it would be restored through wage adjustment. A cut in money wages would lead to reduction in costs and hence to a fall in prices. As a result demand would increase and more labour would be employed till full employment is reached. But, according to Keynes, most of the economies usually operate at less than full employment level. When income increases, consumption increases, but not at the same rate. So there is a gap between the two. Investment is required to fill this gap. Effective demand is the sole determinant of income and employment.
- (ii) Classical theory is based on the concept of a static economy, while Keynesian theory is dynamic in nature. Keynes laid great emphasis on future expectations and, thus, analysed conditions. But classical economists concentrate only on full employment equilibrium.
- (iii) Classical theory is related only to full employment. Classical economists were of the view that general unemployment and general over-production were impossible. But Keynesian theory is a general theory. He considered all situations ranging from general unemployment to full employment. He studied how the level of income, output and employment was determined in the economy and what were the factors which determined it.
- (iv) Keynes has integrated theory of money with the theory of value and output in his early age. Keynes was an authority on monetary theory and monetary policy. When he formulated his general theory, he acclaimed money to be one of the main determinants of output and employment in the whole

economy. Classical economics kept these theories separate and dealt with them as if they were not related to each other.

- (v) Classical theory is not realistic, while Keynesian theory is realistic and is of practical significance.
- (vi) Classical economists believed that every increase in money supply would lead to inflation. This theory assumed full employment in the economy. But Keynes repudiated this theory. He pointed out that increase in money supply would lead to inflation only after full employment. But full employment is a rare phenomenon and an economy remains usually at less than full employment level. In such a case, increase in money supply would rather lead to more employment and more output and it might not, thus, necessarily result in inflation.
- (vii) Classical economists advocated the policy of balanced budgets. On the contrary, Keynes held the view that decision regarding a balanced or an unbalanced budget should depend on the economic situation. If there is widespread unemployment in the economy, the policy of deficit budget should be adopted to step up the tempo of economic activity.
- (viii) Classical economists, especially Pigou, held this belief that a cut in money wages can remove unemployment and bring the economy to the level of full employment. But Keynes held that this theory is not only unrealistic, but also theoretically unsound. Wages do not constitute only cost, they are also worker's income. So, if income is reduced, effective demand is also curtailed. Thus, a cut in money wages would not lead to full employment.
- (ix) According to classical economists, the rate of interest is determined by the intersection of saving and investment curves. Keynes says that interest is the reward for parting with liquidity. It is determined by the liquidity preference (demand for money) and supply of money.

### **Importance of the Keynesian Theory**

#### **(a) Theoretical Importance of Keynesian Theory**

- (i) Keynes repudiated the classical assertion that there is always a tendency towards full employment of resources in the economy. He visualised the possibility of underemployment equilibrium. In other words, Keynes has proved on a theoretical basis that an economy is usually at the level of less than full employment. By adding investment expenditure the level of income based employment can be raised.
- (ii) Keynes has adopted the macroapproach in economics and he has based his theory of output and employment on this approach. The pre-keynesian economics was based on the microapproach. In microapproach or in microeconomics individual commodities, individual consumer and



individual firms are studied. But Keynes dealt with aggregates. He analysed the economy as a whole and he explained how in a country aggregate demand, aggregate supply, aggregate employment and general level of prices are determined. Thus, he succeeded in giving an altogether some thing new to economic theory.

- (iii) Keynes has adopted new techniques for economic analysis. He has developed new concepts like liquidity preference, multiplier, consumption function and investment function.
- (iv) Keynes developed the theory of a monetary economy and, thus, integrated the theory of money with the theory of value and output.
- (v) Keynes for the first time introduced the dynamic element in economic theory.
- (vi) The great character of Keynesian theory is another contribution of Keynes. His theory is applicable to all situations, i.e., underemployment, full employment and more than full employment. The classical theory was applicable only to full employment situation.
- (vii) Keynes pointed out the great importance of future expectation in taking investment decisions. This was a great step forward in the development of economic situation.
- (viii) Keynes has shown investment to be a very important determinant of employment in a country. By increasing the amounts of investment, the level of income and employment can be raised. This has simplified the whole analysis of output and employment.
- (ix) Keynes has given a clear cut explanation of the concept of inflationary and deflationary gaps. This has rendered devising of an appropriate policy for eliminating economic fluctuations fairly simple.

**(b) Practical Importance**

- (i) Keynes has shown, on the basis of his theory, as to what monetary policies will serve within different situation. He has also pointed out its limitations. Central banking control over credit now occupies a very important place in the monetary policy of a nation and economic policies are devised accordingly.
- (ii) Keynesian theory also serves as the basis of budgetary policy or fiscal policy. Keynes gave a very important place to fiscal policy in his programme for full employment. When there is depression in the economy resort to fiscal measure should be the way out. Public works programme should be started to fight out depression and unemployment. In fact, modern governments have accepted public works programmes as part of their unemployment fighting programme.

- (iii) It is due to the impact of the Keynesian theory that so much attention is being given to social accounting. New statistics of national income and output are collected in almost every country. This has enabled government and economists to evolve and adopt suitable economic policies.
- (iv) Keynes has demolished the classical doctrine of balanced budget. A budget should be balanced or unbalanced according to the need of time. The budgetary policy of the government should be decided in the light of economic situation prevailing in the country. Keynes has advocated the policy of deficit budgeting in order to eradicate unemployment from an economy. It helps in stepping up the volume of income, output and employment. This policy has proved quite useful in some cases.
- (v) Keynesian theory had dealt a fatal blow to the old policy of laissez faire. He was of the view that state interference in economic matters in certain cases is in the interest of public and the economy. He opined that full employment cannot be achieved automatically. If full employment is to be achieved, the government has to intervene actively to step up the effective demand in the economy. Keynesian influence on economic policy can be seen from the increasing intervention of the government in the economic affairs of the country for the general welfare of the public.

**Criticism of the Keynesian Theory :**

Lord Keynes is not without his critics. The following are the main points of criticism to which Keynesian theory has been subjected :

- (i) This theory is applicable only to developed countries. The main problem of developed countries is their economic instability. On the other hand, underdeveloped countries are faced with the problem of economic development. The measures advocated by Keynes for the removal of unemployment are not very useful for underdeveloped countries like India. Here unemployment is not due to cyclical fluctuations in effective demand. It is a chronic problem resulting from a large number of social, economic and political factors.
- (ii) It is also pointed out that Keynes has altogether ignored micro-analysis and problems of individual economic units. He has dealt with aggregates only. But for a satisfactory analysis and solution of certain economic problems, it is necessary to employ both micro and macro approaches.
- (iii) Another point of criticism is that Keynes has not given any place to accelerator principle in his view on trade cycle. He has, therefore, given undue importance to multiplier. The modern theory of trade cycle is based on the interaction between multiplier and accelerator.
- (iv) It is also said that Keynes has laid excessive emphasis on the role of money in

his theory. The Keynesian theory states that an increase in money supply will lower the rate of interest, which in turn, will encourage investment. Increased investment will lead to more employment and more income. But the rate of interest is not the only factor on which investment depends. There are other factors like techniques of production, efficiency of labour, material resources of the country etc. which also effect investment and production.

- (v) The application of Keynesian theory is limited only to capitalistic economy. It does not apply to a socialistic economy. In a socialistic economy capital belongs to the State and the State invests in it. Thus, the government regulates and controls the investment activity. So the marginal efficiency of capital has no role to play. Again, there is no cyclical unemployment in a socialistic country.
- (vi) Even in the case of capitalistic countries Keynesian theory has a limited application. Keynes has based his theory on the assumption of perfect competition in the economy. But, in reality, this is a rare phenomenon.
- (vii) Keynes has not made any allowance for the concept of time lag in his analysis. He seems to assume that as soon as income increases, consumption also increase. But consumption takes some time to increase. The effect of increase on consumption is not instantaneous. This is one of the main defects in his theory.
- (viii) Keynesian theory is a short-term theory and it does not pay much attention to long-term effects. He himself once remarked, "In the long-run we are all dead."

Thus, Keynesian theory has been criticised on the grounds given above. But we have to acknowledge the fact that inspite of these weaknesses, it has exerted a profound and lasting influence on economic thought and economic policy.

The Keynesian theory is of great theoretical and practical importance.

**BOOKS FOR STUDY (L NO. 1 to 4)**

- |    |                |   |                                     |
|----|----------------|---|-------------------------------------|
| 1. | Gardner Ackley | : | Macroeconomic Theory                |
| 2. | E. Shapiro     | : | Macroeconomic Analysis              |
| 3. | M.C. Vaish     | : | Macroeconomic Theory                |
| 4. | A.H. Hansen    | : | A Guide to Keynes                   |
| 5. | Gupta, R.D.    | : | Keynes and Post-Keynesian Economics |
| 6. | D. Dillard     | : | The Economics of J.M. Keynes        |

**Questions for Practice (L NO. 1 to 4)**

**(Long Answer-Type questions)**

1. What is aggregative economics ? What is its importance and limitations ?

2. Distinguish between Microeconomics and Macroeconomics. What is the importance of each ? Do they really represent two different approaches to the study of economics ?
3. Classical model of income, output and employment determination has been called a partial analysis. Do you agree ? Give arguments.
4. Explain fully the classical theory of employment.
5. What do you understand by effective demand ? How does it determine the level of employment in an economy ?
6. Discuss the main points of difference between the Keynesian theory and classical theory of employment.

**Short-Answer Type Questions**

- (1) What is effective demand ?
- (2) What do you mean by :
  - (a) An economic model
  - (b) A variable
  - (c) Money rate of interest

**Lesson No. 1.5****THE CONSUMPTION FUNCTION**

As you already know, the use of goods and services for the satisfaction of wants is known as consumption in economics. For example, we take chapati, milk and fruit to satisfy our hunger and water to quench our thirst. We use the services of a doctor in case we fall ill. In all these situations there is consumption of goods and services. Every family spends a part of its income on consumption and in many cases the whole of it may be spent on consumption. That part of the total income which is spent on consumption is known as consumption expenditure. Just as an individual spends eighty or ninety percent of his income on consumption, similarly, the whole of the society spends a major part of its income on consumption. Consumption expenditure depends on many factors, e.g., national income, past savings of the society, rate of interest, trade and especially income. This functional relationship is also known as the propensity to consume. The propensity to consume denotes not only the desire to consume, but the actual or expected real consumption out of a given level of income. This relationship between income and consumption can also be expressed with the help of the following equation :

$$C=f(Y)$$

Where C stands for consumption, Y for income and f implies function. In other words, we can say that consumption is a function of income. It means that consumption (C) depends on income (Y). Generally speaking, when income increases, consumption expenditure also increases, but by a somewhat smaller amount. In this way consumption function or the propensity to consume express the relationship between two quantities.

**The Average and the Marginal Propensity to Consume :**

At any time the average propensity to consume is the ratio of total consumption to total income. If a person spends eighty percent (80%) of his income on consumption,

his average propensity to consume is  $\frac{80}{100}$  or 0.8.

$$\text{The average Propensity to Consume (APC)} = \frac{\text{Total Consumption}}{\text{Total Income}} = \frac{C}{Y}$$

The following diagram indicates the Average Propensity to Consume.

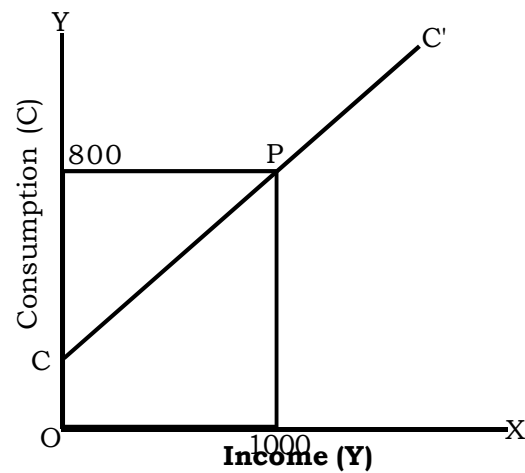


Fig. No. 1

In Fig. No.1.  $CC^1$  curve denotes the propensity to consume. At any point in this curve we can easily find the average propensity to consume. For example, at point P, where income is Rs. 1000 and consumption is Rs. 800, average propensity to consume will be

$$\frac{800}{1000} \text{ or } \frac{8}{10} \text{ or } 0.8$$

### **The Marginal Propensity to Consume :**

When an individual's income increases, his consumption expenditure definitely increases. Keynes' fundamental law emphasises this point that when income increases consumption expenditure also increases, but by a somewhat smaller amount. The ratio of a small increase in consumption to a small increase in income is known as the Marginal Propensity to Consume. This ratio is always positive, but less than one.

$$\text{The Marginal Propensity to Consume} = \frac{\text{Change in Consumption}}{\text{Change in Income}} = \frac{\Delta C}{\Delta Y}$$

$\Delta$  (Delta) denotes a small change (increase in this case).

$\Delta C$  denotes a small increase in consumption and

$\Delta Y$  denotes a small increase in income.

The following diagram indicates the marginal propensity to consume.

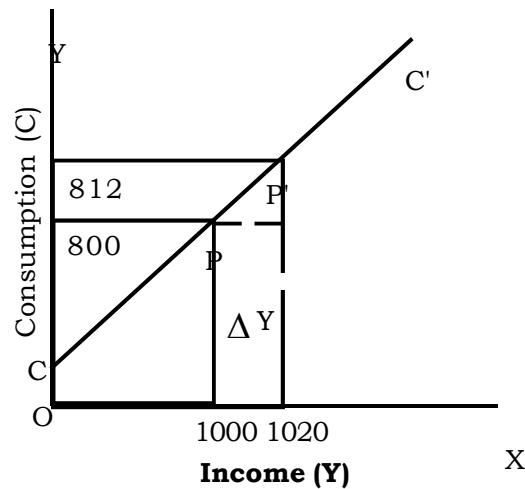


Fig. No. 2

In Fig. No.2 like that in Fig. 1  $CC'$ , indicates the propensity to consume. At point, P, income is Rs. 1000 and consumption is Rs. 800. At point  $P'$  income is Rs. 1020 and consumption Rs. 812. The marginal propensity to consume is

$$\frac{12}{20} \text{ or } 0.6 \text{ or } 60\%$$

$$\therefore \text{ the Marginal Propensity to Consume (MPC) } = \frac{\Delta C}{\Delta Y} = 0.6$$

If the Marginal Propensity to Consume is known, we can find out the marginal propensity to save

$$\begin{aligned} \text{The Marginal Propensity to Save (MPS)} \\ = 1 - \text{M.P.C.} \end{aligned}$$

$$\begin{aligned} \frac{\Delta S}{\Delta Y} \\ = 1 - 0.6 = 0.4 \end{aligned}$$

From this we can draw the conclusion that the marginal propensity to consume plus marginal propensity to save is always equal to one. The total of both of these propensities is equal to one. If we know one of them, the other can easily be found.

The marginal propensity to consume declines with an increase in income. This is because of the society's tendency to consume less than before out of every increase in its income.

The average propensity to consume and the marginal propensity to consume can be

explained with a hypothetical schedule as follows :-

<b>Income (Y)</b>	<b>Consumption (C)</b>	<b>Average Propensity to Consume</b>	<b>Marginal Propensity to Consume</b>
(Rupees)	(Rupees)	$A.P.C. = \frac{C}{Y}$	$M.P.C. = \frac{\Delta C}{\Delta Y}$
1000	950	$\frac{950}{1000} = 0.950$	-----
1010	959	$\frac{959}{1010} = 0.949$	$\frac{9}{10} = 0.9$
1020	967	$\frac{967}{1020} = 0.948$	$\frac{8}{10} = 0.8$
1030	974	$\frac{974}{1030} = 0.946$	$\frac{7}{10} = 0.7$
1040	980	$\frac{980}{1040} = 0.942$	$\frac{6}{10} = 0.6$
1050	985	$\frac{985}{1050} = 0.938$	$\frac{5}{10} = 0.5$

The above schedule indicates that as income increases, consumption also increases, but by a somewhat smaller amount.

As an individual's income increases, the average propensity to consume and the marginal propensity to consume both decline but the rate of fall in case of the marginal propensity to consume is more than that in case of the average propensity to consume. The marginal propensity to consume in the case of poor people is more than that in the case of rich people. It means that as a rich person's income increases, because his basic needs or requirements are already fulfilled, his tendency to save will be more. Therefore, the marginal propensity to consume of the rich is always lower than that of the poor.

### **Keynes' Psychological Law of Consumption**

As we have discussed above, when a person's income increases or a community's income increases, consumption also increases, but not at the rate at which income increases. This is Lord Keynes' Fundamental Law of Consumption. This law is based upon the following three related propositions :

(1) When aggregate income increases, consumption expenditure will also



increase, but by a somewhat smaller amount. It means that MPC is positive, but less than unity.

(2) The increment in income will be divided in some proportion between consumption and saving.

(3) The increment in income is unlikely to lead either to a fall in consumption or to a reduction in saving that the community was doing before this increment. It, thus, emphasises the short-run stability of the consumption function.

**Assumptions of the Law :**

Lord Keynes' law is based on certain assumptions, and if these assumptions do not hold good, the law will not operate.

**(i) The present Psychological and Institutional Complex remains Constant :**

The propensity to consume is affected not only by income, but also by other factors such as population, price etc. As we want to know the relationship between income and consumption we assume that there is no change in factors other than income that can affect consumption. This means that other elements like distribution of income, level of prices, size of population etc. remain constant.

**(ii) Normal Conditions :-** Secondly, we assume that the conditions should be normal. In case of abnormal conditions like war, revolution or hyper-inflation etc. this law does not hold good.

**(iii) Capitalistic Economy :-** Thirdly, this law is applicable to a rich capitalist economy because in such an economy people's basic wants are already fulfilled. The question -of choice between consumption and saving does not arise in poor countries because in the case of people living in these countries there are many wants which are yet to be satisfied. Therefore, in many cases, the whole of the additional income may be spent on consumption and there may be no saving.

**Factors determining the Consumption Function or the Propensity to Consume :**

Though the propensity to consume is stable in the short run, yet it is not completely unchangeable. There are certain factors which do play a part in changing the marginal propensity to consume. Some of these factors are explained below :

**(i) Level of National Income :-** The level of national income influence the national consumption and saving. As the level of national income rises, the propensity to consume will fall but the propensity to save will increase.

**(ii) Distribution of Wealth :-** When national income and wealth of a country are unevenly distributed, the marginal propensity to save will be more than the marginal propensity to consume. On the contrary, if national income is distributed more equally and evenly, the marginal propensity to consume will be more than before, but the marginal propensity to save will fall.

**(iii) Social Security :-** If there exists good social security arrangements in a country, people can spend a major portion of their income at present because, in times of old

age, illness, unemployment etc. the government will come to their rescue.

**(iv) Fiscal Policy :-** People's marginal propensity to consume increases whenever there is a reduction in taxes.

**(v) Changes in the Rate of Interest :-** When the rate of interest increases, people save more to take advantage of this increase and, therefore, their consumption expenditure falls.

**(vi) Windfall Gains and Losses :-** Windfall gains and losses also affect the propensity to consume. When the prices of shares of companies in the speculative markets increase the result is that the capitalists earn a large amount of profits and this in turn, raises the propensity to consume. On the contrary, if the prices of the shares are on the decline, the capitalists suffer heavily with the result that the propensity to consume falls.

**(vii) Change in Future Expectations :-** Not only the present expectations but future expectations also affect the propensity to consume. The out break of a war and people's fear that a commodity may become scarce, may shift the propensity to consume upwards.

**(viii) Holding of Liquid Assets :-** If people already hold sufficient liquid assets which can be converted into money at any time, they will spend more out of their current income and this will increase the propensity to consume. On the contrary, if they have very limited liquid assets they will spend less out of their current income and with this propensity to consume will fall.

**(ix) Miscellaneous Factors :-** Apart from the factors discussed above, there are other factors which are of somewhat lesser importance. They also affect the propensity to consume. Some of these factors, which affect propensity to consume in the long-run are change in fashions, availability of substitutes, predictions about future, cash balance etc.

#### **Importance of the Consumption Function :**

**1. Consumption Function helps to Invalidate Say's Law of Markets :-** The study of the consumption function reveals that Say's Law of Market 'supply create its own demand' is defective or wrong. Consumption function shows that the whole of income is not spent on consumption ( $M.P.C. < 1$ ). Therefore, there is a possibility of over-production and hence of unemployment.

**2. It Highlights the Importance of Investment in the Theory of Employment :-** The consumption function also reveals that the major cause of change in the level of income and employment is the instability of investment and not the propensity to consume. In the short run, the propensity to consume is almost stable. It is, therefore, obvious that investment plays an important role in determining the level of income in a country.

**3. It Helps to explain the process of Income Generation :-** The consumption function is the basis of the multiplier. We shall study about it in a separate lesson.

Since the marginal propensity to consume is less than one, the value of the multiplier is greater than one and, when investment increases, income increases by multiple times the increase in investment.

**4. It helps to explain the turning points of the Business Cycle :-** The consumption function provides us the knowledge about the turning points of the business cycle. The value of the marginal propensity to consume, which is less than one, explains the cause of upper turning and lower turning points of a cycle. In other words, the cause is the failure of people to spend on consumption the full increment in their income. Similarly, the cause of lower turning point is the failure of people to curtail their consumption by the full decrement in their income. The standard of living once achieved and enjoyed is difficult to cut.

**5. It helps to find out the difference between Income and Consumption :-** The consumption function helps us to find out as to how much a country spends on consumption out of its income. We also know that the difference between income and consumption of a community is its saving. If investment does not increase by this amount, there is danger of a fall in income.

**Lesson No. 1.6****THE MULTIPLIER****THE MULTIPLIER****(A) MEANING :**

The concept of multiplier has an important place in the Keynesian theory of income, output and employment. It is considered as one of Keynes's path breaking contributions and is an important tool of economic analysis. According to Keynes, employment depends upon effective demand. The latter depends upon consumption and investment. In other words,

$$Y=C+I.$$

where Y stands for income, C for consumption and I for investment.

According to Keynes, consumption function remains stable in the short period. As MPC (marginal propensity to consume) is less than unity, all the increase in income is not consumed. A gap comes to exist between the income produced and consumed. This gap is filled by investment. Keynes believed that an increase in investment increases the final income many times more. To this relationship between the increase in investment and the increase in aggregate income, Keynes gave the name of 'Investment Multiplier'. Other people have called it 'Income Multiplier'.

Keynes borrowed the concept from R.F. Kahn's 'Employment Multiplier' and modified it into his Investment Multiplier. He states, "Multiplier is the ratio of the final change in income to the initial change in investment. It is the ratio which gives expression to the quantitative relationship between the final increase in national income brought about by the increase in investment. The relationship can be expressed algebraically as :-

$\Delta Y = K \Delta I$ ,  $\Delta$  stands for small change, Y for national income, K for multiplier and I for investment.

Hence  $K = \frac{\Delta Y}{\Delta I}$ , i.e., K is equal to the ratio of the increase in income to the

increase in investment, which brings about the increase in income.

For example, if the investment increases by Rs. 10 crores and the national income increases by Rs. 30 crores, then the multiplier is 3. This happens because investment not only increases the income in the industries where the investment is originally made, but also in other industries whose output is demanded by men employed in investment industries.

**(B) Value and Working of Multiplier :**

The value of the multiplier is determined by the value of MPC. Large MPC means large multiplier and vice-versa. The value of the multiplier can rarely be one because consumption always increases when income increases. This is so because MPC is never zero. Again, multiplier can never be equal to infinity, because as Keynes argues, MPC is positive but less than unity. The general formula for the multiplier is

$$K = \frac{1}{1 - \frac{\Delta C}{\Delta Y}}, \text{ Where } K \text{ stands for multiplier and } 1 - \frac{\Delta C}{\Delta Y} \text{ for the marginal}$$

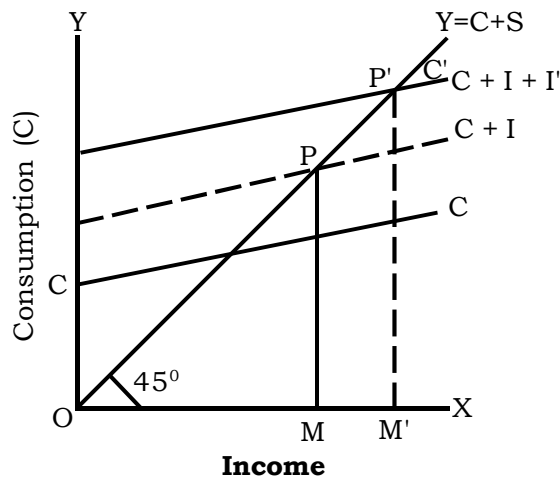
propensity to save. In other words, the multiplier is the reciprocal of the marginal propensity to save i.e.,

$$K = \frac{1}{MPS} \text{ or } \frac{1}{K} = 1 - \frac{\Delta C}{\Delta Y} = 1 - MPC = MPS : \text{ Hence larger the MPC, larger}$$

the multiplier and larger the MPS, the lower the multiplier.

The income, of course does not increase all at once. Process of income increase is spread over time. But Keynes does not attach much importance to 'time lag' involved in the process of income generation.

The multiplier effects of investment on income can be shown graphically as follows :



**Fig. I**

The line at 45° shows that  $Y = C + S$

CC (consumption curve) drawn on the basis that MPC is 0.5, at all levels. OM gives the equilibrium level of income.

When investment rises from  $C + I$  to  $C + I + I^1$ , the new curve intersects the 45° line at  $P^1$ .  $OM^1$  gives the new level of income. It is greater than the old level of income of OM by  $MM^1$ .

This is double the distance, between  $C + I$  and  $C + I + I^1$  curves. Assuming MPC equal to 0.5 (or  $\frac{1}{2}$ ), the multiplier will be two. Thus, the original increase in investment leads to the double increase in income.

The multiplier works in the forward as well as the backward directions. If the investment decreases, say by 10 crores, the income will decrease by 20 crores (MPC =  $\frac{1}{2}$ ) (or 0.5)  $K = 2$ .

As Keynes assumes that changes occur simultaneously in investment, consumption & income, his multiplier is called 'Simultaneous Multiplier'. It is also known as the static Multiplier. He assumes that there is no time lag and all adjustments in income and consumption, in response to increase in investment, are instantaneous. But in actual practice, things do take time to happen. There is always an expenditure lag between income and consumption. There is some time interval between the earning and the expenditure of income.

**(C) Limitations :**

There are a large number of difficulties or limitations which beset the working of the multiplier.

**1. Supply of Consumer goods :-** If income rises, but there is a shortage of consumer goods, the income receivers will not be able to spend more on consumption. This will lead to a decline in MPC, and hence the multiplier. Thus the availability of consumer good places a limit on the value of the multiplier.

**2. Maintenance of Investment :-** A one-time investment will help to raise the income to a new equilibrium level. But as the multiplier effect gets worked out, income will fall to its original level. Steady injections of investment are necessary if the income is to be kept at the new level.

**3. Other Considerations :** Considerations other than maximisation of profit cannot be taken for granted. For multiplier to have positive effects on income and employment, particularly in a period of depression steady flow of investment is necessary. But considerations other than profit maximisation cannot be granted to ensure this flow.

**4. Multiplier Period :** Multiplier period is another important limitation or qualification in the working of the multiplier. Multiplier period may be defined as the gap or interval of time between successive expenditures on consumption. It has been observed that there is a time lag between earning and spending of income and again between spending and its reappearance as income. The greater the length of this period, the fewer are the secondary expenditures on consumption and the smaller the value of the multiplier. The opposite is equally true.

**5 Direction of Net Investment:-** It must be ensured that any investment in one sector of the economy is not offset by a decline in some other sector of the economy. A decline of investment in some other sector may cause a greater decline in national income. Hence the importance of direction of net investment is important in determining the value of the multiplier.

**6. Full Employment Level :-** The output, income and employment can expand so long as there are unemployed or under-employed resources available in the economy. Once the full employment level is achieved, output and employment will stop expanding, however high the MPC may be.

**7. Effect of induced Consumption on Investment :-** Multiplier deals with the effect of original investment on consumption and hence on income. It does not deal with the effects of increased or induced consumption on investment (acceleration effects). Both the effects taken together would lead to greater increase in income and employment. Hence, the value of multiplier, as it is confined to the effects of investment on consumption alone, would not show the actual increase in income or employment.

**8. The Value of the Multiplier :** also depends on whether the economy is closed (where there is no foreign trade) or open (where there is foreign trade). If we consider the case of an open economy and if the balance of trade is unfavourable (value of imports exceeds the value of exports), there will be a leakage in the process of income propagation due to payment abroad. Hence, the value of the multiplier will be less than otherwise.

**9. Availability of other Resources :** If other resources, besides labour, like raw materials, capital equipment, etc. are not available, the working of the multiplier will not be smooth. Obstruction in its working will mean lowering its value.

**10. No change in Prices :** Multiplier assumes that prices do not change. But if they do, value of the multiplier is affected. If the prices rise consumption decreases, and the value of the multiplier will fall and vice-versa.

Infact, the simplicity of Keynes treatment of the working of the multiplier raises doubts in the minds of many writers and this makes it an imperfect tool. The process of income-generation is not so as Keynes makes it out. George S. Stigler calls the multiplier "The fuzziest of Keynes' General Theory".

**(D) Assumptions :**

Keynes' Multiplier is based on the following assumptions which, however, are not found in real life.

1. MPC remains constant during the process of adjustment.
2. There is no induced investment.
3. New investment is maintained long enough for the adjustment process to be completed.
4. Output of consumer goods responds to the effective demand for them.
5. There is no Government interference in the form of taxation or expenditure.
6. There is no time lag between increase in investment and increase in income and again between earning and spending, increase in income and increase in consumption.

These assumptions are so unreal that they limit the utility of the concept of the multiplier.

**Importance of the Multiplier :-** In spite of its limitations, the concept of the multiplier is of importance both to economic theory and practice. It establishes the great importance of investment as a major dynamic element in the economy. It shows that, besides creation of employment, there is generation of income throughout the system in the same way as outward expanding ripples, when a stone is thrown in a lake. In particular for economic policy, it has strengthened the case of public investment by pointing out that a small increase in investment brings about a large increase in income and employment. It is important in business-cycle studies forecasting and controlling fluctuations by promoting investment during the phase of depression and by reducing it when boom is reached. It is a useful analytical tool for the adoption of suitable employment policies.

The theory of the multiplier has brought about a revolution in the thinking of economists and policy makers. It has replaced the policy of laissez-faire (non-intervention by Government in economic matters) by one of intervention and consequent growth of the public sector in practically all the countries of the world.

**Leakages in the Operation of the Multiplier :-** There are several leakages from the income stream which slow down the process of income propagation. These are :

**1. Saving :-** A part of the increase in income is not spent on consumption, but is saved. This petering out of the income stream, limits the value of the multiplier. If the whole of the income generated as a result of additional investment is spent on consumption, additional increases in consumption will lead to full employment. Saving is leakage, and the higher the marginal propensity to save lower is the value of multiplier.

Again, the whole of the saving may not be invested and a part of them may be hoarded, i.e., withheld from the income stream.

**2. Debt Cancellation :-** Paying off past debts to persons or banks also constitutes a leakage if the recipient fails to spend the amount received on consumption. MPC is not, therefore, increased and the value of the multiplier is thereby reduced.

**3. Imports :-** Excess of imports over exports will mean that a part of the increased income as a result of increased investment will find its way to foreign countries. To the extent the foreign countries do not use this income for buying out exports, there is a leakage from the income stream of the country.

**4. Inflation :-** Any investment after the level of full employment of available resources has been reached in the country, will only lead to competition for these limited resources resulting in an increase in their prices. There is likely to be a scramble for these limited resources even at higher prices. A part of the increased income is dissipated and not used for promoting consumption, income and employment.

**5. Higher liquidity preference :** Higher liquidity preference will encourage keeping idle cash balances. This will cause reduction in expenditure on



consumption. This constitutes a leakage from income stream. The value of the multiplier will be affected at this leakage.

**6. Buying of Old Stock and Securities :-** No new income is created by these transactions which can influence consumption. Such transactions thus constitute leakage of income. The investment in them is only financial and not real.

**(E) Criticism :-** The unreality of the assumptions on which the concept of the multiplier is based and the serious limitations which have been pointed out, limit its utility and importance. D.H. Robertson, R.M. Goodwin and A.P. Lerner criticise Keynes for ignoring altogether the effect of consumption on investment (induced investment or acceleration effect). The concept is condemned as a cheap jackway of getting something for nothing. Prof. A.G. Hart calls the concept a useless fifth wheel. It adds for nothing to what is already implied in the concept of consumption function. Haberler accuses Keynes as “first describing something as necessarily true and then proclaiming as a discovery the length of the relationship made inevitable by definition-Prof. Hazlitt calls it “a myth”. He does not think that there could be a mechanical relationship between income, consumption and investment. Prof. Hutt calls it rubbish. Prof. Klein has shown that the relationship between the aggregate consumption and the aggregate income is not so simple as described by Keynes. He shows that consumption is not the function of income alone and MPC is not constant as assumed by Keynes.

All the same, a whole body of literature has grown up which employs the multiplier. Writers like Harrod, Hansen and Samuelson have tried to deal with its criticism and helped to make the whole analysis dynamic. The concept has undergone much improvement. It is now used as a tool for short-run and long-run analysis of income changes in the economy.

## **B. THE DYNAMIC MULTIPLIER**

### **(a) Meaning :**

Criticism has been levelled against Keynes that his multiplier is a static formulation and is unrelated to dynamic process of income generation. He is silent as to what happens between the initial stage of investment and the final increase in income. His multiplier functions under static assumptions shows income expansion from one point of equilibrium only. Writers who have come after Keynes have pointed out that the magnitude of the multiplier is affected by time lags. In other words; investment takes time to exert its full effect in raising income i.e., time lags will make the income grow more slowly than if they are absent. The real multiplier should take into consideration the dynamic forces working in the economy. Critics favour the replacement of the static multiplier by the dynamic multiplier which takes into account the changing conditions.

Current research to effect improvements in the theory of the multiplier has taken mainly two directions :

The first relates to the time it takes the multiplier process to work itself out.

The final equilibrium value is reached after a number of periods or units of time. It then becomes necessary to know what is the duration of a period, whether a day, a week, a month or a year. Johnson felt that causes and effect proceed together hand in hand and interval between them is not long.

The second direction relates to the determination of the amount of net investment associated with a given amount of spending under changing circumstances and the determination of the numerical value of the multiplier. The MPC of the individual is only one of the many factors important for the determination of the MPC (multiplier) of the society. Stability of the multiplier over time need not be overemphasised.

**(b) Dynamic Multiplier Action** :- In case of static multiplier, it is a movement from a position of equilibrium to a new equilibrium corresponding to a change in net investment of a given amount. To get a more complete picture, the path of movement from one equilibrium to the new one needs to be traced. This requires the treatment of the multiplier in the terms of the dynamic analysis. The analysis of the effect of a single investment can be extended over to the analysis of effect over time of a permanent change in investment.

**Illustration** :- Let the equilibrium be disturbed by an increase in net investment of Rs. 100 per period of time. The level of investment will exceed the original level by Rs. 100, not only in period I, but in all the following periods. The total effect of the rise in the level of investment is the aggregate effect over time of the individual investments. Two assumptions, however, are made :

- (i) All transactors have MPC of 0.5.
- (ii) All of them react to a change in income in the following period.

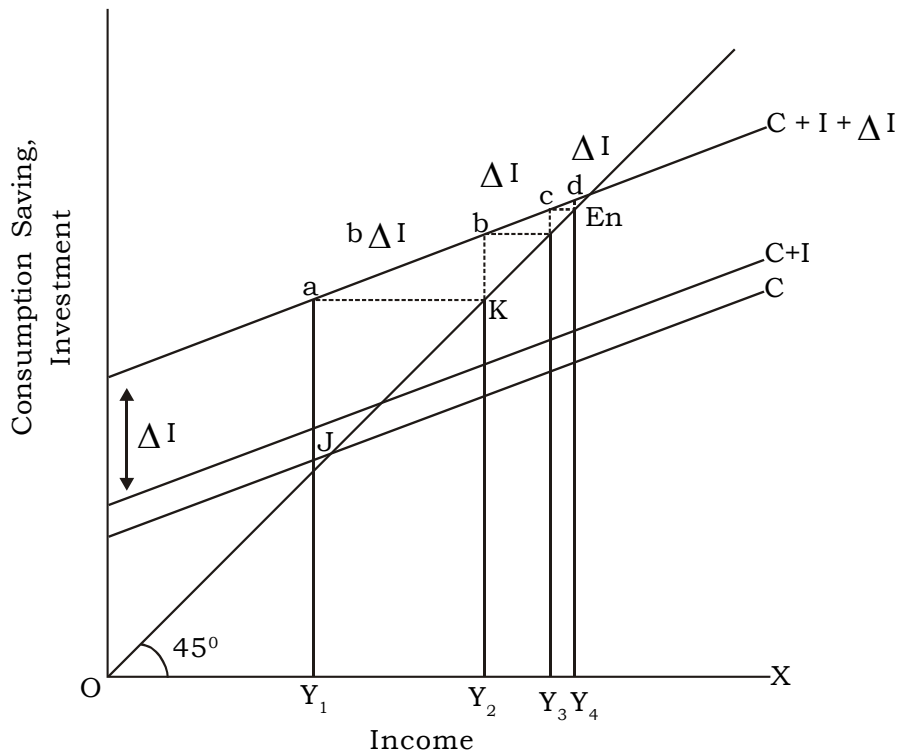
The following table shows the process resulting from a permanent increase in investment of Rs. 100 per period :

Period of investement	Increase in consumption	Increase in income	Increase in Total income
1	100	0	100.0
2	100	50	150.0
3	100	50 +25	175.0
4	100	50 + 25 +12.5	187.5
5	100	50 + 25 + 12.5 + 6.25	193.75
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
n	100	50 + 25 + -	200,00

The process of total income propagation can also be summarised as shown below :-

Period	Increase in income
Ist period	100
2nd	$100 + \frac{1}{2}100$
3rd	$100 + \frac{1}{2}100 + (\frac{1}{2})^2 100$
4th	$100 + \frac{1}{2}100 + (\frac{1}{2})^2 100 + (\frac{1}{2})^3 100$
nth	$100 + \frac{1}{2}100 + (\frac{1}{2})^2 100 + (\frac{1}{2})^3 100 + \dots + (\frac{1}{2})^{n-1} 100$
	$= 100 [1 + \frac{1}{2} + (\frac{1}{2})^2 + \dots + (\frac{1}{2})^{n-1}]$
	$= 200$

Or total income will be equal to  $Y_n = 100 [1 + \frac{1}{2} + (\frac{1}{2})^2 + \dots + (\frac{1}{2})^{n-1}]$



The final effect of the multiplier is achieved after a number of periods. The dynamic process of income generation is shown diagrammatically in the figure below :

In the above diagram, consumption, investment and savings are measured along the vertical axis and income along the horizontal axis, Curve 'C' shows consumption function has a constant slope. The vertical distance between the curves 'C' and  $C + I$  indicates original investment and that between ' $C + I$ ' and  $C + I + \Delta I$ , the new investment savings out of previous income are measured by the vertical distance between the  $45^\circ$  line and the curve 'C'. The system is in equilibrium at point J, where savings and investments are both equal.

In period I, there is increase in investment by  $\Delta I$  (Ja). This increases the total expenditure to  $Y_1$ . As a result of increase in investment, income in period 2 increases to  $Q_{y2}$ . The expenditure on consumption increases by  $bK$  ( $b\Delta I$ ) and the total expenditure now becomes  $Y_2$ . The process continues as has been shown by the dotted lines, till of point  $E_n$  equilibrium is established. The level of income now is  $Y_n$  and  $Y_1$ .  $Y^n$  is the increase in income ( $\Delta Y$ ) as a result of increase in investment ( $\Delta I$ ).

It may be observed that the gap between intended saving and intended investment becomes smaller and smaller until the gap is completely wiped out. All the full effect of investment, aggregate income becomes stationary at the level of  $y_n$  in nth period. The system again becomes stable at a new higher equilibrium. In the nth period saving gap equals the sums of old investments plus new investments.

Though the dynamic version of the multiplier makes the theory more useful for further investigations, in actual practice the response of consumption to changes in income is affected by other factors also.

**(c) Limitations :**

1. MPC may not remain constant as assumed because income increases through the multiple action.
2. Beyond the level of full employment further increase in investment would lead to general increase in prices.
3. The assumption of given increment of consumption may have to be abandoned because of the possibility of multiplier income causing fluctuation in investment.
4. In an open system with foreign trade, there is possibility of a part of increased income leaking out the benefit to employment in some other country.

**C. THE ACCELERATION PRINCIPLE**

**(a) Meaning :**

The Principle of Acceleration, also called the "Principle of Acceleration, or Derived Demand" (Accelerator), is an important tool of economic analysis. It is older

than the concept of the multiplier. J .M. Clark popularised the idea that investment depends upon consumption and that there was an Acceleration Principle. Harrod gave it the name of "The Relation". It may be regarded as a post-Keynesian concept because it is the economists who came after Keynes who presented it in a refined and developed form.

The multiplier and the accelerator are not rivals, but parallel concepts. The former shows the effect of investment on consumption and the latter, the effect of a change in consumption on investment. The principle of acceleration states that if demand for consumption goods rises, there will be an increase in the demand for factors of production, say machines, which are needed to produce the goods. But the demand for machines, will increase at a faster rate than the demand for the product. The accelerator makes the level of investment a function of the rate of change in consumption. The accelerator measures the changes in investment goods industries as a result of changes in consumption goods industries. It establishes a functional relationship between the demand for consumption goods and the demand for the machines which make them. It is the ratio between the induced investment to a net change in consumption expenditure.

Symbolically,  $a = \frac{\Delta I}{\Delta C}$ , where  $a$  stands for acceleration co-efficient (factor).

$\Delta I$  denotes net changes in investment outlays, and  $\Delta C$  denotes the net changes in consumption outlays.

For example, if an expenditure of Rs. 100 crores on consumption goods leads to an investment of Rs. 200 crores in investment industries, then the accelerator is 2. Accelerator is usually more than zero as increased expenditure on consumption goods always leads to increased expenditure on capital goods. Where a large amount of capital equipment is needed per unit of output, acceleration co-efficient is positive and more than unity.

The basis of acceleration principle is the knowledge that the fluctuations in output and employment in investment goods industries are greater than those in consumption goods industries. The accelerator has greater applicability to the industrial sector. It seeks to analyse why fluctuations in employment in the capital goods industries are more than those in the consumption goods industries. The more capitalistic the methods of production, the greater the value of accelerator.

The accelerator has been used to explain fluctuations in economic activity, especially in the investment goods industries. But it cannot explain all kinds of fluctuations in these industries. For example, the prices of raw materials fluctuate more violently than the prices of investment goods. This is so because the supply of raw materials, particularly agricultural commodities is much more inelastic to the changes in demand than the supply of manufactured goods.

**(b) Working of the Acceleration Principle :**

The size of the accelerator depends upon :

**(i) Capital-output Ratio or the Capital Co-efficient.** Greater the capital co-efficient larger would be the increase in investment as a result of a given increase in consumption. Lower the capital co-efficient, smaller would be the increase in investment induced by the given increase in consumption.

**(ii) Durability of the Capital Equipment.** Other things remaining the same, size of the accelerator also depends upon the durability of the machines. "When there are no durable means of production\_ \_ \_ \_ \_ . There is no magnification (acceleration) at all," writes Heberler. The greater the durability, the greater the value of the accelerator and vice-versa.

To illustrate the operation of the acceleration principle with the help of an example; suppose that the electric bulb manufacturing industry produces 100 million bulbs per year with the help of 1000 machines. It means each machine produces 100000 bulbs per year. The average life of a machine is 10 years. It means that 100 machines wear out and have to be replaced every year.

Suppose further that the consumer demand rises by 10% next year. Now 110 million bulbs would be demanded. To meet the demand, 100 new machines, in addition to the 100 in replacement would have to be installed. It means that 10% increase in demand for bulbs leads to 100% increase in demand for machines. The accelerator is 10.

Suppose that the consumer's demand stabilises at 110 million bulbs in the 3rd year. No new machines would be needed. Only 100 worn out machines would have to be replaced. No new investment would be needed. The only investment is on 100 machines to be replaced. The result is that zero% increase in sales has meant 50% drop in investment.

The acceleration principle is a double-edged sword. If demand slips from 100 million bulbs to 90 million bulbs annually, the manufacturers would not be replacing 100 worn-out machines. No new machines would be demanded. Investment would be zero. The firms might even be tempted to sell some of the machines in the used' equipment market. There may be disinvestment or, in other words, there would be negative investment.

The above explanation clearly brings out that a depression can set in because consumption has stopped growing rapidly. The point to be kept in mind is that to keep the economy in good health, mere standing still or running at a slow pace is not sufficient. There is the need to run faster in order to prevent the depression from setting in.

The acceleration principle intensifies fluctuations both ways. On the up swing phase, it induces net investment. On the down swing it causes disinvestment. It works as a stimulating factor if the economy is growing because of population increase

or higher real income.

**(c) Limitations and Assumptions :**

The working of the acceleration principle is subject to the following limitations and assumptions :

**1. No Excess Capacity :-** If there is excess capacity or idle equipment in the consumer goods industries, the principle of acceleration will only start operating after the excess capacity has been used. There would be no induced investment till then.

**2. Surplus Capacity :-** There must be surplus capacity in investment industries. If this were not so an increased supply of machines in response to increase in the derived demand would not be possible. The acceleration principle would only operate if the machine-making industries are in a position to manufacture machines with their existing equipment.

**3. Nature of Demand :-** An increase in the demand for consumption goods must be more or less permanent in nature to have acceleration effects. A temporary increase in demand will not lead to any addition in the capital goods. Such goods are expensive and producers will venture to produce them only if they can be sure that the increase in demand is permanent.

**4. Capital-Output Ratio:-** The acceleration principle is based on the assumption that there is constant capital-output ratio for consumer goods and capital equipment. This is not so in reality. New inventions and improvements in the techniques of production help to lower capital-output ratios. Besides, existing capital equipment may work more intensively. Moreover, the future expectations of businessmen regarding trends in wages, interest rates and demand, may lead to change in the proportions in which the factors are combined.

**5. Availability of Resources :-** The acceleration principle will work only if unemployed factors are employed in the capital goods industries. In other words, these industries should be able to expand. But once the level of full employment is attained, capital goods industries stop expanding and the acceleration principle stops working.

**6. Elastic Supply of Money and Credit :-** The smooth working of the acceleration principle is helped by elastic supply of money and credit. Induced investment caused by increased consumption will materialise only if it is possible to raise sufficient funds for investment in investment goods industries. Tight money and credit conditions will mean higher rates of interest and, therefore, costlier borrowing.

**7. Fluidity :-** This implies that the industry is in a position to have materials and means of production instantly supplied to it to turn out finished goods as fast as wanted.

**8. Meaningful Average not Possible :-** In the economy all types of business

firms or industries do not have the same capital-output ratio. It means that in the economy as a whole, there may be high accelerator at one time and low accelerator at another. This will prevent any meaningful average, particularly in cases when the accelerator is used to explain cyclical nature of the whole economy rather than the behaviour of a particular industry.

**9. A Given Time-unit :-** The acceleration principle assumes that the increased output and the rise in investment take place at the same time. But in actual practice, a sudden rise in demand may have taken place much earlier than the response in the investment levels. In order to account for such refined models of acceleration principle, the influence of time lags has to be included.

The acceleration principle is very useful in explaining business fluctuations. It shows how a modest increase in consumption spending can lead to huge increase in investment spending and vice-versa. It describes how period of prosperity can turn into a period of depression simply because demand levels off at high point instead of increasing at a steady rate. But the simplifying assumptions limit its usefulness as at times it may give entirely misleading results. It may be because of this, that Keynes in his "General Theory of Employment, Interest and Money", completely ignored the acceleration principle.

The acceleration principle works under many constraints in the case of capital abundant developed economies. It cannot function satisfactorily at all in the capital short under-developed economies as a tool of capital formation, which is the main headache of these economies. These limitations of this concept place a greater constraint on its application to the underdeveloped economies.



**INVESTMENT AND ITS DETERMINANTS****Importance**

The level of income, output and employment in an economy depends upon effective demand which, in turn depends upon expenditure on consumption goods and investment goods ( $Y=C+I$ ). Consumption depends upon the propensity to consume which we have learnt, is more or less stable in the short period and is less than unity. Greater reliance, therefore has to be placed on the other constituent (investment) or income. Out of the two components (consumption and investment) of income, consumption being stable, fluctuations in effective demand (income) are to be traced through fluctuations in investment. Investment thus, comes to play strategic role in determining the level of income, output and employment at a time. According to A Murad, "Investment is an essential requirement for full employment and the key property in a capitalist economy." This is so widely and generally recognised by all economics schools and sets that it may be regarded "as a crucial variable of modern macro-economics" Not only net investment but an increasing rate of net investment is necessary to assure continued full employment.

In order to maintain an equilibrium level of income ( $Y=C+I$ ), consumption expenditure investment expenditure must equal the total income ( $Y$ ) but according to psychological Law of Consumption given by Keynes, as income increases, consumption also increases but less than the increment in income. This means that a part of the increment in income is not spent or is saved. These savings must be invested to bridge the gap between an increase in income and the result would be an unintended increase in the stock of goods (inventories) which in turn would lead to depression and mass unemployment. Hence, investment rules the roost.

**Meaning**

In Keynesian economics real investment means i.e. investment on the building of new machines, new factory buildings, roads, bridges and other forms of product, capital stock of community, including increase in inventories. It does not include the purchase of old or existing stock, shares and securities which constitute merely an exchange of money from one person to another. Such investment is merely financial investment and does not effect the level of employment in an economy. An investment is termed

real investment only when it leads to an increase in the demand for human and physical resources resulting in an increase in their employment. It implies an increment of capital equipment. According to Stonier and Hague, "By investment we do not mean the purchase of existing paper and the like." "Investment means making an addition to the stock of goods in existence", says, Mrs. Joan Robinson. But propensity to invest is a different term. Propensity to invest is the ratio between aggregate investment and aggregate income it may take the form of average propensity to invest (API) or the marginal propensity to invest (MPI). Average propensity to invest is shown

by  $\frac{I}{Y}$  is the ratio of investment to income.

The marginal propensity to investment denotes the proportionate change in investment as a result of change in income. It is shown by  $\frac{\Delta I}{\Delta Y}$ . Suppose, the total income of a country is 40 crores and total investment is Rs. 10 crores then

the API is  $\frac{10}{40} = \frac{1}{4} = 0.25$ . Again if income changes ( $\Delta Y$ ) by Rs. 20 crores and as a

result investment changes by Rs. 10 crores then  $MPI = \frac{10}{20} = \frac{1}{2} = 0.5$ .

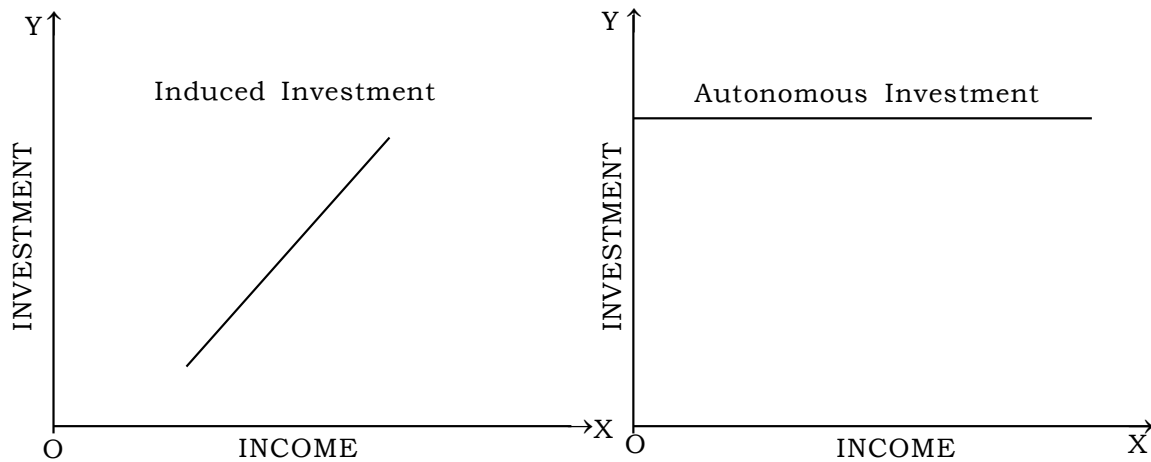
### **Types of Investment :**

Investment may be private investment or public investment. Induced investment is that investment which changes with a change in income that is why it is income elastic. In a free enterprise capitalist economy, investments are induced by profit motive. Such investment is very responsive to change in income i.e., induced investment increases as income increases.

According to Hicks, investment is of two types, induced as described above and autonomous which is independent of variations in output. Explaining autonomous investment, Hicks remarks, "Public investment as the investment which occurs indirect response to inventions and much of the long range investment (as Mr. Harrod calls it) which is only expected to pay for itself over a long period, all of these can be regarded as autonomous investments". Autonomous investment is not sensitive to change income. In other words, it is independent of income changes and is not guided or induced by profit motive. Autonomous investments are made primarily by the Government and are not based on considerations of profit. Autonomous investments are a peculiar feature of a war or a planned economy, for

example, expenditure on arms and equipment to strengthen the defence of India may be called autonomous investment as it is incurred irrespective of the level of income or profits.

According to W.C. Peterson, "The autonomous investment is generally associated with such factors as the introduction of new techniques or product, the development of new resources or the growth of population or labour force." The curve of autonomous investment is represented by a straight line running from left to right and to horizontal (income) axis. The distinction between induced and autonomous investment is shown in the diagram below :



Private investment (induced investment) depends on the marginal efficiency of capital and the rate of interest. The marginal efficiency of capital in turn, depends upon future expectations which fluctuate violently. Hence, private investment becomes highly capricious and is very low, when in fact, it should be very high. Prospective entrepreneurs keep on comparing the marginal efficiency of capital with the rate of interest and decide to invest only when the former is higher than the latter. There will be no investment if the rate of interest is higher than the MEC (in other words, if profit expectations are not very bright); that is the reason why investments fall to low levels during depression period. The inducement to invest is determined in Keynes analysis by the businessman's estimate to the profitability of investment, in relation to the rate of interest of loans for investment. Given the rate of interest, the higher the MEC, the greater will be the volume of investment. On the other hand, given the MEC, the lower the rate of interest, the higher the magnitude of investment. Classical economists regarded investment as dependent on the rate of interest; this to them, was an

important lever by which investment in the system was regulated. That is why they relied too heavily on the rate of interest to control fluctuations. They always held that by manipulating the rate of interest, stability in the economic system could be attained.

Apart from these basic factors which go to determine investment it depends upon a number of other factors. According to Robert Eisner and R.R. Stroz, Econometric studies have indicated that capacity (and its rate of utilisation), demand, cash flow, and expected profits are the most important determinants of investment. Investments are influenced by the degree of present and future competitions, wage rates, taxations, fiscal and monetary policies, aggregate demand, cash flows, innovations, changes in the techniques of production, maintenance and operating costs, existing stock of capital goods, expectations, rate of population growth, territorial expansion, degree of liquidity in the economy, government policies, etc.

### **Marginal Efficiency of Capital (MEC)**

Marginal efficiency of capital refers to the anticipated rate of profitability of a new capital asset. It is the expected rate of return over cost from the employment of an additional unit of capital asset. Marginal efficiency of capital depends upon the expected rate of return of a capital asset over its life time called prospective yields by Keynes, and the supply price of the capital asset. According to Stonier and Hague, "The marginal efficiency of a particular type of capital asset shows what an entrepreneur expects to earn from one more asset of the kind compared with what he was to pay to buy." it must be remembered that businessmen while invest in a new capital asset will always weight the expected rate of return (profitability) over the life time of the capital asset (say a machine, against its supply price (cost) also called the "replacement cost". If the former is greater than the latter, the businessmen will invest, otherwise not. Prof. Kurihara defines MEC as the ratio between the prospective yield of additional capital goods and their supply price. It is, thus a technique of relating the yield to the price of capital.

### **Prospective Yield**

Prospective yield refers to total net return (net of all costs such as maintenance expenses, depreciation, raw material except interest charges, expected from the asset over its life time. If we divide the total expected life of the new capital asset into a series of periods, say years, we may refer to annual returns as a series of annuities represented by  $Q^1, Q^2, Q^3, \dots, Q^n$ , we have to add the net return for all these years to arrive at the prospective yield. It is however, very difficult to estimate correctly the expected return from a capital asset over its life time (because, it is difficult to estimate correctly the life of the capital asset.) At best, we can guess,

intelligently perhaps, but only guess an estimate of what an investment will earn in five, ten or twenty years hence. It is based largely on guess work, on animal spirits, on adapting estimate to the average estimate, which in turn is based on uninformed guesses. Moreover, the expected return each year is not the same (except in a static society) in this changing world, the returns from the capital asset are likely to vary from year to year. Besides, Keynes considers the supply price, which means the cost of the asset (not of the existing asset but of the new asset) also called the replacement cost. The supply price of a capital asset is the cost of producing a new asset of that kind and not the supply price of an existing asset. Thus MEC is the ratio of these two elements (prospective yield and the supply price). In other words, marginal efficiency of capital refers to the rate of discount at which the prospective yield of an asset is discounted so as to make it just equal to the supply price of the asset. Keynes says, "More precisely, I define the marginal efficiency of capital as being equal to that rate of discount which would make the present value of the series of annuities given by return expected from the capital and during its life just equal to its supply price." In the words of Norman F. Keiser, "MEC is that rate of discount which makes the present value of the returns expected from a capital asset equal to the asset's supply price." An example will make it clear.

Suppose an investor feels that a given investment in new capital asset (say a machine will cost him Rs. 10,000. Suppose the machine, (unit of capital asset) is expected to yield over its life a new return (net of all costs like maintenance, depreciation, raw material except, interest charges) of Rs. 500/ per annum. To find out the MEC of the new capital asset we would simply calculate the ratio (expressed as per cent of the expected annual net return Rs. 500) to the original cost (supply price Rs. 10,000). Here Rs. 500 (prospective yield) divided by Rs. 10,000 (supply price) results in a value of

$$5\% \left( \frac{500}{10000} \times 100 = 5\% \right)$$

The MEC is 5% i.e. the expected annual net return on the investment of Rs. 10,000 is 5%. It may, however, be noted that in a dynamic economy, it is not so easy to find out the rate of expected return. Thus,

Supply Price = Discounted prospective yield

The formula for its calculation is :

$$Cr. = \frac{Q^1}{1+r} + \frac{Q^2}{(1+r)^2} + \frac{Q^3}{(1+r)^3} + \dots + \frac{Q_n}{(1+r)^n}$$

where Cr stands for supply price (replacement cost) of the new capital

asset,  $Q^1, Q^2, Q^3, Q^n$  denote expected annual rate of return each year from the capital asset (also called series of the prospective annual yields), stands for the rates of discount which will make the present value of the series of annual returns just equal to the supply price of the capital asset. This denotes us the rate of discount of the marginal efficiency of capital. To take a concrete illustration, let us suppose that the prospective annual yields from the use of the new capital asset whose life is 3 years only are as follows :

Ist Year	2nd Year	3rd Year
Rs. 1,050	Rs. 3,528	Rs. 9,261

Suppose that current supply price or the replacement cost of the capital asset is Rs. 12,200. Now 5% must be that unique rate of discount which will equate the sum of the discounted values of the prospective annual yields to the current supply price of the capital asset.

$$\begin{aligned} \text{Rs. } 12,200 &= \frac{1050}{(1.05)} + \frac{3528}{(1.05)^2} + \frac{9261}{(1.05)^3} \\ &= 1000 + 3200 + 8000 \\ &= 12200 \end{aligned}$$

The unique rate of discount (5%) is called the marginal efficiency of capital (MEC) is expressed as  $M = \frac{Y}{C}$  where M is the MEC, Y the prospective yield per unit time C the Supply Price.

Suppose a capital goods costing Rs. 10,000 gives an expected annual return per year Rs. 1,000 then the MEC (M) =  $\frac{Y}{C} = \frac{1000}{10000} \times 100 = 10\%$

The marginal efficiency of a particular type of capital asset is the highest rate or return over cost expected from an additional or marginal unit of the type of asset. The marginal efficiency of capital in general is "the highest rate of return over cost expected from producing an additional or marginal efficiency of capital assets." In other words, the marginal efficiency of capital in general is "the highest rate of return over cost expected from producing an additional or marginal unit of the most profitable of all types of capital assets". In other words, the marginal efficiency of capital in general is the marginal efficiency of that particular asset, of which the economy finds it most worth while to produce another or additional unit.

### **MEC and the Rate of Interest**

MEC and the rate of interest are the two important factors which affect the volume of investment and these two must be determined before hand

independently of each other. MEC is the result of supply price and the prospective yield of the capital asset. Rate of interest is the price paid for the loanable funds and is determined like any other price, by the demand for and supply of loanable funds. A potential investor will go on weighing the MEC on new investment which are continued to be made, till the MEC and the rate of interest equalised. Once the MEC becomes equated to the rate of interest equilibrium investment is determined. Thereafter, if investment has to be increased, either the rate of interest equalised. Once the MEC becomes equated to the rate of interest equilibrium investment is determined. Thereafter, if investment has to be increased, either the rate of interest should fall or MEC should increase. In this connection D. Dillard remarks: "When it is recalled that employment cannot increase without an increase in investment, the propensity to consume being unchanged, the importance of the relationship of the marginal efficiency to the rate of interest for the problem of unemployment will be appreciated as being of the most fundamental significance.

It is true that both MEC and the rate of interest are important determinants of investment. But Keynes contribution relates chiefly to the former, in as much as a result of his analysis. We now place less emphasis than before on the rate of interest as a means of increasing the volume of investment. The rate of interest is very important in the effective implication of Fiscal Policy (specially debt management) but as a means of affecting private investment it could be of importance (as a determinant of income and employment), if the marginal efficiency schedule were highly elastic. Keynes, in the General Theory attributed fluctuations to the changes in expectations and shifts in the MEC and not to the rate of interest. He says, "We have been accustomed in explaining the 'crisis' to lay stress on the rising tendency of the rate of interest under the increased demand for money both for trade and speculative purposes. At times, this factor may certainly play an aggravating and, occasionally perhaps, an initiating part. But I suggest that a more typical and often the predominate explanation of the crisis is not primarily a rise in the rate of interest, but a sudden collapse in the marginal efficiency of Capital." However, he continued to stress in the General Theory the relation of the MEC and rate of interest as determinants of the amount of investment and hence of employment. The following table depicts clearly the relationship of MEC and the rate of interest in the determination of the inducement to invest.

Supply Price	Annual Return/MEC	Rate of interest	Effect of Investment
Rs. 5,000	Rs. 1,000 4%	4%	Neutral
Rs. 20,000	Rs. 1,000 5%	4%	Favourable
Rs. 25,000	Rs. 1,000 4%	5%	Adverse

In this table, it is assumed that the new capital asset in question gives a constant return of Rs.1,000 annually. The MEC and the rate of interest are given separately in separate columns, having been determined independently of each other. When MEC (4%) is equal to rate of interest (4%) the effect on investment is neutral; when it is more the effect is favourable and when MEC is less than the rate of interest, the effect on induced investments is unfavourable.

The position and shape of the MEC or investment demand schedule plays a deciding role in determining the volume of investment because it shows the extent to which the amount of investment changes as a result of changes in the rate of interest. If the demand (MEC) schedule is relatively elastic, a little fall in the rate of interest will lead to considerable increase in investment. On the other hand, if the investment demand schedule (MEC) is relatively inelastic there will be little increase in investment, though the fall in the rate of interest may be considerable.

### **Short Run Factors affecting MEC and Investment**

There are a large number of long-run and short-run factors influence the marginal efficiency of capital. Amongst the short-run influences, the following are important :

**1. Nature of Demand, Prices and Costs :** If the costs are expected to rise and prices are likely to fall and the demand for a particular product is prone to decline in future, average businessmen's expectations regarding the rate of return from any given investment will also decline, affecting the investment adversely. On the other hand investment will get a fillip, if the entrepreneur expects a fall in cost, rise in prices, increase in demand or a combination of these.

**2. Propensity to Consume :** Favourable short-run shifts in the propensity to consume also cause favourable shifts in investment because the demand for capital goods is (at least partly) derived from the demand for consumer goods.

**3. Change in Liquid Assets :** When an entrepreneur has a large volume of liquid assets and of different types, he is likely to take advantage of the investment opportunity that comes his way, But when the assets are not liquid or there is the fear of temporary liquidity (shortage of working capital) it often goes to inhibit the new investment.

**4. Change in Income :** Sudden changes in income caused by windfall profits or losses, tax concessions or levies also influence the marginal efficiency of capital and hence investment. It will be stimulated by a rise in income and damped by fall in income.

**5. Current State of Expectations :** Rates of return on current



investments influence business expectations. Entrepreneurs often invest on the assumption that the current state of affairs will continue indefinitely. It is not possible to base expectations and hence investment of future course of events which are uncertain. Thus, current expectations play an important part in influencing investment.

**6. Waves of Optimism and Pessimism :** Considerable importance is given to waves of optimism and pessimism in influencing the MEC and hence investment. During period of optimism, rates of profit on future investment are unduly overestimated, while during periods of pessimism, they are badly underestimated.

**7. Taxation :** MEC is affected by the rates of taxation. Heavy doses of direct and indirect taxation is bound to affect MEC favourably, thereby imparting investment and consumption as appears to be the case in India at present.

**8. Existing Stock of Capital :** If the stock of capital in existence is high, then the MEC of additional capital equipment is bound to be low.

**9. Returns :** If the returns from the existing capital are favourable and of high magnitude then MEC is bound to be favourable and high otherwise, it will be low.

### **Long Run Factors Influencing MEC and Investment**

Following are the important factors which influence the marginal efficiency of capital and investment in the long run :

**1. Population :** The rate of growth of population favourably affects investment, because the basic needs of fast growing population require a greater amount of a capital investment in fields like municipal and public utility services, residential buildings and consumer goods industries specially those producing necessities of life.

**2. Development of New Territories :** The growth and development of new territories lead to heavy investment activities of all types. There will be need to provide for additional transport facilities and commercial buildings. The development of new areas and township in India like Nangal (Punjab), Okhla (U.P.), Durgapur (W. Bengal) and Traumbay (Maharashtra) has necessitated huge development expenditure and investment.

**3. Techniques of Production :** Improvements in the techniques of production, stimulate investment. Any invention or change in the technique of production, specially when it is of labour-saving type, lowers the cost of production and calls for huge investment activity. The manufacture of steel, cars, rubber, glass, textiles, electrical goods etc. has resulted in great technological progress and the expansion of market resulting in increased investment.

**4. Supply of Capital Equipment :** The influence of population

growth, expansion of territories and markets and the changes in the techniques of production depend upon the existing supply of capital equipment. If the existing plant and machinery are capable of being used to cope with increased demand as a result of the above mentioned factors to that extent new or induced investment will not result. However, if the existing plant and machinery are fully employed, then the favourable effects on investment will be low.

**5. Abnormal Conditions :** If the circumstances that prevail or are likely to prevail in future, assume, abnormal form, then MEC is bound to be low.

**6. Economic Policy :** MEC and investment in the long run are greatly affected by the economic policy of the government to be followed in the long run period. If the long-run policy of the government is to adopt socialism and carry on nationalisation then, the MEC may not be very high, affecting investment adversely.

#### **Suggested Readings**

1. Gardener Ackley : *Macro Economic Theory*
2. J. M. Keynes : *The General Theory of Employment, Interest and Money*
3. M. C. Vaish : *Macro Economic Theory*
4. D. Dillard : *Economics of J. M. Keynes*
5. A. H. Hansen : *A Guide to Keynes*
6. F. S. Brooman : *Macro Economics*
7. U. N. O. : *A System of National Accounts* : Series F. N. 2, Rev. 3, December 1968
8. H. C. Edey, A. T. Peacock and Ronald Cooper : *National Income and Social Accounting*
9. D. Croome and J. N. Robinson : *Understanding the Economy.*
10. Pen. J. : *Modern Economics*
11. Dernburg T. F. and D. M. Mc Dougall : *Macro Economics*
12. Mueller (Ed.) : *Readings in Macro Economics*
13. Gupta, R. D. : *Keynes & Post-Keynesian Economics*
14. Campagna : *Macro Economics Theory and Policy*
15. Shapiro, E. : *Macro Economic Analysis.*
16. Harris, S. E. : *The Economics*
17. Friedman, M. : *The Theory of Consumption Function.*
18. M. C. Vaish : *Macro Economic Theory*
19. C. P. Kindleberger : *International Economics*
20. Bo Sodersten : *International Economics.*

**BOOKS FOR STUDY (L. No. 5-7)**

1. Dillard, D : Economics of J.M. Keynes
2. Dewett, K.K. & Verma, J.D. : Modern Employment and Income Theory
3. Gupta R.D. : Keynesian and Post-Keynesian Economics
4. Samuelson, P.A. : Economics
5. M.C. Dougall, D.M. : Macro Economics
6. M.G. Mueller: Readings in Macro Economics

**QUESTIONS FOR PRACTICE (LONG ANSWER TYPE) (L. No. 5-7)**

1. What do you understand by consumption function? Explain its significance.
2. Write notes on :
  - (i) Keynes' psychological law of consumption.
  - (ii) Factors affecting propensity to consume.
3. Discuss in detail the concept of investment multiplier. Explain its working also.
4. Write notes on :
  - (i) Leakages of multiplier
  - (ii) M.E.C.
5. Examine the meaning and importance of investment in the Keynesian theory of income and employment.
6. Differentiate between autonomous and induced investment. On what factors does induced investment depend?

**SHORT-ANSWER TYPE QUESTIONS**

1. What is multiplier?
2. What is prospective yield?
3. What do you mean by supply price of a capital asset?
4. Define MPC.
5. Distinguish between APC and MPC.